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From Scotland to MaRS

By Michael J. Haas, Senior Writer

GlaxoSmithKline plc has begun ramping up its collaborations with academia through two programs that will identify and fast-track the development of academic research with commercial potential. On the one hand, it is forging alliances with individual researchers through its Discovery Partnerships with Academia program, which will reward successful researchers all the way from bench to bedside. On the other hand, the pharma will help Toronto-based technology transfer organization **MaRS Innovation** identify its most commercially viable research in exchange for rights of first refusal.

> **"Any model of academia-industry partnership needs to be simple to avoid wasting time and money."**
> ***—Patrick Vallance, GlaxoSmithKline plc***

Through Discovery Partnerships with Academia (DPAc), the pharma will partner with about 10 individual academic researchers over the next year to develop early stage projects and thus give these academics a more expedient alternative route to developing a medicine besides starting a company, said Duncan Holmes, head of DPAc at GSK.

GSK announced its first DPAc alliance this month—with Irwin McLean, professor of human genetics and head of molecular medicine at the **University of Dundee**. GSK and McLean's group will develop new therapies to treat recessive dystrophic epidermolysis bullosa (RDEB), a rare congenital disease in which the skin and other surfaces of the body develop deep blisters in response to even mild pressure. McLean's research focuses on inherited diseases that affect epithelial tissues.

Through the GSK-MaRS Innovation Fund, announced on May 31, a joint GSK-MaRS team will review drug development projects coming from the 17 Ontario institutions that MaRS represents. The best projects will either be in-licensed by GSK or form the basis of startups that later would out-license their technologies to GSK, said MaRS president and CEO Raphael Hofstein.

DPAc: early confidence

According to Holmes, academic researchers with translatable findings previously had two main options—start a company or publish and hope to attract a company's attention. But in the latter case, "whether those published findings ever turned into a medicine came down to someone picking up on the findings, which is often serendipitous. And it takes a long time for this to happen," he said.

He acknowledged that drug companies and venture capital firms often scout academic research and in-license technologies before the researchers have published their findings. But he said DPAc will enable GSK to collaborate on projects before the stage at which a technology would usually be considered ready for in-licensing.

DPAc will also remove the element of serendipity by connecting GSK directly with key academics, thus allowing the pharma to rapidly identify and develop research that originates in universities, Holmes said.

"Our idea is to partner the individual researcher with a GSK team" to develop the project, said Patrick Vallance, SVP and head of medicines discovery and development at GSK. The researcher would gain access to the company's drug discovery resources—thus enabling them to conduct ADMET, pharmacokinetic, toxicity and other studies—while GSK gains exclusive commercial rights to any medicine that comes out of the project, he said.

The company will seek partners around the world among its own academic contacts and among researchers who approached GSK after it first announced DPAc in 2010, he said.

Under last week's deal, McLean's research team will characterize any compounds discovered and GSK will be responsible for preclinical and clinical development. The university will receive an undisclosed upfront payment and is eligible for undisclosed milestones and royalties.

Holmes declined to discuss scientific details about the project but did say McLean's work matched key selection criteria for DPAc: a strong scientific hypothesis, deep understanding of the biology of the relevant target or pathway and some evidence that hitting the target produces a therapeutic effect.

"We recognize that these projects are very early stage, so we're not looking for preclinical proof of concept of an optimized molecule in animal models," he said. "We just need to have a level of confidence that the scientific supposition is a reasonable one."

Thus, DPAc projects could range from those in which the hypothesis is ready to test in a biological assay up to and including those that need lead optimization, Holmes told *SciBX*.

Deal with it

To rapidly move projects forward, GSK offers academic technology transfer organizations (TTOs) a boilerplate agreement for a DPAc project—thus cutting the time and cost of lengthy negotiations, Holmes said.

"We answer proposals brought to us within weeks, and if interested, we meet with the academic as soon as we can," he told *SciBX*.

"Any model of academia-industry partnership needs to be simple to avoid wasting time and money," Vallance said. "DPAc doesn't allow for negotiations with the academic TTOs. We offer one type of agreement, on a take-it-or-leave-it basis."

Under the standard DPAc agreement, "GSK would continue to fund the research so long as it is successful in terms of meeting milestones" such as the development of an assay or compound screening program within an allotted timeframe.

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As long as a project meets its milestones, "we're committed to taking it all the way through to a medicine, and the academic will continue to be part of that," Holmes said. "We don't plan to pull a project away from the academic and develop it wholly in house at any point."

Holmes declined to say how a DPAc deal would structure ownership of resulting IP, "but if GSK decides not to continue a project, we would not want to prevent the academic from commercializing the findings with someone else," he said.

GSK spokesperson Melinda Stubbee said the company plans to announce a second DPAc alliance—this one with a U.S. researcher—this summer.

"We are doing about 10 of these partnerships in the next year because that gives us a reasonable chance of getting at least one medicine out of the program" without spreading the company's resources too thin, Vallance said.

Holmes added: "The focus is not on having 10 projects *per se*, and I don't want DPAc to be driven by that particular metric. The program is about identifying the right opportunities on a scale that GSK can manage. Time will tell which opportunities we identify, the number and quality of them and how to move them forward," he said.

Going to MaRS

In contrast to DPAc—through which GSK will cherry-pick research from around the globe—the pharma's deal with MaRS gives it rights of first refusal to a selection of early technologies emerging from MaRS' partner institutions in Ontario.

"GSK in Canada has been and always is looking for strategic opportunities and collaborations," and the MaRS deal is part of that strategy, said Savino DiPasquale, VP of business development at GSK Canada. "This partnership allows GSK to collaborate with MaRS, a leader in early stage science in Ontario, and gives us simplified and cost-effective access to Canadian discoveries and platforms for our R&D."

According to Hofstein, industry's rule of thumb is that about 10% of academic discoveries have the strongest commercial potential, and MaRS sees about 150 discoveries annually in drug development and diagnostics. Thus, a joint GSK-MaRS deal team expects to review about 15 projects each year and decide which ones to recommend to the pharma for in-licensing, he said.

"We are sacrificing an element of confidentiality by allowing GSK to participate in the project vetting process," Hofstein said. "But in turn we benefit from the fact that GSK will contribute its expertise in assessing market needs, identifying which projects could be scaled up to products and so on—expertise that we don't have."

Stubbee said GSK is contributing $750,000 to the program.

MaRS will contribute several million dollars per year to the joint program, as well as in-kind investments such as project management and business development capabilities, Hofstein said. MaRS receives funding from the Canadian federal government, the provincial government of Ontario and its member institutions.

Hofstein also said startups could emerge from the partnership if a technology is interesting to GSK but not quite ready for in-licensing. In those cases, MaRS would seek seed funding for the new company and GSK would offer guidance on how to develop the technology to an agreed-upon stage, with the understanding that the pharma would in-license the technology at that point, he said.

GSK and MaRS have no timeline for assembling the formal deal team and beginning to choose projects. However, because the two organizations have offices in the same building in Toronto, an informal deal team already meets regularly, "and we have already identified a few projects that we will present to the company," Hofstein said.

He declined to disclose details about those projects.

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COMPANIES AND INSTITUTIONS MENTIONED

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