UNIVERSITY OF TORONTO
LESLIE DAN FACULTY OF PHARMACY

2018 Self-Study Report

University of Toronto Quality Assurance Process (UTQAP)

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Introduction

Overview

The Leslie Dan Faculty of Pharmacy (LDFP) is Canada's largest pharmacy school and has a world class reputation in both education and research. We are also one of the largest pharmacy schools in North America, offer innovative education programs and conduct cutting edge research that is multidisciplinary and encompasses all aspects of patient care and drug therapy. Our Faculty is comprised of over 1,200 students studying in our PharmD, PharmD for Pharmacists and Graduate Studies programs, approximately 38 staff members, and 49 faculty members with primary academic appointments. In the last five years our faculty members have received over 65 million dollars in research funding.

The LDFP at the University of Toronto has been named the top Pharmacy school in Canada by the 2018 QS World University Rankings. Internationally, the Faculty ranked fifteenth. Utilizing academic and employer surveys, and measuring publication citations as well as the impact of published works, this year's rankings recognize the Faculty as a world leader in pharmacy education (Appendix 1).

The Faculty is also an integral part of the pharmacy profession's historical roots in Ontario, inextricably linked to the people of this province and to the advancements of pharmacy. We are one of seven health science faculties at the University of Toronto: Pharmacy, Medicine, Social Work, Dentistry, Public Health, Kinesiology and Physical Education and Nursing.

The last University of Toronto Quality Assurance Process (UTQAP) self-study was conducted in October 2013 under the direction of then Interim Dean Heather Boon. The previous review highlighted our strong Academic Plan, the quality of our faculty and students, research productivity, facilities and reputation. The reviewers also strongly supported the programmatic direction of the Faculty's professional programs as well as increasing links with teaching hospitals and the private sector. The review also focused on some opportunities for improvement including increasing cohesion around the Faculty's Academic Plan, improving the organizational structure of the Faculty and developing greater information technology infrastructure. The reviewers also suggested the PharmD program be reviewed to increase rigor and improve PEBC performance, and that the experiential component of the programs be provided more attention.

Since the last review, the Faculty has undergone a number of changes which began with an academic planning process. One of the key goals of the academic planning process was to engage our students, staff, faculty, and external stakeholders to reflect on what they value most about their work, study, or partnership at the LDFP, and to envision how we can enhance the unique strengths and impact of the Faculty. A core planning team of 30 individuals representing students, staff, and faculty from across all of our programs and research areas led this process. This group directed a consultation process that included more than 100 interviews. This provided the groundwork for a January 2016 Academic Planning Summit which was attended by more than 120 people, where a vision for the Faculty was developed and our strategic focus areas for the next five years were defined. Working groups refined the goals identified at the Summit and

outlined specific short- and medium-term objectives for each strategic focus area. Finally, the core planning team and the Dean's Advisory Group (DAG) worked to blend the ideas from all the working groups into a cohesive academic plan. This plan, Forward Together (Appendix 2), went into effect on January 1, 2017. The strategic focus areas in the plan are as follows:

1. Advance Education Programs that Develop Leaders for Diverse and Emerging Careers
2. Lead Innovations in Pharmacy and Pharmaceutical Science Education and Learner Engagement
3. Grow our Scientific Impact
4. Build a Distinct Organizational Identity
5. Improve Health through Knowledge Translation and Policy Influence

Based on the recommendations from the last UTQAP review, the Faculty has been restructured. The restructuring was also done to support the implementation of the Academic Plan. Numerous changes, highlighted in this self-study, have also taken place in our academic programs.

Academic Programs

The Faculty has three degree granting programs:

- PharmD (Entry to Practice Professional Degree Program)
- PharmD for Pharmacists (Degree Bridging Program for Practicing Pharmacists)
- Graduate Programs (MSc and PhD)

PharmD

The Doctor of Pharmacy (PharmD) program is the Faculty's entry to pharmacy practice educational program. Introduced in 2011, the PharmD program focuses on today's most pressing healthcare and medication related issues. The PharmD program replaced the four-year Bachelor of Science in Pharmacy (BScPhm) professional degree program. The change from a Bachelor's degree to a PharmD degree reflects the changing scope of practice and increased responsibilities of pharmacists in the healthcare system, and is aligned with the international move to this degree. The new curriculum was implemented in 2011 and the new degree designation was approved in Spring 2013. Students enrolled in the program from 2011 onward graduate with a PharmD degree.

The program consists of didactic, lab-based and experiential education. The experiential component is robust, providing students significant opportunity for hands-on learning in direct patient care and non-direct patient care settings. Students in this four-year program participate in 44 weeks of practical training, which develops clinical, research, communication, leadership and project management skills. Students graduating from this program have an extensive knowledge of the science and practice of pharmacy. Graduates from this program are trained to deliver the enhanced scope of practice required by the Canadian healthcare system.

PharmD for Pharmacists

The accredited Post-Baccalaureate PharmD program has been offered at the LDFP since 1993, meeting the Association of Faculties of Pharmacy of Canada (AFPC) Post-BSc PharmD educational

outcomes. As it was not possible for two programs to offer the same degree (Doctor of Pharmacy) and achieve different educational outcomes, the Post-BSc PharmD program underwent a major modification in 2014. The program now serves as a bridging program for pharmacists with a BScPhm degree to meet the new PharmD outcomes and earn a PharmD degree. The PharmD for Pharmacists program is designed for practicing pharmacists to meet the changing needs of the profession and to prepare them for the future of healthcare practice. Flexible and customizable, this program combines taught courses and experiential learning to build on the knowledge and skills pharmacists obtained in their undergraduate degree.

Graduate Programs

The Graduate Department of Pharmaceutical Sciences at the Faculty offers research-intensive MSc and PhD degrees in a wide range of pharmaceutical science topics. Pharmaceutical science is a broad and multidisciplinary area of research that encompasses all aspects of drug therapy. This includes the design, synthesis and characterization of new medicinal agents, studies to understand their mechanisms of action, assessment of their effectiveness for treatment of disease, identifying their optimal clinical use for improving patient care, and the economics and policies that define best practices and their essential role in the health care system. Professors at the LDFP are international leaders in all of these areas of investigation. Our graduate programs provide a stimulating and productive environment for graduate education and research for students with degrees in physical, biological, and social sciences. The majority of students are enrolled full-time, but the program also offers part-time MSc and flex-time PhD options. The core educational activity of both the MSc and PhD programs is research under the direction of a primary supervisor.

As outlined in our Academic plan, we have developed a new Master of Science in Pharmacy (MScPhm) program. This program has been developed in response to a need expressed by academic institutions and academic hospitals for leaders in pharmacy practice.

The MScPhm program will provide an opportunity for pharmacists to gain advanced clinical knowledge in a defined area of practice. It will enable them to become clinical leaders in a wide range of patient care and professional settings. MScPhm graduates will also hold leadership roles in quality improvement programs, the provision of education to pharmacy students and other health care providers and the development of pharmacy practice and health care services and policies. This program will set the standard for advanced pharmacy education in Canada. We received approval of this program from the University of Toronto's Quality Council in September 2018 and expect to hear from the Ministry by the end of November. The anticipated date for enrollment of the first students in this program is September 2019.

Other Programs

Of merit, but not under the scope of this self-study, are the Bachelor of Science in Pharmaceutical Chemistry program, and the International Pharmacy Graduate (IPG) program.

The Pharmaceutical Chemistry Specialist program is housed in the Faculty of Arts and Sciences and is jointly run with the LDFP. It combines knowledge of the biologic, medical and physical sciences in the study of drug therapy, with emphasis on the chemical nature of reactions and interactions involved in drug therapy, and is completed in partial fulfillment of the HBSc degree.

The IPG Program was created in 1999, funded by a three year grant to the Faculty from the Ontario College of Pharmacists with a mandate to "create educational modules for foreign trained pharmacists seeking licensure in Ontario". The program has been a success since its inception. In 2018, program administration was transferred to the School of Continuing Studies (SCS) with academic responsibility for the program remaining at the LDFP.

Self-Study Process

The process of writing the self-study at the LDFP was very collaborative. The process was led by the Education Office, with Program Directors involving faculty and students through committee meetings, information sessions, as well as having faculty with specific knowledge contribute information to the report itself. Narratives for each program were written by their respective Directors. Non-academic sections of the report were compiled with the assistance of numerous administrative offices at the Faculty including Admissions, Advancement, Communications, Experiential Education, Finance, the Dean's Office and the Office of the Chief Administrative Officer, amongst others. Upon completion of the draft, the report was reviewed for feedback and disseminated for information to staff, faculty, students and those in leadership positions.

Doctor of Pharmacy - PharmD Program

Program Description

The Doctor of Pharmacy (PharmD) program is the Faculty's entry to pharmacy practice educational program. Implemented in 2011, the PharmD program focuses on today's most pressing healthcare and medication related issues. The program is a combination of didactic, lab-based and experiential education. The experiential component is robust, providing students significant opportunity for diverse experiential learning. Students graduating from this four-year program participate in 44 weeks of practical training which develops clinical, research, communication, leadership and project management skills. Students graduate with an extensive knowledge of the science and practice of pharmacy. Ultimately, pharmacy graduates from this program will deliver the enhanced scope of practice required by the Canadian healthcare system.

The PharmD program replaced the four-year BScPhm professional degree program. The change from a BScPhm degree to a PharmD degree reflects the changing scope of practice and increased responsibilities of pharmacists in the healthcare system, and is aligned with the international move to this degree. The new degree designation was approved in Spring 2013. Students enrolled in the program from 2011 onward graduate with a PharmD degree.

Program Objectives

The University of Toronto is committed to being an internationally significant research university, with undergraduate, graduate and professional programs of excellent quality. The President's three priorities call for us to Leverage Our Location, Strengthen our International Partnerships and Rethink our Undergraduate Education in a Research Intensive University. The LDFP Academic Plan is consistent with the University's Mission and the President's Priorities. The President's Priorities (Appendix 3) and the Academic Plan continue to guide curricular decisions in the PharmD Program.

In 2016, we convened members of the PharmD Program to set objectives to advance the Faculty's Academic plan. By consensus, the Program set objectives to deliver on the two education priorities: 1. Advance the Education Programs that Develop Leaders for Diverse and Emerging Careers, and 2. Lead Innovations in Pharmacy and Pharmaceutical Science Education and Learner Engagement. We have made progress towards the achievement of these priorities, and have presented annual updates to the Faculty and Staff in May of the last two academic years.

The healthcare system needs leaders that can advance pharmaceutical science and pharmacy practice to maximize the contributions of pharmacists and generate new solutions to meet the increasingly complex demands of patients and health systems.

These needs, coupled with the changing role and scope of pharmacy practice and the emergence of regulated pharmacy technicians, led to significant changes to the curriculum culminating in the full implementation of the PharmD Program in 2011. As Canada's largest Faculty of Pharmacy, we have leveraged our location and outstanding faculty, staff, and students to set a bold agenda

for the PharmD program to prepare graduates to improve the health of our local community, across Ontario, and around the world.

The Faculty is situated at the nexus of the University, teaching hospitals, government, industry and community. Through our proximity to these world-class hospitals, research institutes, government, industry, and community sites, we have achieved access to internationally recognized clinical and research faculty and offer students the widest range of experiential opportunities in North America and Internationally.

The goal of the PharmD program is to graduate pharmacy students who are prepared to meet the changing expectations of the communities they serve within Canada's health care system. Overall, our program is designed to meet and exceed the Educational Outcomes for First Professional Degree Programs in Canada set out by the AFPC. The AFPC outcomes signal curricular priorities and provide the framework for our curriculum design. The Educational Outcomes focus attention on outcomes that matter to patients, the profession of pharmacy and Canadian society. The 2017 version of the AFPC Educational Outcomes (Appendix 4) retains CanMEDS terminology (Royal College of Physicians and Surgeons of Canada) and draws from several concepts in CanMEDS 2015 role statements. The 2017 Educational Outcomes represent a conceptual shift since publication of the 2010 Educational Outcomes. In the 2010 version, each role was expressed independently and they had no particular relationship to one another. In the 2017 version, the relationship of the roles to one another is based on provision of patient care (Care Provider), which is at the heart (core) of the discipline of pharmacy in Canada. To meet the expectations of patients and society, graduates must take an appropriate approach to the core of the discipline, which is pharmacy care. To provide the quality of pharmacy care required, graduates are able to approach pharmacy practice by skillfully integrating Communicator, Collaborator, Leader-Manager, Scholar and Health Advocate roles in their Care Provider role. In addition, graduates are educated to fulfill societal roles beyond those required of pharmacists, acknowledging that the goal of university education extends beyond solely preparing graduates to enter into pharmacy practice. Pharmacy graduates must be grounded in a professional identity when being a Care Provider. Accordingly, the conceptual shift is that the Professional role is not one among many roles; rather it is the overarching ethos of the discipline of pharmacy – the spirit that guides graduates' practice and their approach to practice regardless of the type of practice in the field of pharmacy. The Educational Outcomes are comprised of multiple Role Statements: Care Provider, Communicator, Collaborator, Leader-Manager, Health Advocate, Scholar and Professional. Within each Role Statement, the Key Competencies define what graduates need to achieve by the end of the program. These competencies focus on measurable behaviours that are the end product of the program. They reflect the expectation that there will be use or application of knowledge and skill acquired during the program. Enabling Competencies delineate specific sub-components of competencies that graduates need to achieve in order to attain the competency required at the end of the program.

Each course offered in our PharmD program has been mapped to the AFPC educational outcomes. We are now in the process of reviewing our curriculum map to determine areas for further growth and areas where redundancy may be reduced. The goal is for the curricular map analysis to be complete by December 2018, with a plan to integrate the findings with course and

student feedback, which together will inform a curricular review and revision process beginning in January 2019.

Admission Requirements

As noted, the learning outcomes of the PharmD program are based on the AFPC Educational Outcomes for First Professional Degree Programs in Pharmacy in Canada. As these outcomes drive the curriculum, it is important that our admissions requirements are designed to set students up for success within the program. The 2010 AFPC outcomes document was the guiding source for the PharmD curriculum until 2017, when AFPC released an updated version. Of note, there are not substantial differences between the two outcomes documents that would impact admissions, however, the Admissions Subcommittee of the PharmD Program Committee will be reviewing admissions policies, processes and criteria in Fall 2018, which will include a process confirming alignment with the new AFPC Educational Outcomes.

Our applicants are assessed and ranked for admission offers based on the following three factors:

1. Academic performance
2. Pharmacy College Admission Test (PCAT)
3. Admission Interview - using a multiple mini-interview (MMI) format

The following chart provides an overview of how each attribute of the admission requirements can be related to, and thus provide a relevant foundation for, meeting the AFPC outcomes.

Table 1: Admission Requirements Mapped to AFPC Outcomes

Admissions Requirements	***AFPC Outcomes***						
	1	**2**	**3**	**4**	**5**	**6**	**7**
Academic Requirements							
Cumulative Average	X					X	
Carry full course load	X			X		X	
Pre-requisites	X	X				X	
PCAT Scores							
Biology, Chemistry, Quantitative Reasoning	X					X	
Critical Reading, Writing	X	X				X	
MMI Attributes Assessed							
Accountability							X
Problem Solving	X						
Communication (oral)		X	X				
Conscientiousness	X				X		X
Emotional Intelligence	X	X	X				
Resilience			X	X			
Ethical Reasoning	X				X		X
Leadership				X			

**(see Appendix 5 for detailed list of attributes assessed during MMI)*

The following outlines the key admission requirements for the PharmD program. See Appendix 6 for further detail.

Academic Performance

To be eligible for admission to the PharmD program, applicants must:

- Successfully complete all pre-requisite courses; and
- Achieve a minimum cumulative average of 70% (equivalent to a 'B' at the University of Toronto) or higher.

Preference is given to candidates with a proven ability to successfully carry a full-time course load (i.e., a minimum of 5.0 full credit course equivalents in the regular academic year). Our PharmD curriculum is rigorous, often exceeding the workload of many first-entry undergraduate programs. As such, students who are carrying full-time course loads prior to enrollment are better equipped to be successful in the first two years of our program.

Pharmacy College Admission Test (PCAT)

All applicants must write the PCAT – a norm-referenced standardized test which measures content knowledge and cognitive abilities that many pharmacy schools, including University of Toronto, consider to be essential for success in the program. The test includes sections on Biological Processes, Chemical Processes, Quantitative Reasoning, Critical Reading, as well as a

writing sub-test to assess applicants' ability to think and write effectively. A review paper by Meagher D.G. et al., published in the American Journal of Pharmaceutical Education (AJPE) (Appendix 7), reinforces that the PCAT has been shown to be a reliable predictor of academic performance in the first year of pharmacy programs. Hence, it remains an important element of our admissions process. In addition, the PCAT provides a common standard against which candidates can be compared, regardless of educational background, which is helpful considering our applicants come from universities across Canada and internationally.

Applicants must achieve minimum standards (cut scores) on each of the PCAT sections and meet the academic requirements to be invited to the interview stage.

Admission Interviews

Admissions interviews at the LDFP follow the MMI format. In this type of interview, candidates participate in approximately eight to ten short interviews that are six to seven minutes in length. Outside each interview station, candidates are given two minutes to read a question or scenario, and then enter the interview station to discuss or enact their response to that question or situation. Candidates are guided by volunteers from one interview station to the next. At each station there is a different assessor (interviewer) who may be a pharmacist, faculty or staff member, or student. Each interview station assesses one or more non-academic attributes. The non-academic attributes being assessed may include, but are not limited to, the following:

- Conscientiousness
- Accountability
- Problem solving
- Emotional intelligence
- Ethical reasoning
- Communication skills
- Leadership
- Resilience

Admission Selection

An index score is calculated for each applicant, based on a weighting of cumulative university average (60%), PCAT composite score (20%) and interview score (20%). Applicants are ranked by the Index score. Offers of admission are made in June to the top ranked applicants to fill a class of 240, while some remaining qualified candidates may be placed on a waiting list.

Curriculum and Program Delivery

Structure of the Curriculum and Educational Outcomes for the PharmD Program

The curriculum is structured so that graduating students will meet the AFPC Educational Outcomes for First Professional Degree Programs in Pharmacy in Canada, 2017 (Appendix 4). The degree level outcomes for the PharmD program are as follows:

> **Care Provider** – Graduates provide patient-centred pharmacy care by using their knowledge, skills and professional judgement to facilitate management of a patient's

medication and overall health needs across the care continuum. Care Provider is the core of the discipline of pharmacy.

Communicator – Graduates communicate effectively in lay and professional language, using a variety of strategies that take into account the situation, intended outcomes of the communication and diverse audiences.

Collaborator – Graduates work collaboratively with patients and intra- and inter-professional teams to provide safe, effective, efficient health care, thus fulfilling the needs of the community and society.

Leader-Manager – Graduates engage with others to optimize the safety, effectiveness and efficiency of health care and contribute to a vision of a high-quality health care system.

Health Advocate – Graduates demonstrate care for individual patients, communities and populations by using pharmacy expertise to understand health needs and advance health and well-being of others.

Scholar – Graduates take responsibility for excellence by applying medication therapy expertise, learning continuously, creating new knowledge and disseminating knowledge when teaching others.

Professional – Graduates take responsibility and accountability for delivering pharmacy care to patients, communities and society through ethical practice and the high standards of behaviour that are expected of self-regulated professionals. The Professional role is the overarching ethos of the discipline of pharmacy.

In addition, the curriculum is mapped to the National Association of Pharmacy Regulatory Authority (NAPRA) Professional Competencies for Canadian Pharmacists at Entry to Practice, 2014 (Appendix 8), upon which the Pharmacy Examining Board of Canada (PEBC) bases the national licensing exam and the Ontario College of Pharmacists Code of Ethics (Appendix 9). The Faculty has further defined a cogent teaching philosophy, grounded in the Faculty Mission and Academic Plan (Appendix 2) to advance pharmacy practice and pharmaceutical science through world leading education and research. The Faculty mission and our "INSPIRE" values (inclusiveness, social accountability, professionalism, innovation, respect and excellence) serve as the guiding principles to all curricular development within the program. As a result, students are exposed to diverse content in five distinct streams: Biomedical Sciences; Pharmaceutical Sciences; Behavioral, Social and Administrative Pharmacy Sciences; Pharmacy Practice; and, Experiential Education.

From 2016 – 17, the program explored three electronic platforms (available at the University of Toronto) to move our Microsoft Excel-based curriculum map into an updated and more functional format. This review resulted in the selection of CORE CompMS as our curriculum mapping tool. In 2018, the program embarked on updating existing course outlines to map to the new Educational Outcomes and transitioned the curriculum map to ensure that the curriculum is aligned with the newly revised outcomes. The course outlines link pre- and co-requisites,

learning outcomes, and AFPC outcomes to ensure appropriate sequencing of courses throughout the curriculum. The new mapping tool will enable the Faculty to monitor the knowledge and skills taught within the program, while proactively linking the impact of any ongoing changes in pedagogy or content within a course to its pre- and co-requisites, and subsequent courses. This allows us to ensure the integrity of content, teaching and assessment methods across the entire curriculum. A summary of the AFPC outcomes and expected key competencies are attached as Appendix 4. These competencies and expectations are communicated to students during orientation, and during introductory lectures in the various courses. Moving forward this is an area that we can further develop. With the new curriculum map format, we now have the opportunity to provide detail and guidance to faculty in the area of outcomes based education, which will enable them to communicate this information more effectively to students.

Our four-year PharmD program is broad, rich, and diverse in scope, providing students with the foundational knowledge and skills required for safe and effective pharmacy practice, across the biomedical, pharmaceutical, social, and clinical science domains. The content covered in the program builds systematically from year to year and covers all relevant knowledge domains required for pharmacists at entry to practice. Experiential education, and a mandatory interprofessional program of study, complement classroom and laboratory courses, resulting in an intense program of study that prepares students to be medication therapy experts and collaborative care providers.

Key components of the curriculum include:

- A series of nine Integrated Pharmacotherapy Modules (PCT) (seven integrated with basic sciences);
- Four Medication Therapy Management (MTM) courses which are aligned with Pharmacotherapy courses;
- 320 hours of Early Practice Experiences (EPE) in patient care sites in both community and institutional settings;
- Thirty-five weeks of Advanced Pharmacy Practice Experience (APPE) rotations in a variety of practice sites;
- Interprofessional Education (IPE), both in-class and on-site learning experiences; and
- A variety of elective courses in the areas of pharmacy practice, pharmaceutical sciences, and social and administrative pharmacy.

Year 1

In Year 1 of the PharmD program, students complete several foundational courses, which are important in preparing them to become medication therapy experts. These include anatomy, biochemistry, pathobiology, pharmaceutical calculations, pharmacology, pharmacokinetics, pharmaceutics, health systems, social and behavioral health, pharmacy informatics, clinical trials, MTM (including a laboratory component), and the first pharmacotherapy course – General Medicine I. Once students have completed these courses they undertake 160 hours of Early Practice Experience (EPE-1) in a patient care setting (community) during the summer.

Year 2

In Year 2 of the PharmD program, students complete additional foundational courses as well as several courses related to patient care practice. The foundational courses include Microbiology, The Science of Pharmacotherapy, Topics in Pharmaceutical Quality and Clinical Laboratory Medicine. Other courses include pharmacotherapy (four courses), medication therapy management (two courses, both with skills based laboratory components), a physical assessment and injections course, and courses in practice management, pharmacy practice research, and health and pharmacoeconomics. (Five themes are integrated within the year: Critical Thinking, Critical Appraisal, Professionalism/Ethics, Patient Safety and the Patient Care Process). At the end of these courses, students undertake 160 hours of Early Practice Experience (EPE-2) in an institutional patient care setting during the summer.

Year 3

In Year 3, the majority of the courses relate to patient care practice such as toxicology, health systems, pharmacotherapy (four courses) and MTM. Selective and elective courses are offered in the areas of pharmacy practice, pharmaceutical sciences, and social and administrative pharmacy to allow students to pursue particular areas of interest. All students are required to take Preparation for the APPE course (PHM 330) in the Winter term of Year 3.

Year 4

In Year 4, students complete a total of 35 weeks of experiential education over three academic terms (summer, fall winter) starting in May and finishing the following May. The APPE courses are composed of five distinct five-week rotations and one ten-week community pharmacy rotation block. Students are required to complete a minimum of five direct-patient-care rotations (i.e. a total of 25 weeks) in a variety of practice settings such as institutional practice, community practice, and ambulatory care. There are two elective rotations of five weeks each that can take place in direct-patient-care or non-direct-patient-care settings. Students also have the opportunity to complete international rotations as outlined in further detail in the APPE section of this report.

Innovation and/or Creativity in the PharmD Program

Integrated Teaching Model

In planning for the curriculum, stakeholders (including students, recent graduates, employers, preceptors, training sites, and faculty members) identified issues related to integration of learning in the practice environment as an area of importance for our students. Further analysis suggested that many students experienced difficulty in applying theory in the practice setting, and converting classroom learning into clinical performance. In order to address this identified gap, a new model of teaching was adopted, one in which pharmacotherapy teaching and learning are integrated, aligned and sequenced with content from a variety of biomedical and pharmaceutical science domains. In order to ensure appropriate focus and coverage of science components in the pharmacotherapy courses, it was determined that therapeutics content should comprise about 60% of the pharmacotherapy modules, with the remaining 40% of time spent on biomedical and pharmaceutical sciences.

The concept of integration is very important for health-science curriculum design, in pharmacy and beyond. There is evidence that associates integration with the development of professional expertise. As such, using this evidence to intentionally inform our pharmacotherapy course design was very important to the PharmD faculty. Integration has been studied predominantly in medicine, however broadly speaking it can be generalized to pharmacy curriculum as well. In general integration refers to situations in which knowledge from different sources (basic science, clinical, factual, experiential, etc.) connect and interrelate in a way that fosters understanding and performance of the professional activities of medicine (or pharmacy). Kulasegaram et al write, "causal integration is not just an aid for memory and retention. Rather, the cause and-effect relationship between the basic sciences (such as the physiology of upper motor neurons) and clinical features (such as the symptoms of stroke) creates a framework within learners' minds that allows them to organize the constellation of the features of a diagnosis. This cognitive conceptual coherence is the advantage of integrated basic science teaching." (Appendix 10). This quote illustrates the complexity of integration, but reinforces the importance of it within health professions curriculum. More research is needed to know the best way to integrate basic and clinical science, but the importance of the integration is firmly established. Further work specific to pharmacy education would be beneficial to guide curricular reform in the future. We are well suited to design a study to assess the impact of our integration attempts, and to review our 60:40 split between clinical and basic science.

In general, this integrated approach to teaching has been positive and suggests that it provides students with a more cohesive approach to the integration of biomedical, pharmaceutical, and social sciences, with clinical sciences and professional practice.

The delivery method of the pharmacotherapy courses has been coordinated to provide students with the therapeutic background that allows a progression of skill development in the patient care process through assessment, pharmacotherapeutic workup, and care plan development. The MTM courses have been designed as active learning environments where students demonstrate these skills using the pharmacy practice laboratory setting to apply knowledge and skills from the entire curriculum to the provision of safe and effective pharmaceutical care. Students have the opportunity to demonstrate the application of their pharmacotherapy knowledge in increasingly more complex cases through a series of four MTM courses.

Team-Based Learning

Team-Based Learning (TBL) is an evidence-based collaborative learning teaching strategy that can be scaled for large classrooms with a single instructor as a facilitator for multiple small teams (usually five to six students/team). TBL is a structured active learning strategy consisting of a three component sequence:

1. advanced preparation;
2. in-class readiness assurance process, and
3. application exercises; where the majority of class time is spent on decision-based application assignments in small teams.

TBL modules were implemented for six workshops in PHM 204; the cardiovascular pharmacotherapy course.

For each workshop, students were provided with learning objectives, a reading list, and preparatory pharmacotherapy lectures. In class, students individually complete a readiness assessment quiz, and then work together in their teams on the quiz again using "scratch cards" to provide immediate feedback. Teams then complete a series of application exercises that involve applying the pharmacists' care process to a patient case. Teams simultaneously report their responses to a series of questions at each phase of the application exercise using color-coded cards. After the session, students complete peer assessment online to provide their teammates both qualitative and quantitative feedback on their contributions. Student performance in TBL modules comprises 20% of the course grade; half of this is based on individual performance on readiness assessment quizzes (10%), and half for group performance on both the quizzes (5%) and application exercises (5%). Student feedback to TBL since implementation in 2016 has been overwhelmingly positive. Students comment on the benefits of discussing and collaborating with their team on the quiz, and that listening to other's thought process augments their own learning.

Use of the Patient Voice

Patient-centered care is an important component of health care delivery in our current social environments. As such, it is important for our pharmacy students to learn the importance of the patient experience and to learn to view patients as active participants in health care, not passive recipients. One way that this is being done is through the introduction of "patient voices" into courses in the curriculum. The use of the patient-voice is a way for students to engage with the course material on a more personal level. In PHM 302, Pharmacotherapy of Neuropsychiatry, patients with different mental health disorders attend lectures throughout the year and describe their experiences with mental illness and the health care system, including their experiences with pharmacists. The course uses a mix of live patients and TED talks to illustrate "lived" experiences with the different disease states. Evidence supports the use of patient voice activities to increase student engagement and satisfaction (Appendix 11). It is an innovative approach that promotes student learning.

Electives and Selectives

One of the strengths of the LDFP and the University of Toronto is the diverse array of educational opportunities available, based upon the expertise of a broad and diverse group of faculty members and clinical practitioners. The curriculum recognizes the opportunities this affords students and supports the self-directed aspirations of students to advance their own interests and education. The curriculum has been designed to allow students the opportunity to take a total of seven half-course equivalents as optional credits, two in the area of pharmacotherapy, one in pharmaceutical sciences, one in social and administrative pharmacy, and three of any other elective offerings. In the 2017 - 18 academic year, students had the opportunity to select seven courses from amongst twenty-seven offered courses.

The Discovery Stream

To respond to the evolving nature of professional practice, and ongoing calls from students and preceptors for additional opportunities to develop specialty interests and skills, the Faculty has designed a "Discovery Stream" option. This option is intended to allow interested students to undertake a combined degree option.

Currently, this option is available to students to obtain a combined Doctor of Pharmacy and a Master of Business Administration (MBA) Degree.

Combined Degree Programs

One of the strengths of the University of Toronto is the broad array of academic and professional programs offered. The Office of the Provost is encouraging individual schools and faculties to develop combined degree programs, to allow students an opportunity to acquire different degrees within their academic program. To this end, we have pioneered development of a combined PharmD-MBA program, in collaboration with the Rotman School of Management. The combined degree model allows students an opportunity to complete both degree programs within five academic years, rather than the six years that would be required if each degree were taken separately. In this model, compulsory year one Rotman courses are counted as fulfilling elective and selective requirements in the PharmD program. In this way, students are able to focus their interests, acquire an additional degree, and experience another faculty at the University of Toronto. We anticipate additional combined degree programs becoming available in the future.

Learning Beyond the Classroom

The President's three priorities call for us to Leverage Our Location, Strengthen our International Partnerships and Rethink our Undergraduate Education in a Research Intensive University. The experiential education component of our PharmD program encompasses all three priorities.

Experiential Education

Early Practice Experience - 1 (EPE-1)

This course is the first of two early experiential rotations in the PharmD curriculum, each consisting of 160 hours of experiential education. Students undertake EPE-1 between May and August at the end of Year 1 while participating in day-to-day direct patient care at a community pharmacy practice site. The student applies and expands their knowledge, skills and values learned in first-year lectures and simulated practice environments (MTM) courses.

Early Practice Experience - 2 (EPE-2)

This course is the second of two early experiential rotations in the PharmD curriculum, consisting of 160 hours of experiential education in the summer at the end of Year 2. Students undertake EPE-2 between May and August at the end of Year 2 while participating in day-to-day direct patient care services in an institutional practice site. EPE-2 is designed to reflect actual practice and to help prepare students for their Year 3 courses and is the foundation to APPE rotations in Year 4.

Intermediate Pharmacy Practice Experience (IPPE)

The IPPE rotation is only available for Discovery Stream (PharmD/MBA) students. This direct patient care rotation is designed to build and enhance students' knowledge, skills, and attitudes in the provision of direct patient care in institutional, community, or ambulatory pharmacy practice. The rotation builds on knowledge, skills, and behaviours acquired in academic courses and early experiential rotations. This rotation occurs in sites serving a variety of health care needs, including, for example, acute care, rehabilitation, pediatric, geriatric, chronic care and

specialty populations. Care may be provided in any patient care setting such as a hospital, family health team, community pharmacy, ambulatory clinic or other types of patient care practices, with an emphasis on establishing a context for the provision of pharmaceutical care in a clinical setting. Students participate in, and take responsibility for, direct patient care activities including: patient assessment to identify and prioritize drug therapy problems, development of care plans that address desired patient outcomes, and patient monitoring including physical and laboratory assessment, and where feasible, provision of follow-up evaluation and appropriate documentation. Students will communicate with patients and care givers to monitor patient parameters, determine and assess target outcomes, and provide education. Students will work closely with members of the health care team in providing collaborative care with regular communication with team members to share and document their assessment of the patient's medication related needs and recommendations to address those needs.

Advanced Pharmacy Practice Experience (APPE)

The APPE rotations are required components of the PharmD program. APPE rotations occur over twelve months starting in May of each year. Prior to commencing APPE rotations (a total of thirty-five weeks of experiential rotations), Year 4 students in the PharmD program will have completed three years of undergraduate education, including a Preparation for APPE course. Students will have three by five week study blocks scheduled throughout the academic year. The thirty-five weeks of rotations consist of twenty-five weeks of required direct patient care (one ten week community rotation, two five week institutional rotations, and one five week direct patient care rotation in any approved setting) and two five week elective rotations. The direct patient care rotations (twenty-five weeks) will provide experience in a variety of practice settings such as institutional, community and ambulatory care. The elective rotations can be direct patient care and/or non- direct patient care placements. Students are expected to travel to placement sites across Ontario. (Appendix 12)

Students also have the opportunity to complete rotations outside of Canada. By offering international rotations to PharmD students, the Faculty helps build on the President's Priority to strengthen and deepen key international partnerships. Through these rotations students may be exposed to various international, global and domestic policies and regulations, which shape health and pharmacy practice systems. This allows students to gain perspective on how pharmacists are well placed to contribute positively to patient care within the overall global and public health arena. The goal is to provide students opportunities to practice in cross-cultural settings, which enhance cultural competence, global health literacy and global citizenship. Guiding principles for these rotations can be found in Appendix 13. Nine students completed international rotations in the 2017-8 Academic Year, with 17 expecting to complete international rotations in the 2018-9 academic year. International sites include the Chinese University of Hong Kong, Ghana Rural Integrated Development, and the Cairns and Hinterland Hospital and Health Service (Australia).

Site Placement Process

Students in the PharmD program are able to rank their preferences to schedule experiential rotations via two possible methods. The primary method used is the CORE ELMS's matching system (Appendix 14), and the second is through CORE ELMS's Site Prospector module.

It should be noted that the majority of students participate in the matching. The next few paragraphs outline this process.

In the Fall term, the Office of Experiential Education (OEE) contacts all registered, and interested, preceptors and hospital education coordinators (ECs) with a request for EPE and/or APPE availability for the upcoming year. All of the availability is entered into the CORE ELMS database prior to Winter Break. The OEE provides these preceptors and education coordinators (ECs) with a confirmation report to ensure that all rotations offered have been entered as described.

Over the Winter break, students are then able to view all available rotations, and the corresponding preceptor and site profiles, via the Research Centre Module. The Research Centre Module remains open for student viewing until all scheduling is complete (December to February).

At scheduled times throughout January and February, students are able to rank or identify their preferred rotations for each rotation type during the "site selection" period. After each ranking or preferencing phase, the OEE uses the Smart Match technology to run a match. The Smart Match software randomizes the class list for each rotation type and then matches the students to their top available rotation, beginning with the student randomly ordered at the top of the class list, and moving throughout the randomly ordered list, until all students are assigned. In the rare instance that none of a student's preferred rotations are available, the system will not add a random rotation. Instead, the OEE works closely with the student to schedule a rotation using the remaining availability. After each rotation type has been scheduled, the OEE conducts a quality assurance phase, to ensure that schedules meet the student's needs, and the program requirements, before releasing the results to the students.

The APPE scheduling process is conducted in phases, based on rotation type, allowing students to focus on ranking rotations, one rotation type at a time. Students then receive the schedule for that one rotation type, before moving on to rank rotations for the next rotation type. This allows students to adopt a more strategic approach when preferencing rotations, and to make more informed decisions. Once all rotations are confirmed, the final schedules are released to all sites.

Prior to the above matching period, a similar process is conducted on a smaller scale for international rotations. Due to the additional planning required to prepare for an international rotation, this match is conducted in November of each year. A full list of available experiential rotation sites can be found in Appendix 12.

The Site Prospector module is specific to students who want to complete rotations out-of-province or in rural areas, and allows them to submit new sites not currently listed in our database. The OEE contacts these sites on behalf of students, to determine if a rotation can be arranged based on the site's interest, availability of a qualified preceptor who will commit to the training and responsibility of preceptorship, and the willingness of the site to sign a site agreement. If successful, then the rotation is approved and directly scheduled to the student who submitted the request. Preceptors must meet criteria (Appendix 15) identified by the Faculty in order to be selected.

Interprofessional Education (IPE)

All undergraduate PharmD students participate in formal interprofessional education (IPE) curricular activities with students from ten other health profession programs. The formal IPE curriculum is coordinated by the Centre for Interprofessional Education (https://ipe.utoronto.ca/) (CIPE) which is a strategic partnership between the University of Toronto and the Toronto Academic Health Sciences Network with the University Health Network as lead hospital. The Centre provides IPE program opportunities to pre-entry to practice students and practice-based health professionals. The ten other health sciences programs engaged in the IPE curriculum include: Nursing, Dentistry, Kinesiology and Physical Education, Medical Radiation Sciences, Medicine, Occupational Science and Occupational Therapy, Physical Therapy, Physician Assistant, Social Work, and Speech-Language Pathology. Each program has individually determined the number of IPE learning activities their students are required to attend.

The IPE Curriculum is based on a core competency framework (Appendix 16) that encompasses a learning continuum, moving towards the goal of optimizing the provision of interprofessional collaborative care. The framework incorporates three key constructs: Communication, Collaboration, and Values and Ethics. Each construct outlines core competencies that students will gain as they move across the learning continuum, through Exposure (introductory), Immersion (development and professional placement) and ultimately, Competence (Entry-to-Practice).

