CQDM is a unique consortium seeking solutions to the most pressing issues facing biopharmaceutical research. President and CEO Diane Gosselin talks about the organisation’s impact in this area and its emphasis on synergetic relationships for advancing discovery.
Firstly, what is CQDM’s primary aim?

CQDM’s mission is to fund research that will lead to new tools or technologies to accelerate the discovery process. Developing a new drug is lengthy, costly and risky; we want to find ways to accelerate the whole process. At CQDM this is achieved using a unique, collaborative approach. We currently have nine pharma company partners who each invest in the organization. These companies share not only the cost of research, but also the results, and this is what makes our model so unique. We are also funded through public means, by the Governments of Canada and Quebec. This combination of private and public investment gives CQDM financial leverage of 25-fold, enabling us to work on tools that eventually accelerate the process. We can afford to take risks and are able to conduct research that a pharma company alone would not have the capacity to do.

Can you give examples of the kind of risks CQDM might take?

Firstly, CQDM funded the development of a macrocycle library from scratch. Macrocycles are extremely important when developing effective new drug treatments since they can inhibit protein interactions. They are attractive to the pharma industry because of their potential in therapeutics, but no one wants to invest in them because understanding them is extremely challenging. CQDM funded a project that allowed the development of a powerful chemistry platform to more rapidly and more efficiently synthesise a new class of macrocycles (called nacellins), which are cell permeable and have greater potential for oral bioavailability than other macrocycles. Though funding the development of such a platform was risky, as it was very early stage, the project was a success and Encycle Therapeutics (a biotech start-up in Toronto created to further develop those macrocycles) now has a library containing 1,400 of these promising macrocycles.

The second example is biomarkers. Imagine being able to identify a biomarker to help identify an Alzheimer’s disease patient at a very early stage. Diagnosis of the disease is usually difficult because symptoms often appear when the patient is at a very late stage. A biomarker that can help identify these patients at a much earlier stage could be extremely helpful for many different reasons. Treatments would be more effective in the first instance, but it would also be much easier for the whole pharma industry to recruit patients. This is important because recruiting patients at an early stage provides a better way of measuring the impact of a drug on the disease.

To what extent has the organisation’s mission changed since you were appointed to head up the research consortium in 2012?

CQDM was created in 2008, so is relatively young. The mission at our inception has not changed; we want to impact biopharmaceutical research. We were mainly based in Quebec at the beginning and this is where our roots remain, but we know that biomedical research is global and we need to work with the rest of the world. Much of my recent work is primarily geared towards increasing our leadership across Canada, and ensuring our researchers have the capacity to work at the international level. We have recently generated a number of multinational, collaborative programmes with the US and France, for example. We want to work with other countries in Europe and are in discussions with different partners with a view to increasing our capacity to work at the international level.

CQDM has also acquired new pharma members, with three new companies joining since my nomination. The whole concept here is for all of the leading pharma companies to be part of CQDM in order to increase leverage. We aim to expand from a membership perspective and also an international point of view.

Is CQDM unique on a global scale? Are there other examples similar to this company?

Although CQDM is unique, there are indeed other precompetitive pharma consortia, of which the Innovative Medicines Initiative (IMI) is one important example. Our approach is a little bit different; while IMI pharma partners provide in-kind contributions, CQDM’s pharma partners provide both in-kind contributions and cash. The benefit of this is very impressive leverage.

We also have our own unique mentorship programme (see page 26) which is extremely beneficial for everyone involved. Within the programme, our pharma partners identify mentors, ie senior scientists at the global level, for each of the projects we are funding. Although the research is performed in Canada, or in collaboration with France or the US, mentors – about 100 as of today – come from all over the world and are expert advisors in certain areas of research. In a certain project you may have two, three, or even up to nine mentors, and their mandate is to make sure the technology aligns with industry needs. As you can...
imagine, this provides substantial support to the projects. For the researchers it’s something that is of great interest, and provides a one-of-a-kind opportunity.

