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Temple building

By Chris Cain, Senior Writer

The **Temple University School of Pharmacy** has teamed up with **MorphoSys AG** to bring industry-quality antibody technology in-house. The partnership expands MorphoSys' access to early stage research and adds to the toolkit of discovery capabilities at the **Moulder Center for Drug Discovery Research at Temple University**.

The center was founded in 2009 with a donation from Lonnie Moulder, a university alumnus and CEO of **Tesaro Inc.**

Center director Magid Abou-Gharbia told *SciBX* that the center's strategy has been to focus on building in-house medicinal chemistry capabilities while partnering with outside universities—and in some cases small companies—to gain access to new targets.

Abou-Gharbia also is associate dean for research and a professor of medicinal chemistry at Temple.

"We started with a vision to have a fully integrated drug discovery center, founded with a strength in chemistry and drug design. Most drug discovery centers in academia are founded by biologists and focus on the disease interests of the founder. Our strength in chemistry and drug design allows us to be highly flexible in the disease that we study and the biology that we study," he said

In 2011, the center entered into a discovery partnership with the target-rich but chemistry-poor **University of Rochester Medical Center**.[1] The partners expanded the deal in 2012 to include a $500,000 research fund called the Drug Discovery Pilot Award Program that provides grants to researchers conducting either exploratory screening studies or lead optimization.

The Rochester partnership has resulted in IP covering compounds against an undisclosed target that were developed as part of a three-way collaboration with the **University of Nebraska Medical Center**.

More recently, the Moulder center has partnered with **The Wistar Institute** to pursue cancer targets and with **The Johns Hopkins University School of Medicine** to pursue targets in neuroscience and drug addiction. Abou-Gharbia said that the center now has nine academic and nine industry collaborators.

He highlighted two industry collaborations: one with **Shifa Biomedical Corp.** to develop a small molecule inhibitor of proprotein convertase subtilisin/kexin type 9 (PCSK9) and one with **Cortendo AB** to develop compounds to treat type 2 diabetes and Cushing's disease.

At least 10 companies are developing PCSK9 inhibitors to lower low-density lipoprotein cholesterol levels in a variety of lipid disorders. There are three antibodies against the target in Phase III testing.

Antibody up

On the heels of the small molecule deals, Abou-Gharbia said that the next logical step was to expand the center's biologic capabilities. To do this, he recruited Jon Condra in September 2012 to head a new Biotherapeutics Discovery Unit.

Condra previously was head of phage display technologies in the biologics department of **Merck & Co. Inc.**'s research labs. He also is an associate professor of pharmaceutical biotechnology at Temple.

Condra's first order of business was to identify a technology Temple could rely on for antibody production.

MorphoSys CEO Simon Moroney told *SciBX* that Condra's prior experience with the company's HuCAL phage-display technology gave the biotech confidence in Temple's ability to make the most of a partnership.

In exchange for a first option on any antibodies produced using its technology, MorphoSys will install its Ylanthia phage-display platform at the Moulder center. Ylanthia is MorphoSys' successor to HuCAL and is designed to reduce the time needed for lead optimization.[2]

Condra said that the ability to rapidly develop molecules was a key reason he looked to bring Ylanthia in house. "It's easy to get antibodies that bind targets, but then you spend a great deal of time trying to optimize them. What MorphoSys has done is to optimize the antibodies for developability, which will greatly improve our chances of success."

The Moulder center will independently run discovery activities using the Ylanthia platform. MorphoSys will provide technical assistance and will not have a hand in selecting programs.

Moroney said that the company is comfortable with a hands-off approach because Moulder is an applied research institute with a more translational focus than most institutions. This is the first time MorphoSys has installed its phage-display system at an academic center.

He also noted that MorphoSys has been looking for ways to expand its early discovery capabilities. "Discovery is one of the hardest things in the industry, and there aren't any companies, not even pharma, who can do it on their own. We have a discovery group in-house, but of course it is limited, so we look for any way we can work productively with groups that have the potential to discover therapeutic antibodies against new targets," he said.

"This is the kind of partnership we would do again, in a selected, targeted way, at applied sites that are interested in drug development," Moroney added.

Cain, C. *SciBX* 7(18); doi:10.1038/scibx.2014.511
Published online May 8, 2014

REFERENCES

1. Edelson, S. *SciBX* **4**(33); doi:10.1038/scibx.2011.923
2. Cain, C. *BioCentury* **20**(5), A9–A10; Jan. 30, 2012

COMPANIES AND INSTITUTIONS MENTIONED

Cortendo AB, Gothenburg, Sweden
The Johns Hopkins University School of Medicine, Baltimore, Md.
Merck & Co. Inc. (NYSE:MRK), Whitehouse Station, N.J.
MorphoSys AG (Xetra:MOR; Pink:MPSYF), Martinsried, Germany
Moulder Center for Drug Discovery Research at Temple University, Philadelphia, Pa.
Shifa Biomedical Corp., Malvern, Pa.
Temple University School of Pharmacy, Philadelphia, Pa.
Tesaro Inc. (NASDAQ:TSRO), Waltham, Mass.
University of Nebraska Medical Center, Omaha, Neb.
University of Rochester Medical Center, Rochester, N.Y.
The Wistar Institute, Philadelphia, Pa.