Up until recently, the IPE curriculum has occurred in addition to the PharmD curriculum. Starting in 2017, there is a new integrated IPE curriculum that outlines eight core scheduled learning activities across programs as well as elective learning activities. Each faculty is working towards this integrated curriculum depending on the length and logistics of their program. The Faculty of Pharmacy is working towards adapting this new curriculum by embedding the IPE activities within our pharmacy curriculum to complement the course content. In 2018 - 2019, students will complete three IPE learning activities/courses during their first year, and three IPE learning activities during their second year. Additionally, students may engage in as many electives as they want during their studies.

The required learning activities for first year PharmD students are:

- Teamwork: Your Future in Interprofessional Health Care (within Health Systems 1)
- Roles of Health Professionals and Team Dynamic, (within Health Systems 1)
- Understanding Patient/Client Partnerships

The required learning activities for second year PharmD students are:

- Conflict in Interprofessional Life
- Safe Prescribing (within MTM 3)
- Interfaculty Pain Curriculum

There are currently no required IPE learning activities for third year PharmD students, except for those students who taking the Pharmacotherapy in Older Adults – PHM 352 course, who must complete a case-based palliative care activity.

The required learning activities for the fourth year PharmD students are:

- Three flexible IPE activities which are carried out in a clinical setting, or
- A structured IPE placement organized by one of the TASHN hospital sites

The faculty is currently engaged in discussion with a number of course coordinators to include the "Collaborating for Quality and Safety" IPE learning activity, as well as integration of all current IPE learning activities. In this way, the content of courses can be re-enforced in an interprofessional context, and the material and/or skills can be assessed within the course.

Evaluation of these courses is completed and compiled centrally by the CIPE. The results are from all the professions participating in each IPE activity. The evaluations are reviewed by the IPE curriculum committee to improve the learning activities for the following year. The 2017 - 2018 IPE Curriculum Report is attached with the complete integrated curriculum plan and results for each core learning activity this past year (Appendix 17).

Shaping Student Life and Learning Fund

Each year, many of our generous donors choose to direct their support to the Shaping Student Life and Learning Fund (SSLL). The purpose of this fund is to support various events, activities, and initiatives that enrich the student experience and provide students with opportunities to gain skills far beyond what is acquired in the classroom.

With the support of our donors, the SSLL has provided funds for student led events, such as the OPA Cup and Pharmacy Follies, as well as student clubs and campaigns, such as Pharmacy Awareness Month (PAM).

The SSLL also funds individual students at the undergraduate and graduate level to take part in conferences to present their research as well as international APPE rotations in countries such as Ghana, Uganda, and China.

Each year, the SSLL provides approximately $70,000 to $100,000 in funding to ensure that our students can participate in activities that extend their learning and leadership development opportunities beyond the classroom. Endeavours funded by the SSLL include:

- *Pharmacy Awareness Month*

  PAM is an annual event organized by the Undergraduate Pharmacy Society (UPS) and supported by the Faculty. Through a wide range of activities, the goal of promoting student and public awareness of the important role pharmacists' play in delivering patient-centred health care is achieved. In 2018, the ribbon cutting ceremony featured (then) Dean Heather Boon as well as Allan Malek and Mike Cavanagh from the Ontario Pharmacists Association. Students had the opportunity to implement several pharmacy outreach booths on chronic disease topics, participate in 15 Kids in Medicine presentations on hand washing, allergies and smoking and have an accredited Interprofessional panel on diabetes for the first time. Students also fundraised over $500 for Casey House Toronto and over $280 for the Canadian Foundation for Aids Research.

- *Professional Development Week*

  The Faculty encourages students to attend the annual Professional Development Week (PDW) conference organized by the Canadian Association of Pharmacy Students and Interns (CAPSI). The number of students who attend each year varies, based on the location of the conference. In 2018, the conference took place in Edmonton, Alberta with 40 students from the Faculty attending. This conference brings together pharmacy students from across the country for educational sessions, seminars, workshops and social events.

  Numerous students from the LDFP were recognized for achievements. These include receiving the national CSHP-CAPSI award, winning the compounding competition, the student literary challenge as well as placing second for both the 2017 PAM campaign and the 2018 IPSF Tobacco Alert Health campaign.

- *Ontario Pharmacy Student Integrative Summit*

  The Ontario Pharmacy Student Integrative Summit (OPSIS), is a collaborative initiative between students from the LDFP and the University of Waterloo, School of Pharmacy. This two-day conference promotes teamwork, leadership and clinical skill development and is open to all undergraduate pharmacy students in Ontario. Now in its seventh year, this conference creates a strong relationship between students at both faculties, promotes and strengthens awareness of the expanding role of the pharmacist and encourages leadership, innovation and initiative among pharmacy students.

Looking to the future, our goal is to grow the SSLL Fund to provide even more opportunities to enhance the learning opportunities for our students. With additional donor support, we can open up new opportunities for PharmD students, such as financial assistance with living expenses for APPE rotations outside of the greater Toronto area in Ontario, as well as meet the needs of students in the joint PharmD/MBA Program and new MScPhm Program.

Opportunities for Student Research Experiences

Undergraduate Summer Research

PharmD students are offered a unique opportunity to participate in a 12 week research experience in the following areas: molecular basis of drug targets and diseases; drug development and disease diagnostics; drug safety; health services research and clinical pharmacy research. Students spend their summer doing research under the supervision of a faculty member, and get the opportunity to present their research to their peers and other faculty at the end of the summer.

Research Elective – Year 3

This elective course is designed to introduce students to the philosophy, methodology and performance of research in scientific fields offered by faculty members who hold graduate appointments in the Department of Pharmaceutical Sciences. The research involves the review of pertinent scientific literature and the generation of new information. Depending upon the project and the supervisor, the research may be conducted in a number of settings, e.g., in a

laboratory at the Faculty, in a hospital, community pharmacy, pharmaceutical company, or in an office. Fields of study are wide ranging and include drug delivery, drug metabolism, medicinal chemistry, pharmaceutics, pharmacokinetics, pharmacoepidemiology, pharmacy administration and pharmacoeconomics, radiopharmacy, receptor biology, therapeutics, education, clinical pharmacy practice and toxicology.

Research Elective during APPE

In this rotation, students participate in one or more research projects and receive an introduction to the requirements and opportunities of a career in research. Students work with the preceptor (and, as relevant, research team) as part of ongoing research at the Faculty or at an experiential placement setting. Students normally are not be expected to start and finish an entire research project within the five week rotation time frame. Although the student's activities may be focused in one or more specific aspects of the research (e.g. research design or data analysis), the student is expected to develop an understanding of all components of the research. The goals and objectives of this elective is included as Appendix 18.

WHO Collaborating Centre for Governance, Accountability and Transparency in the Pharmaceutical Sector (WHO CC) Placement

This placement allows an undergraduate student to assist in research and operational work related to the WHO Collabroating Centre for Governance, Accountability and Transparency in the Pharmaceutical Sector (WHO CC) mandate which is to focus on knowledge dissemination, education and research on governance issues relevant to the pharmaceutical sector. The placement will provide the student with research experience, as well as the opportunity to learn about the WHO CC's operations and participate in its mandated work. Students will build their skills in the realm of public health with a focus on health promotion knowledge and skills, plan and evaluate health promotion action, community mobilization and building community capacity, partnership and collaboration, communication as well as leadership and building organizational capacity.

Assessment of Learning

As the PharmD curriculum was implemented all courses were reviewed by the Curriculum and Assessment Subcommittee and the PharmD Program Committee prior to final review and approval by the Faculty-wide Curriculum and Assessment Committee. A component of this review was a focus on assessment methods to ensure that they aligned with the course learning objectives and supported student development. Changes to assessment methods continue to require review and approval by the previously mentioned committees. The following discussion highlights the types of assessment used within the program.

Variety of Assessments

The curriculum utilizes a range of assessment methods which allows instructors to assess the multiple competencies related to our educational outcomes (Patient Care Provider, Communicator, Collaborator, Health Advocate, Scholar, Professional). Students with different learning styles benefit from the variety of assessments used and learn how to function effectively within different types of assessment environments. In general, methods of student assessment

are criterion-based, allowing for measurement of observable behaviors. Wherever possible, complementary methods of assessment are utilized to improve validity of the overall assessment process.

Formative, Summative and Self-Reflective Assessment

Balancing formative, summative, and self-reflective assessment is important to assist students in becoming life-long learners. Both formative and summative assessment methods are used within the program. An important objective of assessment within the professional curriculum is not only to provide students with an indication of their progress towards attainment of educational objectives, but also to prompt critical self-reflection to initiate the process of life-long learning that will underpin their professional practice.

In general, students receive formative assessment prior to receiving summative assessment. This is in effort to ensure that they are able to acquire the competencies required for adequate and appropriate self-assessment. For example, in the pharmacotherapy courses, students are asked to develop a care plan using pharmaceutical care process for a given written patient scenario. Instructors post an example of an "ideal care plan" in the learning management system (LMS) for students to review. This provides students with an opportunity to reflect on their performance and make adjustments prior to submitting their assignment (care plan) for formal grading. In some pharmacotherapy courses, students also are provided with low stakes quizzes to test their readiness for interactive workshops. These are in the form of short (five point) multiple choice quizzes (MCQ) that cover foundational material. These provide students with an opportunity to assess their learning, and recognize gaps as they begin the pharmacotherapy workshops. In the MTM courses, students receive formative verbal feedback from standardized patient actors on their communication style which can then be incorporated into future patient interactions. Opportunities for practice lab sessions and practice of written documentation on SOAP (Subjective, Objective, Assessment, Plan) notes are provided to inform student progress. Self and peer assessments are also utilized in the IPE learning activities over the first two years of the program. Students are given opportunities for self and peer assessment of collaborative skills following several of the IPE learning activities, while core content is assessed in the Health Systems course in first year.

Traditional Assessment Methods

While there has been an evolution towards performance-based assessment situated in the clinical context of practice (particularly in the MTM stream of courses), such assessment requires an adequate fund of knowledge in order to be meaningful. Traditional assessment methods, such as examinations with MCQs, are widely applied across the program particularly in the foundational courses. These assessments test core knowledge efficiently given the large class size. Where traditional assessment methods are used, there has been an emphasis and faculty development on writing MCQs that target higher order thinking by focusing on the application, analysis, synthesis, and evaluation domains of Bloom's Taxonomy; particularly in the core pharmacotherapy courses. Individual course instructors use exam blueprinting to map their exam questions to course and session level learning objectives.

Writing-based Assessment

Writing-based methods of assessment include traditional written examinations (that generally include case-based MCQs, fill-in-the blanks, short answer or formal essay), in-class micro-writing, essays, or individual or group assignments/problem sets. Virtually all courses incorporate some form of writing-based assessment as a weighted component of the overall course grade. As an example, in the social administrative pharmacy stream of courses (including Health Systems courses), students have two substantive written assignments that build from the year 1 course to the year 2 course. As another example, in the pharmacy management courses, students develop a written business plan for assessment.

Performance-based Assessment

The MTM stream of courses and experiential rotations are integrated throughout the curriculum and provide the students with practical experiences and performance-based assessment. The MTM courses progress from dispensing and basic counselling skills through to complex simulated patient encounters using standardized patient actors incorporating pharmacists' scope of practice. The courses allow the students to apply therapeutic knowledge learned in previous and concurrent pharmacotherapy courses and to practice and enhance their communication, patient assessment and documentation skills. Encounters are assessed by experienced pharmacy practitioners (faculty and Clinical Instructors) using standardized global communication assessment rubrics and content checklists which outline minimum expected competency. Students have opportunities for self-assessment on specific activities incorporated into the labs (i.e. communication skills and documentation).

Experiential rotations are an integral part of student learning and allow students to bring their knowledge and skills into authentic practice settings. The rotations are divided into EPEs comprised of four weeks at the end of year one (EPE 1) and year two (EPE 2) and APPE which encompass thirty-five weeks in the final year of the program. These rotations are assessed in the workplace by pharmacy preceptors who meet established preceptor criteria and who have completed our preceptor development program. Students are assessed using the Ontario Pharmacy Patient Care Assessment Tool (OPPCAT). This tool was developed as a direct observation tool for pharmacy learner performance assessment in field-based Direct Patient Care learning settings (Appendix 19). Anchored in the SOLO taxonomy, OPPCAT was designed to assess performance on a longitudinal basis. Its domains of assessment are drawn from the three pharmacy standards of practice and education (Associations of Faculties of Pharmacy Canada Educational Outcomes, NAPRA Standards, and Canadian Pharmacy Residency Board Standards). The development of OPPCAT was a collaborative effort amongst four organizations in Ontario involved in field-based assessment: LDFP University of Toronto, School of Pharmacy University of Waterloo, Ontario College of Pharmacists, and the Hospital Residency Forum of Ontario. The assessment tool (OPPCAT) is designed to be used in all levels of learners (undergraduate to post-graduate) as well as in all types of direct patient care field-based settings (e.g., community pharmacy, acute care hospital pharmacy, long-term care, ambulatory care). The tool underwent an extensive pre-implementation design and testing process and is currently undergoing post-implementation assessment. Self-assessment skills are developed by student completion of the

same OPPCAT tool and discussion with preceptors at rotation mid-point and at the end of the rotation.

Future Directions

There are ongoing efforts to continue to ensure a variety of assessment methods are used throughout the curriculum and that these methods are valid, reproducible and map to the learning objectives. Review of assessment methods occurs within the PharmD Program Committee and the Curriculum and Assessment Committees. The following are activities/projects that are currently underway or in the planning stages:

1. ***Mapping of Assessment Methods***

   Now that the curriculum map is in a more functional format this will allow us to map assessments available in the curriculum and through the various streams of courses (e.g., management, pharmacotherapy, MTM) to greater detail; including both methods and frequency, of the assessments. Also, this will allow for more informed review of assessment methods as proposed changes are brought forward and at regular scheduled intervals (yearly).

2. ***Capstone Assessment***

   Capstone assessment(s) were identified as a beneficial assessment method during the development of the PharmD curriculum. The Faculty committed to implement capstone assessments which include an Objective Structured Clinical Examination (OSCE) component that may be held at the end of Years 1, 2 and 3 of the PharmD Program. With the plan that capstones in Years 1 and 2 would focus on assessing students' readiness for EPE 1 and 2 respectively, and that the capstone in Year 3 would access students' readiness for APPE rotations.

   While yearly capstone assessments have not been implemented to date, the final term in Year 3 contains a course designed to prepare and assess students' readiness for APPE rotations (PHM 330 – Preparation for APPE). The Preparation for APPE course is designed to strengthen and integrate students' knowledge, skills, and attitudes in preparation for, and to make the transition to, APPE rotations. This course, via lectures, workshops, case-based role play activities and related assignments and assessments, enables students to review, build on, consolidate and apply previous knowledge, skills and behaviours acquired throughout the curriculum in academic courses and in earlier experiential rotations in the areas of patient care provision, communication, collaboration, management, advocacy, scholarship, and professionalism. The goal of this course is to engender students' practical skills and strategies to help prepare them for their role as APPE students. Currently, the Preparation for APPE course serves as a "capstone course." Given the importance of this course, in terms of this being the last course that is designed to consolidate learning prior to the fourth year, we believe that it is particularly important to study whether the course is achieving the set learning objectives. To accomplish this we plan to assess data from the 2017-2018 and 2018-2019 academic years to look for direct evidence that the assessment practices are aligned with the AFPC Educational Outcomes and that students enrolled in the course are successfully meeting all

components of the assessments (Appendix 20). More specifically, the study aims to determine if students' enrolled in the course acquire the knowledge and skills set at the appropriate levels (Introductory, Intermediate, and Advanced) necessary to perform the roles as set out by the AFPC Educational Outcomes. Review of students' performance on the course assessments will provide direct evidence whether the intended learning outcomes are achieved at the correct level attached to a specific course. The results of the analysis will provide evidence for the instructor to make informed decisions about changes to content, and teaching and assessment methods. Students will also benefit from this as it will help to make the assessments more meaningful and allow the students to reflect and connect with the AFPC Roles they will be expected to embody as a practicing pharmacist.

In addition, discussions have occurred to identify the capstone assessment purpose and ideal timing. This is an essential step as this will inform the design and execution of these important but resource-intensive assessments. At the Faculty Education Day in May 2018, the Acting Director of the PharmD Program presented an overview of current capstone practices in various pharmacy programs. This presentation highlighted a number of potential approaches to capstone assessments and provides preliminary literature to review options for the PharmD program. (Appendix 21)

3. ***OPPCAT Assessment Tool***

   The OPPCAT assessment tool was implemented in the PharmD program in the 2016 – 17 Academic Year; and more recently to assess student performance in EPE-1 in the 2017 – 18 Academic Year, with planned implementation for EPE-2 rotations in 2019. Ongoing initiatives include post implementation assessment and validation of the tool (2018-2019), as well as refinement of associated levels and ranges documents (2019-2020).

4. ***Faculty Development***

   There have been several faculty development sessions delivered on assessment methods (e.g, MCQ development, creating an exam blueprint). Further sessions are scheduled for this year on course design and delivery in the context of program level outcomes. These sessions will be led by the Education Office and Centre for Teaching Support & Innovation (CTSI). All faculty will be given an opportunity to attend a series of four workshops to help them to: understand an outcomes-based approach to curriculum design, design questions and other assessments based on course outcomes, use the new syllabus template to create a relationship between the course and the program / competencies / standards. These workshops will cumulate in the annual Education day event at the Faculty where instructors will be invited to present their work.

Quality Indicators

Assessment of Program Against International Comparators

The LDFP has been named the top Pharmacy School in Canada by the 2018 QS world rankings. Internationally, the Faculty is ranked fifteenth. (Appendix 1) Although, one of the first Faculties

in Canada to introduce the entry to practice PharmD program, the program is still relatively new by North American standards. In Canada, the program is one of only three English programs to have graduated students with the entry to practice PharmD degree. Since 2015 and the launch of the PharmD program, 918 students have graduated from the program. Graduation rates in the PharmD program are very high at 96.8%, well above the University of Toronto average. As of October 2018, we have 951 students enrolled in the program.

We believe that our internationally recognized clinical and research faculty, leading edge practitioners, faculty building, international experiences, proximity to world-class hospitals and partnerships with government, research institutes, industry, and community sites set us apart from international comparators.

Another opportunity for students that sets us apart from other Canadian Faculties of Pharmacy is our combined PharmD-MBA program. We pioneered development of a combined PharmD-MBA program, in collaboration with the Rotman School of Management. The combined degree model allows students an opportunity to complete both degree programs within five academic years, rather than the six years that would be required if each degree were taken separately. To date, four students have been admitted to the combined PharmD-MBA program. The first student admitted in the combined program (2016) is scheduled to graduate in 2019. Since then we have admitted one student per year. The Faculty anticipates an increase in interest and applicants to this program as the program becomes more widely known among students.

The PharmD program is very specific to the AFPC Educational Outcomes, NAPRA competencies and the local scopes of pharmacy practice. In 2019, with our first four cohorts of graduates, we will have the opportunity to explore international comparators in a more robust manner.

Applications and Admissions

The Admissions Office tracks yearly admissions data for the purposes of monitoring to assist the Admissions Subcommittee in their work (Appendix 22). Over the past five years, total applicant numbers have ranged from 539 to 732. In 2011, the conversion to the PharmD program resulted in a decline in applicant numbers to 602 (down from 1066 in 2010). Applicant numbers gradually rose until plateauing in 2015 and 2016 to 732 and 730, respectively. In 2017, the number of applicants fell to 569 and continued at this reduced level in 2018 (i.e. 539).

Table 2: Overall Admission 2013 - 2018

	Applications	Offers	Acceptances	Declines	Yield Rate (%)	Offer Rate (%)
2018	539	277	240	37	86.64	51.40
2017	569	274	240	34	87.60	48.15
2016	730	274	239	35	87.22	37.5
2015	732	291	237	54	81.40	39.75
2014	707	273	237	36	86.81	38.61
2013	642	280	235	45	83.92	43.60

Of note in 2017, several admissions requirement changes took effect, namely: the addition of pre-requisites in Human Physiology and University level English and the removal of languages as acceptable from the humanities/social sciences list. The decline in applicants to the PharmD program, is consistent with what is occurring in many other Canadian Pharmacy schools, as well as in American schools. Although there are limited Canadian data to explain the trend of decreasing applicants, there are some reports in the US suggesting that the decline is most likely multifactorial (Appendix 23). It has been suggested that numbers have been impacted by a growing number of students who do not want to enroll in professional programs that will result in accumulation of significant debt, including pharmacy.

There are also conversations in North America suggesting a surplus of pharmacists, thus fewer jobs for new graduates. It is not clear if such a surplus exists in Canada, however, there is a perception amongst the profession that this is the case. It is postulated that this is impacting numbers of applicants as students are concerned about future employment opportunities. A significant contributor to applicant numbers in the US is the large increase in the number of pharmacy schools across the country. This is not applicable to the Canadian context as we have a stable number of schools, currently ten across the country. Of note, as of 2008, there are now two pharmacy schools in Ontario which may impact our applicant numbers.

Despite fewer applicants, we continue to attract a high quality pool of applicants and our yield rate (those accepting an offer of admission) is high (86.64%). The percentage of the admitted pool with an 'A' average remains high and an increased number of the admitted pool have three or more years of university. This figure was 91.2% of the admitted pool in 2018, an increase of 9.5% from the previous year. We have also been able to maintain high standards with our MMI and PCAT scores. The PharmD program attracts applicants from across Canada. In 2018, 40.3% of applicants attended the University of Toronto while the remainder attended other Canadian Universities.

As was suggested and in response to the previous UTQAP report, the Faculty revisited the non-academic attributes considered in the PharmD program admissions process. In June 2016, members of the Faculty-Wide Recruitment and Admissions Committee and members of the Admissions Subcommittee of the PharmD Program met for the "Attributes Revisited" workshop led by Andrea Cameron, Chair of the Admissions Subcommittee of PharmD Program and Faculty Lead, MMI. Subsequently, a literature search along with further discussion and refinement by the Admissions Subcommittee, generated a table of definitions and keywords related to the attributes (Appendix 5). This helped support the development and selection of the MMI stations and guided the interviewers in their assessment of the candidates. The order of the attributes was determined by a paired comparison survey of pharmacists, faculty and pharmacy students with three of the attributes ranked equally: conscientiousness, emotional intelligence and resilience. This resulted in an updated list consisting of four attributes from 2009 and four new attributes. The "commitment to care" attribute, which was on the list of attributes from 2009, was considered to be foundational and implicitly expected in a candidate applying to become a pharmacist and is aligned with the attributes of accountability, conscientiousness, and ethical reasoning. The updated non-academic attributes were approved by the PharmD Program Committee in March 2016.

In 2017, Cameron et al published a report of the 2010 - 2014 cohort (Appendix 24) which showed the MMI to be the only significant admissions indicator to predict performance on the PEBC Objective Structured Clinical Examination (PEBC-OSCE), and in year 4 Institutional/Ambulatory rotations. The PCAT and pre-pharmacy Grade Point Average (GPA) both predicted performance on the PEBC –MCQ exam. Preliminary analysis of data from the 2011-2015 cohort (Appendix 25) also showed the MMI to be a significant predictor of success on the PEBC-OSCE and PEBC-MCQ. PCAT and GPA also predicted performance on the PEBC-MCQ. The Admissions Subcommittee has discussed the merits of continuing to require PCAT since GPA is highly correlated with it. PCAT does provide a standard tool upon which to select applicants for the MMI, and includes a writing assessment, which is very important as our students are required to produce high quality written work in several courses. The PCAT also provides a standard score for reading comprehension which is another important skill required for our pharmacy students.

Curriculum Mapping and Analysis

As mentioned in the previous section the Faculty has recently updated all PharmD course outlines to reflect the 2017 AFPC Educational Outcomes. These Educational Outcomes (see Appendix 4) have been mapped to the PharmD curriculum, while it is clear from the gap analysis that the taught and experiential courses, in totality are designed to cover all of the key and enabling competencies we are using the data collected to review the curriculum. The PharmD Program Director has organized working groups to represent the different kinds of courses that form an important part of the curriculum. We will be reviewing the MTM courses and Pharmacotherapy courses to look at alignment with teaching and learning practices. The Education office will continue to expand on the curriculum map to gather data on course content and assessment methods across the PharmD curriculum.

Annual Course Reporting

In the 2018-19 academic year the Education Office has implemented a course reporting template (See Appendix 26) for the PharmD program. The process of annual reporting is an important part of program evaluation and curriculum renewal. The course report allows for the collection and analysis of qualitative and quantitative data on: student performance, student course evaluations and approaches to learning, teaching and assessment. The course report is also a requirement for the Canadian Council for Accreditation of Pharmacy Programs (CCAPP) accreditation processes.

The course reporting template was designed to be used as a 'live' document to keep track of changes as they occur and to follow up on the effect of those changes on the curriculum. The collecting of data through the course report template will promote alignment across the program and facilitate strategic planning in addition to disseminating examples of best practice. The report will also be useful for the Program Director to identify any issues that need to be addressed as well as to aid in making decisions on resource allocation and curriculum enhancements.

Course coordinators can use the course report as a reflective tool to develop a course that aligns with the program aims and reflects the program approaches to learning, teaching and assessment. The information summarized in the course report can also form part of the course coordinator's annual Progression Through the Ranks (PTR) review.

In-course Evaluation

The Faculty, through the Registrar's Office, provides students with an opportunity to provide feedback on each course they take each year. These evaluations have both a qualitative and quantitative component. Results are compiled and made available to individual course instructors and to the Dean. Annually, as part of the performance appraisal process, faculty members must identify how they plan to address areas for improvement identified by students, and how they plan to sustain strengths of the courses they teach. The Dean also provides feedback to individual instructors and course coordinators based on in-course evaluations, and support or referral to university-based teaching improvement resources.

In 2015, the PharmD program began implementation of online course evaluations in eighteen courses using eight common institutional questions and two instructor specific questions per course. As of this year, the PharmD program has fully implemented the institutionally developed online course evaluation system. More specifically, the online evaluations now have eight common institutional questions, seven Divisional questions, three PharmD program specific questions and finally two instructor specific questions. The Divisional Questions used by the two Faculty of Pharmacy Professional Programs (PharmD and PharmD for Pharmacists) are as follows:

1. The course enhanced my understanding of professional pharmacy practice.
2. The course helped me improve my ability to formulate, analyze, and solve problems.
3. The instructor related course concepts to practical applications and/or current research.
4. The instructor explained how the course concepts related to other courses.
5. The feedback I received on tests, assignments, labs and/or projects provided guidance to improve my understanding of course materials.
6. The instructor explained what students are expected to learn in the course.
7. The instructor responded respectfully to students' questions.

The program specific questions for the PharmD program are as follows:

1. The course enhanced my confidence to engage in patient care.
2. The course provided opportunity to develop my oral and/or written communication skills.
3. The course enhanced my understanding of the link between foundational biomedical sciences (e.g. pathophysiology, pharmacology, pharmacokinetics, pharmaceutics) and pharmacy practice.

The flexibility of an online system allows students to complete the evaluation at their convenience (within a specified time-frame) and without the time constraints presented by using the current process. Students are better able to provide thoughtful consideration of the course and instructor, resulting in feedback that is more constructive. The online system also facilitates the sharing of course evaluation data with students. Results of course evaluations have improved in recent years. Comparing the results of the 2015-6 and 2016-7 academic years, overall course satisfaction increased by 5.5% in Year 2 and 8.3% in Year 3, while remaining steady in Year 1 (Appendix 27). A full listing of all questions can be found in Appendix 28.

Interprofessional Education

Evaluation of the IPE activities/courses is completed and compiled centrally by the CIPE. The results are from all the professions participating in each IPE activity. The evaluations are reviewed by the IPE curriculum committee to improve the learning activities for the following year. In addition, the Interprofessional Lead, Della Croteau reviews the results and makes recommendations to the Professional Program(s) Directors and Dean with respect to the pharmacy professional programs. Students' feedback has generally been positive. The 2017 - 2018 IPE Curriculum Report is attached with the complete integrated curriculum plan and results for each core learning activity this past year (Appendix 17).

Experiential Education

The OEE oversees the collection of data (quality indicators) about the experiential courses. Examples of data collected include items directly related to the match process such as the number of and types of experiential rotations, number of preceptors, number of students who are matched with top three choices and number and types of international student experiential rotations. In addition, the office collates student feedback. Students provide feedback about their preceptor(s) and site after each rotation. The data analyst scans student feedback after each block. In addition, we have an internal program evaluation review committee who regularly review (once per term) summaries of the data.

Preceptors for whom we have received five or more student evaluations are able to access an anonymized feedback report through their CORE ELMS account. The period captured is for one academic year from May to the following April. We also provide TAHSN sites with annual aggregate data reports. For the 2017-2018 academic year, the evaluation of site reports average student rating was 4.47 (out of 5).

Preceptor Development Program

The Preceptor Development Program supports practicing pharmacists to be effective preceptors for students in the PharmD and PharmD for Pharmacists programs at the LDFP. Developed by faculty members and offered through the OEE, the Preceptor Development Program provides preceptors with the skills, knowledge, and confidence to supervise PharmD and PharmD for Pharmacists students during their Early (EPE) (PharmD only) and APPE (PharmD and PharmD for Pharmacists).

The goal of the program is to:

- Apply specific teaching skills and principles to optimize EPE and APPE rotations;
- Access resources available within the EPE and APPE preceptor community;
- Incorporate learning styles theory to improve the quality of workplace learning;
- Use feedback techniques to enhance student performance;
- Apply principles of stages of learning, awareness of preceptor roles, and methods of clinical teaching and assessment to effectively conduct an EPE and APPE rotation;
- Reinforce the patient care process used by students in their provision of direct patient care;

Since its launch in 2013, 1,091 preceptors have completed the required modules of the Preceptor Development Program. In 2016, the Faculty conducted a preceptor needs assessment, led by Artemis Diamantouros, in order to build on the Preceptor Development Program, and in particular to identify the unique learning needs and opportunities for those preceptors interested in educational leadership. In the end, 264 pharmacist preceptors and 33 students completed the survey. The results of this needs assessment informed the development of the role of the Preceptor Engagement Coordinator and the preceptor development priorities. Since the hiring of a Preceptor Engagement Coordinator, the Faculty has been able to offer more elective workshops for its preceptors. Over 300 preceptors have attended live workshops on the topics of giving feedback to students and/or working with learners in difficulty since October 2017. Learner (preceptor) self-efficacy results have demonstrated positive results (Appendix 29). More details about the Preceptor Development Program are included in the Relationships section.

Quality of Educational Experience, Teaching and Graduate Supervision

Overall, we evaluate the quality of the student experience via numerous mechanisms. The most robust source of data related to the student experience with the educational aspects of the program comes from our course evaluation data. All course instructors receive course feedback annually and as part of the PTR process. The PTR teaching documents require faculty to respond to student feedback with specific approaches that will be taken to improve the learning experience in the next year.

In addition to this, the Director of the PharmD Program and the Dean have bi-annual meetings with the UPS and the class councils for each class. During these meetings students bring forward items for discussion. They provide feedback on what is going well, but the focus is mainly on issues that are impacting student experiences. Issues discussed can be related to the curriculum itself, exam schedules, room bookings, workload, social or athletic events, and financial support for clubs or activities. There is a recording secretary for these meetings and action items are noted and shared with the student body. A recent issue that arose was the increasing number of non-pharmacy students in the building due to the central booking of lecture space. The students were having difficulty finding study space in the pharmacy student reserved areas. Faculty and staff worked with students to create signs to note that certain space was restricted for pharmacy students. We also sent messages to students to remind them to keep the doors closed, as fob access is required for entrance into pharmacy spaces. There was also concern related to garbage containers overflowing and we worked with the staff to have more containers placed throughout the building.

We also collect feedback from all students related to their experiential rotations. Students are able to provide feedback related to the site, the preceptors and the overall work environment. The data is collected and collated at the end of each block by a Data Analyst in our OEE and is then reviewed at the end of each term by a committee consisting of the Director of the OEE, the Director of the PharmD program, the Interim Director of Professional Programs, the Data Analyst and two experiential faculty members. Any concerning data is flagged, and if significant concerns and/or significant volume of negative feedback is seen, the sites and/or preceptors are called for follow up conversations. This process allows us to be responsive to the student experience at rotation sites.

Finally, implemented in 2016, we also receive student feedback on overall experience through our Pharmacy Graduate Exit Survey. In 2017, we adopted use of the AFPC Pharmacy Graduate Exit Survey. This survey is sent to all of graduating students at the end their studies. It provides significant opportunity for feedback on a broad range of topics. Data from this year's survey highlights the University of Toronto hospital rotations as a significant strength of the program. Some areas highlighted for improvement are the quality of community pharmacy rotations, the communication between faculty and students and some of the content in the core basic science courses. Overall student satisfaction increased by 10% from 2017 (4.14/6) to 2018 (4.56/6). A current challenge with the survey is the response rates – it is difficult to get a large number of students to complete the survey once they have finished their rotations and are studying for their licensing exams. Response rates were not very good in 2017, with only 56 students completing the survey. There was an improvement in 2017, with 95 students completing the survey. We are discussing opportunities to bring the students to the faculty for PEBC study sessions, at which time we could have the students complete the survey on-site.

PharmD Program Graduate Numbers

Since 2015 and the launch of the PharmD program, 918 students have graduated from the program (Table 3). Graduation rates in the PharmD program are high at 96.8%, well above the University of Toronto average. As of October 2018, we have 951 students enrolled in the program.

Table 3: LDFP PharmD Graduates 2014 – 2018

Academic Year	Graduates
2014-5	221
2015-6	231
2016-7	231
2017-8	235

Honours Citation

Students who excel academically in the programs are recognized with the distinction of Honours on their graduation diploma. This is based on the following criteria:

- Cumulative GPA of at least 3.5 in the first three years of the Doctor of Pharmacy Program and
- A grade of "Honours" in at least 2.0 of the 3.5 APPE full-course equivalents, and a grade of 'Pass' in remaining APPE courses

Only courses for which numeric grades are reported are factored into the calculation of GPAs (i.e. non-numeric designations are excluded. In 2017-8, 22 students (9%) graduated with a citation of "Honours".This number is significantly lower than recent years as 59 students (25.5%) graduated with Honours in 2015-6 and 31 students (13.4%) graduated with Honours in 2016-7.

Remediation

At a course level, students who fail a mid-term or final exam have the opportunity to review their exam with the course-coordinator. The course coordinator(s) provides support and additional

resources for students where appropriate. If a student has a valid reason to petition, they will have access to course contents online to help prepare for a make-up exam. In an experiential rotation, preceptors and students have an opportunity to contact the course coordinator at any point during the rotation should any concerns arise. Course coordinators monitor the progress of students at the mid-term evaluation point. Support is provided to students and preceptors in cases when students are at risk of failing a rotation. If a student fails an experiential rotation, the course coordinator will assist with remediation. Depending on the reason for not successfully completing the rotation, remediation may consist of a learning contract with learning objectives prior to resuming another experiential rotation. Supplemental materials, including patient cases or professional ethical scenario, may also be provided and discussed with the student.

In addition, the Board of Examiners meets throughout the academic year to provide grade updates. During these meetings, the PharmD Program Director and the Registrar note students who are struggling in several courses and, following the meeting, the Registrar reaches out to the students to suggest they connect with professors and/or meet with her to discuss any potential concerns related to their academic performance. The goal is to support students and encourage them to seek assistance early, in order to increase the likelihood of success.

At the program level, student progression is tracked by the Registrar's Office. Students at risk of not meeting program requirements are contacted to discuss their situation. Additionally, counseling or referral to student resources may also take place depending on the unique situation of each student. Potential options are discussed to enable the student to continue with program progression or to take a leave of absence for a defined period of time.

Success Rates on Pharmacist Licensing Examination: Pharmacy Examining Board of Canada

We conduct an annual review of the statistics on the performance of our graduates who have taken the Spring Qualifying Examinations Parts I (MCQ) and II (OSCE) and the overall Qualifying Examination Certification results. Students who pass both parts of the examination receive PEBC certification. This is a key step towards obtaining a pharmacist licence to practice. An analysis of the PEBC results for the past four cohorts reveals the following students pass rates on both Parts I (92.4-97.9%) and II (90.3-95.5%) of the examinations, and an overall PEBC certification rate of 86.7-93.8%. In 2016, PEBC updated the exam Blueprint. In 2017, PEBC implemented computer-based testing for the Fall Pharmacy Qualifying Examination Part I (MCQ). Analysis of the curriculum map will also consider the revised exam Blueprint.

Implication of Data Concerning Post-Graduation Employability

We do not currently have much data to inform us of our students' post-graduation employment rates. There are questions related to this on the exit survey discussed above, however the sample is small and not reflective of a large portion of the class. That said, the data suggests that the bulk of students are finding employment. There appears to be a mix of permanent and contract employment and hospital, community and industry jobs are noted. We are currently working with our Advancement office to create a survey related to employment that could be circulated to our young alumni to get a sense of the employment opportunities post-graduation.

Also of note, there is a national collaborative currently reviewing the pharmacy workforce in Canada and future workforce planning. The data from this project will be very valuable and once

available may provide insight into our program design and recruitment strategies moving forward.

Availability of Student Funding

There are several sources of financial assistance available to students enrolled in the PharmD program. As a first step in meeting their financial shortfall, students are expected to access the government aid to which they are eligible through their home province; in Ontario this assistance is available through the Ontario Student Assistance Program (OSAP). Single students are eligible to receive up to $395 per week while students who are married or sole support parents receive up to $670 per week. For some students, the full amount of their OSAP funding is in the form of a loan. However, many students qualify for a mix of loan and non-repayable grants such as the Canada Student Grant for Full-Time Students.

For students registered in second-entry professional programs such as the PharmD program, it is expected that financial need unmet by OSAP will be met through a mix of grants and institutionally-negotiated loans. The Scotia Professional Student Plan is an integrated banking services package designed for students in professional faculties. This financial aid tool, sponsored by Scotiabank, is a customized professional banking program which differs from traditional non-government student loans by providing an all-inclusive account for students. PharmD students may borrow up to a maximum of $175,000 over their 4-year program. The rate of interest on the loan is the current prime rate plus 0.50%.

