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No 'easy targets' for Omass, which adds $95M series B for small-molecule work

By Nuala Moran, Staff Writer

Omass Therapeutics Ltd. has raised £75.5 million (US$94.6 million) in a series B round, as it continues to advance five small-molecule programs against previously intractable membrane-bound targets to the clinic.

Despite the early stage of these programs, the company attracted a trio of heavyweight international investors, with Sanofi Ventures, Northpond Ventures and GV (formerly Google Ventures) co-leading the round.

The existing investors, Syncona, Oxford Science Enterprises and Oxford University also participated. Syncona said the financing has resulted in a 32% uplift in the value of its stake in Omass.

Oxford-based Omass raised $18 million in the first tranche of its series A in November 2018, adding a further $37 million in February 2020. That enabled it to switch from a service model, industrialize the technology platform and begin inhouse drug discovery.

Since then the platform has proved to be very productive, said Ros Deegan, CEO. "We now have two programs in lead optimization and [one] in hit to lead. In addition we're making some good early progress in two [others], so we have a rich pipeline against targets that the investors are excited about," she said.

"These are not easy targets; these are targets that other people have not managed to drug. So although we are still relatively early stage, we're over a hump that has proved to be a barrier for other companies," Deegan told *BioWorld*.

The Odyssion platform uses gas phase mass spectrometry technology to study the binding of small molecules to protein assemblies.

The technology was developed by Omass founder Carol Robinson, professor of chemistry at Oxford University, who pioneered its use as a tool for studying intact membrane proteins and intracellular protein complexes, and in understanding how they interact with their immediate environment.

It makes possible to observe targets at high resolution in their native form with interactions preserved, thus showing how they are influenced by regulatory proteins, pH, ions and lipids.

As one example of the power of Odyssion, it has enabled Omass to clear what Deegan described as a "double high bar" in the discovery of an insurmountable antagonist of the G protein-coupled receptor melanocortin 2 (MC2), which is selectively activated by adrenocorticotropic hormone. Deegan said the Omass compound is able to turn the MC2 receptor off, even in the presence of very high concentrations of the natural ligand.

Ros Deegan, CEO, Omass Therapeutics

The aim is to control production of endocrine hormones in the rare inherited disorder congenital adrenal hyperplasia (CAH). Turning the MC2 receptor off is important because the negative feedback loop that normally occurs in the body to stop the adrenocorticotropic hormone continuing to build up isn't working properly in CAH.

Another example is drugging gasdermin D, which sits at the heart of multiple inflammatory cell death pathways. When activated, it forms lytic pores in the cell membrane leading to the release of inflammatory cytokines.

Because Odyssion conserves the fidelity of the native target ecosystem, it is possible to look at gasdermin D in context, yet outside the confounding complexity of the cell. At the same time, the system provides richer insights than stripped down structure-based design.

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"We've really validated the fact that the platform allows us both to see biologically things that other people can't see, and go after targets other people can't," Deegan said.

In addition, Odyssion is uncovering novel biology. "Every day almost, we learn new things about what the platform can do," said Deegan. "As we actually analyze these proteins in native mass spectrometry, we find these new biological insights that we can potentially leverage into our programs."

Native state

With five programs progressing more or less in parallel, Omass has not specified which will be first to the clinic, or when. "I wouldn't say all will get to the clinic in the time frame [of the series B], but we certainly expect to be clinical stage," Deegan said. "It's a significant fundraise, so we can really focus on progressing the portfolio."

The company also will be looking to form partnerships. "We've been purposely inward-looking during the series A, because we felt we needed to prove what the platform can do and build our own portfolio," said Deegan.

As Omass turns the handle on the Odyssion platform, Robinson is continuing to develop it. Earlier in April, she published a paper in Nature describing how native mass spectrometry was able to capture a GPCR signaling cascade in a native membrane environment without purifying the protein.

Using rhodopsin as the model, all the elements of the signaling pathway were captured and the changes associated with the signaling cascade and rhodopsin's response to photon activation were captured in real time.

"Carol's paper is really focusing on one of the key elements that we think is important in moving this technology forward, which is about the ability to actually interrogate proteins directly from membranes, so getting them in an even more native environment," Deegan said.

"We talk about the native state of the existing work we do, because we're looking at more than just the target, we're looking at other molecules in the ecosystem. But by actually extracting directly from membranes without going through purification, then of course, you're even more native."

The technology Omass licensed from Oxford University includes IP around how to extract proteins directly. "It's an example of how we are progressing the technology to get even more data," said Deegan.