

## Cross-country collaboration creates compelling chemistry

Finding new chemotherapy drugs is a painstaking process that often takes years, including plenty of hours in the lab, as Flávia Marszaukowski can attest.

Marszaukowski, a PhD student at Brazil's Universidade Estadual de Ponta Grossa (UEPG), has been working in Dr. René Boéré's lab in the Department of Chemistry & Biochemistry at the University of Lethbridge since March of 2019, thanks to a memorandum of understanding (MOU) between the two universities.

"We are trying to discover new drugs that kill cancer cells but don't kill healthy cells," she says. "Some of the compounds we are developing are new. They are metal complexes using the element ruthenium (Ru). We believe that compounds with ruthenium will be less toxic for healthy cells than the compounds that are now being used in cancer chemotherapy."

Boéré, a chemistry professor in the Canadian Centre for Research in Advanced Fluorine Technologies (C-CRAFT), has built a network of colleagues in UEPG's chemistry department and that has led to two PhD students working in his lab.

"It's been going really well," says Marszaukowski. "The chemistry that I'm doing here at the U of L I can't do in my lab in Brazil because part of my synthesis work involves compounds that are air sensitive. So, we need different kinds of equipment that we don't have in our lab in Brazil. For me, it's new and I'm learning to work with this equipment. My knowledge has increased a lot."

The collaboration between the two universities brings together two areas of expertise. The lab at UEPG is interested in making a particular class of compounds and studying them for their anti-cancer and antibacterial properties. Boéré's lab focuses on chemical synthesis to design and make new molecules. Once the molecules are designed, they are tested against cancer and bacterial cells.

"Here at the U of L, we have an additional collaboration with Dr. Roy Golsteyn in biological sciences," says Boéré. "Roy is also involved in anti-cancer studies or biologic action of molecules, so they screen some of our materials as well. That collaboration has been funded through the University of Lethbridge Research Fund."

Marszaukowski hopes to have completed developing her compounds by the end of November. She'll then return to UEPG to test them against various cell systems, with an eye to completing her PhD in 2022.

"Flávia has worked very hard here and she's been very creative and highly productive and has developed into a very skilled synthetic chemist," Boéré says. "Collaborations like this give the U of L access to talent we wouldn't otherwise probably get. A lot of the big universities have

multiple exchange programs and they're like magnets that attract resources you couldn't get otherwise. I think this cooperation with UEPG is a very appropriate one for the University. It's a comparable university in terms of size and they produce really good students who are very keen."

While no U of L students have yet gone to Brazil to study, the MOU provides the possibility for up to two undergraduates to spend a semester at UEPG and for two UEPG undergraduates to study at the U of L.