The University of Toronto Advanced Planning for Students (UTAPS) program is a University-administered financial aid program for full-time students. Eligibility for UTAPS assistance is determined based on OSAP methodology which provides a uniform, verifiable approach to assessing student need. Students receiving funding from another province/territory or a First Nations band are also eligible for consideration for assistance through the UTAPS program. Students in the PharmD program who are identified as having a financial need not met through OSAP are eligible to receive a grant of up to $2,000.

The Faculty of Pharmacy allocates funds to a central UTAPS pool of funds and students enrolled in the PharmD programs have been eligible to receive funds from this central pool. However, in 2017 the University made the decision to leave these funds with the Faculty for allocation through a divisionally run program. This program, known as the “Professional Program Financial Aid – Pharmacy” (PPFA-P) is being phased-in over a four-year period. In 2017-18, students enrolled in Year 1 of the PharmD program received grants through this new financial aid program while students enrolled in Years 2, 3 and 4 continued to receive grants through the UTAPS program. In 2018 - 19, Year 1 and 2 students will be considered for grants through the PPFA-P program; Year 3 and 4 students will receive UTAPS grants. During the 2017-8 Academic Year, the average grant value was just under $2,000. By the 2020-21 session, all eligible PharmD students will receive funding through the PPFA-P program. Through the transition period, the criteria used to assess eligibility for a PPFA-P grant will be the same as those used to assess eligibility for a UTAPS grant. In addition, the level of funding available to students through the PPFA-P program will mirror the amount of funding students receive through the UTAPS program.

Students may also apply for financial assistance through the Faculty. "Applications for Financial Assistance" are made available to students in October and January of each academic year. The Awards Sub-Committee of the PharmD Program Committee establishes guidelines for providing bursary funds to students on an annual basis. It has been their philosophy to provide assistance to all students who demonstrate a financial shortfall. Consequently, the values of bursaries have traditionally been quite small (i.e., from $400 to $800). The Award Sub-Committee will be revisiting the established guidelines over the 2018-19 session for implementation in 2019-20.

Table 4: Student Funding

	OSAP			UTAPS/PPFA-P			
	Recipients	% of Full-time Enrolment	Value ($)	Recipients	OSAP Recipients (%)	Value ($)	Value ($) Non-Ontario UTAPS/PPFA-P
2013-4	716	74.5	7,936,018	681	95.1	1,767,478	Not available
2014-5	723	75.4	8,203,310	692	95.7	1,843,926	Not available
2015-6	694	73.9	7,921,314	677	97.6	1,348,982	86,021
2016-7	649	73.3	8,393,278	674	97.1	1,343,399	71,637
2017-8	714	76.0	9,630,304	653	91.5	1,301,641	59,491

Table 5: Financial Assistance

	# of Applications Received	# of Applicants who Received Assistance	Total Amount Awarded ($)	Average Award ($)
2013-14	611	503	325,300	646.72
2014-15	595	424	269,700	636.08
2015-16	555	439	309,100	704.10
2016-17	545	442	313,800	709.95
2017-18	559	450	323,800	719.55

***based on 'Applications for Financial Assistance' received in October and January of each year*

Student Awards

Student awards play a vital role in the life of our Faculty, providing a way for us to recognize outstanding student achievements and provide valuable financial assistance to students in need. Awards can be in the form of scholarships or bursaries and they recognize a multitude of achievements including academic excellence, extracurricular involvement, leadership and commitment to the profession. Some of the merit-based awards are given to the students with the top GPAs in their year. Others are given to students who achieve the highest grade is a particular course or series of courses; in some cases, the series of courses span multiple years of the curriculum. In addition, students accepted in a hospital pharmacy residency program with high GPAs are eligible to receive awards.

There are several awards that recognize students who have had extensive involvement in the community or in extra-curricular activities. There is also an award given to a graduating student who demonstrates innovative leadership in a pharmacy-related setting and the likelihood of a noteworthy future contribution to the profession.

As a Faculty, we are very fortunate to have a dedicated and supportive group of alumni and friends who have established awards with the ultimate goal of helping students become leaders in pharmacy tomorrow. Awards are grouped into seven categories:

- Admission Awards
- General Awards
- First Year Awards
- Second Year Awards
- Third Year Awards
- Fourth Year Awards
- Bursaries

Descriptions of all awards can be found in the Faculty Calendar (Appendix 30) and on our website at https://pharmacy.utoronto.ca/programs-and-admissions/pharmd/current-students/awards-financial-assistance/. In 2017-8, over 100 awards were issued, ranging in value from just over $80 to approximately $9,000, totaling over $100,000 with an average value of approximately just below $1,000.

PharmD students have also been recognized for their successes in the academic field, winning national awards.

- *Dean George A. Burbridge Award*

  This award is issued by the Canadian Pharmacists Association to the student achieving the highest mark on the PEBCs qualifying exams. This award has been won by two LDFP PharmD students in the past five years: Matthew Daniel Ng Chow (2015) and Cherry Hui (2017).

- *John H. Webster Memorial Award*

  This award is issued by the Canadian Society of Consultant Pharmacists and Manrex Ltd to a graduating pharmacy student demonstrating excellence in geriatrics. This award was won by PharmD student Jessica Visentin in 2017.

Program Outreach and Promotion

Professional School Fairs

Students, faculty and admissions staff members participate in numerous recruitment events throughout the year. In 2018, members of faculty, staff or students plan to attend eleven professional school fairs (Appendix 31). While most are in southern Ontario, Faculty representatives did travel to events outside of the province, including the Halifax University Career Fair (Halifax, NS) and McGill Graduate School Fair (Montreal, PQ).

Summer Mentorship Program

The LDFP partners with the Faculty of Medicine, and other health science faculties, to deliver the Summer Mentorship Program (SMP). The SMP gives high school students of Indigenous or African ancestry a chance to explore health sciences, including Pharmacy, at the University of Toronto over four weeks in July. The SMP started as a Faculty of Medicine and Toronto District School Board endeavor in 1994. Most years feature approximately 60 students, and included over ninety students in 2018. Students who take this program will get hands-on experience through lab work, lectures and special projects, discover university education and professional careers in the health sciences, enjoy valuable mentoring experiences from a variety of professionals, earn a credit towards their high school, and gain a greater understanding of whether a career in health science is right for them. Graduates of the SMP also become part of the Summer Mentorship Program Alumni Society (SMPAS) which includes networking and professional development.

Quality Enhancement

Quality Enhancement Initiatives

In 2017 the Faculty established the Education Office to be responsible for providing strategic direction and implementing processes in areas such as program development and delivery, program evaluation, development of academic pathways, program quality assurance, assessing alignment of teaching and learning within all academic programs. The key initiatives related to quality enhancement have been around curriculum mapping and curriculum renewal. The curriculum map (Appendices 32 and 33) has been updated to reflect the 2017 AFPC Educational Outcomes for all courses across all four years. The next steps in the curriculum mapping process are to map: content and depth of coverage, assessment methods and frequency, NAPRA Competencies and Ontario College of Pharmacy Code of Ethics. The mapping process will allow the faculty to make evidenced based, informed decisions about curriculum renewal.

The other key initiative undertaken to further quality enhancement is the implementation of a reporting framework, both at the course and program levels. The course reporting template is designed to be used as a strategic planning tool at the Faculty and program levels. It is also designed to be used by course coordinators to facilitate reflection of best practices and approaches to teaching and assessments. The course report allows for the collection and analysis of qualitative and quantitative data on: student performance, student feedback, approaches to learning, teaching and assessment. The course reports are reviewed by the program directors and will feed into overall decisions allocation of resources and about the future direction of the program, these will be articulated in the annual program report.

Diversity

Appendix 22 provides key demographic information on our student profile and diversity in students that apply to and are admitted on the PharmD program. From 2013-2018 the trend data indicates that the number of female applicants and admitted students exceed that of male applicants albeit not disproportionally. Further, the number of international applicants and admissions continue to grow steadily from 2% to 5%.

The Faculty offers a number of admission awards to help promote diversity in the student cohort these include:

- Afro-Canadian Scholarship
  Awarded to a deserving black student (African-Canadian, Caribbean-Canadian, or Afro-Caribbean heritage) entering First Year Pharmacy who has community/volunteer involvement prior to entering the Faculty, and also demonstrates financial need.
- Colonel F.A. Tilston Admission Scholarship
  Awarded to students entering First Year Pharmacy with the highest admission index, and who have not won an admission award of greater value. One of these scholarships will be awarded to an Indigenous student.
- William James Toth Pharmacy Memorial Scholarship
  Awarded to a student entering First Year Pharmacy from Brant County.

In 2018 the Faculty completed the Truth and Reconciliation Divisional Annual Report (Appendix 34). This process allowed Faculties to set commitments that support the continual building of positive relationships with Indigenous peoples, while considering the Faculty's role in advancing Indigenous initiatives. Within the curricula at the Faculty, Indigenous education content is covered in:

- A 2 hour lecture related to Indigenous health in PHM 310: Health Systems I, a mandatory course in the PharmD program. The lecture was given by two Canadian physicians who identify as Indigenous and the lecture slides and study guide for the session are included in Appendix 34A. The lecture was introductory in nature and designed to generate significant conversation amongst students.
- PHM 325 – Indigenous Issues in Health and Healing is an elective course available to all pharmacy students. This course examines the many issues surrounding the health of Indigenous people living in Canada. During the 13 weeks of class, students come to understand the present day health issues of aboriginal peoples from the perspective of their historical and political context and the effects of health care policy. The many highly qualified speakers from the Indigenous community and its focus on health and the healing process makes this course unique in the university. Optional, but strongly recommended, field trips include a "medicine walk" on the Six Nations reserve in which students are able to see firsthand the source of some of the herbal preparations that are used in healing, and a purification (sweat) lodge ceremony outside the city. The course is enriched by its association between students of the LDFP and the Indigenous Studies program in the Faculty of Arts and Science, many of whom are of Indigenous origin. Eighteen PharmD students enrolled in this course in the 2017/8 academic year.

Recruitment and Admissions

In line with our academic plan we plan to create a more robust recruitment strategy aimed to increase the number of high quality applicants. Annually, our Admissions Staff and Faculty members actively attend recruitment events throughout key locations in Ontario; however there may be opportunities to selectively recruit in other provinces and perhaps internationally, in

collaboration with the other programs offered by our Faculty. Of note, the selection process for our PharmD program does not distinguish between domestic and international applicants. In 2018, the number of international applicants within the pool increased significantly (i.e. 8% in 2018 relative to 2% in 2011) and as a result there was a significant increase in the number of international students admitted (i.e. 11 out of 240). Given increased international student interest in the PharmD Program, the admissions committee will need to consider an increase in the total number of students to be admitted annually.

Our communications team will be key partners in our recruitment strategy moving forward, specifically developing branding that illustrates what makes LDFP and our graduates unique. This process will allow us to further target recruitment events more strategically to increase applicants with interests specific to our program.

In the Fall of 2018, the Admissions Officer (Director, PharmD Program) will be meeting with education researchers from the Wilson Center for Education Research/Faculty of Medicine, University of Toronto who specialize in admissions research in health professions. The goal of the meeting is to review the current index score calculations, specifically the weighting of the various components to determine if modifications are needed. The MMI process will also be reviewed, as will the potential use of situational judgement tests (SJTs). Any recommendations resulting from the consultation will be discussed with the Admissions Subcommittee and the PharmD Program committees prior to the Faculty-Wide Recruitment and Admissions Committee.

Program Accessibility Initiatives

In January 2018, the Faculty introduced a new student service to expand the mental health outreach and support provided by the University of Toronto's Health & Wellness Centre. To better meet the diverse needs of our student population, pharmacy students now have access to a dedicated counsellor embedded in the Leslie L. Dan Pharmacy building. This counsellor is on site for two and a half days per week, and offers brief counselling services with an overall focus on wellness, resiliency and skills-building. While students still have full access to the services provided by the Health & Wellness Centre, having an embedded counsellor provides our students with "just in time" early interventions when they experience mild or mild-moderate emotional or psycho-social difficulties that negatively impact their academic performance. Staff and faculty may formally refer students by completing and submitting an "On-Location Referral Form". Alternatively, students may contact the Health & Wellness Centre directly to schedule an appointment with the embedded counsellor.

In the fall of 2018, the University of Toronto's Accessibility Services will be expanding their services by introducing on-location Accessibility Advisors across the St. George Campus. One of these Accessibility Advisors will be assigned to the "Professional Faculties South" which includes most of the Health Science Faculties. By working with local faculty and staff, the on-location Accessibility Advisor will become knowledgeable of each Faculty's pedagogical approaches, program requirements and degree regulations to ensure appropriate accommodations are recommended for students. This model will also allow for the collaboration that is needed to determine feasible accommodations for skills-based laboratories and experiential rotations. Students will continue to register through the central Accessibility Services office; however, they

will meet with the on-location Accessibility Advisor “in their neighbourhood”. It has been proposed that for Professional Faculties South, the office will be located in the Rehabilitation Sciences building at 500 University Avenue. In addition, the Accessibility Advisor will be embedded in our Faculty one day per week.

Remediation

The PharmD program is currently reviewing the process of remediation for students having academic difficulties with the view to take a more comprehensive approach to supporting academic success. In the past, there were two faculty members responsible for academic progress and providing remediation to students who were having difficulty with experiential rotations. Currently, the experiential course coordinators provide remediation to students in academic difficulty at mid-point based on preceptor feedback and for those students who are not successful in passing a rotation. We have a bank of remediation assignments available that address therapeutic content knowledge, patient care and professionalism and ethics. The assignments are reviewed and discussed with the Program Director, who provides input and feedback for these students requiring extra support. Students who are not successful on rotations are required to do remedial work prior to commencing their supplemental rotation. Overall, the students who are supported through the remediation process are successful on future rotations.

Doctor of Pharmacy - PharmD for Pharmacists Program

Program Description

In 2011, the LDFP launched a new entry-to-practice curriculum that replaced the previous BScPhm curriculum. The new curriculum was designed as an entry-to-practice (PharmD program and in 2013 the Ontario government approved the degree name change. The final class completing the BScPhm curriculum graduated in June 2014.

The accredited Post-Baccalaureate PharmD program has been offered at the LDFP since 1993, meeting the AFPC Post-BSc PharmD educational outcomes. As it was not possible to offer the same degree (Doctor of Pharmacy) with two programs achieving different educational outcomes, the Post-BSc PharmD program underwent a major modification in 2014 so that the goal would be to bridge pharmacists with a BScPhm degree to meet these new PharmD outcomes and earn a PharmD degree. The PharmD for Pharmacists program was designed for practicing pharmacists to meet the changing needs of the profession and prepare them for the future of healthcare practice. Flexible and customizable, this program combines course work and experiential learning to build on the knowledge and skills pharmacists obtained in their undergraduate degree. The PharmD for Pharmacists program has received accreditation by CCAPP until 2019.

Course work in pharmacotherapy, critical appraisal, physical assessment, pharmacokinetics, educational theories, and health systems, provide the foundation needed to advance one's practice and fully embrace the changing scope of pharmacy. Courses are delivered in a variety of formats including online lectures, online-facilitated discussions, case-based learning, independent project work, onsite didactic classes, and small group discussion. Students may work at their own pace by adjusting their course load each term. In order to ensure that all students are progressing through the degree within an acceptable period, the maximum time allowed to complete the program is four years. Advanced experiential rotations are also included in the program to help develop and enhance practice skills and provide exposure to different practice areas.

The PharmD for Pharmacists program is based on the philosophy that the primary role of every practicing pharmacist is to provide pharmacy care to individual patients. To do this, we believe that each pharmacist must accept responsibility for providing the patient-specific care required to prevent the development of problems associated with drug therapy. The program puts emphasis on the knowledge, skills and values required of PharmD for Pharmacists graduates. The PharmD for Pharmacists program advocates that knowledge alone is not enough. Graduates must also have the skills necessary to apply this knowledge and the attitude required to be responsible, compassionate health professionals. We also acknowledge that the content of the curriculum and the method of education employed throughout the curriculum are equally important. Skills required for effective learning, problem solving and communication, and caring attitudes are incorporated through mock patient interactions (Physical Assessment course) and case-based

methods of education. These methods foster a self-directed learner who is able to integrate, apply, and communicate changing and expanding information. Students are presented with realistic, relevant problems and are provided with guidance in locating, understanding, learning and applying the concepts and facts necessary to solve these problems. Course instructors and guest lecturers function both as facilitators of students' learning and as sources of expertise. Through this learning process, students acquire skills such as effective communication, teamwork, self and peer-assessment, writing, problem solving, and critical thinking.

The program is designed to graduate pharmacy practitioners with the knowledge and clinical experience to enable them to be at the forefront of health care in a variety of settings (e.g., institutional, community practice, government, academia and industry), and to promote excellence in patient-focused care based on the philosophy of pharmacy care.

Program Objectives

The mission of the PharmD for Pharmacists Program is to provide a flexible and customizable learning environment for pharmacists' development of expanded knowledge and skills that enable them to improve patients' health outcomes and contribute to the advancement of the pharmacy profession.

In support of this, we are committed to:

- Teaching knowledge, skills and professional values that are required to practice pharmaceutical care;
- Developing, disseminating and applying knowledge through innovative teaching and practice; and
- Providing an academic environment in which the changing demands of modern health are met through collaborative partnerships.

Educational Outcomes for PharmD for Pharmacists

Upon completion of the PharmD for Pharmacists program, students will meet the 2017 AFPC educational outcomes for the Doctor of Pharmacy degree (first professional degree) (Appendix 4):

Care Provider – Graduates provide patient-centred pharmacy care by using their knowledge, skills and professional judgement to facilitate management of a patient's medication and overall health needs across the care continuum. Care Provider is the core of the discipline of pharmacy.

Communicator – Graduates communicate effectively in lay and professional language, using a variety of strategies that take into account the situation, intended outcomes of the communication and diverse audiences.

Collaborator – Graduates work collaboratively with patients and intra- and inter-professional teams to provide safe, effective, efficient health care, thus fulfilling the needs of the community and society.

Leader-Manager – Graduates engage with others to optimize the safety, effectiveness and efficiency of health care and contribute to a vision of a high-quality health care system.

Health Advocate – Graduates demonstrate care for individual patients, communities and populations by using pharmacy expertise to understand health needs and advance health and well-being of others.

Scholar – Graduates take responsibility for excellence by applying medication therapy expertise, learning continuously, creating new knowledge and disseminating knowledge when teaching others.

Professional – Graduates take responsibility and accountability for delivering pharmacy care to patients, communities and society through ethical practice and the high standards of behaviour that are expected of self-regulated professionals. The Professional role is the overarching ethos of the discipline of pharmacy.

Admission Requirements

The PharmD for Pharmacists program is designed to equip practicing pharmacists with the skills, knowledge, and experience to engage in an expanded scope of practice. The admissions process identifies the strongest possible candidates for the PharmD for Pharmacists program by assessing each applicant's overall achievements, including those in academic and non-academic areas. A multitude of factors are used to determine the appropriateness of every candidate. As the applicant pool varies in qualifications, there will be an overlap in the distribution of applicants' practice settings, clinical skills, GPAs, and other criteria in accepted and declined candidates.

PharmD for Pharmacists' admission procedure has two-phases including documentation analysis of an application form, curriculum vitae, academic transcript(s), and two professional references. Points are awarded for residency training, post-graduate training, leadership positions, and outstanding references from referees in academic positions. Applicants meeting the requirements then proceed to a MMI. Applicants rotate through six interview stations and have the option to interview in person or via Skype. Each interviewer poses a question to elicit information regarding domains such as motivation, conflict management, communication and other soft skills. A written assessment is also performed on the day of the interview. A 10-point scale is used by each assessor for a final score out of 60. Applicants are offered admission based on the final score and review by the Admissions Committee.

Only individuals meeting one of the three admission requirements listed below may apply:

1. Pharmacists who have graduated with a Bachelor's degree from an accredited Canadian Pharmacy (CCAPP) program or an accredited (Accreditation Council for Pharmacy Education - ACPE) American Pharmacy program,
2. Pharmacists who are currently licensed to practice pharmacy in any Canadian jurisdiction (except Quebec),

3. Pharmacists who have graduated with a Bachelor's degree (or equivalent) in Pharmacy from any International Pharmacy School AND have successfully completed the PEBC Evaluating Exam.

To date, we have approximately 50 graduates, most of them within the past year. As such, we have not been able to do any predictive correlative analysis to look at admission requirements and success in the program. We plan to start looking at this in the next two years as we see more graduates from the program. The indicators of success from a program where students are already licensed may take more time to materialize since we cannot use surrogate outcomes such as success at PEBC exams.

As this program recruits and admits students with pharmacy degrees, the minimum requirements ensure that any applicant can meet the foundational requirements for practice. Each of these requirements is either equal to a practice ready pre-licensure student (# 1 and #3) or a practitioner (#2).

An area for consideration, as we look to attract more international students, is to review the admission requirements/criteria to ensure that these are not barriers to the program.

Curriculum and Program Delivery

Structure of the Curriculum

Launched in January 2015, the PharmD for Pharmacists program was a result of a major modification of the Post-Baccalaureate Doctor of Pharmacy program. Major changes to the program occurred including the changing of coursework and rotation requirements while ensuring flexibility for practicing pharmacists to design a program that meets their individual needs. Practicing pharmacists have the opportunity to select courses based on personal interests and the option of completing program requirements on a part-time basis.

Our students build on their knowledge, skills and values to become more effective pharmacy practitioners. The curriculum is designed to enhance critical thinking and problem-solving skills as well as professionalism throughout the program. It was also designed to encourage and support life-long learning. The program is offered on a part-time basis consisting of academic coursework and up to twenty-five weeks of experiential education.

The PharmD for Pharmacists Program was structured to meet the curriculum requirements for CCAPP accreditation standards. The CCAPP standards require that the curriculum includes foundational content in: biomedical, pharmaceutical, behavioural, social and administrative pharmacy sciences; clinical sciences including clinical practice skills; practice experiences; and intra- and inter-professional collaborative practice skills. Based on a gap analysis (Appendix 35) of the BScPhm and entry-to-practice PharmD degree, we developed the PharmD for Pharmacists curriculum with courses that meet these accreditation requirements.

- Biomedical Sciences are included in the six Pharmacotherapy courses, the Pharmacokinetics course and the Physical Assessment course.

- Social and behavioral sciences are included in the Critical Appraisal course, the Selected Topics on Social & Administrative Pharmacy, and Educational Theory & Practice courses.
- Pharmacy practice is taught throughout the program however, it is emphasized in the Foundations of Advanced Pharmacy Practice course.
- Experiential rotations are completed in both direct and non-direct patient care settings.

The full curriculum can be found in Appendix 36.

Coursework and experiential placements are customizable to optimize student development in a flexible manner that allows them to continue to work while completing the program.

Two courses are pre- or co- requisites to all other courses: Critical Appraisal, and Foundations of Advanced Practice. This knowledge from these courses is then built upon in the pharmacotherapy courses. Students will apply principles of Pharmacy Care, and evidence-based medicine. Students also take a teaching course that provides them with the knowledge and skills to use on rotations when educating other health professionals and making presentations. This educational process creates a solid bank of knowledge that students can then utilize to advance their practice skills and knowledge during experiential rotations.

Experiential Rotations

Students are also required to complete 20 weeks of experiential learning in the curriculum. Students will complete at least four rotations, each lasting five weeks. Each rotation is approximately 200 contact hours or five consecutive weeks in an experiential placement setting. Three of these required rotations will be in direct patient care settings, while one rotation will be an elective. Students may also elect to complete an additional elective rotation (this would replace an elective pharmacotherapy course). Rotations are available in tertiary care centres, teaching hospitals, community hospitals, specialty institutions, ambulatory care centres, family health teams, the military and community pharmacies. The majority of rotations are in Ontario; however, there are also rotations available throughout Canada, the US and at a few international sites. Direct Patient Care rotations include intensive care, general medicine, emergency medicine, specialty medicine, ambulatory care, family medicine and community practice. Non-Direct Patient Care rotations include drug information, education, administration, pharmaceutical consulting, pharmaceutical industry and professional affairs. Students have the ability to request new rotations and sites. The OEE and the PharmD for Pharmacists program work together to assess and facilitate these requests with similar quality assurance mechanisms, student support and site matching process as the PharmD program.

Rotations can be completed once a student has completed the following three courses:

1. Foundations for Advanced Pharmacy Practice
2. Critical Appraisal
3. One (1) Pharmacotherapy course

Two of the direct patient care rotations must be done once all didactic work is completed. The timing of the rotations is flexible, based upon the student's availability.

Innovation and/or Creativity in the PharmD program

Integrated Teaching Model

Our flexible, student-focused learning experience fosters graduates who are versatile, lifelong learners. As this program is focused towards bridging pharmacists with BScPhm degrees to a PharmD degree, most of our students are currently practicing pharmacists. This necessitates and a flexible online delivery system in order to meet their learning needs. We strive to incorporate innovative and creative technology to enhance program delivery and learning. As the PharmD for Pharmacists program is delivered primarily online, the use of technology is crucial to facilitate asynchronous and synchronous learning, as well as conduct online examinations. The Foundations for Advanced Pharmacy Practice course is offered as an online/on-site hybrid course, with the one week long on-site portion offered twice a year. This course, and two days of the Physical Assessment course, are the only courses with on-site learning. The remainder of the program is delivered online.

In order to deliver didactic lectures online, Power Point presentations are converted to a format that allows for greater interaction using Articulate Storyline software. Instructors are able to embed interactive knowledge check questions throughout each lecture.

This year the University changed their LMS to Canvas (branded Quercus at University of Toronto). The new LMS will enable greater synchronous discussions both inside and outside of the "classroom" environment. It will also allow us to explore other applications that can promote great participation, discussions and engagement.

Virtual office hours are embedded in many courses in the program. This allows the students an opportunity to engage with instructors. The challenge for instructors is balancing, on average, up to seven time zones for all the students in the program.

Other innovative/creative content are course specific and include the development of short (approximately five minutes) presentations on a given topic, or including a component of current news in the course curriculum.

This year we have received funding from the Instruction Technology Innovation Fund (ITIF) to trial guided-discovery learning in PHM652 Contemporary Topics in Primary Care. As guided discovery learning is best suited for students with some expertise (not beginners) and our students are practicing pharmacists, we are trying to see if this method of course delivery will improve knowledge acquisition, application, and student satisfaction.

An area for the program to consider is finding greater opportunity for students to reflect on what they have learned in the academic courses and apply it to their current practice. As the majority of our students are practicing pharmacists, the use of reflective portfolios is feasible and may help them consolidate and apply knowledge immediately, instead of waiting until experiential rotations.

Learning Beyond the Classroom

A key element of effective learning is the application of knowledge and development of skills. As part of program requirements, students must complete up to five experiential rotations that are five weeks (200 hours) in duration. Three rotations must be in direct patient care while the

remaining one to two rotations may be in either direct or non-direct patient care. The options allow students to customize their learning experience beyond the classroom according to their learning needs and career focus.

A key advantage for students at the LDFP is the availability of high quality experiential rotations in both direct and non-direct patient care. Students have access to leading experts in all areas of clinical practice through preceptors and sites that are nationally and internationally known. In addition, students also have the ability to do their experiential training across Canada and internationally. These opportunities are essential to the PharmD for Pharmacists program as our student demographic encompasses the national and international stage. Furthermore, as experienced pharmacists, many are looking for the global health and international perspective regarding pharmacy practice. Students are matched to sites/rotations in a similar manner to that described in the PharmD section of the self-study.

Opportunities for Student Research Experiences

Students have the opportunity to complete one to two non-direct patient care rotations as part of their experiential training requirements. Selections for non-direct patient care rotations include research rotations, educational rotations and project rotations. These rotations are offered in diverse practice settings (academic institutions, government, professional associations), as well as at the LDFP. Students also have the opportunity to engage in clinical research during their direct patient care rotations at sites where preceptors have a focus on clinical research or have roles in clinical trials. The focus of the student's research experience may include conducting literature reviews, preparing research protocols, conducting components of clinical research associated with patient care and manuscript writing. Often, students may continue to be involved in the study/project after their experiential rotation has completed. Students have presented posters at conferences and published journal articles related to their research during their education with the PharmD for Pharmacists program.

Assessment of Learning

The PharmD for Pharmacists program, acknowledging that the students are adult professional learners, adheres to the belief that critical thinking, problem solving and self-initiated learning are essential elements of the program. Courses within the program use a wide variety of both formative and summative assessments. In addition to faculty assessments of students, students must also complete self-assessments of their progress while on experiential rotations. Students are required to complete written assignments, reports, and critical evaluations of the literature. Oral presentation skills are evaluated formally through the experiential rotations in which they give patient care presentations to members of the health care team.

Foundational Skills Testing

As our students come from varied educational and practice settings, we use both formative and summative assessments in pre-requisite and early courses to ensure that students have foundational knowledge. By using formative assessments like online quizzes, students who have not grasped content can be quickly identified. Online quizzes are created so that students receive immediate feedback in the form of an "ideal answer" so they can reflect and identify their own

issues. Coordinators, however, have the opportunity to review all quizzes to help identify overall performance.

Longitudinal Learning

One of the pre-requisite courses is PHM605, Critical Appraisal. This course teaches students to appraise evidence and studies which are important in pharmacy practice and healthcare. In other courses there are assignments to practice these skills, and allows the faculty to assess these competencies in other courses.

Quality Indicators

Assessment of Program Against International Comparators

As this is the third year of the PharmD for Pharmacists program, we are monitoring key indicators to ensure the success of the program. Nationally, there is currently only one other competing program (University of Alberta). Two other Universities, the University of British Columbia and Memorial University, will be offering a similar flexible PharmD for Pharmacists program. We do not have external comparators to use as a benchmark for our program. This course is specifically designed to bridge Canadian pharmacists with BScPhm degrees, a situation unique to the Canadian context, as entry-level programs in Canada are slowly moving away from granting degrees with a BScPhm designation. The program also utilizes context-specific Canadian pharmacy learning outcomes, ensuring that our graduates have different specialization and skills than pharmacists in other countries. We will work to develop a method of following our graduates to see if the PharmD for Pharmacists program enabled positive changes to their professional career.

Applications and Admissions

The PharmD for Pharmacists cohorts have a 92% admissions yield rate, demonstrating the quality of applicants selected through the Admissions process and the desirability of the program. Between January 2015 and January 2018, we have received 397 applications. The high quality applicants is demonstrated by applicants with GPA ≥ 3.7 (A-) (35%), those who completed pharmacy residency training (24%), those who have a MSc or PhD degree (11%) and those in leadership positions (Manager, Director, Leader, Owner, Vice Dean, Academic Lead) (18%). Deferral to the program is low (1%) and all have been due to personal reasons.

Table 6: Quality of Applicants 2015 - 2018

Admission	Total	GPA 3.7 or greater*	Residency	Grad degree	Leadership
Winter 2015	38	12 (of 36)	5	0	5
Fall 2015	36	13 (of 35)	9	3	4
Winter 2016	21	6 (of 20)	6	2	0
Fall 2016	22	5 (of 20)	7	6	4
Winter 2017	19	4 (of 16)	3	2	5
Fall 2017	28	10 (of 25)	3	5	6
Winter 2018	18	5 (of 18)	6	1	6

**only GPAs that can be converted to the University of Toronto 4.0 scale are reported*

The PharmD for Pharmacists program attracts applicants who are University of Toronto graduates (mean 32%), those who graduated from another Canadian university (mean 42%) as well as IPGs (mean 25%).

Table 7: Overall Admission 2015 - 2018

	Applications	Interviews	Offers	Acceptances	Declines	Deferral to next cohort	Attended 1st day
Winter 2018	36	24	19	18	1	0	18
Fall 2017	58	37	31	28	3	0	28
Winter 2017	37	26	21	20	1	0	21
Fall 2016	48	33	26	23	4	1	22
Winter 2016	43	30	22	21	1	0	22
Fall 2015	86	51	40	36	4	1	37
Winter 2015	89	46	42	39	3	3	36
Total	**397**	**247**	**201**	**185**	**17**	**5**	**184**

Table 8: Demographic Comparison of Intakes 2015 - 2018

		Winter 2015	Fall 2015	Winter 2016	Fall 2016	Winter 2017	Fall 2017	Winter 2018
Undergraduate Pharmacy	University of Toronto	55%	30%	36%	33%	20%	16%	37%
	Canadian	30%	40%	45%	43%	50%	61%	26%
	International	15%	30%	18%	24%	30%	23%	37%
Year of graduation	10 years or more	17%	20%	23%	24%	30%	26%	32%
	5 – 9 years	50%	42.5%	45%	28%	25%	29%	47%
	<5 years	33%	37.5%	32%	48%	45%	46%	21%
Current setting	Community	40%	30%	27%	28%	50%	58%	42%
	Hospital	52%	50%	50%	67%	30%	19%	37%
	Other	8%	20%	23%	15%	20%	23%	21%

***Other setting: University, Primary care, Canadian Forces, Government, Industrial / Pharmaceutical Company*

As of March 2018, we have 143 students enrolled in the program (active students). Since 2015, twenty-four students have graduated from the program. Of those who have graduated, the range for time to completion of the program has been twenty-three months to thirty-five months indicating that students are able to complete the program within the four years set out by the program. Attrition rates in the PharmD for Pharmacists program offering are low at 5% (nine students). Of those who dropped out, seven are for personal reasons, while two were for academic reasons (e.g. failed the program).

Remediation

At a course level, students who fail a mid-term or final exam have the opportunity to review their exam with the course-coordinator. The course coordinator(s) provides support and additional resources for students where appropriate. If a student has a valid reason to petition, they will have access to course contents online to help prepare for a make-up exam. In an experiential rotation, preceptors and students have an opportunity to contact the course coordinator at any point during the rotation should any concerns arise. Course coordinators monitor the progress of students at the mid-term evaluation point. Support is provided to students and preceptors in cases when students are at risk of failing a rotation. If a student fails an experiential rotation, the course coordinator will assist with remediation. Depending on the reason for not successfully completing the rotation, remediation may consist of a learning contract with learning objectives prior to resuming another experiential rotation. Supplemental materials, including patient cases or professional ethical scenario, may also be provided and discussed with the student.

At the program level, student progression is tracked by the PharmD for Pharmacists Office. Students at risk of not meeting program requirements are contacted to discuss their situation. Additional counseling by the program staff or referral to student resources may also take place depending on the unique situation of each student. Potential options are discussed to enable the student to continue with program progression or to take a leave of absence for a defined period of time.

Honours Citation

Students who excel academically in the programs are recognized with the distinction of Honours on their graduation diploma. This is based on the following criteria:

- Cumulative GPA of at least 3.5 in all didactic courses, including the pharmacotherapy elective AND a final grade of “Honours” in at least three of the experiential rotations; OR
- Cumulative GPA of at least 3.5 all didactic courses, AND a final grade of “Honours” in at least four of the experiential rotations, including the elective rotation.

Of the 24 students who have graduated, four students (17%) have graduated with a citation of “Honours”.

Quality of Educational Experience, Teaching and Graduate Supervision

Online Course Evaluation

Beginning with the winter of 2018 term, the PharmD for Pharmacists program implemented online course evaluation. Since then, online course evaluation has been conducted for the summer 2018 term. In addition to using the institutional and divisional questions used in the PharmD program (Appendix 28) the following program-specific questions are used:

1. The course instructor maintained a presence throughout the course.
2. The instructor was available for contact if needed.
3. Online tools used in this course supported my learning.

Response rates were 33% and 30% for winter and summer terms. Results have been reported back to students during Town Hall meetings to encourage higher uptake. Although the response rate is typical across the University of Toronto, a target has been set at 40% response rate. Monitoring of this target will occur in 2018-2019 and a plan of action will be developed based on the results.

Experiential Learning

In March of 2018, an initiative was undertaken to better understand the quality of experiential rotations. An invitation was sent for participation in focus group interviews and an electronic survey was available for students unable to participate in the focus group interviews. We conducted focus group interviews with eleven students and received feedback from an additional eighteen students.

Overall, students indicated that the quality of the experiential rotations was good. They also noted the high quality of support from the staff and faculty. The main areas of improvement were the matching process and expectation that preceptors tailor rotations to the learning needs of PharmD for Pharmacists students. As a result of this initiative, an action plan was developed and included sharing results with the OEE and Preceptor Engagement Coordinator; creating a communication plan to better inform students of key dates and important information of the matching process; and add experiential education as standing topics at Town Halls and during orientation sessions. We will continue to obtain student feedback annually to help monitor experiential program delivery.

A second initiative we undertook this year was to look at the indicator “top five selections matched” which tells us the number of successful matches that were ranked in the top five selections. For the winter 2018 match, 87.6% (113/129) of rotations matched were the students’ top 5 selections. For the summer 2018 match, 92.7% (38/41) of rotations matched were in the student’s top five selections.

Provision of Student Support through Orientation, Advising/Mentoring and Student Services

All new students attend an orientation week. The agenda for the week is carefully designed to provide student support to ensure the success of their academic career in the PharmD for Pharmacists program. Discussions on academic-work-life balance as well as resources for students (e.g. mental health, sexual violence prevention, health and wellness) are provided. This information is also available on the PharmD for Pharmacists homepage on Quercus. In addition,

students attend a session from Library Services on available resources and student support for research and writing. Finally, new students also attend a session with advice and mentoring from students currently in the program and recent alumni of the program.

Future initiatives to consider for implementation are Peer Mentorship and Faculty Mentorship programs. Currently, students have the opportunity to reach out to specific faculty members for informal mentorship opportunities. It is not known how many students have established this informal relationship.

Availability of Student Funding

There are no bursaries available from the PharmD for Pharmacists program. Students may be eligible for provincial or federal student loan programs. If a student does not qualify for provincial or federal student loan funding, they may apply for a loan through their banking institution.

Student Awards & Professional Development

The CSHP Ontario Branch PharmD for Pharmacists Award was established this year to recognize a student who meets all program requirements and are eligible for graduation in the period September to August of the following year. This award will be presented annually in recognition of a graduating candidate who demonstrates excellence in patient care during their hospital experiential rotation and obtains high academic achievements in their didactic courses.

The program recognizes that the students incur significant financial burden because of enrolling in the PharmD for Pharmacists program. The limited number of student awards (only one currently) is an area for future improvement. Awards and opportunities for professional development are necessary to acknowledge and promote academic achievement.