In your opinion, has the pharmaceutical industry stagnated in terms of innovation in recent years?

I would say yes. It is extremely disappointing when you see all of the effort being put into research but little increase in the number of new drugs being approved, and this has been the situation for the last 10 years. There are several reasons to explain this. First of all, diseases are more and more complex; it’s difficult to find or even understand all of the diseases and symptoms, and the mechanisms to stop the disease. Cost for R&D is increasing too, so there is only so much that can be done with a certain number of resources. I think the pharma industry is not always in a good position to justify increasing cost in R&D or taking more and more risks for early stage research. Pharma companies just cannot afford to initiate new early stage programmes in R&D. With the ageing population, innovative solutions are crucial. That’s why the pharma industry is increasingly working with external partners to innovate. Especially in the early, more risky, stages of research.

How might researchers access CQDM’s funding?

We have various funding programmes, each with different criteria and objectives. We hold competitions where we launch a call for proposals and ask applicants to submit their proposal to us. We have 23 calls for proposals so far and we have reviewed 645 different applications. From these we have identified 35 projects which we are now funding.

These 35 research projects are being performed by 51 different research entities. Around 23 are from biotech companies: almost half from the private sector, and the other half from academic institutions. Currently, we have 460 different researchers being funded by CQDM. The organisation is funding research areas across Canada, but we now have several programmes where we collaborate with different international partners.

Are there any challenges to these collaborations?

Yes indeed. We need to identify the partners that align with our goal, but at the same time don’t want partners to be trying to do the exact same thing as CQDM; we need to find synergies. We have established solid relationships with our current pharma partners and other co-funding partners and are aligned in what we are trying to achieve. We can bring mutual benefits to one another.

Once you have identified a partnering opportunity, efforts need to be made from both sides. We need to make sure the researchers are aware of what is going on and where the opportunities are. It usually takes some time before you can start to initiate researcher engagement or a call for proposals. Taking the time to identify the very strong projects provides interesting end results. CQDM has certainly found this to be true, and we have very interesting projects being funded between France and Quebec in particular.

In addition to the macrocycle project, are there any other specific initiatives you are particularly excited about?

I’m excited about the macrocycle project, not only because of the technology being developed, but also for the value we are generating for biotech companies. Encycle Therapeutics was created to further develop the macrocycles into drugs. It’s very difficult for a company like Encycle to find private investment to develop such a library of macrocycles, especially one that is still in its infancy. We have done this and have developed the funding, in collaboration with MaRS Innovation. Four leading pharma partners now wish to screen the library. This is a great opportunity to showcase the library to the pharma industry and could lead to it being validated, putting the company in a good position to raise some significant private investment. We are proud of this because it’s a great example of the types of benefits that we want to bring for biotech companies and also our pharma partners; we want to achieve that mutual benefit.

Secondly, we have funded the development of biosensors that can measure the effect of the drugs on G-protein-coupled receptor (GPCR), an important family of therapeutics targets, which are largely used in the pharma industry. We have been able to develop a screening platform that allows us to predict the side effect and efficacy of a given drug. This project has been extremely successful and is a great example of how we have generated strong technology, as well as benefits for academic researchers, biotech stakeholders and pharma industry as well. We’re very proud that not only have we developed the technology and funded the research, we have put the researchers in a good position for long-term partnerships with leading pharma companies. This project also led to the establishment in Montreal of Domain Therapeutics, a company based in France.

Where do you plan to steer the consortium in the future?

The principal goal is to expand at the international level. We are uniquely positioned in Canada because of our focus on platforms. Everybody wants to use platforms to develop and discover new drugs but no one really wants to focus on them; our library of macrocycles, for example. We have the capacity to fund these research projects and we know these platforms have commercial value, which CQDM seeks to capture. We see ourselves playing an important role in Canada, as while we are focusing on these platforms we can fill an important gap in the innovation chain. In other words, we want to use these platforms to generate a pipeline of early drug candidates and we want to work with other groups who are going to further develop these candidates. This will generate a strong pipeline for the main key players in Canada.

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