



# CQDM: A MODEL FOR SMART INNOVATION



More and more, the industry is facing a lack of productivity and finding it hard to get new drugs to the market. With the industry being challenged to collectively think "outside the box" and to better understand the needs of funding innovation, the idea of 'open innovation' is gaining momentum.

First profiled in the October 2009 issue of *Biotechnology Focus*, the Québec Consortium for Drug Discovery (CQDM), was built as a first of its kind public-private partnership between universities, hospital, biotech companies and most impressive of all, a list of major players in the pharmaceutical industry that includes AstraZeneca, Merck, and Pfizer Canada. It's a unique partnership where all the players work together in pursuit of common goals of investing more into R&D and developing together enabling tools that accelerate the drug discovery process.

"With pharma companies specifically facing pressure to put new drugs in clinic, they realized that they should work together in order to have the resources to develop tools that would eventually help in decreasing the time

and the cost that the industry as a whole is facing for the discovery of new drugs. This system, which we call 'open innovation,' is a reasonable model," said president and CEO of the CQDM, Dr. Max Fehlmann.

The idea, he explained is having all the partners put their money in the same basket to fund risky projects and then share the profits.

"That's a way to dilute the risks, and more projects can be funded with this model. As a result, there are more chances of having a project that gets off the ground, for the same investment," he said.

The results from the CQDM's first program, Focus, have been both positive and encouraging. Through this program, CQDM provides grants for up to \$2 million, for a maximum period of three years. The Focus program is designed for academic research institutions as well as for private companies. Multidisciplinary collaborations between public and private sectors are also strongly encouraged in this program. Thus far, CQDM has financed 11 research projects for a total of \$19.2 million disbursed amongst 17 research entities (nine academic research centers and eight private companies). Even though the first projects financed with this program will end in August 2012, several deliverables with high impact have already been generated.

Three years later the CQDM has performed beyond expectations. And not surprisingly, it continues to grow.

For starters, the number of pharma partners that have signed on with the CQDM has increased to six with the additions of Boehringer Ingelheim and Glaxo Smith Kline Inc. in February, and

the addition of Eli Lilly Canada in June.

With the arrival of the new partners, the CQDM also took another forward step launching a new initiative aimed at building unconventional and highly innovative research projects geared towards impacting the drug discovery process. This new program is called Explore.

CQDM vice president, Research and Business Development Diane Gosselin said there are many difference between the two programs.

"Explore covers projects that aren't possible in the Focus Program model. With Explore, we're trying to fund something that is not possible to fund right now in Canada. Whereas the Focus program focuses on large-scale, multi-disciplinary, multi-institutional public-private partnership types of projects, Explore is more small-scale. It can be just one lab and the projects themselves are more out of the box thinking," she said.

While different in nature, the goals of the two programs remain the same.

"Both programs are geared towards funding tools that can help increase the productivity in general or facilitate the discovery of new drugs but with Explore it's on a smaller scale yet with more risk and higher rewards. Explore is also geared toward talented researchers who wouldn't otherwise have access to support from industry both in terms of funding and in an advisory role," she said.

The Explore program is not only intended for research fields directly related to drug development, but also for all sectors that can provide solutions to the challenges faced in biopharmaceutical research (for example, engineering,



nanotechnology, medical instrumentation, diagnostic products, translational medicine, imaging tools, etc.). The three new pharma companies joined CQDM for this one program specifically, but the three original partners will also support the program.

The CQDM has already selected four projects for the Explore Program and they are:

1. Terence Hebert (McGill University): This project aims to generate a library for G-protein coupled receptor sensors to analyze the conformational mapping of receptor dynamics upon binding and activation.
2. Rafael Najmanovich (Sherbrooke University): The aim of this project is to develop and validate a computational program to detect similarities in the binding sites of drugs.
3. Enrico Purisima (National Research Council, Biotechnology Research Institute): The aim of this project is to develop a novel platform to design antibodies using an innovative computational technique allowing to model and virtually optimize the interactions of antibodies with their target molecules.
4. Brent Richards (McGill University): The aim of this project is to identify somatic mutation sufficient for the development of autoimmune diseases.

In all, the CQDM Explore competition received 51 proposals that were evaluated by the Explore Advisory committee made up of representatives of the consortium's member pharmaceutical companies.