Program Outreach and Promotion

The Program Director or designate attend national conferences to promote the PharmD for Pharmacists Program. In 2017-2018, the program was represented at the Ontario Pharmacists Association Conference, Canadian Society of Hospital Pharmacists Conference and the Canadian Pharmacists Association Conference. In addition to promotional opportunities during exhibit halls, faculty members also present oral and poster presentations. The Program Director or designate attend national conferences to promote the PharmD for Pharmacists Program. In 2017-2018, the program was represented at the Ontario Pharmacists Association Conference, Canadian Society of Hospital Pharmacists Conference and the Canadian Pharmacists Association Conference. In addition to promotional opportunities during exhibit halls, faculty members also present oral and poster presentations.

A poster presentation was presented at the Associations of Faculties of Pharmacies of Canada Conference. The Program Director also presented an oral presentation and was an academic judge at the Ontario Pharmacists Conference.

Finally, the program was promoted in the summer edition of Hospital News, an online newsletter to a broad audience of pharmacists in hospital settings across Canada.

There is an opportunity to develop a marketing and promotion strategy with the Communications Office at the LDFP as well as to collaborate with other business units at the University to more broadly align this work.

Quality Enhancement

Quality Enhancement Initiatives

The PharmD for Pharmacists program evaluates its effectiveness using several different strategies and methods. This year, we launched online course evaluations in the winter term. We will review and analyze the responses to make improvements to each course and to the program as a whole.

For the experiential component of the program, students have an opportunity to evaluate individual preceptors as well as experiential sites to ensure high quality rotations. We have a formal process where experiential faculty members review student progress through their rotations; this is done on a monthly basis. In March 2018, we held a series of focus group interviews with students to understand the strengths and potential areas of improvement for experiential rotations. The focus was on the matching process, quality of education and overall experience. Based on the results of these interviews, the program will work with the OEE to develop plans for quality enhancement.

An exit debrief (focus group interview) was conducted in November 2017 where graduating students were able to provide feedback on the entire program. We plan to develop an exit survey using the existing AFPC PharmD Graduate exit survey as a guiding tool. The information gathered from these tools will be used to make changes to improve the program.

The program also uses its committees to monitor the effectiveness of the program. There are standing items on the agenda of the PharmD for Pharmacists Program Committee to follow the progress of students. The Board of Examiners discusses whether our evaluations assessments are an appropriate reflection of student performance. Other committees such as the Committee on Academic Standing, Curriculum and Assessment and Program Evaluation and Accreditation Committee are leveraged to approve grades and review all changes/additions to courses (major and minor).

Curriculum Mapping and Analysis

The Faculty have recently updated all PharmD for Pharmacist course outlines to reflect the 2017 AFPC Educational Outcomes (Appendix 4) and are have completed a program curriculum map. The map provides a thorough gap analysis (Appendix 37) to determine the areas that require curriculum enhancements. Additionally, we will be able to compare and analyze the PharmD and PharmD for Pharmacists curriculum for areas of alignment in teaching and learning.

Enhancing the Admissions Process

The PharmD for Pharmacists program has moved its admissions process to the Pharmacy Student Information System (PharmSIS). This move will result in the program collecting more robust data about applicants and students in a systemic way.

Program Accessibility Initiatives

Accessibility initiatives undertaken by the LDFP were covered in the PharmD program section.

Graduate Program

Program Description

The Graduate Department of Pharmaceutical Sciences at the Faculty offers research-intensive MSc and PhD degrees in a wide range of pharmaceutical science topics. Pharmaceutical science is a broad and multidisciplinary area of research that encompasses all aspects of drug therapy. This includes the design, synthesis and characterization of new medicinal agents, studies to understand their mechanisms of action, assessment of their effectiveness for treatment of disease, identifying their optimal clinical use for improving patient care, and the economics and policies that define best practices for their essential role in the health care system. Professors at the LDFP are international leaders in all of these areas of investigation. Our programs provide a stimulating and productive environment for graduate education and research for students with degrees in physical, biological, and social sciences, as well as for students with a degree in a Pharmacy professional program. The majority of students are enrolled full time, but the program also offers part-time MSc and flex-time PhD options (see Graphs 1 and 2 below). The core educational activity of the MSc and PhD programs is research under the direction of a primary supervisor.

A strength of our program is the diversity of students, faculty, and fields of study. The common theme across all areas of study is exploration of therapeutic drugs from their discovery, through their development and formulation, their use by patients and finally how they are regulated and their place in society. Students work in one of two fields: Biomolecular Pharmaceutical Sciences (BMS) (i.e., wet lab environments including the chemical biology, genomics and proteomics, molecular pharmacology and toxicology, and pharmacokinetics) and Clinical, Social and Administrative Pharmacy (CSAP) (i.e., research team environments without wet labs including clinical trials, qualitative research, ethics, political science, economics, and social psychology). A full description of the programs we offer, admission requirements, application procedures, program and graduation requirements are included as Appendices 38 and 39.

There are two main programs: Master of Science (MSc) and Doctor of Philosophy.

Master of Science (MSc)

The MSc program is designed as a research intensive two-year program involving course work, oral presentations and research culminating in a thesis which is formally defended. A part-time program is also available. Part-time students must meet the same requirements as full-time students but are given four years to complete the program. Students excelling in the MSc program have the opportunity to transfer to the PhD program between twelve and eighteen months after starting the program based on the recommendation of their graduate supervisor, thesis advisory committee, and successful completion of a transfer examination which has oral and written components.

It is also possible for licensed Pharmacists to combine the MSc program with a Residency position. A student accepted into an accredited Hospital Pharmacy Residency Program in the Toronto area may register simultaneously as a student in the MSc program. During the period of

residency in the hospital, the applicant registers as a part-time graduate student and is expected to make progress toward the completion of required courses. Registration as a full-time graduate student occurs upon completion of the hospital residency. During this period, a research program will be completed either on campus or in the hospital where this was initiated. The standards for the MSc component of the residency program are the same as the MSc program described throughout this document.

Doctor of Philosophy

The PhD program is a research intensive four-year program for students who have completed an MSc and a five-year program for students granted direct entry to the PhD program without first completing an MSc (or those transferring from our MSc program). A flex-time program option (designed to be completed in eight years) is available to students currently employed in a position directly related to their intended field of research who have the permission and support of their employers.

Our graduate students may also participate in collaborative specializations offered at the University of Toronto and/or internships which provide the opportunity to gain experience in a pharmaceutical, a biotech company, or in global health placements around the world.

The breadth and diversity of research conducted at the Faculty has also transformed over the past several years. As a result of our expanded approach to pharmaceutical science research, our international reputation has extended to include expertise in pharmaceutical oncology, pharmacy practice research, nanotechnology, diagnostics and imaging technology, exploration of disease mechanisms and new drug targets, pharmacy education research, studies in global health, health services, care delivery, pharmacoeconomics, and health policy. Our emphasis on these new research areas has added to our already established reputation as a world-class facility for biophysical chemistry, pharmaceutics, pharmacology, pharmacokinetics, drug metabolism, and toxicology research.

Since the previous review the Department has realigned its fields so that they align more closely to the research carried out by faculty and students. Specifically, we have combined two former fields, Pharmaceutics and Pharmacokinetics and Pharmacology and Toxicology into a single new field called BMS. Thus, we now have two fields: 1) BMS and 2) CSAP.

Program Objectives

Master of Science

The currently approved educational objectives for students in the MSc degree program are:

A. Conduct a defined, original research project.
B. Acquire technical skills and basic interpretive skills for specialized research and studies in the Pharmaceutical Sciences.
C. Learn the ability to acquire or consolidate basic pharmaceutical knowledge.
D. Acquire additional technical skills.
E. Demonstrate fundamental competence in the evaluation, analysis, interpretation and presentation of scholarly data.

By meeting these educational objectives, they will also meet degree level expectations (DLEs) as described below:

1. Depth and Breadth of Knowledge
   Depth and breadth of knowledge is defined in the MSc degree in Pharmaceutical Sciences as the ability to generate or consolidate knowledge. This is reflected in students who are successful in completing graduate level courses in substantive areas, and who are able to apply this knowledge in the context of their research projects.

2. Research and Scholarship
   Research and Scholarship is defined in the MSc degree in Pharmaceutical Sciences as: the ability to conduct a defined, original research project; and to demonstrate competence in the technical and interpretive skills needed for the generation, evaluation and analysis of scientific data. This is reflected in students who successfully develop, conduct and defend their thesis research, at a level and scope assured by their graduate advisory committee.

3. Level of Application of Knowledge
   Level of application of knowledge is defined in MSc degree in Pharmaceutical Sciences as the ability to conduct a defined, original research project. This is reflected in students who successfully develop and defend their thesis research, which includes demonstrating the ability to apply existing knowledge in the field to a new question or setting.

4. Professional Capacity/Autonomy
   Professional capacity/autonomy is defined in MSc in Pharmaceutical Sciences as the ability to demonstrate responsibility, accountability and integrity, for example, in decision making, ethical behaviour, and in applying knowledge to particular contexts. This is reflected in students who demonstrate throughout their program accountability for their actions, academic integrity, sound decision-making skills and an understanding of the potential influence their research may have in the scientific field, and ultimately to society.

5. Level of Communications Skills
   Level of communications skills is defined in MSc in Pharmaceutical Sciences as demonstrating the ability to effectively communicate ideas, evidence and their application. This is reflected in students who successfully develop and defend their thesis research, which includes demonstrating the ability to clearly communicate their ideas, rationale, results, and conclusions.

Doctor of Philosophy

The overall objective of the PhD program is scholarly achievement in the form of research that constitutes an original and significant contribution in the student's area of study. Successful completion of this programs prepares the student for a research career in an academic, industrial, or governmental setting. Graduates are expected to have acquired and demonstrated autonomy in conducting research, preparing scholarly publications, and presenting scientific findings. The

program provides the graduate with deep knowledge of their field of research, a broad knowledge of pharmaceutical sciences, and high-level skills in fundamental research.

Specifically, the educational objectives of the PhD program include:

A. Learn how to identify important hypotheses that can be tested.
B. Develop the ability to select appropriate experimental approaches and techniques relevant to the scientific hypothesis.
C. Develop critical analytical skills.
D. Develop communication skills, written, oral and visual, within various formats of presentation.

By meeting these educational objectives, they will also meet DLEs as described below:

1. Depth and Breadth of Knowledge
   Depth and breadth of knowledge is defined in the PhD degree in Pharmaceutical Sciences as the ability to generate or consolidate knowledge that constitutes an original and significant contribution to the field. This is reflected in students who are successfully complete graduate level courses in substantive areas; who are able to apply thorough knowledge of the literature in the context of designing and conducting their original research projects; and who have demonstrated scholarly achievement in the form of research that constitutes an original and significant contribution in the field.

2. Research and Scholarship
   Research and Scholarship is defined in PhD degree in Pharmaceutical Sciences as the ability to identify important questions; select appropriate approaches and techniques to answer these questions; and to demonstrate the technical and interpretive skills needed for the generation, evaluation and analysis of scientific data. This is reflected in students who are able to: acquire and demonstrate autonomy in conducting research, preparing scholarly publications and presenting scientific findings.

3. Level of Application of Knowledge
   Level of Application of Knowledge is defined in the PhD program in Pharmaceutical Sciences as the ability to undertake an original research project at an advanced level that constitutes an original and significant contribution in the field. This is reflected in students who are able to successfully design and defend their original research project, which includes demonstrating the ability to apply existing knowledge in the field to a new question or setting and to demonstrate critical analytical skills to the generation of new knowledge.

4. Professional Capacity/Autonomy
   Professional capacity/autonomy is defined in PhD in Pharmaceutical Sciences as the ability to demonstrate responsibility, accountability and integrity, for

example, in decision making, ethical behaviour, and in applying knowledge to particular contexts. This is reflected in students who demonstrate throughout their program accountability for their actions, academic integrity, sound decision-making skills and an understanding of the potential influence their research may have in the scientific field, and ultimately to society.

5. Level of Communication Skills
   Level of communications skills is defined in PhD in Pharmaceutical Sciences as demonstrating the ability to effectively communicate complex and/or ambiguous ideas, issues and conclusions clearly and effectively. This is reflected in students who successfully develop and defend their thesis research proposal, including methods, results and conclusions; demonstrating the ability to clearly communicate their ideas, issues and conclusions clearly and effectively in various formats of presentation.

6. Awareness of Limits of Knowledge
   Level of Awareness of Limits of Knowledge is defined in PhD in Pharmaceutical Sciences as the ability to critically analyze and assess one's own research results and the findings of others to draw conclusions to new questions or to specific problems or issues in a new setting. This is reflected in students who are able to: successfully design, conduct and defend their research; present their research to academic audiences and publish their research in peer reviewed venues.

Admission Requirements

Admission requirements for the MSc and PhD programs at the LDFP are in accordance with the general regulations of the University of Toronto, School of Graduate Studies (SGS). Full admission requirements are included as Appendix 39.

For both degrees, the admission requirements are more stringent than those of SGS. One example of this is the Department's requirement of the Graduate Record Examination (GRE) for students whose degree comes from outside of Canada or the US. A second example is the higher average grade required for the direct-entry PhD program. Students are required to have an A- (80%) average to enter this program, higher than the B+ (77%) requirement issued by SGS.

Master of Science

Applicants must hold a four-year Bachelor's degree in physical, natural, life, or social sciences, engineering, or a health profession such as pharmacy, nursing, dentistry, or medicine from a recognized university. Academic standing equivalent of a "B+" at the University of Toronto (75%) in each of the two last years of the Bachelor's program is required for admission.

Doctor of Philosophy

Applicants must hold a four-year Bachelor's degree or a two-year research-based MSc (or Master of Arts) degree in physical, natural, life, or social sciences, engineering, or a health profession

such as pharmacy, nursing, dentistry, or medicine from a recognized university. Students admitted directly into the PhD program with a bachelor's degree must have an academic standing equivalent of an "A-" at the University of Toronto (80 – 84%) in each of the last two years of the Bachelor's. Students in the Master's Program in our Department who wish to transfer to the PhD program prior to completing the Master's degree must have a minimum academic achievement of an "A-" or 80 – 84% in the courses completed during the Master's program. Finally, students who have completed a Master's degree must have achieved a minimum average grade of "B+" or 77 – 79% in the courses completed during the master's program.

Unless an undergraduate or graduate degree has been obtained from an approved Canadian or U.S. University, the applicant must write the Graduate Record Examination (GRE) and demonstrate facility in English and science.

Applicants are screened to ensure they meet departmental minimum standards and then are required to seek out potential supervisors. Admission is dependent on finding a supervisor willing to provide intellectual, practical, and financial support to the student. Generally, students are admitted to the Graduate Department of Pharmaceutical Sciences twice annually – in September and January.

We aim to strike a balance between admitting the best and brightest graduate students, while at the same time allowing flexibility to graduate faculty members to choose students with specific interests, skills and backgrounds that increase the likelihood that they will be successful in our graduate program and significantly add to the research program at the Faculty.

All applicants must have completed (or be in the final year of) a four-year BSc or BA degree or a two-year MSc (or its equivalent) in the physical, natural, life, or social sciences, engineering, or a health profession such as pharmacy, nursing, dentistry, or medicine from a recognized university.

Curriculum and Program Delivery

The graduate faculty is composed of 30 tenured or tenure-stream faculty, 12 clinician scientists and 15 status or cross-appointed faculty (many of whom are based on research institutes located in our teaching hospital partners). Their research programs are summarized under the Research section of this document. Faculty members with graduate appointments are actively involved with the supervision of graduate students.

Many faculty members in the LDFP are cross-appointed to other graduate departments and may supervise students registered in other departments which are not captured in the data presented below. These students interact with the students enrolled in our program enhancing the diversity of the student population engaged in research with our graduate faculty. Similarly, these activities allow the members of our graduate faculty to have additional influence beyond the Faculty increasing collaboration and networks across the university and beyond.

Master of Science

Students in the MSc program achieve program objectives through a range of experiences. The primary objective of the MSc program is to educate the student to become a researcher. To this

end, students are encouraged to begin their research as soon as they enter the program, provided they have the appropriate background.

MSc students must meet with a thesis advisory committee at least once every academic year. The advisory committee consists of the thesis supervisor(s) and at least two other researchers working in fields relevant to the student's research. The role of the advisory committee is to assist the student in carrying out the thesis research and identifying appropriate courses to take, and to offer guidance for intellectual and professional growth. This process helps students meet DLE 4.

MSc students are also required to complete course work; the student's educational background and the research project define the curriculum. Students must successfully complete a minimum of 1.0 Full Course Equivalents (FCEs, two half courses). These courses help students meet educational objectives B, C and D.

With the exception of the first year of enrolment, students must present annually in one of the graduate student seminar series. The Master's students must also present an academic conference-style poster at least once at the department's annual Graduate Research in Progress (GRIP) day. This helps students meet DLE 5 and educational objective E.

Upon completion of the research project, the student must submit and defend a written thesis at an oral examination. The written thesis ensures students meet DLEs 1, 2, 3 and 5 and meet educational objectives A and E.

Doctor of Philosophy

The objectives of the PhD program are achieved through the exposure of the student to a variety of research and educational experiences. The main emphasis is on conducting original research. Students are expected to start their research as soon as they begin the program. All PhD students must meet with a research advisory committee at least once every academic year. The advisory committee consists of the thesis supervisor(s) and at least two other researchers working in fields relevant to the student's research. This part of the program helps students meet DLE 2, 3, 4, and 6 as well as educational objectives A and B.

The student must also complete course work; the curriculum is defined by the student's educational background and the research project. Students who have completed a master's degree must complete 2.0 FCEs and those who enter directly with a Bachelor's degree must complete 3.0 FCEs. Each year, with the exception of the first year of enrolment, all students must present in their graduate student seminar series. These courses help students meet DLE 1 as well as educational objective C.

PhD students are also required to present two academic conference-style posters at the Department's annual GRIP day. This presentation helps students meet DLE 1, 5, and 6 as well as educational objective D.

Students in this program must pass a Qualifying Examination within twenty-four months of entering the program (thirty-two months for flex-time students). Upon completion of the research project, the student presents an Exit Seminar to the Faculty and must submit and defend

a thesis at an oral examination. This helps students meet DLEs 1, 2, 3, 5, and 6 as well as educational objectives A, B, and D.

In addition to the research project, course work, and seminars that form the basis of our graduate program, both MSc and PhD students have the option of enrolling in one of nine collaborative programs (e.g., Addiction Studies, Global Health, Neuroscience).

Following recommendations from the last UTQAP review, the Department currently offers nineteen graduate courses, with an additional three new courses approved to start in the 2018 – 2019 academic year. Students are encouraged to explore graduate courses offered across the wide variety of graduate programs at the University of Toronto to build individualized programs that support their research.

Many of the graduate courses also have a presentation component that makes up part of the final mark. Generally, these presentations are about relevant manuscripts or topics not covered by the professor's lectures.

Innovation and/or Creativity in Graduate Program

Since the previous UTQAP review, the most significant innovation in the Graduate Program is the creation of the new degree called the Master of Science in Pharmacy (MScPhm). This is a new, two-year, non-thesis program intended for practicing Pharmacists. It is a new direction in advanced clinical pharmacy-practice education. The MScPhm degree program has been developed as an advanced professional practice program for pharmacists with a research-informed, scientific focus as the foundation of all its components. It has been developed to build upon our entry to professional practice degree. It is anticipated that 5-10 students will choose to enroll in the new MScPhm program each year. Only students ready to rise to the challenge of taking on leadership roles in clinical practice and education will be admitted to this program.

The new MScPhm program will provide an opportunity for pharmacists to gain advanced clinical knowledge in a defined area of practice that will enable them to become clinical leaders in a wide range of patient care and professional settings. MScPhm graduates will also hold leadership roles in quality improvement programs, the provision of education to pharmacy students and other health care providers and the development of pharmacy practice and health care services and policies.

Graduates of the MScPhm who later decide to pursue an independent research career will be strong candidates for a subsequent PhD degree. The program is currently in the final stages of approval. The program proposal is included as Appendix 40.

We have also redefined our graduate fields. Previously, we had three fields one in the CSAP area, another in Molecular Pharmacology and Toxicology and a third called Pharmaceutics and Pharmacokinetics. The latter of these three fields were merged to form a single new field called Biomolecular Pharmaceutical Sciences (BMS). Each of the current fields now has a graduate coordinator, who is responsible for guiding change and overseeing the educational program in their respective field. This change makes the structure of the Department clearer and creates two groups of similar size each with similar research interests. This should facilitate promotion

of the educational programs and recruitment. At this time there are 95 students in the BMS field and 31 students in the CSAP field.

For the past two years, we have been holding a competitive event called the 3-Minute Thesis. Students have three minutes and only one slide to discuss the importance of their work and results to an audience. The talks are scored, and the winners can go on to compete in the University-wide competition. This gives the students the challenge of condensing their research into a format that could be easily understandable to a non-scientist.

Learning Beyond the Classroom

For all students in our programs, the Department offers a breadth of opportunities for the students to attend seminars and learn from external experts as well as present their own work. Regularly scheduled research seminars are offered by the Department and the Research Centres in the Faculty. Speakers are invited from all areas of expertise related to the Pharmaceutical Sciences. Speakers generally come from locations that are geographically close; however, each year several speakers come from abroad. The students may attend seminars sponsored by other departments at the University and the affiliated hospitals.

The student seminar series provide an opportunity for graduate students to learn how to present their own work to students and professors working in their area of expertise. There are six different student seminar series each with its own subject focus. The six series are: Clinical Research, Health Services/Policy Research, Molecular Pharmacology and Pharmacokinetics, Molecular Toxicology and Neuroscience, Pharmaceutics and Biophysical Chemistry, Pharmaceutical Diagnostics and Imaging. Every student must belong to one of these groups and must present each year they are enrolled in the program with the exception of the first year. Each group is made up of fifteen to twenty-five students and several professors whose research aligns with the topic. The students present to other students and professors in the group. Each talk is followed by a question and answer session. Through this, the students gain experience presenting and answering questions about their research. Students receive feedback on their presentations from both their peers and faculty members.

All graduate students must present during our annual research day, GRIP. This is a full-day event, intended to ensure that all of the students and the faculty members are exposed to the breadth and depth of the research in our department. The department has been sponsoring GRIP for approximately thirty years and the students have always been required to present at GRIP. The type of required presentation can be either a talk or a poster. At GRIP there is also a research presentation on a topic of general interest in the Pharmaceutical Sciences. In recent years, we have begun choosing students to present from the student seminar groups and the winners of the Department's 3-Minute Thesis competition.

Opportunities for Student Research Experiences

The variety of research experiences available to our students is reflected in the breadth of the research carried out by the faculty members. Students may choose to work in a laboratory, a clinical, or office setting. Their research may be either fundamental for which there are few anticipated short-term practical applications, or the work may be applied and lead to practical application quite quickly in the healthcare or drug development world. There are also many

things in between these two extremes. The experiences are enhanced by the connections and collaborations between the faculty members in the LDFP and other researchers at University of Toronto, in the local hospitals, or elsewhere. In addition to the interactions with people, the location of the Graduate Department of Pharmaceutical Sciences means that our students have access to the equipment, databases, and other resources available at the University of Toronto. Essentially, all modern techniques for lab work and data analysis are available, often within walking distance of the building.

Assessment of Learning

Students in both graduate programs are required to have regular meetings with their supervisory committees (composed of at least two graduate faculty members plus their super-visor(s)). The requirement is that the students meet at least once every academic year; however, more frequent meetings are encouraged. Prior to the Advisory Committee meetings, the students prepare a short, written description of the background, rationale, and progress to date of their research. At the meeting, the student presents the work, results, problems encountered, and future plans to the committee. The committee provides verbal and written feedback at each meeting regarding their progress toward graduation.

Quality Indicators

Assessment of Program against International Comparators

International comparators of the Graduate Program are addressed in the Faculty/Research section of the self-study report.

Applications and Admissions

The Graduate Department of Pharmaceutical Sciences consistently receives far more applicants than positions available every year. For the past five years, the acceptance rate for MSc students has remained constant at approximately 20 new students per year, as seen below.

Table 9: Overall Admission (Masters) 2013 - 2018

	Applications	Offers	Acceptances	Declines	Yield Rate (%)	Offer Rate (%)
2018	61	11	11	0	100.0	18.0
2017	73	20	19	1	95.0	27.4
2016	94	30	25	5	83.3	31.9
2015	86	28	25	3	89.3	32.6
2014	75	25	24	1	96.0	33.3
2013	81	18	18	0	100.0	22.2

Table 10: Overall Admission (PhD) 2013 - 2018

	Applications	Offers	Acceptances	Declines	Yield Rate (%)	Offer Rate (%)
2018	22	13	12	1	92.3	59.1
2017	27	7	6	1	85.7	25.9
2016	32	8	8	0	100.0	25.0
2015	43	20	16	4	80.0	46.5
2014	46	19	17	2	89.5	41.3
2013	32	9	8	1	88.9	28.1

There are approximately ten applicants, offers, and new registrations in the PhD program each year. The longer financial commitment required for a supervisor to take a new PhD student requires a certain amount of financial security on the part of the professor. As the recent funding environment has been difficult, the number of PhD new registrants decreased the last two years. This is addressed further later in this section and in the Research section of the report.

Table 11: Demographic Comparison of Applicants 2013 - 2018

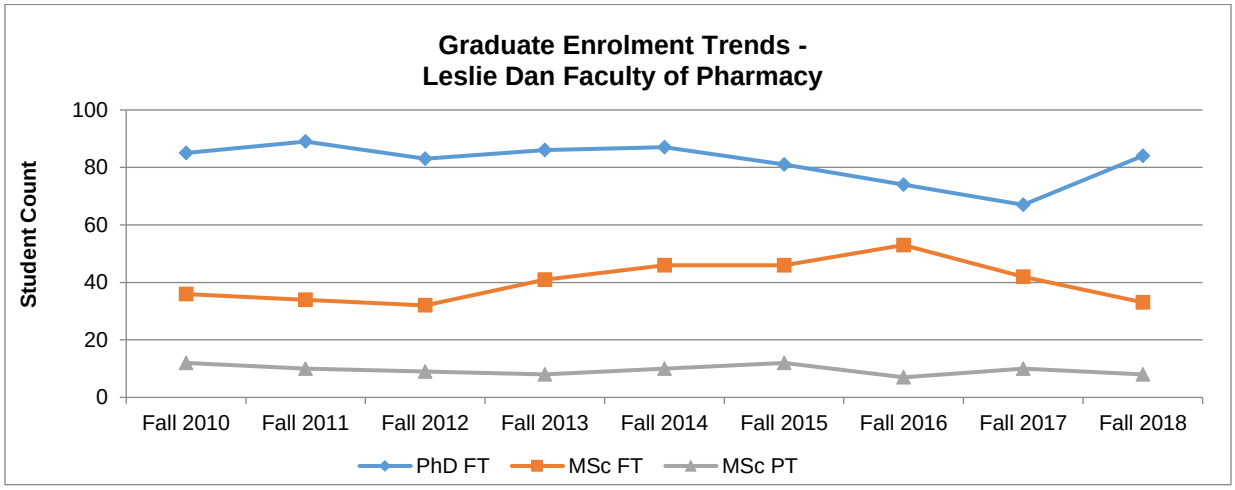
	2013	2014	2015	2016	2017	2018
Canadian	59	60	69	42	53	49
International	26	18	36	30	47	34
Unknown	2	20	1	0	0	0

Enrollment

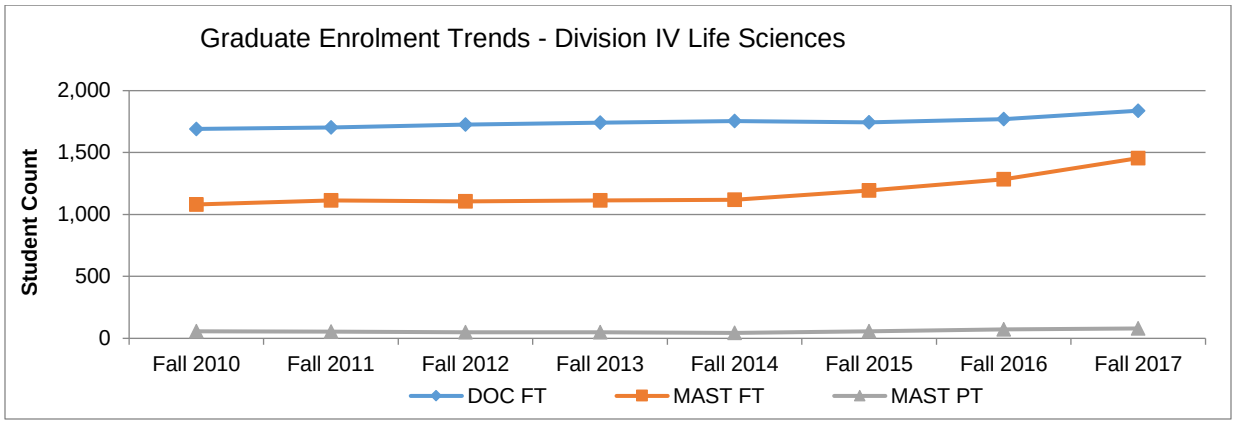
The trends discussed above are also reflected in the overall enrolment data for the department and is shown in the following graphs. The number of full-time Master's students has increased almost 50% and remained constant for the part-time students. The number of PhD students has decreased over the past three years. As the students in the program have graduated, professors have been reluctant to take on new students due to funding uncertainty.

Compared to the other Life Sciences Departments, the trend is quite similar for the Full-time and Part-time students in the Department of Pharmaceutical Sciences. However, the decrease in PhD students was not observed in the other Departments.

Graph 1 – Graduate Enrolment Trends - LDFP



Graph 2 – Graduate Enrolment Trends – Division IV Life Sciences



In addition to the difficulty of some faculty members in attracting research funding, the recent decrease in student numbers has other possible origins. We have hired four new tenure stream faculty members over the past three years. These new research groups are just starting up and they still do not have large numbers of students. There are a few research groups in the Faculty who are at the other end of the spectrum: namely, they are gradually winding down as the professor prepares for retirement. As mentioned above, some of the professors in the LDFP are cross-appointed to other departments in the University of Toronto and take students in those departments. These students do not show up in our enrolment numbers, of course. Finally, some research funding is not amenable to graduate research projects and tends to use Research Associates instead. This will cause the amount of research funding to appear to be out of alignment with the number of graduate students.

The use of the Dean's Fund and maintaining the support of the Department are the two most effective means we have had over the past couple of years to maintain the enrolment levels.

Enrolment in the 2018 – 2019 academic year has increased to 126 students, 41 MSc and 84 PhD students and one non-degree student). With the new MScPhm program, we expect the number of students enrolled an MSc degree program to increase by up to 20 students. Since 2013, 77

students have graduated from the MSc program. Of those who have graduated, the range for time to completion of the full-time masters program has been an average of 2.3 years, similar to other University of Toronto Life Sciences departments. Time to completion for part-time students has been an average of 4.6 years, slightly higher than other University of Toronto Life Sciences departments. Since 2013, 95 students have graduated from the PhD program. Of those who have graduated, the range for time to completion of the full-time masters program has been an average of 6.0 years, similar to other University of Toronto Life Sciences departments.

Quality of Educational Experience, Teaching and Graduate Supervision

Student satisfaction data provided below come from two sources: the Canadian Graduate and Professional Student Survey (CGPSS) 2016, which was included in the Standard Data Set provided by the university. The CGPSS had a 34 - 47% response rate for graduate students in the pharmaceutical sciences program. Some of the data also came from an anonymous Exit Survey that the department asks recent graduates to complete.

In general, the CGPSS shows high levels of satisfaction with the graduate program that is comparable to other University of Toronto programs (Appendix 41).

Overall, students in the Graduate Department of Pharmaceutical Sciences indicated good exposure within the program to a wide range of research experiences (better on average than within other departments at the University of Toronto).

Our time-to-completion rates are close to the intended completion times for the MSc program – 2 years for full-time MSc, and 4 years for part-time MSc. The small number of part-time MSc students means that a single student who takes longer to complete than expected can skew the mean.

The Exit Survey data is summarized in Appendix 42. The data were obtained from students who graduated with MSc or PhD degrees since the previous self-study, during this time twenty-four graduates responded to the survey. Those who responded are generally satisfied or very satisfied with the programs offered by the department. The quality of the personnel, academic and administrative, played a major role in the graduates' choice of our department and their satisfaction with the time they spent here. The opinion of the supervision of the students' research project and the interactions with the supervisor and others in the research groups was overwhelmingly positive. Those who published their thesis work did so at an average of almost four publications per student. Some students noted that there is little interaction between the students in the two fields, and led to some students feeling isolated. Students were also interested in incorporating co-op activities into the Graduate program.

Implication of Data Concerning Post-Graduation Employability

The only data available on employability comes from the Exit Survey. Of the twenty-four survey respondents, seventeen stated that they were employed, with the remainder continuing their education in one of several programs. The largest number of those employed had found employment in industrial settings, the other respondents had found positions in academia, non-profit organizations, and "other". The data shows that two of the graduates working in academia were post-doctoral fellows; however, we do not know what type of position the others were

working in. Similarly, the data does not specify the type of work the graduates are doing in industry. This small sample suggests that the students do successfully move from our programs to employment.

Availability of Student Funding

All full-time graduate students at the University of Toronto are guaranteed a minimum stipend equal to $15,000 for living expenses plus tuition. The minimum stipends in the Department of Pharmaceutical Sciences mirror this minimum. In our program, all full-time MSc students receive a minimum stipend of $16,650 + tuition (= $25,030) per year for at least the first eighteen months of the program. Full-time PhD students receive a minimum stipend of $18,550 + tuition (= $27,030) per year for at least the first four years if the student enters the program with a MSc or for the first five years if the student enters the PhD directly from an undergraduate program or transfer from our MSc program. Many students receive larger stipends by winning awards or are offered more funding by their research supervisor. In addition, many of the full-time students receive approximately this stipend level until graduation, even if they exceed the stipulated maximum funding period, eighteen months for MSc and either four or five years for PhD students. The mean stipend paid to full-time graduate students in 2018/2019 is $29,186 for PhD students and $27,115 for MSc students. Part-time students are not guaranteed any minimum stipend and individual arrangements are made with respect to funding between specific students and their supervisors. This is summarized in the following table.

Table 12: 2017-2018 Graduate Student Funding

Legal Status & Program	Living Allowance	2017-2018 Tuition	Minimum Stipend
Domestic MSc	$16,550	$8,480	**$25,030**
Domestic PhD	$18,550	$8,480	**$27,030**
International MSc	$16,550	$23,692	**$40,242**
International PhD	$18,550	$23,692	**$42,242**

The stipend offered to full-time graduate students comes partially from the Graduate Department (ultimately paid from grants from the Provincial government): in recent years the department has contributed $7,500/year for an MSc student and $10,000/year for a PhD student (for up to a maximum of three graduate students in each faculty member's research group). The remainder of the stipend comes from the supervisor's research grants and competitive student funding awards from agencies such as the Ontario Graduate Scholarship, the Canadian Institutes of Health Research (CIHR) or the Natural Sciences and Engineering Council (NSERC). (Until this academic year, part of the minimum stipend could also come from a Teaching Assistantship.) One challenge for the Graduate Program in the last several years has been the Canadian research funding context. Given that more than half the funding for our graduate students is directly dependent on faculty members' research grants, the dropping success rates in grant applications have made it difficult for some faculty to accept new graduate students. This has impacted the enrolment in our programs.

In an attempt to alleviate the funding difficulties recently experienced by some faculty members, the Faculty offers some direct research funding. There are currently two programs of support.

The first is Bridge funding, which is available to investigators who need help to maintain a research program in between operating grants. The second direct support of graduate student research from the Faculty is the Dean's Fund. This proves stipend funding for ten domestic graduate students each year who have a minimum A- average and thus are eligible and competitive for external funding awards.

Many students also receive funding from working as teaching assistants (TA) with the Faculty of Pharmacy or other faculties in the University. Beginning in the 2018 – 2019 academic year, the money the students receive as a TA will not count towards the student's stipend. That is, the money received as a TA will be in addition to the stipend the student receives.

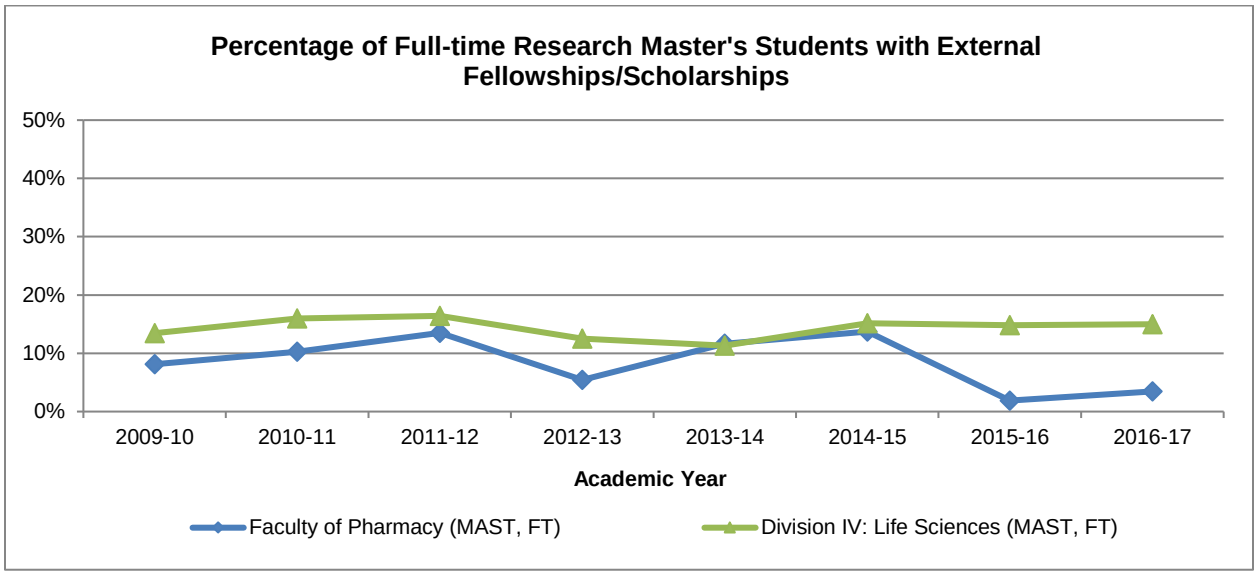
In early 2018, the University announced that the tuition for visa students enrolled in a PhD program would be the same as that of domestic students. This change was accompanied by limits on the number of new visa students each graduate department could accept in the 2018 – 2019 academic year. A second restriction is that the number of domestic students must not be adversely affected by the intake of these international students. This was very exciting news for our department because we receive a large number of applications from potential visa students. Now that their tuition will be the same as that of domestic students, it will no longer be such a financial disadvantage for a professor to accept one into their research group. We are hopeful that this plan will be expanded to allow us to take additional visa students in the coming years.

