After 46 years in the Pharmacy Building on the Fort Garry Campus, the College of Pharmacy moved to the new Apotex Centre on the Bannatyne Campus in July 2008 to be in close proximity to medicine and the other health sciences.

In the Apotex Centre, the College of Pharmacy has state-of-the-art laboratories and research services which feature five open space laboratories and numerous purpose-built support rooms including computer laboratories. Wireless internet is provided throughout the building, so students are able to find a variety of locations for private study. Graduate students are enjoying a large, open study and lounge area immediately adjacent to the laboratory spaces, which is flooded with natural light.

The new laboratories are suitable for a wide range of biological, microbiological, and analytical studies. Available equipment include: gas chromatography, high-pressure liquid chromatography (HPLC), HPLC-MS, UV-visible spectrophotometry, spectrofluorimeter, computers for molecular modeling and data analysis, a Bruker Model EMX electron paramagnetic resonance spectrometer, manufacturing equipment for pilot scale pharmaceutical manufacturing operations, electrophysiological instrumentation, intracellular video imaging instrumentation, molecular biological equipment and cell cultures facilities.

Research Activities

The College of Pharmacy has three established research groups: drug disposition and discovery, antibiotic resistance, and drug use and effectiveness. Research activities are typically collaborative and supported by a variety of sources including Canadian Institutes for Health Research, National Science and Engineering Research Council, Manitoba Health Research Centre and the pharmaceutical industry.

The Drug Disposition and Discovery Research Group is involved with the science of rational design and use of drug dosage forms. This includes: pharmacokinetic/pharmacodynamic (PK/PD) and efficacy studies in animals and humans; drug formulation (intra-venous, intramuscular, subcutaneous, optic drops, transdermal, inhalational, oral including sublingual, sustained release and immediate release products, etc.); drug design (medicinal chemistry) and targeted drug delivery.

The College of Pharmacy has a unique Transdermal Research Facility that was funded by a Canadian Foundation for Innovation grant. The facility serves
to investigate work into the transdermal absorptive properties of sunscreens and insect repellants.

Medicinal chemists within the Drug Disposition and Development Group are determining the mechanisms of oxygen-free radical tissue damage and its prevention by antioxidant drugs. One study on a new drug may help in the treatment of cancer by preventing damage from oxygen radicals. Researchers are also exploring the antioxidant properties of several functional foods and nutraceutical products on free radical damage to heart and liver cells. In addition, there is a major focus on the photochemical reactions with biological membranes and the resulting photosensitization reactions. The synthesis and evaluation of new chemotherapeutic agents is increasing.

Other research is focused on the cause and novel treatment options of liver disease. In the neurosciences, research on the cause and treatment of pain in patients with multiple sclerosis (MS) is conducted in the laboratory and in clinics with MS patients. Research by the Drug Disposition and Development Group has resulted in several patents, while patent applications resulting from the current research work are in progress.

Clinical researchers within the College of Pharmacy have an opportunity to directly apply their research findings in clinical practice. Such applications are evident within the Antimicrobial Resistance Group where in vitro and clinical research, study the influence of antibiotic PD in the prevention and treatment of infectious diseases. The work characterizes PD relationships critical in optimizing therapy in high-risk patient populations.

Similarly applied research is being conducted with central venous catheters where research focuses on novel formulations to treat catheter-related infections. Findings from the laboratory are directly applied to the Manitoba Renal Program Dialysis Units. Research on the rate and extent of epinephrine absorption has resulted in changes in world-wide policies and procedures that have been in place for more than a century.

Investigations undertaken by the Drug Use and Effectiveness Group help define effective drug use in Canada. Manitoba is one of the few jurisdictions in the world to maintain a database of all prescriptions dispensed in community pharmacies. This database can be linked with physician visit and hospitalization data to study outcomes of pharmaceutical use. It is used by College members to do population-based studies on the appropriateness of drug use, ranging from assessments of adherence to clinical practice guidelines in hypertension and arthritis to descriptions of the drivers of unnecessary antibiotic use in children.

Clinical researchers are also developing, implementing and evaluating interprofessional education initiatives for pre- and post-licensure pharmacy learners along with learners from other health-care professions to promote collaborative patient-centered care and ultimately optimal patient outcomes.

Research Collaborations

College members hold cross appointments in many University of Manitoba departments as well as in the Manitoba Institute of Child Health, the Richardson Centre for Functional and Nutraceutical Foods, and the Canadian Centre for Agri-Food Research in Health and Medicine. Numerous national and international collaborations take place, some of which include researchers at the University of British Columbia, the University of Saskatchewan, the University of Pittsburgh, the State University of Ghent, Johns Hopkins University, University of Queensland and Curtin University, Australia and China-Japan Friendship Hospital.

Graduate Training Opportunities

The College’s diverse research programs offer many opportunities for graduate training. Programs are offered leading to the degrees of Master of Science and Doctor of Philosophy.

FOR FURTHER INFORMATION

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