"This is something that is quite impressive with six pharma companies together working and selecting a project that they will finance. They all agreed that Explore should be really dedicated to small, very novel, disruptive technology. Risky things and because we have this leveraging of funds behind the program they're ready to take those risks," said Gosselin.

"The active involvement of six strong pharmaceutical members creates a very powerful leverage effect for all our members, and will benefit the whole scientific community," said Dr. Fehlmann.

#### THE CQDM AND EUROPE

Another new initiative at the CQDM is the CQDM /Alsace BioValley joint funding program.

Alsace BioValley is a France-based competitive health cluster dedicated to therapeutic innovation. The two sides signed an agreement last November for a bilateral partnership for the benefit of Alsatian and Québec research centres and industries in the life sciences and health sector.

"The CQDM always had the intention to partner at the international level so we did some work last year identifying clusters and potential partners all

around the world and Alsace BioValley was a logical fit because they shared the same objectives, they were flexible, they knew a little bit about Québec," explained Gosselin.

The main goal of the CQDM/Alsace BioValley program is to strengthen biomedical research in Québec and Alsace by the alignment of international resources. Once again, at its core is the development of novel enabling technologies or tools to facilitate the



## OUR FUNDING PROGRAMS

All our programs aim to develop tools or enabling technologies that could strongly impact biopharmaceutical research. The annual competitions are opened to researchers in Quebec from the public and private sectors

Explore	Focus	CQDM/ Alsace BioValley
Unconventional and highly innovative ideas, that could lead to disruptive technologies	Innovative technologies with immediate impact on the discovery or development of new drugs	Collaborative projects between Quebec and Alsace
Early concept validation	Development projects	Development projects
Single or multiple laboratories	Multi-institutional/ multidisciplinary teams	Multi-institutional/ multidisciplinary teams from Quebec and Alsace
Public/ private partnership not required	Public/ private partnership encouraged	At least one private company from Quebec or Alsace
Maximum 300K\$ over 2 years	Maximum 2M\$ over 3 years	Maximum 700K\$ (Qc)/ 500K€ (Alsace) over 3 years

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biopharmaceutical research.

"Through this program, we are promoting the partnership between private companies and academic institutions. The projects are for the equivalent of \$1.4 million, to be split by both CQDM and Alsace BioValley," stated Gosselin.

On how the projects were selected, priority was given to enabling technologies that were designed to encourage the development of new diagnostic tools, imaging tools and technologies for the discovery of new drugs, instruments and medical devices platforms. The first actual competition was completed and two projects were selected involving two small private companies based in Québec.

The first project will be focused on visualization and monitoring of receptor-effector complexes activity in vivo, and involves a private-public partnership between Michel Bouvier (IRIC, Université de Montréal), the organization

Mispro of Montreal and two Alsatian collaborators.

The second project will focus on the development and validation of two synergistic platforms based on imaging and biosimulation to visualize the action of drug candidates at the subcellular and molecular levels and involves collaboration between the private organizations Photon etc. (Québec) and Rhenovia (Alsace) and Université Laval.

### LOOKING AHEAD TO 2012: CQDM'S PLANS FOR THE LIFE SCIENCE CORRIDOR

With the establishment of the Québec-Ontario Life Sciences Corridor in June, organizations are racing to facilitate cross-border partnerships between the two provinces. CQDM can be counted as one of those organizations.

"We are now working on a new initiative to fund collaborative projects between Québec and Ontario specifically

to start to fund collaboration projects within the corridor," stated Dr. Fehlmann. "Already, we have identified two projects with the help of MaRS Innovation and MaRS Discovery District that could be funded by CQDM. Like with the Alsace BioValley partnership we have initiated two pilot projects to see how the process will work and thus far we are happy with the results."

The end goal or intention according to Dr. Fehlmann is to launch a formal competition in 2012. Before this can happen, the CQDM will need to find a partner in Ontario.

"The CQDM is looking for a partner to share such a competition with the partner in Ontario taking charge of expenses in Ontario and CQDM taking charge of the expenses in Québec," Dr. Fehlmann said. "It will be a lot smaller than the Focus Program but the general aim is the same. Hopefully we will have something to announce in November."