Student Awards

The following two graphs show the percentage of the students in the Graduate Department who have received external fellowships. More detailed description of the awards to the students in our program is shown in Appendix 43.

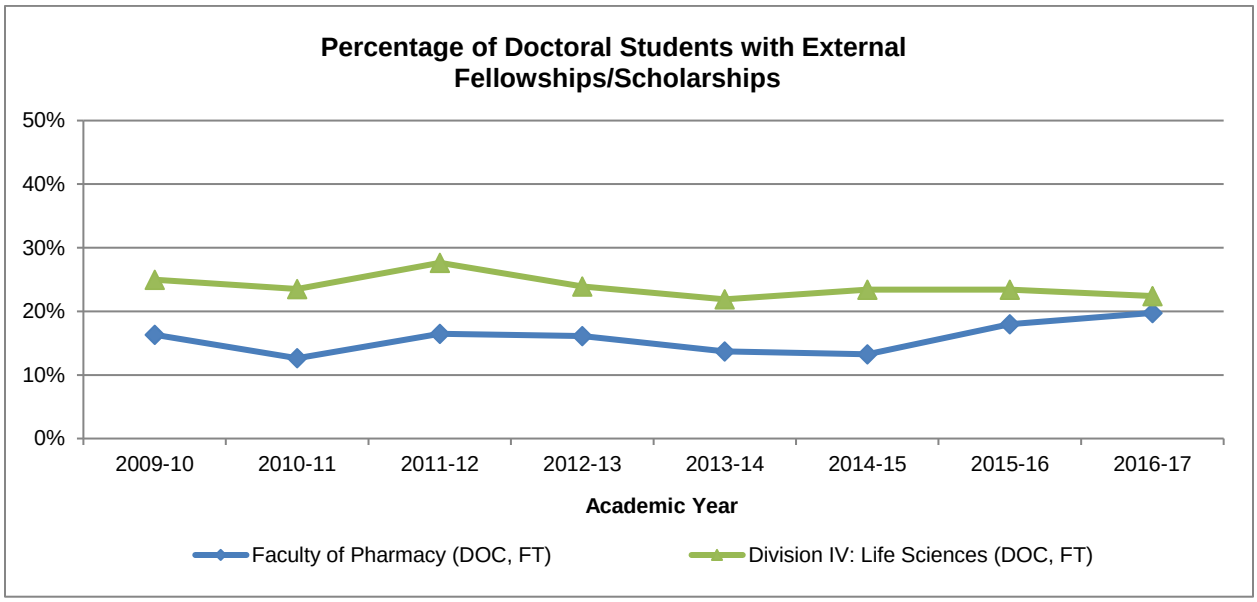
In the graph below, we see that the percentage of MSc students with external fellowships or scholarships has been somewhat lower than the percentage of students who receive them in the Life Sciences Departments, particularly in the last two years for which data are available. The origins of this trend are not well understood. Perhaps it is because some students might receive an award transfer to the PhD program and thus are not counted as MSc students. The transfer exam happens at about the same time as the students would be applying for, or receiving, an award. Another possibility is that this trend is evidence that the department needs to promote the MSc program more effectively.

Graph 3 – Percentage of Full-time Research Master's Students with External Fellowships/Scholarships



In the next graph, we can see that over the period of this review, on average approximately 16% of our PhD students received funding through external awards, which is lower than the mean for doctoral students in the Life Sciences Division (24%). Again, this percentage is lower than that for other departments in Life Sciences at University of Toronto over this period. However, over the last two years for which we have data the percentage amounts between the Life Sciences Division and our PhD students are almost the same.

Graph 4 – Percentage of Doctoral Students with External Fellowships/Scholarships



Provision of Student Support Through Orientation, Advising/Mentoring, Student Services

There are several options available for students to seek support in the GDPS; depending on the nature of the support needed, the student may choose one or more of these. The Department

provides information to all incoming students in a day-long orientation session that takes place at the beginning of the fall and winter semesters. In these orientation sessions we cover many important details about graduate study including graduation requirements, student funding, graduate exams, what to expect in graduate school, a brief tour of the Pharmacy Building, and whom to contact if the student has questions or encounters difficulties. During the orientation session the students are also informed about the University's policies on research ethics and student behaviour. Safety training, information about the Pharmaceutical Sciences Graduate Student Union, the Graduate Student Union, and other information is also made available to them during the orientation.

In most cases, mentoring and advising comes from the student's thesis supervisor and less formally from other graduate students. In some cases, the supervisor cannot provide adequate or appropriate advice, and, in this case, students can turn to either the Graduate Office, one of the two Graduate Coordinators, or the Graduate Chair, depending on the question. The PSGSU also has acted as a neutral go-between in some cases especially cases where a group of students has similar questions or concerns.

We also offer "Just-in-Time" sessions throughout the academic year at which we provide information on a specific topic near the time when many students may have questions. For example, one of the sessions we offer covers the topic of Advisory Committees and Advisory Committee meetings and we hold a one-hour session on this topic in February/March, when the students are starting to schedule and prepare for their annual Advisory Committee meetings.

Program Outreach and Promotion

Currently, the only form of promotion that the Department actively uses is its website. It contains all the information for students to learn about the research expertise of our professors, how to apply, the application requirements, the graduation requirements, courses, etc. The website has a very large amount of information and we have just begun the process of upgrading and renewing it.

A more passive form of promotion and outreach is provided by the professors in the Department. The seminars and courses they offer in other departments and in other universities provide an important source of information about us to the outside world.

In an effort to increase applications and enrolment, we have begun working with the Communications Team of the LDFP to enhance our promotions and outreach. This process has just begun so it is difficult to say exactly what form it will take; however, it will certainly involve and increase presence on social media and the production of promotion materials.

Quality Enhancement

Quality Enhancement Initiatives

Over the past five years we have made changes to enhance the student experience and the learning opportunities of the students. One of the biggest changes was the re-alignment of the fields of the graduate department. As they are currently defined, we have two clearly distinct

groups of researchers in the department. We have begun work to accommodate the differences of the research carried out in the two fields.

We increased the stipend for all students in recognition of the high cost of living in Toronto and to allow the stipends we offer to remain competitive with cognate programs at the University of Toronto. Stipends for international PhD students have been reduced to match the reduced tuition rates now available to international PhD students.

Table 13: Graduate Stipends for the 2018 – 2019 Academic Year

Legal Status & Program	Minimum Stipend
Domestic MSc	$27,115.14
Domestic PhD	$29,186.14
International MSc	$43,479.00
International PhD	$29,810.00

The focus of the student seminar groups has been further refined. Two of the groups were split into two groups in the past academic year. This has led to better participation on the part of faculty members and better feedback on the students' presentations.

Two years ago, we began offering "Just-in-Time" sessions for the program requirements for the programs. Previously, the only occasion we would discuss the program requirements with the students was at the students' initial orientation session when they entered the program. We have found that students were unable to retain most of the information presented at these initial orientation sessions. Now we offer four separate one-hour sessions at appropriate times throughout the year covering the following topics: Advisory Committee Meetings, Graduate Exams, Funding and Scholarships, and Courses.

Since the previous review, we have added six new courses to the departmental offerings; these are:

- Nanomedicines in Oncology
- Introduction to Qualitative Research Methods in the Health Sciences
- Pharmaceutical Data Acquisition and Analysis
- Statistics for Pharmaceutical Sciences
- Diagnosing Corruption in the Health Sector
- Synthetic Biology

The last three courses in the list will be offered for the first time in the 2018 – 2019 academic year. The courses reflect the expanding expertise of the members of the faculty and areas in which students need didactic experience.

In the academic year (2018 – 2019), we will begin to refine the system we use for admission and recruitment. Until now, the system we have used is essentially passive: the student learns about us or a professor, the student applies, the student searches for a supervisor. As mentioned above, there are often student who do not find supervisors. In the coming year, we will be more active in recruiting the best students to come to our department by having a committee of professors

review the applications as they are received and then actively contacting and encouraging those students to come here. We believe that this will increase our ability to retain students who will be more successful in obtaining competitive fellowships and scholarships from external agencies.

Perhaps the most significant change that we have made is the creation of an entirely new master's program for students with PharmD degrees who wish to obtain an advanced experiential and didactic education. This new two-year program, the MScPhm, differs significantly from the existing MSc program in several ways. It has a large course work component, it requires an experiential placement in a clinical setting, and the research component is much more limited than that of the MSc program. We anticipate that there will be approximately ten students in each of the two years once the program is fully running. Presently, we have obtained approval for this program from the Faculty and the University and are now awaiting the go ahead from the Provincial government.

Future Directions

We have addressed two of the most important activities for future directions in the previous section. Specifically: The institution of an Admissions Committee and the implementation of the MScPhm program.

We also plan to work with the Communications group at the LDFP to create a recruitment campaign. This will involve different components such as redesigning the departmental website, creating a presence on social media, and installing an information/promotion location in the atrium of our building. The recruitment effort will also involve bringing in prospective students from other universities to meet the faculty and students.

The Dean of the LDFP has established the Dean's Scholarship for outstanding incoming graduate students. Applicants to the department with CGPA of 3.7 and greater may apply for this award, which will cover the supervising professor's financial contribution to the student's stipend. Because the recipients of these awards will have excellent academic records they should be very competitive for major external awards from CIHR, NSERC, etc. This should make it easier for the department to attract a greater number of high-quality graduate students.

The relatively recent creation of two distinct fields in the department will allow us to redefine the admission and graduation requirements for each field. This will further enhance the quality of the department overall because the degree programs will be better tuned to the requirements of the respective disciplines. We have begun working towards this and hope to have it completed over the course of the next two or three years.

We will continue to create new courses and plan to implement a course designed for all of the students in the department. Currently, we intend this to be a series of two-week learning modules from which the student can select three or four different areas to fulfill the course requirement. Examples of possible modules include pharmacokinetics, drug development, and pharmacoeconomics.

The department will also begin to use the University-mandated online course evaluation system that has been used by the Faculty of Arts and Science and other units for several years now. The questions the Graduate Department will use will be specific to our courses and students. This

will assist us in enhancing the quality of the graduate courses by providing feedback to the course instructors.

As part of this review, the Graduate program has initiated a process of reviewing and standardizing course descriptions and outlines for all of its courses. This is a first step toward curriculum mapping for our programs.

Program Accessibility Initiatives

Accessibility initiatives undertaken by the LDFP were covered in the PharmD program section. We do not have any specific accessibility initiatives for our graduate programs.

Faculty/Research

Scope, Quality and Relevance of Research

There are 58 research faculty with appointments in the Graduate Department of Pharmaceutical Sciences supervising graduate students and other research trainees. These professors are organized into two groups within the graduate department:

1. Biomolecular Sciences (BMS)
2. Clinical, Social and Administrative Pharmacy (CSAP)

Following recommendations of our previous review and as a mandate of the new Academic Plan, we have now identified five research clusters that capture the research strengths and research areas for which we have a critical mass of researchers. Each faculty member is listed in one or more Research Clusters.

The Faculty's 5 Research Clusters are:

1. **Molecular Basis of Drug Targets and Diseases.**

   In this cluster, our teams are elucidating the biochemical and cellular basis of human diseases and the molecular mechanisms underlying drug action and their targets.

   Our investigation of disease mechanisms provides insights into identification of novel therapeutic targets for which small molecules or biologics are being developed. Research is directed towards the molecular and cellular mechanisms underlying the function of therapeutic targets, the intracellular signaling pathways they control and the mechanistic study of drug action. Approaches incorporate human studies, patient-derived samples and animal models of disease. Our research teams are interested in a number of human diseases or conditions including drug addiction, autism, diabetes, cancer, infectious diseases, and neurological diseases.

   Cluster Researchers: Stephane Angers, Rob Bonin, Carolyn Cummins, David Hampson, Jeffrey Henderson, James Wells, Peter Wells

2. **Drug Development and Disease Diagnostics.**

   This cluster deals with the development and optimization of drugs, their optimal delivery and maintenance at their sites of action as well as with the molecular diagnostics of human diseases.

   The study of physicochemical properties of drugs and interactions with their targets, the development of drug formulations, new materials and strategies for design and controlled delivery of drugs to enhance therapeutic activity, targeted radiotherapeutic agents and molecular imaging agents, are examples of areas under investigation. Activities also include the study of drug transport mechanisms across biological barriers as well as the study of their absorption, distribution, metabolism

and elimination, which are important determinants of their biologic activity. The development of new nanomaterials and synthetic biology approaches for disease diagnostic applications and the delivery of precision medicine are emerging topics of interest.

Cluster Researchers: Christine Allen, Tigran Chalikian, Shana Kelley, Lakshmi Kotra, Ping Lee, Rob Macgregor, Keith Pardee, Ray Reilly, Shirley X. Y. Wu

3. Drug Safety

In this cluster, our research focuses on advancing our understanding and minimizing the adverse effects associated with drug use and misuse.

We study the safety of medications in the real world, and mechanisms of adverse and idiosyncratic drug reactions, molecular toxicology and environmental, pathophysiological or genetic factors governing drug efficacy and safety. We also examine the safe use of medications and explore ways to tackle the individual, societal and health system challenges related to inappropriate drug use and addiction.

Cluster Researchers: Reina Bendayan, Heather Boon, Lisa Dolovich, K. Sandy Pang, Micheline Piquette-Miller, Beth Sproule, Jack Uetrecht, Peter Wells

4. Health Services Research

In this cluster, we explore diverse meanings of health and healthcare as well as their implications on structure, function and delivery of care for individuals, communities and populations.

Specific areas of expertise include: pharmacy practice; health human resources; MTM services; quality improvement and program evaluation; community engagement; social, historical and economic aspects of health, healthcare, and the professions; health technology assessment; ethics; epidemiology; health and pharmacoeconomics; as well as knowledge translation and education.

Cluster Researchers: Zubin Austin, Heather Boon, Suzanne Cadarette, Lisa Dolovich, Sara Guilcher, Jillian Kohler, Murray Krahn, Linda MacKeigan, Lisa McCarthy, Elise Paradis, Beth Sproule, Alison Thompson

5. Clinical Pharmacy Research

The goal of researchers in the clinical research cluster is to improve the prevention and management of disease and injury in individuals.

Our research explores hypotheses and answers questions that arise in clinical practice. The focus is on enhancing the health and quality of life of individuals by optimizing the safety and effectiveness of medications. Specific areas of expertise of our researchers include clinical trials, clinical pharmacology, clinical pharmacokinetics, clinical pharmacodynamics, clinical pharmacogenomics, MTM, and medication stewardship.

Cluster Researchers: Marisa Battistella, Lisa Burry, Lisa Dolovich, Carlo DeAngelis, Lee Dupuis, Sara Guilcher, Murray Krahn, Linda MacKeigan, Lisa McCarthy, Peter Pennefather, Beth Sproule, Anna Taddio, Sandra Walker

A full listing of all researchers and a summary of their research directions can be found in Appendix 44.

Research Funding

From 2010 to 2016 total research funding obtained by LDFP faculty peaked in Grant Years 2014 and 2015. Tri-Council funding remained relatively steady over this period, with funding in 2014 and 2015 given a more significant boost from Government and Corporate partnerships.

Substantial Ontario Government funding went to two research groups headed by CSAP professors: the Toronto Health Economics and Technology Assessment Collaborative (THETA) directed by Professor Murray Krahn, and the Ontario Drug Policy Research Network (ODPRN) under Co-Principal Investigators Professors Tara Gomes and Muhammad Mamdani. Corporate partnerships were also formed with both biomolecular laboratories and CSAP groups. CSAP grants in particular demonstrate an increasing need for robust evidence-based policy decisions to meet the growing pressures on Ontario's health care system. It is also notable that the rate of increase in government funding is significantly higher for the LDFP compared to the increase rate for Life Sciences at the university in general. With Pharmaceutical Sciences existing at the crux of health care, focusing on both the development and socio-economic implications of drug use, total funding levels over the years remain high but the distribution between basic, applied, and clinical research may reflect shifts in public policy, Government and corporate funding visions and priorities. Therefore, priority-driven research has received increasing support over the last few years, while independent investigator-led research has faced some funding challenges – most notably among basic researchers who according to the 2017 report commissioned by the federal government, *Investing in Canada's Future -- Strengthening the Foundations of Canadian Research*, have faced up to a 35% drop in per capita funding rates between 2007-2016.

Table 14: Award Amount – Pro-rated to Grant Year (April to March): LDFP

Funding Source	2010	2011	2012	2013	2014	2015	2016	2017
	$ millions	$ millions	$ millions	$ millions	$ millions	$ millions	$ millions	$ millions
Tri-Agency	$3.504	$3.565	$4.031	$3.850	$3.870	$4.402	$3.067	$3.403
Institutional Initiatives	$1.349	$0.713	$0.764	$1.068	$0.979	$2.065	$2.113	$2.268
Government, Other	$1.360	$1.019	$0.819	$2.188	$4.419	$3.965	$2.533	$0.467
Corporate	$0.349	$1.429	$1.748	$1.236	$2.515	$3.197	$1.333	$1.628
Not-for-profit	$3.336	$3.056	$2.428	$3.189	$3.986	$3.782	$2.884	$3.234
Total	**$9.899**	**$9.782**	**$9.790**	**$11.532**	**$15.769**	**$17.410**	**$11.930**	**$11.000**

Table 15: Funding Amount Awarded – Pro-Rated to Grant Year (April to March): Life Sciences Dept. Class

Funding Source	2010	2011	2012	2013	2014	2015	2016	2017
	$ millions	$ millions	$ millions	$ millions	$ millions	$ millions	$ millions	$ millions
Tri-Agency	$158.916	$175.113	$172.650	$175.897	$167.460	$177.284	$179.073	$192.838
Institutional Initiatives	$174.222	$184.429	$275.885	$205.870	$153.241	$134.814	$134.356	$105.577
Government, Other	$66.604	$94.658	$79.835	$75.604	$71.158	$65.200	$60.086	$56.545
Corporate	$47.863	$65.812	$68.749	$71.737	$82.782	$82.958	$109.549	$113.622
Not-for-profit	$224.478	$291.605	$334.987	$472.208	$389.818	$396.326	$437.044	$451.027
Total	**$672.083**	**$811.617**	**$932.106**	**$1,001.316**	**$864.459**	**$856.582**	**$920.108**	**$919.609**

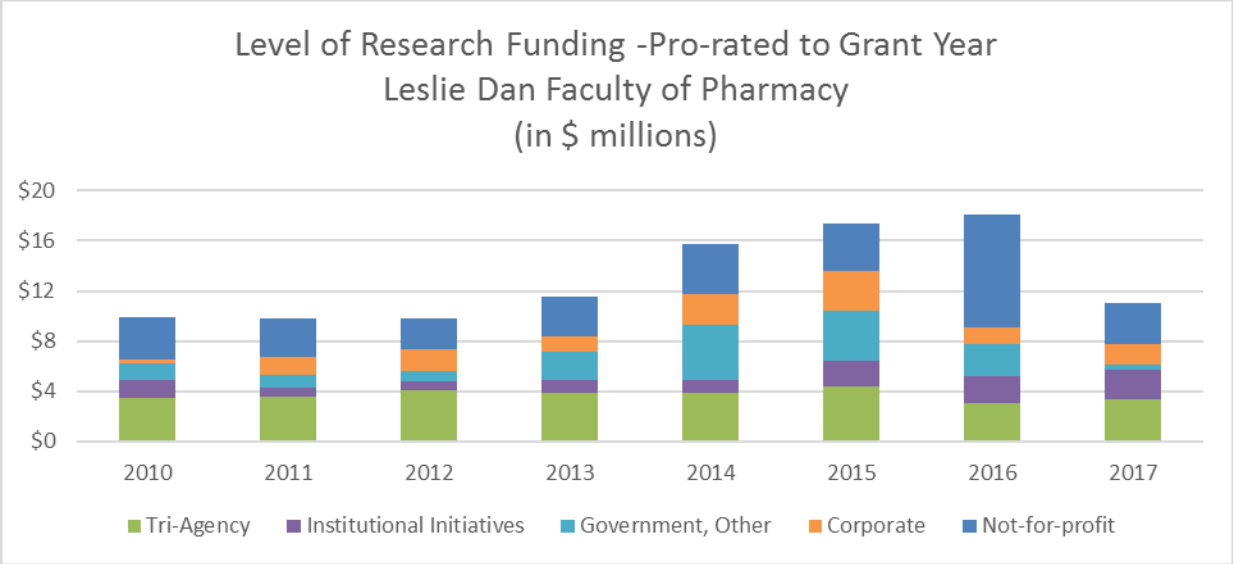
Table 16: Active Award Count – Pro-rated to Grant Year (April to March): LDFP

Funding Source	2010	2011	2012	2013	2014	2015	2016	2017
Tri-Agency	61	54	53	55	53	57	45	49
Institutional Initiatives	26	10	9	10	9	15	15	20
Government, Other	13	9	6	9	10	6	4	5
Corporate	12	17	19	14	24	28	20	15
Not-for-profit	54	57	60	65	76	73	60	69
Total	**166**	**147**	**147**	**153**	**172**	**179**	**144**	**158**

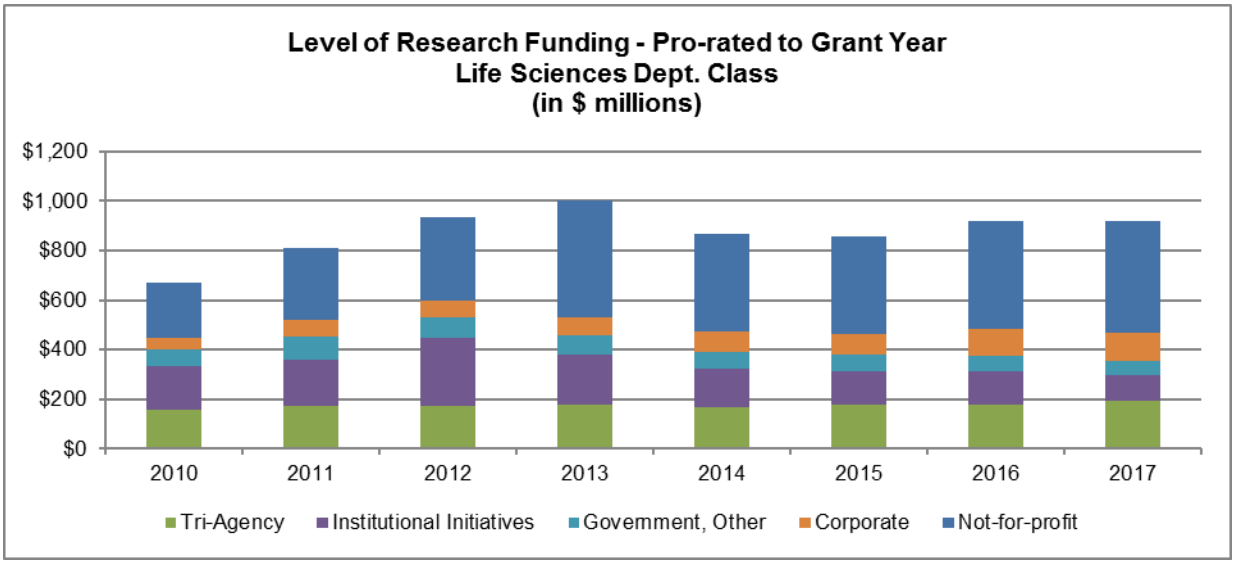
Table 17: Active Award Count – Pro-rated to Grant Year (April to March): Life Sciences Dept. Class

Funding Source	2010	2011	2012	2013	2014	2015	2016	2017
Tri-Agency	1968	2044	1962	1967	1893	1865	1742	1739
Institutional Initiatives	607	579	524	513	502	516	489	556
Government, Other	505	567	510	474	385	383	386	421
Corporate	938	1150	1171	1252	1291	1275	1321	1334
Not-for-profit	3530	3858	4524	4896	4959	5231	5290	5111
Total	**7548**	**8198**	**8691**	**9102**	**9030**	**9270**	**9228**	**9161**

Graph 5: Level of Research Funding – Pro-rated to Grant Year (LDFP)



Graph 6: Level of Research Funding – Pro-rated to Grant Year (Life Sciences Dept. Class)



Publications

Compared to all universities in North America – both public and private – the University of Toronto ranks second for publications, as well as citations, in the fields of pharmacy and pharmacology (see Table 18). Among public universities alone – whether throughout North America or among Canada's U15 – the University of Toronto ranks first for publications and citations in pharmacy and pharmacology.

Table 18: North American Publications and Citations Rankings

Publications Rankings					Citations Rankings			
Institution	**All Peers**	**Public Peers**	**U15 Peers**		**Institution**	**All Peers**	**Public Peers**	**U15 Peers**
Harvard	1				**Harvard**	1		
TORONTO	2	1	1		**TORONTO**	2	1	1
N Carolina - Chapel Hill	3	2			**N Carolina - Chapel Hill**	3	2	
Johns Hopkins	4				**Calif - San Diego**	4	3	
Pittsburgh	5	3			**Johns Hopkins**	5		
Calif - San Diego	6	4			**Michigan**	6	4	
Duke	7				**Calif - San Francisco**	7	5	
U Penn	8				**U Washington**	8	6	
Michigan	9	5			**Pittsburgh**	9	7	
Florida	10	6			**Duke**	10		

Intellectual Property

From 2013 to 2017, there were twenty-six invention disclosures and fifteen patent applications by faculty members at the LDFP. Nine patents were issued, and five licenses were negotiated for the transfer of intellectual property. The Innovations and Partnerships Office (IPO) at the University of Toronto reviews invention disclosures and assists with filing patents. In addition, MaRS Innovation (http://marsinnovation.com) is a partnership between the University of Toronto and its Toronto Area Health Sciences (TAHSN) hospitals, as well as other Universities and research institutes in the city, to promote commercialization of innovations in medical technology. MaRS Innovation has supported the development of the University of Toronto Early Stage Technology (UTEST) incubator program in which a recent graduate from the Faculty's professional program was able to develop a patent for a wayfinder application for hospitals. Within the extensive range of Pharmaceutical Sciences, research applications submitted for patenting concern mostly biomolecular processes but also include a trademark patent for Dr. Anna Taddio's research program HELPinKids&Adults which conducts clinical studies on vaccination pain and adherence. Other patents granted to faculty (2013-2018) include:

- Compositions and Methods for Multi-modal Imaging – Canadian, US and European Patents (Christine Allen)
- Triazolium and Imidazolium Salts and Uses Thereof (Ian Crandall)
- LXR antagonists for treating glucocorticoid side effects (Carolyn Cummins)
- Mitochondria-penetrating peptides carrying antimicrobial or anticancer compounds (Shana Kelley)

- Nanostructured microelectrodes and biosensing devices incorporating the same -- patent issued in US, Canada, China, Germany, Spain, France, UK, Italy, Netherlands, Hong Kong, India, Japan, Singapore (Shana Kelley)
- Therapeutic compositions for diabetic symmetrical polyneuropathy and/or tactile allodynia (Lakshmi Kotra)
- ODCase Inhibitors For The Treatment of Malaria; substance and method (Lakshmi Kotra)
- Supramacromolecular polymer complex for the controlled release of nitric oxide for wound healing – US and Japanese Patents (Ping Lee)
- Implantable Glucose-Responsive Insulin Delivery Device (Shirley Wu)
- Methods and devices for Lymphatic Targeting – Canada and anywhere else? (Shirley Wu)

Canada Research Chairs, Research Awards and Recognitions

The Faculty has 3 Tier Two Canada Research Chairs:

- Rob Bonin - CRC in Sensory Plasticity and Reconsolidation
- Elise Paradis – CRC in Collaborative Health-Care Practice
- Keith Pardee – CRC in Synthetic Biology in Human Health

Faculty members continue to receive a number of prestigious awards and recognitions. Among the highlights are the three new Fellows of the Canadian Academy of Health Sciences: Zubin Austin, Shana Kelley, and Muhammad Mamdani. As expected, Pharmacy-associated awards and recognitions figure largely in the faculty count; namely the three Fellows of the Canadian Society for Pharmaceutical Sciences (CSPS), a Fellowship with the American Association of Pharmaceutical Sciences, and numerous awards from both CSPS and the AFPC. A full list of faculty awards and recognition is in Appendix 45.

International Collaborations and Global Initiatives

Many faculty members have ongoing research collaborations with universities and companies in North America, Europe, Australia, South America, the Middle East and Asia as outlined in Appendix 46.

In the fall of 2015 the WHO CC was established at our Faculty under the direction of Professor Jillian Kohler. The Centre is charged with conducting research, analysis, and training on critical issues related to good governance and transparency in medicines.

Leveraging the strengths of researchers at the University of Toronto and throughout the Americas, the Centre draws upon the expertise of individuals and programs to develop a comprehensive research and training program that informs the work of the WHO in good governance and transparency in medicines. Members in the Centre include Fellows from the LDFP, the Dalla Lana School of Public Health, the Munk School of Global Affairs, and the Rotman School of Management at the University of Toronto, as well as external collaborators from institutions that include the World Bank, Dalhousie University, Carleton University, and the University of California, San Diego, among others.

The Centre is one of over 700 collaborating centres established in universities and research institutes in over 80 countries supporting important WHO programs. Assembling leading experts from around the globe, these centres form an international collaborative network to support WHO programs at the country, intercountry, interregional, and global levels.

Benchmarking

In addition to the funding levels, awards, publications rates, and intellectual property transfers listed above, the Faculty looks at participation and success rates for submissions to funding programs. A review of participation rates for Tri-Council funding (Appendix 47) shows a consistently higher than average participation rate for LDFP tenure and tenure-stream faculty compared to other Life Sciences Faculty at the University of Toronto. Success rates are more varied (Appendix 48). Comparisons are more difficult to decipher due to the small numbers of grant submissions per round. The only figures of note are those for SSHRC participation which is minimal due to the ineligibility of health research as the principal focus of projects that SSHRC will support; only proposals with a wider social science relevance – which may include health research – are eligible. Therefore – reviewing the years 2014 to 2016 – Tri-Council grants constitute almost half of all grants awarded to BMS faculty while only about a quarter of all grants awarded to CSAP faculty for the same period are Tri-Council. CSAP research relies more heavily on Institutional supports (e.g., the teaching hospitals, non-governmental organizations, and government agencies) which, as noted above (see Research Funding) have remained robust over the last five years.

Research Training Programs and Opportunities

The Graduate Department of Pharmaceutical Sciences offers MSc and PhD programs in a broad range of research areas under the supervision of graduate BMS and CSAP faculty members (please see section on Graduate Studies). There are 126 graduate students in the Department. In addition, there is a Summer Undergraduate Research Program (USRP) open to any undergraduate university student which provides an opportunity for students to work for three to four months in the summer on a research project under the supervision of a graduate faculty member. Participation in the USRP remains high – with close to 200 applicants each year competing for thirty placements. There are also undergraduate research project courses in the Pharmacy program (PHM 489 and PHM 499) and the Pharmaceutical Chemistry program (PHC 489) which allow students to work on a research project during the academic year or in the summer. Finally, there are opportunities for post-doctoral fellowship in pharmaceutical sciences offered by faculty members. Support for graduate students is also provided by the graduate Department of Pharmaceutical Sciences and/or by external fellowships or scholarships.

Strategic Plan – Research Initiatives

Two of the main priorities outline in the LDFP five-year Strategic Plan (Appendix 2) are to:

1. Grow our scientific impact by investing in our infrastructure to support our core research areas and increasing both the impact and visibility of our research.
2. Improve health through knowledge translation and influence on policy by;
    a. Creating public forums to engage a broad range of stakeholders and the public around health and pharmaceutical policy issues of broad interest;

b. Optimizing opportunities to engage in multi-stakeholder collaborations that impact the health of Canadians;
c. Creating opportunities in collaboration with governments and enhancing our impact in our local, national, and global communities, and;
d. Establishing ourselves as credible thought leaders in pharmacy practice, policy, and pharmaceutical science.

Since our 2013 UTQAP report, several Centres of Excellence in Research have been established and are contributing to achieving these goals (described below). The faculty complement has also expanded with the addition of four tenure-track positions: two CSAP and two BMS. In addition, the LDFP Research Office now manages an internally funded Small Equipment Fund which distributes grants of up to $5,000 four times annually to support the upgrade or purchase of small equipment and thereby contributing to our research infrastructure.

Centre for Pharmaceutical Oncology (CPO)

The CPO was approved by Faculty Council as an Extra-Departmental Unit for a five-year term and was launched on July 1, 2015. The mission of the Centre is for the LDFP to take a leadership role in translational cancer research. There are currently 106 members from across the University of Toronto campus representing an almost 1.5-fold increase since 2017 and 2.6-fold higher than in 2016. The membership includes thirty-five faculty, ten Research Associates/Post-Doctoral Fellows and sixty-one graduate students.

The CPO in collaboration with the Toronto Recombinant Antibody Centre (TRAC) was awarded a $4 million CFI/ORF Innovation grant which is establishing the first-ever core instrumentation at the LDFP. An additional $1.2 million was awarded by CFI/ORF to establish the first GMP-compliant facility in Canada to advance radiolabeled monoclonal antibodies to Phase I clinical trials. Equipment purchases, and installations have been taking place and will be completed this year. The GMP facility has been designed and will be constructed in Fall 2018, and a Research Associate (Azza Al-Mahrouki) to provide assistance with equipment management, scientific method development, and student training has been recruited.

Activities of the CPO to date include:

- Training workshops for graduate students on scientific graphing, mass spectrometry and flow cytometry.
- Twenty-four graduate student scholarships have been awarded by the CPO for a total investment of $92,000 over two competitions in 2016 and 2017 and a third competition will take place in 2018 for an additional investment of $40,000.
- The CPO awarded six summer undergraduate research scholarships in 2017 and also in 2018 for a total investment of $30,000.
- Hosting the first two annual Research Symposiums with attendees from across the University of Toronto campus and featuring global leaders in oncology research as keynote and session speakers.
- Biweekly seminar series with leading cancer researchers that have seen high attendance from across the University of Toronto campus.

There are plans to establish a graduate course in pharmaceutical oncology through the Department of Pharmaceutical Sciences and also for collaborative "chalk-talk" sessions between researchers.

Centre for Practice Excellence (CPE)

In 2015, the Faculty Council approved creation of a new Extra Departmental Unit (EDU) to be focused on the practice and profession of pharmacy. In the proposal approved by Faculty Council in 2015, the initial structure of the Centre involved three complementary facets: pharmacy management education, practice-based research, and practice innovation. The Centre for Practice Excellence (CPE) (originally the Centre for Pharmacy Research, Innovation, Management and Education) had as its vision to "unleash the potential of pharmacy to transform the care of patients". An endowment from the Murray B. Koffler Chair in Pharmacy Management continues to be used to support undergraduate Pharm D student learning activities aligned with community pharmacy management. Recognizing that the endowment amount is fixed and will no longer grow, prudent investments from this fund will be focused on building a sustainable foundation for Centre activities in the future.

The main activities of CPE during the 2017-2018 academic year have been on strategic planning and organizing activities that encourage dialogue and collaborations between full time faculty at the LDFP and a wider group of colleagues and stakeholders interested in pharmacy practice excellence and medication management research and innovation. These activities have shifted the emphasis of the CPE to research and innovation in the area of medication management. These research and innovation efforts produce outputs promoted as drivers of change in pharmacy education and practice including changes in pharmacy management. The CPE continues to offer a monthly seminar series, student support for various leadership, management and research activities and, for the first time, offered pilot project funding to support two pilot projects. The CPE has also been heavily involved in exploring the development of the Health and Wellness Pharmacy at the LDFP. This pharmacy will nicely exemplify the vision and mission of CPE. The revised focus of CPE has also led to the transfer of pharmacy management curriculum development and delivery including the Business Plan Competition and management courses into the regular curriculum planning and delivery oversight (i.e. through the office of the PharmD program). CPE will continue to support student and faculty-led pharmacy management initiatives that augment the formal pharmacy management curriculum or that are based on research findings and successful innovations. Graduate courses for the new clinical MSc program will be aligned with the Centre.

Centre for Collaborative Drug Research (CCDR)

The Centre for Collaborative Drug Research (CCDR) is a multidisciplinary initiative bringing together the Faculties of Medicine and Pharmacy at the University of Toronto and the Centre for Addiction and Mental Health. The CCDR promotes interdisciplinary and inter-institutional research, education, innovation, communication and advancement across the entire University of Toronto community. The CCDR has been working to advance academic drug discovery research and education across the University of Toronto and Toronto Academic Health Sciences Network through programs such as the pilot project fund, graduate student initiative fund, workshops on drug discovery and development, joint seminars and lunch 'n' learns, behavioural core facility,

and partnered research funding opportunities. The CCDR is actively involved in developing new models for collaboration and innovation with the pharmaceutical industry and other partners and continues to develop mechanisms of promoting collaboration as well as resource- and knowledge-sharing across research groups.

Challenges for the Future

Research Funding

The research funding environment in Canada remains precarious. For example, the success rate for applications in the Project Grant competition at CIHR is around 15-17%. Because of this, scientific excellence alone is not enough to ensure continuity in funding. As a result, scientists across the country inevitably have resourcing difficulties and find themselves consumed writing and revising grant applications rather than actually "doing" science. Although some limited internal mechanisms usually exist to support or "bridge" investigators for short periods, many groups need to downsize and have no other choice to let long-time, highly trained lab members go. Due to this unstable situation, investigators do not want to risk enrolling new graduate students, which puts additional pressure on Graduate Units where funding is usually linked to enrollment. One challenge will therefore be to find alternative and creative solutions to resource our research activities. Defining strategic research priorities to guide fundraising efforts by the advancement office is one avenue that needs to be explored.

Research Infrastructure

It is now practically impossible to obtain funding for new equipment through the various funding agencies. Some have literally removed this option from conventional grant competitions (i.e. CIHR) and others who still have such opportunities are now very competitive (i.e. NSERC). Aging equipment and infrastructure is therefore difficult to replace or renew, which is of course a problem in terms of performing any experiment, but equally important to remain internationally competitive by having access to the most up-to-date and powerful technologies to perform the work. The Canada Foundation for Innovation is an option to obtain funding for new equipment, lab renovations and expansion. These applications are however also very competitive and often awarded to teams of investigators pursuing common research questions. How to evaluate the needs for research, strategically position and support LDFP researchers to compete and be successful for infrastructure funding will be determining for the sustainability of our research operations and insure our international competitiveness.

