U of T’s Institute for Optical Sciences applies student-driven commercialization strategy

The Univ of Toronto’s Institute for Optical Sciences (IOS) is taking steps to ensure that graduates in the physical sciences and engineering stay in Canada by helping them create their own companies. Concerned with the number of graduates heading to the US for career opportunities, the IOS has established a novel commercialization program that creates start-ups in which the graduates have a major equity stake — one of nine programs that shared $4.55 million.

To date, more than 20 start-ups have been created and the program is being ramped up after winning funding through the Ontario Centres of Excellence’s Experiential Learning Program (ELP). Currently situated in a former laser lab converted into offices, the IOS is moving to the Best Institute across the street from the MaRS Discovery District in March with expanded lab and office space.

“Our entrepreneurship activity has taken on a life of its own. U of T has amazing strength in chemistry, physics and the physical sciences and now there’s recognition and investment is there,” says Dr Cynthia Goh, the IOS’s director, a chemistry professor at U of T and the founder of three spin-offs. “We have a unique path from the lab to the market and the student is the pathway. Their expertise is most important — more important than the technology.”

Goh says IOS is looking for a major sponsor to give the entrepreneurship program more structure and take it to the next level.

The core of the IOS model is a month-long Techno Workshop held each summer in which students are immersed in the mechanics of commercialization and commerce. Unlike other workshop models that stress theoretical concepts, the Techno Workshop facilitates actual company creation with the assistance of mentors and other expertise.

With a strong customer focus and bootstrapping ethos, IOS encourages its spin-offs to achieve sales quickly, allowing them to add value by self-financing expansion to the point where other investment sources become viable.

“These companies want to go to market first and then raise money,” says Goh. “Most students are not prepared for that so we train them to make their knowledge useful to enable them to move along the path to commercialization.”

The IOS was established in 2004 out of the former Ontario Photonics Institute. Initially a traditional academic unit, it has rapidly added an entrepreneurial mandate under the leadership of Goh. Two of the three companies she has founded now have between 25 and 50 staff, although the majority of IOS spin-offs are tiny pre-seed entities. IOS does not take equity in any of its spin-offs, limiting itself to an active mentorship role and leaving ownership to the students and/or the legal owners of the research being commercialized.
“We don’t do ICT or therapeutics but we do everything else in between so our companies are all different,” says Goh.

The students have achieved post-doc, PhD and Master’s training in engineering and the physical sciences but are not limited to optical sciences associated with the IOS. In fact, Goh says the IOS’s reach has extended beyond U of T to McMaster Univ and the Univ of Waterloo.

“Strong motivation is the key but the biggest motivator is benefit to Canada. Our students dream of working for Dupont but we tell them they can be the next Dupont.” Goh says of the program’s aspirations. “We want to retain the best people and we are grassroots. We have lots of experience working with science students and we’re happy to share our knowledge.”

In addition to OCE support, IOS has partnered with MITACS to establish four commercialization post-doc intern positions. It also gets some funding through the First Jobs fund of the Industrial Research Assistance Program.

Fleshing out the IOS’s commercialization ecosystem are myriad contacts in the business and scientific community, ensuring access to expert advice and promising science. IOS also has strong ties to MaRS and benefits from its extensive resources.

Its ace in the hole, however, is the success of the first IOS spin-off — Vive Nano, now Vive Crop protection. Founded by Goh in 2006, the firm commercializes formulations of active ingredients for crop protection and has been widely recognized with numerous awards.

“Vive Nano was our first experiment,” says Goh. “It’s a great model for our students.”

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