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Vanderbilt's Neuroscience Unit Operates Like A Biotech

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With many Big Pharma companies cutting back their R&D budgets, tie-ups between academic and industry have become a dealmaking hot spot as drugmakers look for new, and hopefully less expensive, sources of innovation.

Some pharmas, most notably **Pfizer Inc.**, are making large-scale, institution-wide bets, setting up innovation centers that exist in close proximity to their academic partners (“Back To School: Big Pharmas Test New Models For Tapping Academia” – IN VIVO, February 2011).

But there is a lot of flux in how industry partners with academia, and sweeping deals that encompass an entire university aren't a prerequisite for success. Indeed, a small drug-discovery shop within Vanderbilt University Medical Center shows how a more focused approach can also lead to top-notch results in the so-called translational research space. This group, the **Vanderbilt Center for Neuroscience Drug Discovery**, continues to garner National Institute of Health grants as well as milestone-based payments from industry via serially inking drug discovery deals centered around one specialized area – addressing brain-linked disorders through the modulation of glutamate receptors.

Over a period of a few weeks in September 2011, VCND, which is headed by former Merck & Co. Inc. neuroscience researcher P. Jeffrey Conn, PhD, has pushed ahead on three different collaborations. On Sept. 15, the group announced it had earned a milestone payment by delivering preclinical drug-like molecules to treat fragile X syndrome to **Seaside Therapeutics LLC**; six days later, it licensed a set of preclinical glycine transporter one (GlyT1) inhibitors to **Karuna Pharmaceuticals Inc.**, which aims to develop them as a schizophrenia therapy; and on Sept. 30, Vanderbilt advanced a series of mGluR4 positive allosteric modulators for Parkinson's disease under a research agreement with the **Michael J. Fox Foundation** for Parkinson's Research. Conn's shop is now seeking an industry partner to license or co-develop the Parkinson's assets (“Vanderbilt Research Into

GlyT1 Inhibition May Result In New Approach To Treating Schizophrenia” – “The Pink Sheet” DAILY, Sep. 29, 2011).

The specific financial payments Seaside paid Vanderbilt under its 2008 research alliance to develop metabotropic receptor subtype 5 (mGluR5) modulators were not revealed; nor was the licensing fee paid by Karuna. That differs from VCND's past practice – it disclosed a \$10 million up-front payment from Johnson & Johnson, as well as \$100 million in potential milestones, under a 2009 agreement focused on mGluR5 modulators for schizophrenia. But Conn, in an interview, stressed that VCND has been making good progress in its efforts to expand relationships with industry, a trend that could be crucial if NIH funding decreases due to congressional efforts to cut federal spending.

“It obviously would have a major impact on us and all other research labs in university settings that rely on the NIH,” he says of potential federal budget cuts. “We are constantly trying to work to diversify our funding” beyond government support, working with industry players as well as foundations. “If there was a real drop-off in NIH funding, my hope is that efforts that are directly impacting therapeutic discovery would be seen as having high priority,” he notes.

Although VCND brings a business-like approach to its drug discovery initiatives, thanks partly to the background of Conn and some of his associates in biopharma R&D, the unit nonetheless prioritizes its academic mission. Ultimately, says Conn, it measures success a number of ways, not just via return on investment, which can be the main means private-sector entities use to judge their achievements. “What has been most successful about our effort is that we do perform a lot of basic science coupled with every drug-discovery effort,” he says.

As such, Vanderbilt, like the Sanford-Burnham Medical Research Institute, is poised to take greater advantage of the biopharma industry's desire to move early-stage research efforts outside its walls – and, increasingly, off its P&L (“Sanford-Burnham

Medical Research Institute: Making Sure New Drugs Aren't Lost In Translation" – START-UP, September 2011).

"[Without NIH grants] there's not a lot of money left over to do the detailed basic science" that informs drug discovery," Conn says. But that doesn't mean he believes Vanderbilt or other non-profits should necessarily try to replace the drug discovery expertise – be it medicinal chemistry or screening capabilities – pharma has built over the past two decades. "I would not want to be a cheap imitation of what can be done at a very high level in pharma. We'll never meet Pfizer or Merck or other major pharmaceutical companies in terms of pure muscle for drug discovery capability, so what sets us apart is that deep science," he says.

Conn believes VCNDD can take new ideas that result from basic research and think about them "in a very targeted, critical way" to develop data that validate and de-risk novel science so that companies can invest. That worldview is a direct result of Conn's time at Merck, where internally his staff didn't have the capacity to do the experiments that would show a potential new target's viability. "We'd see a lot of great science coming out of universities, proposing new targets for different disorders, for instance. But they never took it far enough for us to know if it was viable or not," he says.

With an emphasis that extends beyond a profit motive tied to an actual marketed drug, Conn says VCNDD uses several metrics to measure success, including the number of deals it signs, the dollars such collaborations generate, and the successful delivery of molecules to partners. "There's no single metric that we really look to," Conn explains, noting that his group tracks traditional academic metrics such as the number of publications authored by VCNDD scientists as well as citation rates for those same studies. "We also look at metrics such as composition-of-matter patents, the quality of those patents, how many of those patents are licensed and actually make it out to the marketplace or advance toward the marketplace," he adds.

While VCNDD so far has consistently taken the approach of making its own deals with biopharma companies, Conn says the door is not closed to potentially spinning out some of its research into a venture capital-backed start-up. Such decisions are made on a case-by-case basis and depend on what seems

best for each individual program. "For the things that we are doing now, much of it [requires] very complex biology and chemistry to move the science forward to the point where we think we can have the greatest impact. And it's hard to do that in a biotech setting," he notes. "A venture-backed company at the discovery stage is just a difficult thing to pull off, I think, in terms of giving a return to the investors within a time frame that is viable for them without it compromising the science."

One reason VCNDD prefers smaller, targeted projects with industry partners, rather than broader initiatives such as the Pfizer Centers for Therapeutic Innovation, is Conn's unit can be somewhat self-sustaining, even in the face of potential NIH funding cutbacks, by generating, patenting and maintaining a financial interest in its own intellectual property. A crucial factor that made VCNDD's partnership with the Fox Foundation so rewarding, he adds, is that the foundation does not ask for an IP stake related to the research it helps to fund. Calling the Pfizer CTI "a very different type of collaboration," he notes such deals are something Vanderbilt would "definitely be open to." "But it's different from the type of work that we do, which is much more target-based and goal-oriented," Conn says, comparing VCNDD structurally

in some ways to a small biotech. "We're very focused and milestone-driven, with very clear go/no-go decision points."

[Editor's note: This story was contributed by Start-Up, a monthly magazine providing in-depth coverage of leading edge biopharma and medical device companies. For information, call customer service at 800-332-2181 or sign up for a free trial at <http://www.elsevierbi.com/publications/start-up/free-trial>.]

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