Another challenge for the future will be dealing with the re-allocation of research space in the Faculty. Indeed, with the retirement of some investigators, the recruitment of new Faculty members and growth of some research groups, strategic allocation of the research space will need to be astutely addressed. The original design of the LDFP labs was a traditional concept, with each investigator being allocated a fixed amount of space. In contrast, open lab concepts are now the standard of most research institutions. This format is not only thought to favour the interaction between trainees but also allows for a more dynamic allocation of the space depending on research needs. Although, small renovations projects could address some of the

present limitations, a longer-term plan and vision to “revamp” or convert the research space to meet the future and changing needs of all our research groups should be developed.

Indirect Costs of Research

The increasing costs of research operations, especially for the basic science labs is an issue that may limit access to resources that could be available for directly supporting advancing the scientific agenda of all our investigators.

Attraction and Retention of Graduate Students, Trainees and Highly Qualified Personnel

There are several advantages to perform research in the downtown Toronto Discovery District. The high density of world-class research being performed is unique in Canada and represents one of the top centres globally. Although one may think that this would facilitate the recruitment efforts for graduate students, trainees and other highly qualified scientists, this also creates some limitations and potential challenges. Indeed, the large number of research labs in the various University Departments and research institutions in the downtown core, all compete for the best and brightest new Graduate students and trainees. It is therefore an increasing problem to continue to attract strong new trainees to the LDFP. The costs of living in the Toronto area is also another factor impacting the attraction, but also retention, of research team members.

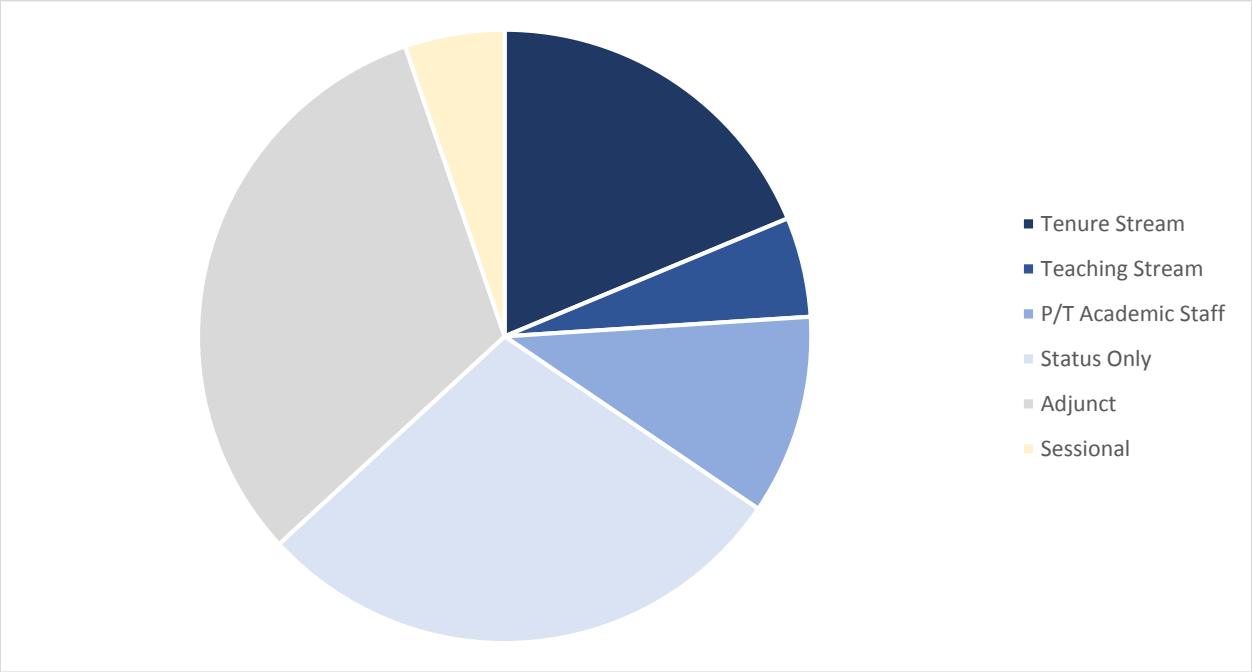
Measure and Communicate the Impact of our Research

One priority listed in the Faculty Academic Plan 2016-2020 is to measure and communicate the impact of our research. The recent arrival of Kate Richards our Director of Communications will help continue improving the dissemination of our Research activities through conventional and social media channels. The excellent research activities conducted in the LDFP remain a hidden gem locally. Many only associate the LDFP building to the professional PharmD program and are not aware that research is being conducted within the Faculty. Many also confuse the Department of Pharmaceutical Sciences in the LDFP with the Department of Pharmacology in the Faculty of Medicine, in which many of our Faculty members are cross-appointed. Given the heterogeneous nature of the research conducted in LDFP, we also need to ensure that we clearly define what impactful research means to us. Indeed, impactful research in the social sciences may be defined differently than the biomedical sciences.

Faculty Complement Plan

The Faculty has a strong mix of faculty members that is comprised of four categories: tenure stream, teaching stream, status-only, and adjunct. See Appendix 49 for all tenure teaching stream Curricula Vitae. In addition, there are a very large number of preceptors who provide clinical placements for our students during experiential rotations coordinated through our OEE. A breakdown of faculty members by stream can be found in Graph 7 and Table 19.

Graph 7: LDFP Faculty Members for Stream Type



In 2015-2016 the Faculty updated the workload policy in accordance with the University of Toronto Workload Policy and Procedures for Faculty and Librarians (WLPP) (Appendix 50). The principles set out in the WLPP will govern how decisions are made related to the assignment of teaching workload at the Faculty. Teaching refers to delivery and preparation for teaching as well as associated administrative tasks. Teaching responsibilities are comprised of a wide range of activities with variables that include the list cited in WLPP section 4.2. A full list of faculty by stream type can be found in Appendix 51.

Hiring decisions in the last five years have been directly related to our new PharmD curriculum, which included a large number of clinically-based courses that must be taught by pharmacists. Many were, and continue to be, taught by part-time or Adjunct Lecturers. An over-reliance on part-time faculty can lead to continuity issues, part-time faculty members not having time to participate in curricular planning and other service components of Faculty life, and students can have trouble accessing instructors who may not be on site, so it can have implications on student learning. As such, the Faculty has focused on hiring additional Teaching Stream faculty to help address this imbalance.

Table 19: LDFP Faculty Members by Stream

Stream	Faculty
Tenure	32
Teaching	9
Part-Time Academic	18
Status Only	49
Adjunct Faculty	54
Sessional Lecturer	9

Tenure Stream - Teaching Load

The typical teaching load for tenured stream faculty members is 1.5 FCEs per year. For clarity, 0.5 FCE is defined as twenty-six to thirty-nine contact teaching hours. Typically at least one 0.5 FCE will be taught in the PharmD Program, however with the Dean's approval this allocation may be fulfilled in other programs that are supported by the Faculty such as the PharmD for Pharmacists, Graduate, Pharmaceutical Chemistry, CIPE, or EDUs.

Usually tenure stream Faculty with active research programs will also fulfill the equivalent of at least one 0.5 FCE with graduate student supervision and participation in supervision of doctoral dissertations and examination committees. One 0.5 FCE will commonly be fulfilled through teaching of graduate courses and participation in graduate seminar or reading courses.

Faculty members designated as pre-tenure are usually assigned a reduced teaching load in the first year of their appointments to allow them to prioritize establishing their research programs.

Other activities such as undertaking a significant administrative assignment or significant amount of supervision of experiential education rotations (e.g., Advanced Professional Practice Experience rotations) or undergraduate research student supervision may be recognized through course release at the discretion of the Dean.

Most hiring in the Tenure Stream has been to replace faculty members who either retired or left the Faculty. Since making these hires, Research Clusters have been established, requiring a more strategic approach to future Tenure Stream faculty hiring.

Since 2014 the Faculty has:

Hired Five Tenure Stream Faculty Members:

- Elise Paradis, June 1, 2014, Assistant Professor
- Rob Bonin, August 1, 2015, Assistant Professor
- Sara Guilcher, August 2, 2015, Assistant Professor
- Keith Pardee, January 1, 2016, Assistant Professor
- Lisa Dolovich, January 1, 2017, Professor

Increased the appointment of:

- Shana Kelly, University Professor, 51% to 100%

Tenure Stream Faculty Members who have been promoted:

- Carolyn Cummins
- Suzanne Cadarette
- Alison Thompson

Tenure Stream Faculty Members who have left the Faculty:

- Heiko Heerklotz
- Brian Shoichet
- Peter Pennefather (retired)
- Linda MacKeigan (retired)

Teaching Stream - Teaching Load

The typical teaching load for teaching stream faculty is 3.0 FCEs per year. In the Faculty there are some courses with large enrollments such as the MTM, and PCT courses, as well as Advanced Professional Practice Experience (APPE) that are complex and where course oversight may not be equivalent to a normal 0.5 FCE. Factors that impact such course offerings (interactive nature, high degree of student contact, significant course coordination activities, and intensive evaluation expectations) will normally result in higher apportioning of an FCE measure than would occur with a typical didactic course offering. For example, normally MTM and PCT courses are considered to be the equivalent of 1.0 FCE. The workload assigned to these courses will continue to be apportioned based on consultation between the faculty member and the Dean.

Typically teaching will occur in the PharmD Program but workload allocation may be in other programs, with the approval of the Dean, that are supported by the faculty such as the PharmD for Pharmacists, Pharmaceutical Chemistry, CIPE, or EDUs.

Upon reappointment, the Teaching Stream Faculty Member will be offered an academic term to focus on preparing for continuing status review and to address any advice from the interim review. Normally this term will not include assigned teaching above half of the normal teaching assignments or service.

Other activities such as undertaking a significant administrative assignment or significant amount of supervision of experiential education rotations (e.g., Advanced Professional Practice Experience rotations) or undergraduate research student supervision may be recognized through course release at the discretion of the Dean.

Since 2014 the Faculty has:

Hired Four Teaching Stream Faculty Members:

- Jamie Kellar, July 1, 2015, Assistant Professor, Teaching Stream
- Kathy Vu-September 1, 2017, Assistant Professor, Teaching Stream
- Sandra Bjelajac Mejia-July 1, 2018, Assistant Professor, Teaching Stream
- Natalie Crown-August 1, 2018, Assistant Professor, Teaching Steam

Teaching Stream Faculty Members who have received Continuing Status:

- David Dubins

Teaching Stream Faculty Members who have left the Faculty:

- Debra Moy
- Doris Kalamut (retired)

Teaching Stream Faculty Members who are in last year of Phased Retirement:

- Andrea Cameron (will retire June 30, 2020)

Tenured and Teaching Stream - Service Load

Section 5.0 of the WLPP outlines service responsibilities for all full-time Faculty Members. Specifically all full-time Faculty Members are expected to contribute to Faculty Governance and administration through service on committees of Faculty Council, program committees, etc. Usually Full-time Faculty Members will serve on four to six Faculty and/or University committees, working groups, each year. All full-time Faculty Members are members of Faculty Council and will normally be assigned to at least one Standing Committee of Council. In addition, all faculty members with a primary graduate appointment in the Faculty serve on the Graduate Education Program committee. All faculty members are expected to attend Faculty and Staff meetings, participate in program activities (e.g., admissions interviews for the PharmD program) and participate in consultations for faculty-wide or program-specific purposes (e.g., academic planning, accreditation) when requested.

Part-Time Academics

Individuals holding part-time appointments 0.75 FTE or less typically have a prorated teaching load. As per the University of Toronto's Policy and Procedures on Employment Conditions for Part-Time Academic Staff, members of the academic staff appointed on an annual contract or less, or holding appointments of less than 50%, shall not be expected to participate in departmental administrative activities unless agreed to with the Dean.

Since 2014 the Faculty has:

Hired Clinician Educator:

- Maria Zhang

Left the clinician scientist role and moved to teaching stream full time:

- Jamie Kellar
- Natalie Crown

Status Only and Adjunct Faculty

In addition to the tenured and teaching streams, the Faculty acknowledges the importance of other professionals whose contribute their expertise to our teaching and research activities. These qualified individuals are typically appointed as status-only or adjunct appointed faculty.

Status-only or Adjunct appointments are held by individuals who are employed outside of the University of Toronto. These are non-salaried and non-continuing academic appointments which may be given to individuals whose skills and expertise can advance the academic mission of the University. However, it is important to ensure that such appointments are made in a manner that is consistent with the mission of the University, upholds integrity of our standards, and simultaneously provides appropriate protection for the individual and the University.

Status Only Appointments

Status-only appointments are non-salaried and normally receive no remuneration from the University of Toronto; however remuneration may be paid to their institution. These appointments allow a faculty member from another university or a qualified individual from an appropriate institution to participate more fully in an academic unit's teaching or research program. Status-only appointees may have certain privileges through their affiliation with the University (e.g. where appropriate, they can be recommended for a graduate appointment and are eligible to apply for research funding).

Status-only appointments are governed under an established Faculty appointments procedure. The Dean, following consultation with an appointments committee, can offer Status-only appointments of faculty at the ranks of Assistant Professor, Associate Professor and Professor. The academic rank of the appointment will correspond with the individual's academic credentials and the expectations of the appointment. Status-only appointments at the rank of professor also require Provostial approval. Status-only appointments are typically annual, but may be for longer terms and are renewable.

Status-Only Faculty Members may also be recommended for a graduate appointment within the Faculty in accordance with the policies of the SGS. These appointees may be actively involved in the graduate courses or supervision of graduate students or by serving on graduate committees. They are also eligible to apply for research grants. Status-Only appointees holding research grants administered by the University are bound by University's policies governing research.

Adjunct Faculty Appointments

Individuals employed elsewhere in a position that is not primarily academic in nature, who have special skills or learning of value to the Faculty, and who may provide services for which recognition is desirable, may be appointed as an Adjunct Faculty member for a limited term.

Those individuals who have special qualifications and expertise will be appointed at the rank of Adjunct Professor.

Individuals who are appointed within teaching programs who contribute their skills or experience in supervising clinical placements will be appointed as Adjunct Lecturers. Adjunct faculty may be remunerated for services. Adjunct faculty may teach credit courses or carry out supervision on a stipend basis or be given an honoraria. In such cases the appropriate policies and procedures governing stipendiary arrangements will apply. Adjunct faculty paid a stipend may be covered as part of a new Canadian Union of Public Employees (CUPE) 3902 agreement for stipend instructors. Appointments are usually annual, but may be for longer terms and are renewable. Adjunct appointments do not usually involve membership in the SGS and do not give the recipient the rights or privileges of teaching graduate courses or of supervision of graduate students.

Sessional Clinical Lecturers

The Faculty also employs Sessional Clinical Lecturers. These individuals are usually practicing pharmacists. These appointments may be as a course coordinator or as a co-coordinator. Generally these appointments are negotiated with the primary employer and worked into a seconded arrangement but occasionally they will be appointed as an overload assignment. In

either circumstance, the Faculty assures that the primary employer is aware and supportive of the appointment prior to hiring.

Faculty Development

Over the past four years, there have been significant efforts to engage instructors in Faculty Development. Ongoing faculty development includes workshops addressing various aspects of teaching and assessment, course design, and using Quercus (new Canvas LMS) to enhance teaching and learning. In addition, all new and returning faculty are invited to an LDFP Faculty Orientation in the beginning of the fall term.

Since 2015, the Education Office has organized and hosted an Education Day to continue to support ongoing faculty development at the local level. This day is held in May of each year to maximize faculty availability to attend. The event offers timely topics of general interest to faculty. In 2015, the Faculty established the Teaching Innovation Award. Education Day offers an opportunity for award winners to present their work and well as an opportunity for the Teacher of the Year award winners to offer pearls to the Faculty. Education Day is well attended drawing a minimum of thirty faculty for the session.

Beyond faculty-specific learning opportunities, the University of Toronto offers a variety of other programs through CTSI (http://www.teaching.utoronto.ca/) and the Centre for Faculty Development (CFD) (http://www.cfd.med.utoronto.ca/). Both centres offer a rich selection of continuing education for faculty to help enhance their teaching and educational scholarship; our faculty are incentivized and supported to attend these events and are encouraged to apply what they have learned within their own teaching. In 2014, one faculty member was supported and successfully completed the Education Scholars Program (2014 - 2016 cohort). And in 2015, one faculty member was supported and successfully completed the New and Emerging Academic Leadership program (2015 - 2016 cohort). Building on these successes, in 2018, the faculty committed to support three faculty members to complete the Education Scholars Program (2018 - 2020 cohort).

Professional development is also made available and encouraged through University-wide incentives. Faculty members, depending on their rank and tenure, have an expense account known as a Professional Expense Reimbursement Allowance (PERA) account which can be used for work related expenses such as conferences fees, travel, books, etc. The typical annual amount in this account ranges from $1,700 to $2,000 and any unspent funds carry forward into subsequent years. Details about PERA accounts can be found at: http://policies.hrandequity.utoronto.ca/pera/.

Promotions

Below is a list of all faculty members who have been promoted since 2014:

Assistant to Associate Professor

- Suzanne Cadarette
- Carolyn Cummins
- Alison Thompson
- Alice Tseng
- Marisa Battistella

Associate to Full Professor

- Stephane Angers
- Jillian Kohler
- Lakshmi Kotra
- *Scott Walker*

Challenges and Opportunities

The key challenge facing our Faculty complement is that a large number of part-time or sessional faculty members are currently delivering our courses in the professional programs. Over 50% of our courses have part-time or Sessional Faculty members coordinating them which can create challenges with continuity, course changes and evaluation. Additionally, with additional full-time Teaching Stream Faculty members scheduled or qualified for retirement in the next three years, planning will need to take place to replace individuals in these positions. The curriculum mapping process will assist us to identify key areas needed for faculty complement. Further discussion regarding the future of the faculty complement can be found in the Long Range Planning Challenges section of the self-study.

Relationships

Strength of Morale

Through the academic planning process, as we gathered perspectives on what we need to pay attention to in our environment, a portrait of a system in the midst of significant transformation emerged. The Faculty underwent a thorough academic planning process engaging faculty, staff, students and stakeholders in a multiple level process. The changing scope in what pharmacists can do, the increased focus on quality of care and relationships with patients, and the opportunity for pharmacists to assume an enhanced role in preventative and primary care were identified as important areas on which to focus. Our students, staff, faculty, and partners informed us that we need to respond to dramatic changes in funding models and opportunities for research, and the increasing demand for high quality experiential education offerings for both undergraduate and graduate students. Students expressed that they need to be better prepared to compete in an increasingly competitive job market, function in a continually changing environment, and have more choices in how their education is being delivered. A full outline of the academic planning process, along with the results of the consultation process, can be found in Appendix 52. Through this process, our stakeholders identified a number of the Faculty's key strengths:

We have a breadth of excellent research that leads to new knowledge and informs practice. We have a highly productive, established group of internationally recognized researchers encompassing all areas of the pharmaceutical science fields (social, clinical, and basic science), as well as a number of world-class experts in key niche research areas.

We create a welcoming and supportive environment for students. Our faculty and staff care deeply about our students and are approachable and dedicated mentors.

We have a strong reputation and culture of performance. We are known for excellence in research, practice innovation, and for being creative problem solvers.

We have rich collaborations and diverse opportunities that add value to the student experience. Our wide range of programs give students access to experts from a variety of areas, and our joint programs, integrated courses, and diverse electives provide students with meaningful learning and career opportunities across a variety of pharmacy and pharmaceutical sciences environments.

We are situated at the nexus of the University, teaching hospitals, government, industry and community. Through our proximity to world-class hospitals, research institutes, government, industry, and community sites, we have incredible access to internationally recognized clinical and research faculty and can offer students the widest range of experiential opportunities in North America. The strength of the University of Toronto brand and reputation enables us to attract top faculty, staff, and students, and facilitates meaningful collaborations with other disciplines that provide rich learning experiences and opportunities for our students.

As Canada's largest Faculty of Pharmacy, we have a unique opportunity to leverage our outstanding faculty, staff, and students to set a bold agenda that aligns our programs, asserts our leadership, and advances meaningful research and knowledge development that improves health in our local community, across Ontario, and around the world. Our Academic Plan 2016-2021 is the product of a series of conversations with our internal and external communities to create a five year vision, define core strategic focus areas, and identify priorities and initial goals designed to advance pharmacy practice and pharmaceutical science research to prepare leaders who create innovative healthcare solutions.

We endeavor to deliver on our academic plan while honouring Our "INSPIRE" Values

- **IN**clusiveness
- **S**ocial Accountability
- **P**rofessionalism
- **I**nnovation
- **R**espect
- **E**xcellence

Relationships with Other Units

Cognate Faculties/ Schools and Council for Health Sciences (CHS)

The LDFP is one of seven health science Faculties/Schools at the University of Toronto with the others being:

1. Faculty of Medicine*
2. The Dalla Lana School of Public Health
3. The Factor-Inwentash Faculty of Social Work
4. The Faculty of Dentistry
5. The Faculty of Kinesiology and Physical Education; and
6. The Lawrence S. Bloomberg Faculty of Nursing

**The Faculty of Medicine also includes Physical Therapy, Occupational Therapy, Medical Radiation Sciences and Physician Assistant Programs.*

Together, the Deans of these Faculties/Schools make up the Council of Health Sciences (CHS) Executive group at the University of Toronto. This group meets seven times a year to facilitate collaboration and enhancement of health science research and education endeavours. The CHS is a standing committee of the Vice-President and Provost. The main function of the Executive is to serve as a group with equal representation from each of the health sciences Faculties, to determine the direction of CHS on matters that need to be discussed and decided at a decanal level for the represented Faculties. Delegates may not be sent on behalf of Executive Members to these meetings. Through the Chair, the Council reports directly to the Provost. Professor Heather Boon, Dean of the LDFP (past), served as Vice-Chair of CHS July 1, 2015 to June 30, 2017.

The mandate of the CHS is to:

- advance the national and international reputation of the University of Toronto as the premier university for health science education and research in Canada;
- advise the Provost and relevant structures (e.g. TAHSN) on all matters relating to the health science sector and its education and research programs;
- work collectively on common academic issues and their implementation;
- identify opportunities for common policies/practices and common management support for education and research across the health science sector;
- promote inter-professional education across all health professional programs and optimize the resources to do so; and,
- ensure that the health science sector is adequately and appropriately represented at all levels of University governance.

The CHS also includes a second group, the CHS Extended group, which meets three times per year and represents the full spectrum of University of Toronto health professions, including those not traditionally clustered within the Health Sciences.

CHS Extended Membership includes the Executive Membership as well as:

- One Chair (or Director/Academic Head) representing each health professional program in the health sciences Faculties (This would include: Department of Occupational Science and Occupational Therapy, Department of Physical Therapy, Physician Assistant Program, Department of Radiation Oncology, Department of Speech-Language Pathology (Faculty of Medicine) and the Department of Applied Psychology and Human Development (Ontario Institute for Studies in Education)
- One Associate/Assistant/Vice Dean as appointed by each Executive Member
- Associate Vice-Provost, Relations with Health Care Institutions (non-voting member)
- Manager, Toronto Academic Health Sciences Network (non-voting member)

The main function of the Extended membership is to ensure that discussion is adequately inclusive within health sciences Faculties and to serve as a liaison function with key stakeholders such as Toronto Academic Health Sciences Network. This group normally joins the Executive Membership for two meetings per year and for an annual retreat. Delegates may be sent for these meetings.

Over the last few years, the CHS has been active in promoting and facilitating the Integrated Interprofessional Curriculum, Site Visits to Toronto Academic Health Sciences Partner Institutions, Truth and Reconciliation Commission Calls to Action, Health Sciences Writing Centre (HSWC), affiliation agreements, and student placement agreements.

Faculty of Arts and Science

The Pharmaceutical Chemistry Specialist is an undergraduate program of study offered jointly by the Faculty of Arts and Science and the LDFP that leads to a B.Sc. degree. The program does not reside in a department, rather it exists between the two collaborating Faculties. There is no directly affiliated graduate program, although both Faculties offer graduate programs and many

of the graduates of the Pharmaceutical Chemistry Specialist become Masters and PhD students in the Graduate Department of Pharmaceutical Sciences (LDFP's sole graduate department).

The students in the Pharmaceutical Chemistry Specialist program receive education about the science, technology, and research methods underlying drug development and drug therapy. In addition to the coursework, all students must complete a one-year (two-semester) research course for which they must write a report and present their findings. Eligible students can elect to participate in a paid Professional Experience Year at pharmaceutical companies or academic research labs, lasting either 12 or 16 months at the end of the third year of study. The graduates of our program go on to graduate programs either in the Graduate Department of Pharmaceutical Sciences or elsewhere, professional programs (especially pharmacy), and to entry positions in the pharmaceutical industry. More detailed information about the program and course offerings are available at https://pharmacy.utoronto.ca/programs-and-admissions/pharmchem/.

The Health Sciences Writing Centre

The Health Sciences Writing Centre (HSWC), currently in its 24th year of operation at the University of Toronto, supports students in the following health science Faculties: Dentistry, Kinesiology and Physical Education, Nursing, Pharmacy, and Social Work.

The program's mandate includes the provision of academic writing and language instruction to:

- undergraduate and graduate students individually (1:1)
- groups, integrated within Faculty curricula (e.g., in lectures, workshops, seminars)
- faculty members and TAs, working in collaboration on assignment design, writing pedagogy, course design, and academic integrity
- students in an online format (students within the LDFP, PharmD for Pharmacists program)

In 2017-2018, 61 undergraduate and graduate pharmacy students attended a total of 130 individual (1:1) sessions to work with writing instructors. In addition to 1:1 writing instruction, groups of students received instruction on several occasions. Data on pharmacy student usage of the HWSC can be found in Appendix 53.

Centre for Interprofessional Education (CIPE)

The CIPE (https://ipe.utoronto.ca/) was founded in 2009 in partnership between the University of Toronto, the University Health Network (UHN) and the Toronto Rehabilitation Institute (now a part of UHN) to build the capacity for collaboration and interprofessional care among healthcare learners and practitioners. The ultimate goal is to prepare healthcare providers with the skills and capacity to transform healthcare through collaborative practice, recognizing that a sustainable, innovative health system, effective health promotion, and good patient outcomes require the full, creative participation of all healthcare providers.

With a central role of developing, delivering and disseminating IPE programs and resources, the Centre recognizes that learning how to practice interprofessional care requires undergrad and post-graduate education to be fully integrated with professional development, community engagement and research, scholarship and innovation. From its inception, the Centre focused

uniquely on the continuum of learning, encompassing undergrad, postgraduate and continuing education, emphasizing the interface between education and practice, simultaneously developing the interprofessional capacity of learners and catalyzing change in the practice environment.

Through our IPE Lead, Della Croteau, LDFP has continued to work with the Centre towards implementation of the integrated IPE curriculum. Through continued collaboration and engagement between the CIPE, and LDFP faculty and practice partners, pharmacy students have the opportunity to develop collaborative competencies through the IPE Curriculum in both faculty based courses and practice settings (Appendix 17).

Centre for International Experience

The Centre for International Experience (https://www.studentlife.utoronto.ca/cie) (CIE) provides services to undergraduate and graduate students in relation to both to domestic seeking international study opportunities and to international students coming to the University. The Centre has served as a source of advice and support for our students primarily through working with our Director, OEE. Over the last year, the Centre has supported preparing students for international experiential courses (e.g., Safety Abroad, Visa requirements) and supported the Office through establishing new International agreements.

Health and Wellness

In early January 2018, we were pleased to announce a new student service to expand the mental health outreach and supports provided to pharmacy students by University of Toronto's Health & Wellness program. To better meet the diverse needs of our student population, students were provided access to a dedicated counsellor embedded at the LDFP. In its first year, the program was offered during the winter and fall academic terms.

An analysis of the usage data collected over the first five months of the service (January to May 2018) revealed that students clearly accessed and valued the program.

As of September 5, 2018, Ashley Carr is our student-focused Wellness Counsellor and offers brief counselling services tailored to support those who may be struggling with the many challenges presented by university life.

Ms. Carr is a clinical social worker who has focused her career on working with young adults and youth to improve their well-being, improve relationships, and navigate complex mental health challenges. Ms. Carr has worked as a counsellor in a variety of community and private settings and completed her Master of Social Work at the University of Toronto. In her role as Wellness Counsellor, she will focus counselling on strengths, resiliency, and skills-building.

External Partnerships

Educational Partnerships

Hospital University Pharmacy Education Committee (HUPEC)

The LDFP is responsible for the clinical and research training of both professional, graduate and postgraduate students in Pharmacy and Pharmaceutical Sciences. Similar to other professional,

graduate and postgraduate programs in the University, the LDFP relies heavily on its full and community affiliates to provide the environments and resources to support these educational programs. The affiliates contribute to and benefit from the provision of high quality clinical and research education experiences for students in our professional and post-graduate programs. In order to facilitate the development, planning and resource allocation necessary to sustain excellence of our clinical and research education programs and academic scholarship, an education advisory group to the Dean of the LDFP was established comprising affiliates and the LDFP leadership.

HUPEC serves to enhance the educational experience of students by fostering partnerships between the Faculty and its full and community affiliates. It does this by:

- Defining joint responsibilities for the education and training of professional, graduate, and postgraduate students and for professional development of clinical scientists, practitioners and clinical teachers;
- Defining lines of responsibility and accountability for delivery of these programs;
- Collectively planning for and rationalizing appropriate resources to sustain the joint education mission by working together to identify and overcome challenges;
- Supporting and interfacing with appropriate academic committees, both at the University and the affiliated partners in areas of mutual interest;
- Seeking out innovative and collaborative opportunities for development;
- Creating a forum to foster interactions amongst all affiliates;
- Supporting and advocating for new and collaborative projects in joint clinical education and training.
- Enabling and promoting best practices among the affiliated institutions, including systematic evaluation and analysis of new programs and initiatives.

Committee membership includes:

1. Associate Dean, Education, LDFP (Chair)
2. Dean, LDFP (ex-officio)
3. Director of Pharmacy, or most senior individual responsible for Pharmacy Practice and Education within the full and community affiliated institutions. Participation by other representatives may be requested by the Pharmacy Director.
4. Director, PharmD Program, LDFP
5. Director, PharmD for Pharmacists Program, LDFP
6. Director, Experiential Education, LDFP

The Committee works by consensus, developing plans and recommendations for decision by the Faculty of Pharmacy and the Affiliates. It is understood that some matters may need to be referred through to the CEOs and Boards of the Affiliates.

HUPEC meets at least four times per academic year. Additional meetings may be called by the Chair. Beginning with a special meeting on March 29, 2016 HUPEC members collaboratively reviewed, and assessed strategic priorities with a 3 – 5 year time horizon. At the concluding

strategy session held on May 10, 2016, members voted on a list of priorities, helping to chart a path forward to continue the successful partnership between TAHSN institutions and the LDFP.

The group cultivated and condensed the list of priorities into the following strategic goals:

1. Enabling/Empowering Students to Effectively and Efficiently Provide Direct Patient Care
2. Classroom to Practice, Preparing Learners for Practice Readiness
3. Co-creating a Model for Advanced Pharmacy Practice
4. Supporting Collaborative Networking for Pharmacy-Led Research
5. Operational Excellence

To put these priorities (strategic goals) into action, HUPEC members formed working groups for each of the tasks identified. Each group has worked with the University faculty/staff to propose enhancements designed to realize the goals voiced and prioritized by HUPEC members. Over the past year, each group has reported back their progress to the broader HUPEC group at regularly scheduled intervals. Documentation of the progress in each of the areas is kept as reports attached to HUPEC minutes. (Appendices 54 - 58).

TAHSN Education Coordinators

Education Coordinators (ECs) from the Departments of Pharmacy of TAHSN partner sites meet regularly (minimum 4 times per year) with Experiential Course Coordinators, staff members of the OEE, and the two Directors of the Professional Programs. These meetings are primarily focused on supporting areas of common interest to ensure the success of experiential rotations for students in the professional programs. ECs are the Faculty's primary contact for operationalizing experiential opportunities. Examples include determining the site's collective preceptor availability for experiential teaching for both direct and non-direct patient care rotations, supporting identification and recruitment of new preceptors, encouraging individual preceptor development, serving as the first-line of support for preceptors, and orienting new students to the site, including local policies, procedures, and practices. TAHSN ECs advocate for preceptors and support transfer of information to preceptors on Faculty updates. Members of this committee have served on Faculty working groups designed to continue to enhance experiential learning and are central to our ongoing strategies to develop, implement and evaluate strategies for better experiential education for our students (Appendix 59).

Continuous Professional Development (CPD)

The Faculty underwent a reorganization of the Continuous Professional Development (CPD) and IPG programs in June 2018, after completing a multiyear review. Up until the end of June 2018, the IPG program was managed under the umbrella of the CPD unit in our Faculty. Following careful review of the CPD Unit (as put forward in 2021 Objective 1.3) a strategic decision was made to move academic delivery and administrative functions supporting CPD offerings and administration of the IPG program to the School of Continuous Studies (SCS). Academic delivery of the IPG program remains in the Faculty. This decision enables the Faculty to benefit from the supports in place at the SCS while ensuring efficient and effective continuation of our CPD offerings and IPG program. Our CPD offerings support the LDFP commitment to life-long learning, delivering leading-edge educational initiatives that improve and expand the competency of

pharmacy professionals and others involved in pharmacy practice and policy. Through CPD initiatives, the Faculty assumes a meaningful leadership role in the field of CPD for pharmacists and other health care providers. Current CPD educational offerings can be found on the SCS website (https://learn.utoronto.ca/courses-programs/partnerships/pharmacy). The financial implication of this transfer is further discussed in the Organizational and Financial Structure section.

Over the years, the CPD unit delivered many educational initiatives that had a positive impact on the pharmacy profession. In the last three years, more than 3,800 learners completed our programs. Working in collaboration with many internal and external stakeholders (i.e., faculty, alumni, regulatory body, hospitals, drug retailers, industry, associations, educational institutions, etc.) the office developed and nurtured many relationships that positively contributed to the Faculty's activities.

- ***Optimizing Patient Care (OPC) Online Education***

  With the financial support of the Ontario College of Pharmacists (OCP) ten online educational video resources were created to help community pharmacists become change agents in embracing and integrating full scope of practice. To date, there have been over 12,000 viewings since launching in March 2015. The market reach for these videos is local, national and international, reaching approximately forty-nine countries. This initiative is ongoing and a great example of how faculty research can be translated into effective innovative programming that can help pharmacists and other health care professions be more effective practitioners.

- ***Pan-Canadian Clinical Skills Practice Change (CSPC) Program***

  Over a two-year period (ending 2016), fifty-five CSPC workshops were conducted across Canada for a major pharmacy retailer. This workshop helped pharmacists gain knowledge and develop skills to work to their scope of practice and to advance their practice. CPD worked in collaboration with Pharmacy schools across Canada to deliver the workshops and to ensure relevance to local practice scope. This initiative was a significant revenue generator and brought a great deal of profile to the Faculty.

- ***Oncology for Pharmacists Program***

  Launched in 2016 in collaboration with Cancer Care Ontario, this is a two-part program geared to multiple audiences. CPD used an innovative approach utilizing technology to reach a national audience. This program is an example of a successful collaboration with a partner where common goals contributed to creating an important program for a variety of stakeholders. Since inception over 350 participants have taken the program.

International Pharmacy Graduate Program

The International Pharmacy Graduate (IPG) Program was created in 1999, funded by a three year grant to the Faculty from the Ontario College of Pharmacists with a mandate to "create educational modules for foreign trained pharmacists seeking licensure in Ontario".

The program's overall goal is one of assisting IPGs in meeting entry to practice requirements in Ontario, which includes:

- a provincial jurisprudence examination
- a Structured Practical Training period of studentship and internship (12 weeks each - recently changed to a Practice Assessment at Entry to Practice [PACE]),
- the PEBC's Part I (MCQ) and Part II (OSCE) examinations.

Following its inception in 1999, and autonomous nature within the Faculty (with accountability to the Dean and the Ontario College of Pharmacists), the IPG Program was repositioned organizationally in 2006 when the Department of CPD was created at the Faculty. More recently, following further organizational restructuring in 2018, the academic program remains at the Faculty, with administrative functions to be devolved to the SCS at the University.

The program embarked on a period of renewal in July 2015, with a renewed program launched in April 2018, aligned with the Faculty's strategic plan. One single-streamed blended IPG program is now offered twice annually (consisting of alternating online and on-campus blocks). Assessment results are more reflective of expectations in the PharmD program. Courses have been renewed and aligned with AFPC Educational Outcomes and NAPRA's. The Ontario College of Pharmacists is satisfied with the new program approach and rigour. The new program outline curriculum can be found in Appendix 60.

During the renewal period relations with external stakeholders were reinvigorated. The Academic Director met regularly with the College's Manager of Registration to discuss areas of mutual concern and work through issues. The Academic Director presented to the Registration Committee at OCP on several occasions. The Dean and Academic Director met with the Registrar/Treasurer of PEBC in the fall of 2015 and spring 2018 to discuss a number of important issues, allowing for ongoing communication and dialogue. The Academic Director also worked closely with HealthForceOntario and meetings with the Pharmacists' Gateway to develop additional supports for IPGs are ongoing. Lastly, the Office of the Fairness Commissioner in Ontario is a significant stakeholder, and its perspective must always be kept in mind, given its mandate for transparent, objective, fair and impartial registration practices.

Stakeholder Partnerships

Preceptor Development Program

The Preceptor Development Program is an educational program designed for University of Toronto Pharmacy preceptors, to prepare preceptors supervising our PharmD and PharmD for Pharmacists students during EPE and APPE. The program was developed through a collaboration of the Office of CPD, the OEE and faculty. Since 2013, 1,091 preceptors have participated/ completed the program. In 2016, the program's online modules were updated to make them more relevant and engaging for preceptors. Preceptors come from various practice sites and settings so a versatile and wide reaching program is important. In addition to training preceptors, the program is an important outreach to the Faculty's partners in the profession, and helps strengthen the Faculty's relationship with these partners. Through a preceptor needs assessment (Appendix 61) and based on faculty, staff and student feedback there was a recognized need to continue to enhance the educational support offered to our partners. The result is that in July

2017 we hired a Preceptor Engagement Coordinator to serve as the academic lead for the ongoing review, and updating, of the Preceptor Development Program. The coordinator also works closely with the Interim Director, Professional Programs and the experiential course coordinators, staff in the OEE and others to update the processes for the selection of, and ongoing support for, preceptors including the provision of feedback to preceptors. The job description can be found attached as Appendix 62.

Social Impact

Community Benefit and Outreach Programs

IMAGINE Clinic

IMAGINE (Interprofessional Medical and Allied Groups for Improving Neighbourhood Environments) is an interprofessional, student-run community health initiative aimed at promoting and providing health care to the core neighborhoods of downtown Toronto. Our students are active participants in the IMAGINE clinic.

In addition to outreach activities with IMAGINE's community partners and health promotion workshops with clients, IMAGINE is also building an interprofessional community-based clinic program that will meld the collective knowledge and abilities of health care students. With the guidance and encouragement of faculty and practising healthcare professionals, the team will develop a service program specific to the needs of the population it aims to serve.

Through IMAGINE's community assessment and research, we aspire to develop a program where students will not only apply their clinical knowledge, but also address the needs of our target population through patient education and appropriate healthcare service delivery. Moreover, IMAGINE aims to create a stable, long-term, and committed clinic that the partners and community will recognize as a source of assistance. As part of a student education program, students will in turn receive a hands-on health service education which will complement their studies.

Research

Research at the LDFP spans the broad range of pharmaceutical sciences, encompassing all aspects of drug therapy. This includes the design, synthesis and characterization of new medicinal agents, studies to understand their mechanisms of action, assessment of their effectiveness for treatment of disease, identifying their optimal clinical use for improving patient care, and the economics and policies that define best practices for their essential role in the health care system. We also encourage productive and mutually beneficial research collaborations with private and government sectors to advance the impact of pharmaceutical sciences. Below are a few recent examples of how our research drives impact outside the laboratory.

Improving Clinical Care

Making needles and vaccinations more tolerable is a key focus of Anna Taddio’s groundbreaking pain research, the vast majority of which was funded by the CIHR. Both are critical preventative medicine tools and represent most people’s first interaction with the health-care system, helping to shape long-term attitudes about it in the process. Professor Taddio's work is already having a

big impact. In 2015, vaccine-administering recommendations developed by her team were written into Canadian clinical practice guidelines. Several were also adopted the same year by the WHO. Anna Taddio is a professor at the LDFP and senior associate scientist at SickKids.

Liquid Biopsy Technology

Prostate cancer is the second most common cancer in men and the fifth leading cause of death from cancer in men worldwide, according to 2012 numbers. While several viable treatment options for prostate cancer exist, many men affected with prostate cancer will not respond to first-line treatments. Shana Kelley, Professor at the LDFP, led the development a new "liquid biopsy" technology to identify which patients might not respond to standard therapy for prostate cancer before it is delivered. The ability to screen patients using a blood sample as opposed to more invasive techniques required for conventional biopsies is also a step forward.

Fighting International Health Corruption

When we think about corruption, it is often the political or financial impacts that come to mind. But corruption also leads to significant adverse effects on human health, including higher morbidity and mortality due to the barriers to health services it creates, particularly for the most vulnerable. Jillian Kohler, professor at the LDFP and director of the WHO CC, co-led the development of a framework to help the WHO map anti-corruption efforts onto the international Sustainable Development Goals launched in 2015.

Rethinking Education in Health Professions

Professor Zubin Austin is responsible for leading innovations in education and instructional design that have been adopted world-wide. As Principal Investigator in the IPG Program, Professor Austin led development of one of the first bridging-education programs for internationally educated health professionals seeking licensure in Canada. Components of this program included language training and assessment, clinical skills development, and mentorship to foster professional enculturation. Elements of this program have been adopted by similar programs now offered at the University of British Columbia, the Bredin Institute (Alberta), the University of Florida, and the University of Manchester. He has developed reflective self-assessment instruments such as the Pharmacists' Inventory of Learning Styles (PILS) which is currently used in over 30 schools of pharmacy in the United States and as part of the American Council for Pharmaceutical Education's Continuing Professional Development program for American pharmacists. The PILS has been used with pharmacy students and practitioners in the United Kingdom, Iran, Sweden, Australia, New Zealand, South Africa and the Netherlands.

Organizational and Financial Structure

Governance Structure

The Faculty Council of the LDFP includes academic and administrative staff, students, alumni and community members. The Council exercises its powers and duties under the provisions of the *University of Toronto Act, 1971*, as amended.

Faculty Council is the main governing body for the Faculty. In accordance with its Constitution the Council's general powers and duties are to:

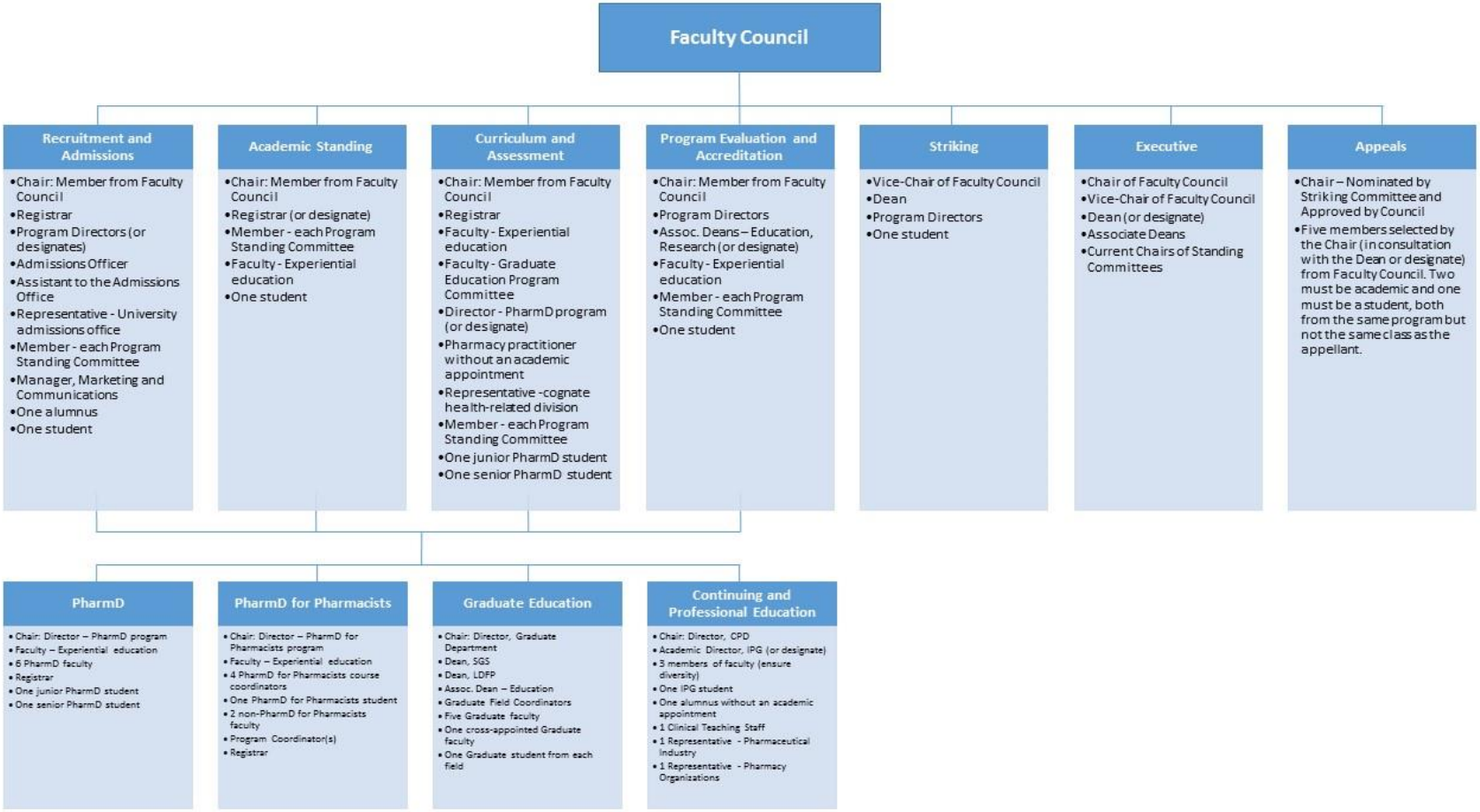
a) determine its composition, and the number composition and authority of its committees;
b) recommend for approval to the appropriate body of Governing council amendments to divisional academic policies (academic policy sets out the principles for, the general directions of, and/or priorities for the teaching and research activities of the Faculty); and
c) play an advisory role to the Faculty administration.

All full-time and part-time teaching staff with 50% or greater appointments are members of Faculty Council. For teaching staff with appointment of less than 50% or status appointments there are ten elected representatives. Membership also comprises of student representatives of all of the Faculty's academic programs as well as external stakeholders such as the Ontario College of Pharmacists and the Ontario Pharmacists Association. The Chair and Vice-Chair of Faculty Council are elected from amongst its members. The full specification of the members of Faculty Council can be found in Section VI of the Faculty Council Constitution (Appendix 63).

The work of Faculty Council is largely done through its eleven Standing Committees, with a reporting structure depicted in the Figure 1.

The membership and terms of reference for each Committee are described in the Council ByLaws, last approved February 13th, 2018. (Appendix 64) Each year, the Striking Committee, chaired by the Vice-Chair of Council, faces the often delicate challenge of recommending to Council enough members from various estates for each Standing Committee to achieve a good balance and representation, as well as a fair distribution of Committee assignments. To achieve this end, the Committee is responsible for soliciting preferences for committee membership from faculty and students, as well as information about faculty members' other service activities, including administrative responsibilities and membership on special committees.

Figure 1: LDFP Committee Structure



There are four Program Standing Committees of Council:

i. Pharm.D. Program Committee
ii. Pharm.D. for Pharmacists Program Committee
iii. Graduate Education Program Committee
iv. Continuing and Professional Education Program Committee

Each Program Standing Committee shall include a minimum of five members of Council, in addition to the Chair. Normally, the majority of members of each Program Committee will be involved in the delivery of the program. Each Program Committee will include at least one student representative. Each Program Standing Committee shall have responsibility for oversight of the standards and quality of the program with regard to admissions, awards, examinations, curriculum and assessment, and program evaluation and accreditation, and for long-range planning and quality assurance of the program.

The following are the Faculty-wide Standing Committees of Council:

i. Executive
ii. Striking
iii. Recruitment and Admissions
iv. Academic Standing
v. Curriculum and Assessment
vi. Program Evaluation and Accreditation
vii. Appeals

These Committees are intended to serve as overarching coordinating committees for the Faculty as a whole and shall report directly to Council. All committees, except the Executive Committee include at least one student in their membership. Both full-time faculty and part-time teaching staff faculty who are members of Council are considered for committee appointments, as are external stakeholders when required, e.g., a staff member of the Ontario College of Pharmacists sits on the Curriculum Committee and the Continuing and Professional Education Committee includes a pharmacy practitioner as well as individuals from a pharmaceutical company and a pharmacy organization.

Faculty Council undertook a comprehensive revision of its Constitution (Appendix 63) and ByLaws in 2010. The Constitution and ByLaws were revised in the fall of 2011 and changes to Council membership were implemented in January 2012; changes in committees and committee membership were made in June 2012 with the Report of the Striking Committee. Thus, the first full year of operating within the new structure of Council was 2012-2013. Major changes were made to the Constitution and Bylaws in 2016, 2017, and 2018 to adjust to structural changes in the administration and programs of the Faculty. The constitution is due for a review, which is scheduled for the 2018-2019 academic year.

Challenges and Opportunities

One of the challenges of the current committee structure is the need for strong secretarial support to support the large number of Council committees. Separate handbooks have been created and maintained for chairs of standing committees of council, members of Faculty Council,

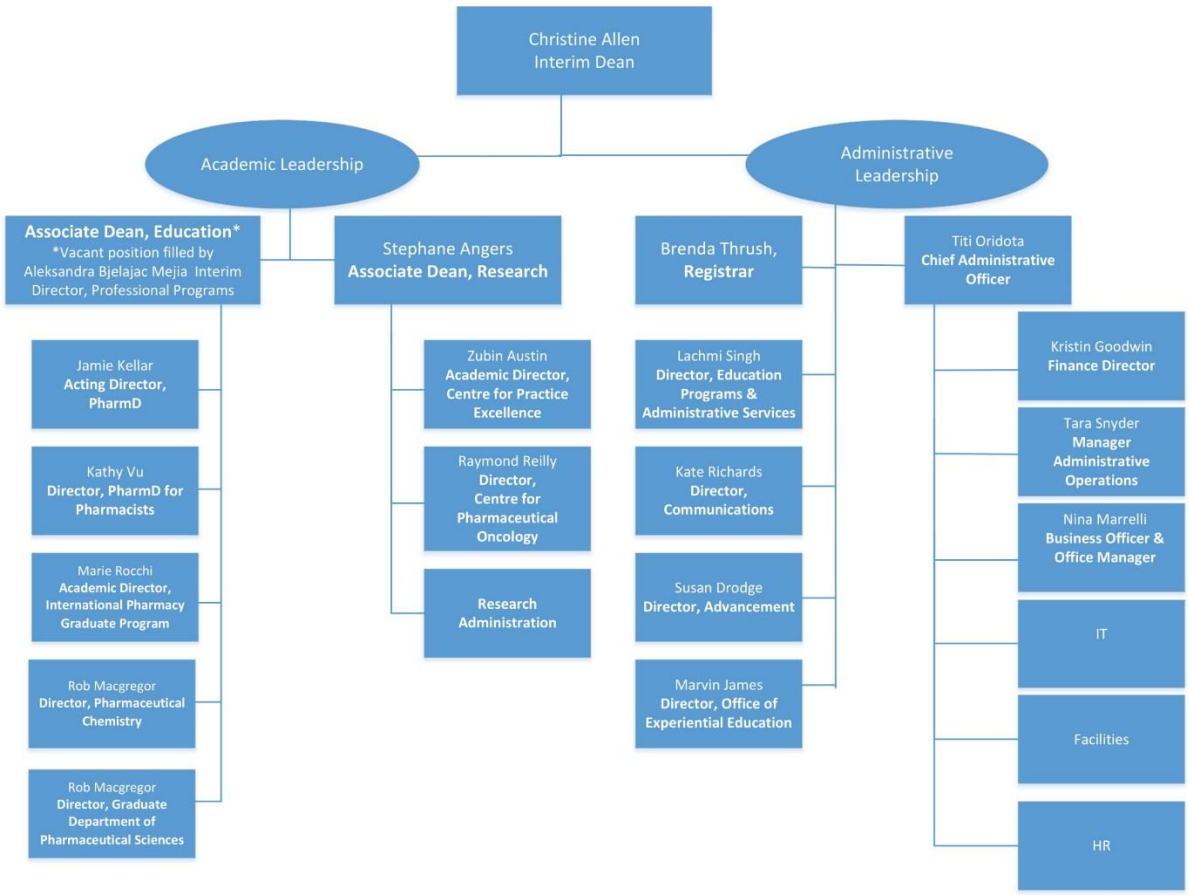
and secretaries of council. The secretaries' handbook (Appendix 65) was created to facilitate consistency of procedures and record keeping across Committees of Council. However, continued focus to ensure continuity and archiving of committee records is needed.

As mentioned above, we are revisiting the ByLaws and Constitution for the 2018-2019 academic year, as we are due for constitutional review. The Faculty has undertaken a preliminary, informal review of the structure, constitutions and bylaws of other Faculties across the university to identify gaps and redundancies within our current structure. It is anticipated that there will be new Committees required to fill existing gaps.

Organizational Structure

The LDFP is a single department Faculty with overall leadership provided by the Dean who is a full-time academic member of the faculty. The Dean is assisted by two streams of leadership within the Faculty; Academic and Administrative as seen in the below chart.

Figure 2: LDFP Organizational Chart



Academic Administration

A new academic administrative structure was introduced July 1, 2016 to facilitate the implementation of the 2021 Forward Together Academic Plan. The restructuring has included the creation of two Associate Dean Portfolios: Associate Dean, Research and Associate Dean, Education. These positions provide academic administrative leadership for the two key components of our mission. In addition, Program Directors have been appointed to provide academic oversight of the day-to-day operations of each of our academic programs:

- Director, PharmD Program
- Director, PharmD for Pharmacists Program
- Director, Graduate Department of Pharmaceutical Sciences
- Academic Director, IPG Program

Staff Administration

Administratively, the Chief Administrative Officer (CAO) leads a group of exceptional managers who oversee administrative operations for the Faculty including:

- Manager, Administrative Operations
- Finance Director
- Registrar
- Director, Education Programs and Administrative Services
- Director, OEE
- Director, Advancement
- Director, Communications
- Business Officer & Office Manager

With the exception of the Registrar, Director OEE and Business Officer & Office Manager, all of the above listed administrative management positions have been hired within the last 2 years.

Staff Composition

The total appointed staff within the Faculty has increased by 14 per cent since 2014 (see Table 20). The most significant increase was in the hiring of employees in the United Steelworkers (USW) employee group. Detailed discussion of the faculty complement (tenure and teaching stream) can be found in Section 2 of the report.

Table 20: LDFP Staff Composition

Staff Composition (appointed)	2014-15 FTE	2015-16 FTE	2016-17 FTE	2017-18 FTE	2018-2019 FTE
USW Staff	34	41	40.50	43	42.5
Professional / Managerial Staff	6	7	8	8	8
Faculty – tenure and tenure stream	31.31	32.31	31.56	32.05	32.05
Faculty – teaching stream	13.15	13.65	12.56	13.80	13.80
TOTAL	**84.46**	**93.96**	**92.62**	**96.85**	**96.35**

Challenges and Opportunities

The Faculty, under the leadership of the Dean and CAO continue to focus on the following priorities:

- Build a Strong Organization Structure;
- Attract and Retain Top Talent;
- Develop Effective & Efficient Business Processes and Procedures.

Build a Strong Organizational Structure

Much work has been done with the focus of realigning the faculty organizational structure to focus on three areas:

1. Education
2. Research
3. Administrative Operations

One of the key accomplishments of the Faculty's restructuring has been the creation of the Education office. The Education Office is responsible for providing strategic direction and implementing processes in areas such as: program development and delivery, program evaluation, development of academic pathways, program quality assurance, assessing alignment of teaching and learning within all academic programs at the LDFP. The role of the Education office has been key in bridging the requirements for academic program enhancement with the appropriate administrative support staff complement. The office currently falls under the leadership of the Interim Director, Professional Programs (pending the appointment of the Associate Dean, Education) and the Director, Education Programs and Administrative Services.

Now that the Faculty has gone through organizational restructuring, it has become clear that significant work is still needed to align the units, faculty members and staff to the larger LDFP vision and mission, as many appear siloed and insular. While time has been spent at staff and faculty meetings to communicate changes and the goals of the organizational structure, it does not appear that we have buy-in from all stakeholders with many focused only on their own unit's priorities and needs without consistent consideration how these fit within the larger Faculty goals, needs and priorities.

The current 2019/20 Academic Budget Review Process has provided us an unprecedented opportunity to meet with each Unit and Program head to discuss strategic goals for their unit and to provide an opportunity to integrate these goals into the larger Faculty goals and objectives as articulated in the 2021 Forward Together Academic Plan. It is hoped that this will create further buy-in amongst leaders.

Attract and Retain Top Talent

The Faculty is very fortunate to have its Human Resources services delivered through the UofT Central Administration HR Services (CAHRS). Now that the key management positions have been filled and have yielded strong new hires who have brought key expertise in several areas, the next phase of recruitment and building will have a focus on Research Administration, Information Technology and Facilities Management.

While the partnership with CAHRS has enabled us to move forward on strategic initiatives and provided overall support, given the nature of HR challenges at the Faculty, we recognize the need for an embedded HR presence within the Faculty to help address retention, employee development and work cultural challenges in a way that central services cannot. The Faculty is facing two key challenges with respect to the organizational structure of the Academic Leadership team: the turnover of key leadership roles and turnover of administrative staff in key areas.

One of the challenges the Faculty is facing is the turnover of key leadership roles. In the past twelve months our Associate Dean, Education was recruited to become Dean at another Canadian pharmacy school (effective August 1, 2017) and our Dean was promoted to Vice Provost, Faculty and Academic Life at the University of Toronto (effective July 1, 2018). The search for a new Associate Dean, Education was suspended until the search for a new Dean was concluded. To provide support and continuity, for the academic leadership of educational programs at the Faculty, Sandra Bjelajac Mejia accepted the role of Interim Director, Professional Programs (a new role to provide support through this transitionary period only); Jamie Kellar accepted to serve as Acting Director, PharmD Program (to replace Sandra). Christine Allen's accepted to serve as Interim Dean (July 1, 2018 - June 30, 2019) and Kishor Wasan will join the Faculty as Dean starting July 1, 2019.

While it is wonderful to see our leaders being recognized for their excellent work and being promoted, this creates both challenges and opportunities for the Faculty. In the short term, the challenge is to keep the momentum and engagement with the academic plan through the transition. The appointment of strong Interim and Acting leaders will help with this.

A second challenge is that over the years, we have experienced a significant turnover of our administrative staff in key areas such as program delivery, finance and education office. While this is not uncommon in many institutions, we believe that we would benefit by addressing strategies for motivating and growing our existing talent base. The Faculty has been in contact with the University's Recognition and Engagement Unit and will continue to look at ways of recognizing and engaging administrative staff which has also been a subject of review at Management Committees and with representatives at CAHRS to look at ideas to implement immediately.

With several new leaders hired over the past year, monthly administrative management meetings have begun under the auspice of the CAO's office. This provides the opportunity for senior administrative leaders across the Faculty to meet, engage and discuss challenges and opportunities and to strengthen the organization.

Beginning September 2018, we started scheduling monthly administrative staff meetings to provide an opportunity to meet, update staff and socialize. We hope that this will build a more collaborative and engaged staff group.

To balance and support all aspects and issues emerging the Dean also holds monthly Dean's Advisory Group (DAG) meetings with key academic and administrative directors to discuss the future directions of the Faculty.

Develop Effective & Efficient Business Processes and Procedures

The current practice has been for each unit to create and maintain their own business processes and procedures. With limited staffing resources, it has not been possible to this point to centralize this process. This is an area that is still a challenge as there is not consistency across the Faculty on how processes are created or work executed. As administrative staff have resigned from positions, we have taken this opportunity to create and update work manuals, however this is an area which will require additional focus. It is hoped that once we have all areas staffed, this will be a feasible focus.

Financial Structure

The University's budget is the mechanism by which operating funds are allocated to various divisions in the institution. As such, it is an important tool in the management of the University, particularly in enabling it to fulfill its mission and achieve its academic goals. The University's current budget model was introduced to its academic divisions in 2007 - 2008 and reviewed in 2011 with positive results. A second review was scheduled for 2018 – 19 and is currently under way. The model highlights the importance of financial accountability and divisional authority and its success relies on its adherence to three principles:

- Transparency (clear delineation of revenue and expense by division);
- Incentives (local decision-making and allocations linked to performance indicators, revenues, and costs);
- Engagement (consultation and review processes).

The Faculty recognizes the need to align to this responsibility-centred model and incorporates these values into our annual budget process in the following ways:

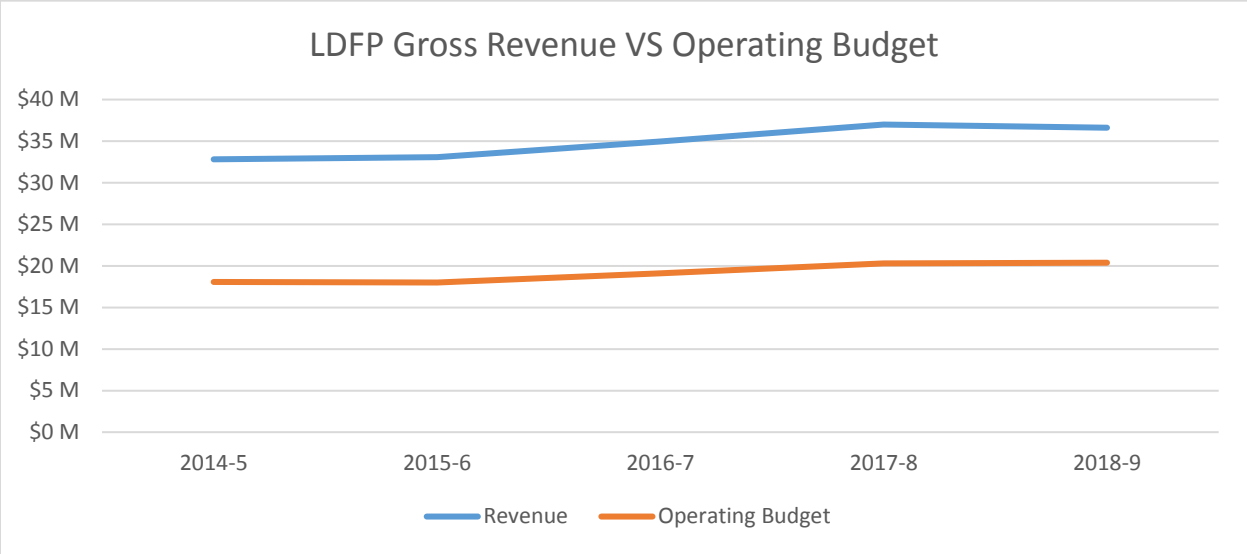
- Regular review and revision to our financial accounts structure to more accurately track and monitor revenues and expenses by each unit/program;
- Thorough consultation with program and unit heads on annual budget and resource needs for strategic plans;
- Upcoming development and measurement of unit-specific Key Performance Indicators for long-term planning.

Table 21: Faculty Operating Budget

	2014-15 (actual)	2015-16 (actual)	2016-17 (actual)	2017-18 (actual)	2018-19 (estimate)
Faculty Salaries	$10,421,308	$9,044,035	$9,957,381	$10,167,136	$10,395,896
Staff Salaries	$3,601,776	$4,143,150	$4,519,898	$4,682,187	$4,976,646
Student Awards	$454,000	$849,000	$619,000	$839,328	$1,274,928
Benefits	$3,477,076	$2,573,406	$2,905,284	$2,829,340	$3,016,085
Other Expenses	$2,612,463	$4,626,677	$4,394,889	$3,968,029	$3,674,842
Cost Recoveries/Income	-$2,497,809	-$3,240,028	-$3,306,115	-$2,184,785	-$2,956,919
Net Operating Budget	$18,068,814	$17,996,240	$19,090,337	$20,301,235	$20,381,478

**Source: University of Toronto Budget Blue Book*

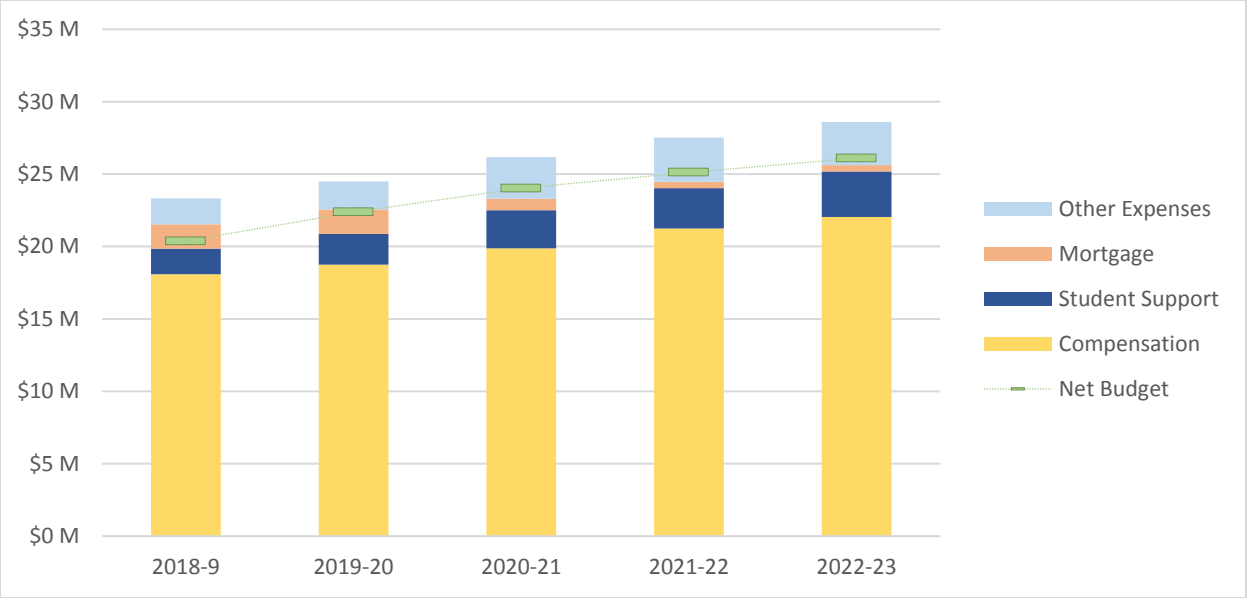
Graph 8: LDFP Gross Revenue VS Operating Budget



The Faculty continues to be in good financial standing with responsible management of funds, we have been able to retain a healthy operating reserve. Our annual expenses are approximately $20 million per year with approximately 80% dedicated to compensation. As we continue to create staff positions and build the administrative structure the Faculty requires to run optimally, we will need to be mindful of our revenues which have increased only slightly in the last year.

In addition to the annual revenue received through our net operating budget, the Faculty has a contingency reserve of approximately $10 million. This fund is under the control of the Dean and is used to offset unexpected costs, capital improvements, special one-time projects, and provide an allowance for unexpected events. This year our reserves will allow us to repay the almost $4-million mortgage on our building.

Graph 9: LDFP Projected Budget 2018 - 2023

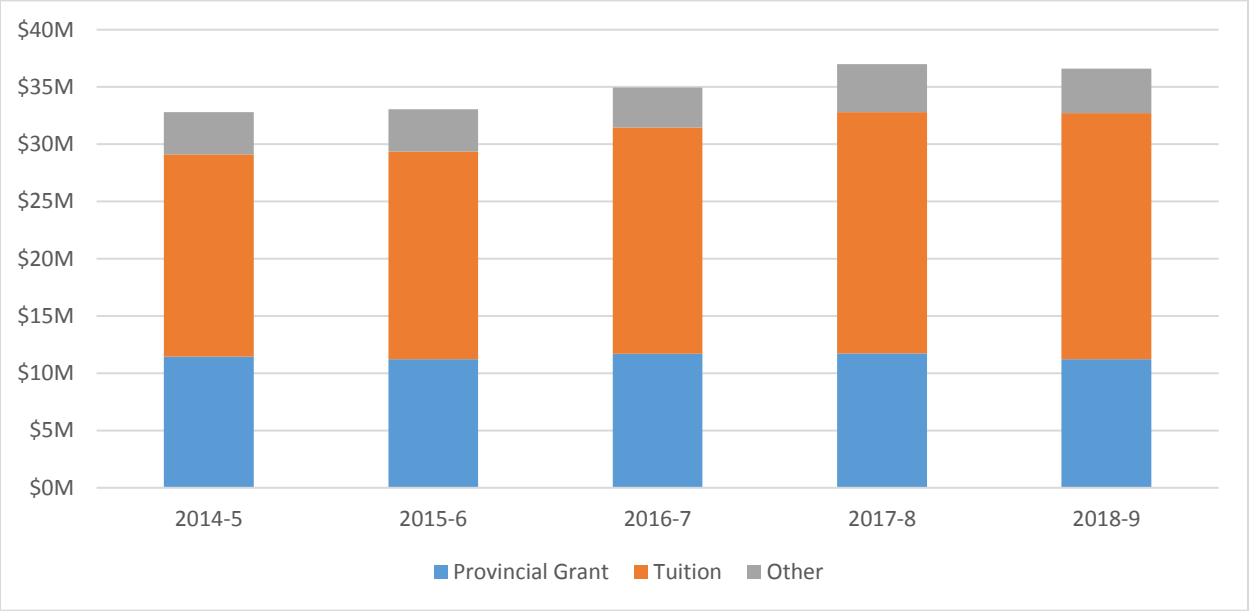


Our revenue is based primarily on grants from the provincial government (provided on a per student basis) and tuition revenue. In 2017-18 the Government of Ontario implemented a new funding formula using the new Weighted Grant Unit (WGU) replacing the Basic Income Unit (BIU). In 2018, the University reduced the tuition fee for international PhD students to be the same as domestic students. We will continue to work with Planning and Budget to understand how these changes will affect the Faculty.

Table 22: LDFP Gross Revenue

	2014-15	2015-16	2016-17	2017-18	2018-19
Provincial Grant Revenue	11,449,423	11,220,241	11,708,092	11,729,741	11,237,139
Tuition Revenue	17,656,221	18,139,520	19,747,004	21,074,843	21,479,472
Investment Income	775,061	738,353	665,287	789,002	1,146,628
Provincial Scholarship Grants	190,314	171,944	151,191	135,672	135,586
Endowment Revenue	963,541	937,096	960,129	1,500,357	1,234,826
Overhead on Research	1,379,165	1,475,729	1,310,968	1,366,028	1,030,829
Canada Research Chairs	400,000	400,000	400,000	400,000	400,000
	$32,813,725	**$33,062,883**	**$34,942,672**	**$36,995,654**	**$36,614,480**

Graph 10: LDFP Gross Revenue by Source



There are a number of University related expenses that the Faculty is required to contribute to annually (see Table 23). Academic divisions all contribute to University-wide costs and Pharmacy's contribution in 2017-18 was approximately 10 million dollars. Student Aid Set-Aside is an operating-funded source for student aid that is a pooled university resource. Pharmacy contributes based on its share of total tuition revenue and the funds are distributed to students based on need. Although our amount of Student Aid Set-Aside has decreased, we are now funding our UTAPS program at the Faculty level. UTAPS used to be a centrally funded University of Toronto program designed to reduce the unmet financial needs of students receiving a provincial student loan. UTAPS is also available to students receiving an out of province loan. We also commit a significant amount of internal funding for support; we project a total of over $3.1 million by 2022-23.

Table 23: University Fund Related Transfers

	2014-15	2015-16	2016-17	2017-18	2018-19
University Wide Costs	8,728,062	8,911,423	9,146,498	9,825,683	10,238,485
University Fund Contribution	2,979,656	2,999,291	3,203,766	3,351,109	3,378,314
Student Aid Set-Aside	3,008,004	3,105,863	3,450,282	3,073,910	2,573,972
	$14,715,762	**$15,016,577**	**$15,800,546**	**$16,250,702**	**$16,190,771**

In 2018-2019 the Faculty will have a negative adjustment to our budget, due to the fact that we did not meet our enrolment targets for the 2017-18 academic year, primarily in the graduate program. We are in the process of analyzing our variances to inform our future plans and process. We will also be addressing this by adding more frequent meetings between involved units to ensure targets are communicated and recruitment and retention efforts are maximized to meet these targets. We also see this as an opportunity to change our culture to more closely bind academic planning and strategy to our financial objectives.

As more pharmacy programs across Canada adopt entry-level PharmD degrees, we must review and evaluate all programs to guarantee that we are offering innovative and unique curricula to our students. We are in the process of making changes to support the strategic plans of all academic programs, including evaluation, marketing, communications, and recruitment. With the recent creation of the Education Office to have administrative oversight of all programs we will leverage the leadership of the Office to assist with a thorough review. In 2019-20 the MScPhm degree will be introduced which will bring the Faculty another source of graduate revenue. As we await approval of our funding/fees structure we are estimating minimal expenses to support the program.

Future Planning and Opportunities for New Revenue Generation

A major expense that the Faculty has been responsible for is the mortgage of our building (see Graph 9). As of April 30, 2018 the remaining amount was $4,617,088 and our final payment will be in 2023-24. We have been able to reduce our mortgage significantly over the last five years. As the financial burden of the initial construction of our building comes to an end in the near future, we must work towards a timely assessment and renewal of our space. Many areas of our building are starting to show their age and, in order for us to be innovative, we must review and plan for the revitalization of our lab space. In the upcoming year, we will be dedicating close to $1 million dollars for the renovation of our research labs and graduate spaces. A financial commitment we will also be considering are initiatives related to furthering our academic plan. In the next 2-3 years we will focus on our identity, by developing a brand strategy to shape and communicate our identity which will also assist in our recruitment over all programs. We also plan to redesign our website, create a comprehensive communications plan, and develop core branding, marketing, and communication materials.

These commitments present us with opportunities to reflect and evaluate our identity and to develop our ideal student profile. We also see the following areas as opportunities for improvement

- our recent transfer of our CPD program to the SCS to increase program revenues and utilize the unit's expertise
- using the University's Award Inventory Project to revisit our current student funding structure
- ensuring that we are using our donation funds to the fullest extent
- setting student funding and research priorities for advancement
- increasing resources in our Research Office to encourage increased grant and award funding.

Continuous Professional Development (CPD)

The Faculty underwent a reorganization of the CPD and IPG programs in June 2018 after completing a multiyear assessment.

After much analysis and review, the decision was made to move forward with the restructuring of the unit so that the CPD unit would no longer be embedded within the Faculty of Pharmacy. This decision was made based on financial constraints; the reality is that in this competitive

marketplace, the financial costs of conducting the courses were greater than the revenue generated.

A partnership was created whereby the LDFP's CPD will be delivered by the SCS at the University of Toronto. Specifically, SCS will be responsible for the:

- academic delivery and administration of all our CPD programs
- administration of our IPG Program. Academic delivery of the IPG program will remain at the Faculty

This change will allow LDFP to benefit from SCS's expertise and innovative infrastructure in the area of open enrollment and continuing education. SCS has a strong track record of working with different Faculties within UofT, leveraging the research and subject matter expertise of the faculty members and combining it with adult learning best practices.

Changes to the administrative organizational structure have occurred, resulting in the elimination of all administrative positions within our CPD and IPG units. In the meantime, the CAO portfolio has assumed the business administration of the unit.

Advancement

To support the needs of a Faculty that has experienced transformational growth over the past decade, the advancement and alumni relations functions at the LDFP have become key institutional priorities.

In the last five years, the Faculty has raised over $10 million from alumni, friends, industry, and professional associations. This support enables us to fund provide numerous scholarships, fellowships, professorships, chairs and programs for students, researchers, and faculty.

Table 24: LDFP Advancement Total Support – 2013 – 2018

Fiscal Year	Pledges & OTO	Intentions	Grant Totals	Total Support
2017-2018	**$269,700**	**$325,005**	**$596,397**	$1,191,103
2016-2017	**$355,855**	**$203,494**	**$1,720,368**	$2,279,717
2015-2016	**$372,285**	**-**	**$2,040,413**	$2,412,698
2014-2015	**$590,059**	**-**	**$1,745,277**	$2,335,336
2013-2014	**$587,997**	**-**	**$1,458,359**	$2,046,356
				$10,265,210

In the last five years we have experienced a complete staff turnover of our advancement team, which has created a challenge with respect to continuity, but has provided an opportunity to renew the team and develop new strategies that will enable us to reach the goals included in our academic plan.

Advancement and alumni activities at the Faculty are led by a three-person team that includes:

- The Director of Advancement, who directs the team, develops strategies, sets priorities, and provides leadership to all of the Faculty's advancement activities,

including fundraising and alumni relations, as well as external relations with individual donors, pharmacy associations, corporate and other key stakeholders.

- The Senior Development Officer, Advancement and Alumni Relations (role is currently vacant and being updated), who develops and oversees annual leadership giving, provides strong support to the Director in the solicitation and management of major gift donors, and manages all facets of alumni relations.
- The Coordinator, Advancement and Alumni Relations who provides high-level administrative support, for the office, acts as the office manager, is the first point of contact for donors, alumni, faculty, students and members of the pharmacy community, as well as plans and executes events, including donor, alumni, and student events, and plays a lead role in stewardship for the Office.

To support the goals outlined in the current academic plan, the advancement team is currently focusing its fundraising efforts on the CPO, CPE, and Student Awards, especially graduate student awards.

The University of Toronto Boundless Innovation Campaign will officially come to a close at the end of 2018. As the University enters the planning phase of the next campaign, this will give the Faculty's new advancement team time to re-group and develop a new advancement strategy under the leadership of a new Dean who has a strong record of accomplishment and strong interest in advancement activities.

Resources and Infrastructure

The LDFP is located at 144 College Street and is embedded in one of North America's most comprehensive Health Sciences Research clusters including Canada's largest University, and the MaRS Discovery District. Space utilization is managed through the Dean's office in consultation with Associate Deans, Program Directors and the Chief Administrative Officer. The Faculty moved into a new building in 2006 which was purpose built, designed to accommodate the space needs at the time, for the undergraduate and graduate education programs. The atrium on the main floor is open to the public and contains a café with seating and lounge space. Outdoor seating is available in the courtyard between the Pharmacy building and neighbouring Tanz and Fitzgerald buildings. The Pharmacy Building is accessibility compliant providing a main entrance with an auto door opener, floors accessible via elevators and accessible washrooms. The building is very close to public transit routes.

Key building features include:

- Height: 14 stories (12 above grade, 2 below grade)
- Floor space: 167,000 square feet; 40,000 sq. ft. dedicated to research and aprx. 8,000 net assignable square metres (NASMS)
- Capacity: 1,300 students, faculty and staff
- Two lecture theatres in basement levels
- Five-story colonnaded area houses resource centre, study spaces, and administrative offices

- Upper floors are dedicated to graduate student education and faculty research, including biochemistry labs, tissue culture rooms, shared instruments rooms, etc
- Classrooms, seminar rooms, and lecture halls accommodating groups of 24 - 300 people
- Professional practice and pharmaceutics teaching laboratories
- Two pods provide 59-seat and 24-seat group instruction spaces, quiet study lounge for undergraduate students, and a faculty/staff lounge

Given the aging infrastructure and to ensure best utilization of space, the Faculty is planning a space audit of the LDFP Building to review how the building is being used and explore ways to more efficiently use space to meet the needs of our current and go forward needs for academic and research programs.

Table 25: Occupancy and NASMS Space

Space Utilization	NASM
Classroom & Classroom Service	1,022.54
Teaching Laboratories & Support	950.16
Library/study	383.48
Student and Common Use	531.00
Academic Offices	865.01
Administrative Offices	596.32
Departmental Support	720.62
Graduate Student Rooms	822.01
Research Laboratories & Support	2,126.39
Other Space	70.06
Total	**8,087.59**

The office of Academic Campus Events (ACE) is responsible for the booking of larger classrooms across the University of Toronto including those located in the Leslie Dan Pharmacy Building. The larger lecture hall PB B150 accommodates approximately 300 persons and PB B250 accommodates approximately 240 persons. These classrooms are generally used by 1st and 2nd year PharmD students as they have the most populated classroom needs with approximately 240 students per class. Due to the small-group nature of teaching for PharmD students in year 3 (and students in other programs), they generally can be accommodated in the smaller classrooms such as PB255 which is the large pod that seats 60 persons. All classes are booked based on the enrolment and/or size of the class, the needs of the class and the availability of the room. Floors 8 and below have classrooms used for the PharmD and Professional programing and floors 9 and above are used for biochemistry (wet labs) research studies.

Student Areas

Spaces designated specifically to pharmacy undergraduate and graduate students are available 24-hours a day, 7 days a week throughout the Pharmacy building. Student space at the LDFP is allocated as follows:

- Floors B2 up to three are primarily designated for undergraduate students use.
- Undergraduate student lounge on Floor B2, accessible by fob only, is equipped with comfortable seating, a kitchenette, microwave ovens, vending machines, a television, ping pong and foosball tables.
- Each student is assigned an individual locker to use throughout their studies in the PharmD program; Lockers are located in the "crush" space on Floors B1 and B2.
- Two prayer/meditation rooms are available on B2.
- Undergraduate student study spaces accessible by fob only, known as the Apotex Resource Centre is housed on Floors 1, 2 and 3; all areas are Wi-Fi equipped.
- Floor 1 houses The Jack Kay Meeting Room and is designed for group work activities.
- Floor 2 contains space for both small group and individual work and has several "quick access" stand up computer stations and a printer.
- Floor 3 houses individual work carrels, some of which have desktop computers for use and a printer available; students may also access a quiet reading room (which is on top of the "big pod")
- The UPS has designated space on Floor B1. The space is equipped with desks, computers and filing cabinets; UPS is also allocated meeting and storage rooms.
- Locked storage cabinets located adjacent to the UPS office and in the meeting room are available for use by student clubs.

While not designated as "student space", student groups are permitted to book two of the Faculty's meeting rooms (i.e., Rooms 210 and 310) to hold meetings or other activities in the evenings, when these rooms are not being used by faculty or staff.

Following is a detailed inventory of the undergraduate student space:

Table 26: Undergraduate Student Space Inventory

Room Number	Room Description	Sq Meters
B215	Pharmasave Student Lounge	68.98
B220	Prayer/Meditation Room	7.18
B222	Prayer/Meditation Room	7.38
B123	UPS Office	17.98
B126	UPS Storage Room	10.15
B148	UPS Meeting Room	39.27
120	Jack Kay Meeting Room (part of the Apotex Resource Centre)	73.85
150	David R. Bloom Shoppers Drug Mart Lounge	117.48
220	Apotex Resource Centre (main room)	166.66
245	Apotex Resource Centre (small group work room)	18.45
330	Apotex Resource Centre (computer room)	125.34
330V	Apotex Resource Centre (individual carrels)	46.68
332	Apotex Resource Centre (photocopier room)	14.20
335	Apotex Resource Centre (individual work room)	58.44
350	Apotex Resource Centre (quiet reading room)	60.72

Graduate student spaces are located throughout floors 6-12. There is a dedicated kitchen, dining lounge with vending machines located on the 6th floor. Flexible lounge seating is available on the east and west sides of the 6th floor. Additionally, on the 6th floor there private office and storage room space allocated to the graduate student union. The Faculty has an embedded Health and Wellness councilor on-site in a private office. This service is available to all students, 2.5 day per week.

Instructional Facilities

In addition to the traditional classroom facilities/lecture halls, the Faculty also houses the Herbert R. Binder/Shoppers Drug Mart Professional Practice Laboratory (PPL). The PPL is exclusive to Pharmacy and occupies the center core of the 7th floor. Building upon the student-centred, problem-based education model currently used by the Faculty, the PPL provides the opportunity for students to learn and practice, in a controlled, simulated pharmacy setting, and helps shape the necessary skills to provide patient-centred, Pharmaceutical Care. These skills range from accurate prescription interpretation and computer processing, responding to drug information requests, and compounding of extemporaneous formulations. Students engage in "clinical encounters" with simulated patients, receiving feedback from trained pharmacist facilitators. A telephone/intercom system allows for verbal "tasks" to simulate discussions with prescribers.

The PPL is integral to the PharmD curriculum. More specifically, it provides the learning and assessment setting for the MTM series of courses. The Professional Practice Laboratory areas include 466 NASM allocated to the Professional Practice Laboratory and 160 NASM of adjoining seminar rooms. All of the practical/simulated components of the PharmD are taught to groups of 40-60 students. The PharmD program also shares the PPL with the IPG Program. When these seminar rooms are not being used in conjunction with the Professional Practice Laboratory, they may be reserved by other groups.

Experiential Learning: Off-site Practice Experience Space

In the PharmD and PharmD for Pharmacists programs, students undertake off-site experiential education in various external practice sites, including academic institutions, community affiliated hospitals, family health teams, pharmaceutical companies and community pharmacies. There is also an opportunity for students to participate in international rotations as part of their elective rotations. Every effort has been made to ensure that practice sites meet UofT program standards, with ongoing evaluation to ensure continued quality. A detailed description of the experiential component of the professional programs are covered in the PharmD and PharmD for Pharmacists sections of this report.

Pharmaceutics/Pharmaceutical Analysis

Another integral component of the PharmD program is the Pharmaceutics Laboratory, where students learn the physical and chemical properties of the materials used in dosage form design. They also gain experience in the compounding and formulation of drugs. The pharmaceutics teaching laboratory in the Pharmacy building occupies 337 NASM with associated pharmaceutical analysis equipment in a separate adjacent room. This equipment includes HPLC with UV

detectors, SDS-PAGE electrophoresis, tablet dissolution apparatus, and several UV-visible spectrophotometers.

Health and Wellness Pharmacy

As we shape the Pharmacy leaders of tomorrow, the LDFP aims to develop a pharmacy clinic that is integrated with the existing primary care Health and Wellness Services at the University of Toronto. The Health and Wellness Pharmacy Clinic will be led by LDFP.

The vision for the pharmacy is that it will provide person-focused care for the management of acute and chronic conditions with a special emphasis on health prevention and promotion. It will include a dispensary and offer a range of professional pharmacy services for students, staff and faculty at the University of Toronto and create an innovative educational experience for pharmacy students. The pharmacy itself will be designed for optimal workflows, flexibility and functionality. It is intended to be a "living lab", dedicated to research, education, and creating innovation in pharmacy. Further information can be found in section 3 – Relationships.

Research Infrastructure

Professors of all research disciplines also have access to all of the facilities on the three campuses including the library, which is one of the largest in North America. Graduate students and other research staff, including post-doctoral fellows, research associates, research assistants and technicians are housed in personnel rooms located close to the professor's office with whom they work. These rooms accommodate eight-ten such personnel for faculty in the BMS, and five to eight such personnel for every faculty member in CSAP.

Each Professor in the BMS group has been provided with approximately 1,400 square feet of laboratory and office space in the Pharmacy Building or in some cases at the University Health Network. Research space for the CSAP area primarily includes office space for Principal Investigators and their graduate students. Researchers in the Pharmacy Practice area (e.g., clinician scientists and clinician educators) have office space at the TAHSN hospitals and their research environment is their practice site at the hospitals. Common facilities in the Pharmacy building include a focus group room with 2-way mirrors for observation; 5 small interview rooms with 2-way mirrors for observation in addition to individual office space and workspace for their respective research staff and trainees.

The research laboratories in BMS areas are on floors 9 though 12, some of which are undergoing renovations. These renovations are required to help facilitate world leading research needs and also in order to comply with changes to the Canadian Biosafety Standards and Guidelines. Please refer to section 2, Research for further information. Below we highlight just some of the special facilities and equipment available to these PIs and their trainees.

- Professor Stephane Angers Laboratory
  Qexactive orbitrap mass spectrometer for proteomic analysis, LSM700 confocal microscope, EVOS microscope, Envision multimodality plate reader, Incucyte label free cell analysis system, Nanodrop ND-1000 spectrophotometer.

- Professor Jeffrey Henderson Laboratory
  Murine Imaging and Histology (MIH) Core (http://phm.utoronto.ca/~mih/) Fluorescence microscopy, a microinjection/electrophysiology microscope, 2D and 3D Image processors, microtome and cryostat.

- Shana Kelley Laboratory
  Agilent HPLC systems, Aspex Explorer scanning electron microscope, Nikon ECLIPSE LV100 fluorescence microscope, Dimension uPrint Plus 3D printer, Biorad 7500 Real-Time PCR, Samco Reactive Ion Etching System, Bioanalytical Systems Epsilon Potentiostats, Prelude peptide synthesizer, Miicraft-100 3D printer, Beckman Coulter optima Max-XP ultracentrifuge, Eppendorf vapo.protect mastercycle PCR, Nanodrop ND-1000 spectrophotometer, Eclipse LV150N upright microscope, SpectraMax M2 Microplate Reader, BD FACSCanto flow cytometry system, Labconco freeze dryer, Preparative Chromatography Systems – Shimadzu.

- Professor Raymond Reilly Laboratory
  PerkinElmer HPLC with diode array and radioactivity detectors, Waters HPLC with diode array, fluorescence and radioactivity detectors, multi-functional (UV-visible, fluorescence and bioluminescence) plate reader, PerkinElmer gamma counter, radioisotope dose calibrators, survey and contamination monitors, refrigerated ultracentrifuge, Cyclone autofluorescence imager, gel documentation system, real-time PCR, Agilent Technologies HPLC with diode array, fluorescence and radioactivity detectors, VetScan HM5 Color Hematology System and VetScan VS2 Chemistry Analyzer.

- Department of Comparative Medicine Laboratory
  The Division of Comparative Medicine (DCM) (dcm.utoronto.ca) operates one of the largest animal care programs in Canada. The Divisions' offices, animal facilities, central washing facilities, surgeries, x-ray and diagnostic laboratory are located in the Medical Sciences Building (MSB) and the Donnelly Centre for Cellular and Biomolecular Research (CCBR).

- Centre for Pharmaceutical Oncology (CPO)
  CPO facilities and equipment are available to CPO members and their trainees. Equipment include a TSQ-Endura mass spectrometer (MS), a Cytation 5 cell imaging multi-mode reader a Cytoflex S flow cytometer, a liquid scintillation counter and a trimodality microPET/SPECT/CT small animal imaging system, these were purchased and installed in 2017/2018. In 2018, an HPLC was purchased and installed that connects to the MS to be used as an LC-MS system. Request for proposals (RFPs) were written and posted for bids on a confocal microscope, a capillary electrophoresis/ isoelectric focusing (cIEF) system and a dynamic light scattering (DLS) system. These will be purchased in 2018, completing the purchase and installation of all equipment in the CFI/ORF grant.

External Resources and Infrastructure for Research

- Spatio-Temporal Targeting and Amplification of Radiation Response (STTARR) Program
  STTARR is a world-class small animal imaging centre which has capability for multiple modalities including CT, MR, PET, SPECT, Ultrasound, Photoacoustics, Optical and radiation therapy. The facility is located on the 7th floor of the Toronto Medical Discovery Tower (TDMT) at the MaRS building. There is a state-of-the-art Animal Resources Center (ARC) operated by the University Health Network one floor below with a dedicated elevator connecting the two facilities to enable secure transfer of animals to the imaging areas.

- Research Infrastructure Available at the TAHSN Hospital Research Institutes
  The TAHSN hospitals all have large research institutes that provide access to major core equipment such as flow cytometry, confocal microscopy, histopathology and immunopathology, microarray as well as animal resources centres. These facilities are available to PIs and trainees at the Faculty on a cost recovery basis.

- Institute for Clinical Evaluative Sciences (ICES) at the University of Toronto
  The Faculty has contributed to obtain privileges at an ICES node at the University of Toronto St. George campus (https://www.ices.on.ca/) which provides secure access to anonymous health records data through which real-world assessment of care delivery, patterns of service utilization, health technologies, drug therapies and treatment modalities can be performed. Research from this source is used to help policymakers, managers, planners, practitioners and other researchers shape the future direction of the Ontario health care system.

Office Space

Academic Offices

Currently, full time faculty, and others with appointments equal to or greater than 0.75 FTE, are allocated a private office in the LDFP building. Persons with appointments less than 0.75 FTE share an office. In addition, there are six offices that may be assigned to “other” faculty, including visitors and emeriti, on a shared basis. Each of these offices are sized, in accordance with the guidelines of the Council of Ontario Universities.

Currently, a total of 775 net assigned square metres (NASM) of academic office space is available in the LDFP building. The approved faculty complement is 55.53 FTE. Of these, one FTE faculty member has office and research laboratory space at the University Health Network. In addition, there are seven 0.49 FTE Clinician Scientist/Educator faculty who have offices and clinical practice/research sites at the TAHSN. Each of the remaining faculty members has been assigned an office close to his/her research laboratory and graduate students. The average office size is 13 NASMs, in accordance with the guidelines of the Council of Ontario Universities. The building also has offices for a number of positions beyond the approved complement; these include space for two endowed chairs and office space for the PharmD Director and PharmD clinical faculty.

Administrative Offices

Administrative offices are currently housed in private and shared offices.

Faculty and Staff Support Space

An array of departmental support space is available in the LDFP building including faculty and staff lounge, administrative meeting rooms, office equipment rooms and administrative storage spaces.

Challenges and Opportunities

The LDFP has a long-standing reputation as the preeminent Canadian Pharmacy School. To retain this leadership position it is critical for the Faculty to realign and repurpose space based on strategic priorities. To address this, the Faculty will undergo a space audit to ensure the best utilization of space.

To stay competitive the Faculty will invest in the latest technologies, as well as provide high-quality training and support needed to effectively implement those technologies across all programs. Funding for these required upgrades will be made through the Faculty's operating budget and fundraising initiatives.

The building is currently 12 years old and will require updating and maintenance. Specifically, equipment and facilities for research will require more investment going forward, especially as our major initiatives in the Strategic Plan are realized (e.g., the Research Centres). Funding for this infrastructure may be available through the Canada Foundation for Innovation, or through fundraising initiatives.

Increasing success in research (see Research section) combined with the expansion of graduate student and post-doctoral fellow training opportunities may require additional space for research in the future. Similarly, changes in the undergraduate education programs may require additional or reconfigured space in the future.

Office space to accommodate our large complement of part-time faculty remains a significant challenge for us. Where possible, we are re-configuring our offices into group-office configuration.

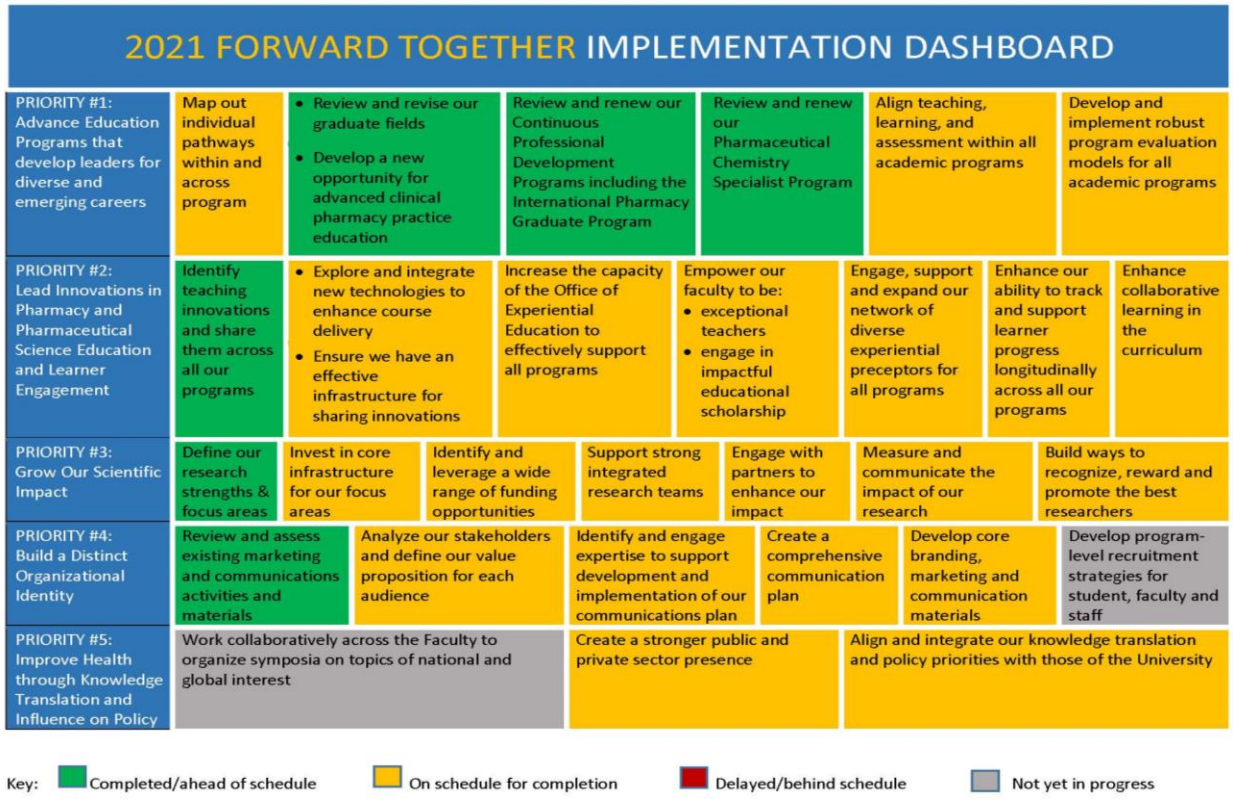
Long-Range Planning Challenges

Consistency with University's Academic Plan

The University of Toronto is committed to being an internationally significant research university, with undergraduate, graduate and professional programs of excellent quality. In 2018 the LDFP was named the top Pharmacy school in Canada, and 15th in the world by the QS World University Rankings. Our Academic Plan- 2021 Forward Together is clearly aligned with the University's mission and vision. The strategic focus areas in the plan are as follows:

1. Advance Education Programs that Develop Leaders for Diverse and Emerging Careers
2. Lead Innovations in Pharmacy and Pharmaceutical Science Education and Learner Engagement
3. Grow our Scientific Impact
4. Build a Distinct Organizational Identity
5. Improve Health through Knowledge Translation and Policy Influence

Figure 3: 2021 Forward Together Implementation Dashboard



We have achieved our initial priorities for action in each of the above categories, some significant highlights include: Reviewing and revising our graduate fields and developing a new opportunity for advanced clinical pharmacy practice education in addition to, defining our research strengths and focus areas in a way that is clear, concise, and highlights our diversity. We also continue to

identify teaching innovations and share them across all of our programs and to empower our faculty to be excellent teachers and to engage in impactful educational scholarship.

The Faculty has embraced the Three Priorities (Appendix 3) set out by President Gertler:

1. Leverage our urban location(s) more fully, for the mutual benefit of University and City;
2. Strengthen and deepen key international partnerships by means of a well-defined strategic focus;
3. Re-imagine and reinvent undergraduate education.

The Faculty has successfully leveraged our urban location to create mutually beneficial strategic relationships with our TAHSN partners. Specifically, though our ongoing meetings and discussions with the Educational Coordinators and the Pharmacy Department Directors we have been able to provide our students with quality faculty teaching expertise and innovative experiential opportunities to enhance their educational experience. In addition, the OEE is collaborating with the CIE to grow our international rotation offerings.

Our next steps to advance our academic plan and remain consistent with the University's mission and the Towards 2030 report (Appendix 66) are to revise our enrollment strategy to attract high calibre students to our programs; both undergraduate and graduate. We aim to create multiple individualized academic pathways within the Professional programs that leverage the diversity and expertise of our faculty members and prepare students for a variety of emerging careers and practices.

Complement Plan

We have been very fortunate in having experienced significant growth at the Faculty. With this progress comes the challenge of operationalizing our unit. Having the ideal complement of engaged faculty and staff, designing optimal reporting structures, and putting in place enhanced mechanisms for accountability are critical to our future success. In our strategic plan, we have articulated the need to conduct an organizational review that addresses relationships between education, research and administration; and the opportunity to develop re-alignment strategies that will enhance the organizational structure.

Currently, our PharmD program has a total of 68 course offerings available to our students in the 2018-2019 academic year. This includes all required courses, as well as selective and elective courses and APPE courses. These courses are taught by a combination of tenure track faculty, teaching stream faculty and then a number of part-time and/or sessional faculty. Numerous courses have a co-coordination model, involving two faculty members to oversee the delivery of the course. A current challenge in our curriculum delivery is the large number of part-time or sessional faculty members delivering our courses. Over 50% of our courses have part-time or sessional faculty members coordinating them which can create challenges with continuity, course changes and evaluation. It is challenging to have part-time faculty and sessional instructors participate in faculty committees, as many are practicing pharmacists with full-time work in other organizations. Moving forward, a review of our complement would be beneficial.

Enrolment Strategy

A priority at the Faculty is to improve recruitment initiatives in all programs. The competitive climate places us at risk of losing potential students to institutions that have robust marketing and communications strategies for attracting the best and the brightest. In our self-study consultation with students, our undergraduate group specifically identified marketing and communications as a concern. They strongly recommended improvements in this regard. As a result, we have recently hired a new Director of Communications, Kate Richards, and staff for her office to strategically enhance marketing and communications efforts for our Faculty. We are now active on social media with Facebook and Twitter accounts and are in the process of redesigning our website. Beyond this we are committed to engaging in additional outreach activities with undergraduate and high school students to ensure we communicate the unique value of pursuing a pharmacy education at the University of Toronto.

With respect to our graduate programs, we stand to miss out on additional funding opportunities if we fail to step up enrollment initiatives, particularly in light of the Provincial funding commitments through 2017/18. By attracting more graduate students we will also be able to enhance our prospects for developing future leaders in the profession of pharmacy and in academia. In the Department of Pharmaceutical Sciences we have seen a steady increase in the number of pharmacists entering our graduate programs to pursue their M.Sc. or Ph.D. degrees. We expect these numbers to increase once the new Clinical Masters in Pharmacy program is approved. The attraction of more graduate students enhances our potential to develop future leaders in the profession of pharmacy and academia.

Student Financial Aid

The approach taken for administering Faculty bursaries (in the PharmD program) has been to provide financial assistance to as many students as possible who demonstrate a financial shortfall. This has resulted in students receiving bursary support in amounts ranging from $400 to $800. In recent years, the average bursary has been approximately $700. However, the Faculty is currently reviewing existing guidelines for awarding bursaries with the goal of increasing the amount of support students receive.

In addition, the Faculty is considering other ways in which we can have a greater impact on assisting students with their education-related costs. One possibility would be to focus efforts on establishing high value admission scholarships (e.g., $10,000) that would be renewable, provided the student maintains a defined minimum GPA. This would also allow us to continue to attract the best students to our program.

Development/Fundraising Initiatives

As we move in to the next University of Toronto Campaign, the LDFP plans to be in a place where:

1. Donors with an affinity for pharmacy, who are seeking to make a transformational gift, come to our Faculty first
2. We are the leading choice for the Faculty's Alumni when making an annual or major gift as well as a gift in their will
3. We are the number one choice for key players in the pharmacy industry when seeking a partnership with an educational institution
4. The majority of our Alumni are engaged with and feel an affinity to the Faculty
5. We provide a gold standard of service to Advancement's key constituents through consistent, timely and appropriate acknowledgement, recognition and stewardship
6. We are consistently raising an average of $1M per year from friends, alumni and organizations, while continuing to attract over $2M per year in grant funding

Management and Leadership

The period covered in the current Faculty Academic Plan (Appendix 2) ends in 2021. Given that timeline, the planning process for the next Academic Plan will begin in July 2019. At that time newly appointed Dean Kishor Wasan's five-year term will begin. The academic planning process, coupled with the new Dean's vision, will set the strategic direction of the LDFP for the next five years.

International Comparators

The LDFP at the University of Toronto has been named the top Pharmacy school in Canada by the 2018 QS World University Rankings (Appendix 1). Internationally, the Faculty ranked fifteenth. Utilizing academic and employer surveys, and measuring publication citations and the productivity and impact of published works, this year's rankings present the most complete and robust list to date, and recognize the Faculty as a world leader in pharmacy education.

PharmD

There is no currently no clear way to assess the University of Toronto PharmD program against other similar programs internationally. The program is very specific to the AFPC Educational Outcomes, NAPPRA competencies and the local scopes of practice for pharmacy. As such, comparisons beyond the broad university rankings for pharmacy schools is not possible. For 2018, the LDFP ranked fifteenth in the QS World Rankings (Appendix 1), which is a strong showing internationally.

PharmD for Pharmacists

Nationally, there is currently only one other program (University of Alberta). Two other Universities will be offering a similar flexible PharmD for Pharmacists program. We do not have external comparators to use as a benchmark for our program.

Graduate Studies/Research

Compared to all universities in North America – both public and private – the University of Toronto ranks second for publications, as well as citations, in the fields of pharmacy and pharmacology. Among public universities alone – whether throughout North America or among Canada's U15 – the University of Toronto ranks first for publications and citations in pharmacy and pharmacology.

Many faculty members have ongoing research collaborations with universities and companies in North America, Europe, Australia, South America, the Middle East and Asia as outlined in Appendix 46.

- In the fall of 2015 the WHO CC was established at our Faculty under the direction of Professor Jillian Kohler. The Centre is charged with conducting research, analysis, and training on critical issues related to good governance and transparency in medicines. Leveraging the strengths of researchers at the University of Toronto and throughout the Americas, the Centre draws upon the expertise of individuals and programs to develop a comprehensive research and training program that informs the work of the WHO in good governance and transparency in medicines. Members in the Centre include Fellows from the LDFP, the Dalla Lana School of Public Health, the Munk School of Global Affairs, and the Rotman School of Management at the University of Toronto, as well as external collaborators from institutions that include the World Bank, Dalhousie University, Carleton University, and the University of California, San Diego, among others.

Conclusion

Reflecting on the key successes and accomplishments of the Faculty to date, it is evident that our strengths are founded in the commitment and dedication of our students, faculty, staff, alumni community and external partners. Under the leadership of Dean Heather Boon, we implemented the current Academic Plan: 2021 Forward Together and built the current organizational structure that has provided the Faculty with a strong foundation from which we continue to advance our academic programs and embrace the strategic direction of the University. Through our Professional and Graduate programs we continue to graduate future leaders who advance science and practice to improve health through pharmaceutical care. Under the leadership of our Interim Dean Christine Allen, we will continue to deliver on our Academic Plan with a focus on the identified strategic enablers and strategic focus areas: Lead Innovations in Pharmacy and Pharmaceutical Sciences Education and Learner Engagement, Build a Distinct Organizational Identity, and continue to Grow our Scientific Impact.

List of Acronyms Used in Leslie Dan Faculty of Pharmacy Self Study

(alphabetical)

- ACE – Academic Campus Events
- ACPE – Accreditation Council for Pharmacy Education
- AFPC – Association of Faculties of Pharmacy of Canada
- APPE – Advanced Pharmacy Practice Experience
- BIU – Basic Income Unit
- BMS – Biomolecular Sciences
- BScPhm – Bachelor of Science in Pharmacy
- CAHRS – Central Administration Human Resources Services
- CAPSI – Canadian Association of Pharmacy Students and Interns
- CCAPP – Canadian Council for Accreditation of Pharmacy Programs
- CCDR – Centre for Collaborative Drug Research
- CFD – Centre for Faculty Development
- CGPSS – Canadian Graduate and Professional Student Survey
- CHS – Council of Health Sciences
- CIE – Centre for International Experience
- CIHR – Canadian Institutes of Health Research
- CIPE – Centre for Interprofessional Education
- CPD – Continuous Professional Development
- CPE – Centre for Practice Excellence
- CPO – Centre for Pharmaceutical Oncology
- CSAP – Clinical, Social and Administrative Pharmacy
- CSPC – Pan-Canadian Clinical Skills Practice Change
- CSPS – Canadian Society for Pharmaceutical Sciences
- CTSI – Centre for Teaching Support and Innovation
- CUPE – Canadian Union of Public Employees
- DAG – Dean's Advisory Group
- DLE – Degree Level Expectation
- EC – Education Coordinators
- EDU – Extra Departmental Units
- EPE – Early Practice Experience
- EPE-1 – Early Practice Experience 1
- EPE-2 – Early Practice Experience 2
- FCE – Full Course Equivalent
- GPA – Grade Point Average

- GRIP – Graduate Research in Progress
- HUPEC – Hospital University Pharmacy Education Committee
- HSWC – Health Sciences Writing Centre
- ICES – Institute for Clinical Evaluative Sciences
- IMAGINE – Interprofessional Medical and Allied Groups for Improving Neighbourhood Environments
- IPE – Interprofessional Education
- IPG – International Pharmacy Graduate
- IPO – Innovations and Partnership Office
- IPPE – Intermediate Pharmacy Practice Experience
- ITIF – Instruction Technology Innovation Fund
- LDFP – Leslie Dan Faculty of Pharmacy
- LMS – Learning Management System
- MBA – Master of Business Administration
- MCQ – Multiple Choice Question
- MMI – Multiple Mini-Interviews
- MSc – Master of Science
- MScPhm – Master of Science in Pharmacy
- MTM – Medication Therapy Management
- NAPRA – National Association of Pharmacy Regulatory Authorities
- NASMS – Net Assignable Square Metres
- NSERC – Natural Sciences and Engineering Council
- ODPRN – Ontario Drug Policy Research Network
- OEE – Office of Experiential Education
- OPC – Optimizing Patient Care
- OPPCAT – Ontario Pharmacy Patient Care Assessment Tool
- OPSIS – Ontario Pharmacy Student Integrative Summit
- OSAP – Ontario Student Assistance Program
- OSCE – Objective Structured Clinical Examination
- PACE – Practice Assessment at Entry to Practice
- PAM – Pharmacy Awareness Month
- PEBC – Pharmacy Examining Board of Canada
- PCAT – Pharmacy College Admission Test
- PCT – Integrated Pharmacotherapy Module
- PDW – Professional Development Week
- PERA – Professional Expense Reimbursement Allowance
- PharmD – Doctor of Pharmacy
- PharmSIS – Pharmacy Student Information System
- PhD – Doctor of Philosophy

- PPFA-P – Professional Program Financial Aid – Pharmacy
- PTR – Progression Through the Ranks
- SCS – School of Continuing Studies
- SGS – School of Graduate Studies
- SJT – Situational Judgement Test
- SMP – Summer Mentorship Program
- SSLL – Shaping Student Life and Learning Fund
- TA – Teaching Assistant
- TAHSN – Toronto Area Health Sciences Network
- TBL – Team-Based Learning
- THETA – Toronto Health Economics and Technology Assessment Collaborative
- UPS – Undergraduate Pharmacy Society
- USRP – Summer Undergraduate Research Program
- USW – United Steelworkers
- UTAPS – University of Toronto Advanced Planning for Students
- UTEST – University of Toronto Early Stage Technology
- UTQAP – University of Toronto Quality Assurance Process
- WHO – World Health Organization
- WHO CC – World Health Organization Collaborative Centre for Governance, Accountability and Transparency in the Pharmaceutical Sector
- WGU – Weighted Grant Unit
- WLPP – University of Toronto Workload Policy and Procedures for Faculty and Librarians

Appendices

1. QS World University Rankings - Pharmacy and Pharmacology
2. LDFP Academic Plan – 2021 Forward Together
3. President's Three Priorities
4. AFPC Educational Outcomes
5. Attributes to be Assessed during Admissions
6. Academic Requirements for September 2018 Admission
7. Understanding and Interpreting Pharmacy College Admission Test Scores - Meagher
8. NAPRA Professional Competencies for Canadian Pharmacists at Entry to Practice
9. OCP Code of Ethics
10. Cognition Before Curriculum: Rethinking the Integration of Basic Science and Clinical Learning - Kulasegaram
11. The Clinical Teacher - Power of the Patient Voice
12. 2017 - 8 Experiential Rotation Site List
13. Guiding Principles for APPE International Placements
14. Core ELMS Smart Match Lottery System
15. LDFP Preceptor Criteria
16. IPE Core Learning Activities
17. 2017 - 8 IPE Curriculum Report
18. Goals and Objectives of APPE Research Electives
19. Report to OCP Council
20. Study Proposal - Mapping Course Assessments to AFPC Educational Outcomes to Enhance Teaching and Assessments
21. Capstones – Transformative Educational Experience or quest for curricular legitimacy? - Slides
22. Admissions Yearly Trend Data 2013 - 2018
23. PharmCAS Volume Update
24. Multiple Mini Interview Predictive Validity for Performance on a Pharmacy Licensing Examination - Cameron
25. Relationship of Admission Scores and Student Characteristics to Performance within a Pharmacy Program and on National Licensure Examinations
26. Course Reporting Template - PharmD
27. PharmD Course Evaluations
28. PharmD Online Course Evaluation Questions

29. Preceptor Development Program Workshop Efficacy Data – 2017 - 2018
30. LDFP 2018 - 9 Course Calendar
31. Fall 2018 PharmD Admissions Team at Professional School Fairs and Events
32. PharmD Curriculum Map – Gap Analysis
33. PharmD Curriculum Map – Course Mapping to Outcomes
34. TRC Divisional Annual Report
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41. Canadian Graduate & Professional Student Survey
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45. Research Awards and Recognitions (2010-2017)
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47. Participation Rates for Tri-Council Funding
48. Success in Tri-Agency Grant Applications
49. Faculty of Pharmacy Faculty CVs
50. University of Toronto Workload Policy and Procedures For Faculty and Librarians
51. Listing of Leslie Dan Faculty of Pharmacy Faculty Members – 2018 – 9
52. Creating the Future for Pharmacy and Pharmaceutical Sciences Planning Summit Presentation – January 25, 2016
53. Health Sciences Writing Centre Annual Report – 2017 – 8
54. HUPEC Strategic Priority 1 Report
55. HUPEC Strategic Priority 2 Report
56. HUPEC Strategic Priority 3 Report
57. HUPEC Strategic Priority 4 Report
58. HUPEC Strategic Priority 5 Report
59. 2016 – 2017 University of Toronto Learner Engagement Site Specific Report
60. IPG Course Listing
61. Brief Summary of the Needs Assessment Project for the Preceptor Development Program

62. Preceptor Engagement Coordinator Job Posting
63. LDFP Constitution
64. LDFP Faculty Council ByLaws
65. Faculty Council Secretary Handbook
66. Towards 2030 - University of Toronto Strategic Plan