ON A MISSION TO BECOME A MAJOR SOURCE OF BIOPHARMA INNOVATION IN ONCOLOGY

In conversation with Ming Wang, President and CEO, Phanes Therapeutics, Inc.

With three proprietary bispecific antibody platforms and three oncology assets in the clinic, two with orphan drug designation, Phanes Therapeutics is establishing itself as an innovative partner in the biotech ecosystem. Building on its string of collaborations, the company is seeking to harness its expertise with further partnerships for its early-stage programs and unique technologies with companies aiming to boost their pipelines.

Tell us about Phanes Therapeutics and its mission

Founded in 2016, Phanes focuses on innovative drug discovery and early development in immuno-oncology (IO). We have multiple differentiated or first-in-class assets in clinical development to address several unmet medical needs in oncology. Our mission is to become a major source of innovation in the biopharma industry.

How do your three bispecific antibody platforms work?

Cancer is complex to treat, often requiring drugs that target more than one mechanism. One way to achieve this is with a bispecific antibody with two 'warheads' that target two distinct tumor-associated antigens (TAAs) on cancer cells. Despite scientific advancements, many bispecific antibodies are made with fusion proteins, which tend to aggregate and are unstable so are not ideal candidates to become drugs from a manufacturing or clinical development perspective. Bispecific antibodies with native immunoglobulin G (IgG)-like structures are preferred because they have drug-like properties, especially those with no fusion-protein components.

Phanes' proprietary bispecific platforms can make native IgG-like bispecific antibodies without using fusion-protein technologies. The first, Pairing of Alternative Cysteines (PACbody), is designed for use at the research stage.

The second, SPECpair (Shifted Properties Elicited by Charge pairs), manufactures PACbodies using the conventional process for monoclonal antibodies (mAbs). This makes manufacturing cost-effective, easy to implement, and fast. You can go to any contract development and manufacturing organization (CDMO) and say "Okay, make this one just like a mAb."

The third platform, ATACCbody (Albumin-modulated Targeting of Antibodies to Cancer Cells), is an extension of the first and second. Using a PACbody with SPECpairs on it, you can attach a piece of free fatty acid (FFA) to one arm of it through chemical conjugation, and the final molecule is called ATACCbody. The conjugated FFA molecule on the ATACCbody can bind to albumin in the blood circulation and the interstitial space in normal tissues and modulate target binding through structural hinderance. This unique technology can modulate the activity of a bispecific antibody in a reversible manner and can be used in areas such as cluster of differentiation 3 (CD3)-based T cell engagers to reduce the risk of cytokine-release syndrome (CRS).

How are the lead pipeline candidates progressing?

We advanced three assets to the clinic last year after several early years of focusing on research. We optimized an anti-CD47 mAb with a balanced safety and efficacy profile, and developed our three technology platforms to make first-in-class anti-CD47 bispecific antibodies that we can use to create new biology. Two assets, PT886 and PT217, have received orphan-drug designations from the US Food and Drug Administration (FDA) for pancreatic cancer and small-cell lung cancer, respectively. These molecules induce the immune system to target tumor cells through activation of macrophages and potentially T cells. A third clinical candidate, PT199, is a mAb with a unique binding mechanism that fully inhibits CD73, a key target mediating T-cell suppression in solid tumors. We're excited and optimistic that our novel drugs could positively impact the lives of cancer patients.

Your collaborations have been successful so far. Can you explain the key ones?

Biotech is capital intensive and rife with risk, usually taking up to 12 years to bring something to regulatory approval. As a small company, it is vital we establish ourselves within the biotech ecosystem to maximize chances of success. We aim to be a source of biopharma innovation, and have actively sought company partnerships, hoping our innovations will augment their work. These partnerships help with our capital needs, provide independent validation of our technology, and enhance industry recognition. We have established partnerships or collaborations every year since 2019, with the latest being a research collaboration with Xyphos Biosciences, an Astellas company, leveraging our bispecific technologies in cell therapy. The beauty of our innovations is that they are broadly applicable across various modalities. This is demonstrated through our collaborations in spaces such as cell therapy, bispecific antibodies, and antibody–drug conjugates (ADCs).

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>
> Ming Wang, President & CEO, Phanes Therapeutics

What are you looking to achieve in the future?

We'll continue to explore strategic partnerships for our early-stage programs and proprietary technologies with companies that can leverage our expertise to boost their pipelines. For our clinical candidates, we're conducting phase 1 clinical trials that will include testing in combination with IO drugs, such as anti-programmed cell death protein 1 (anti-PD-1) or anti-programmed-death ligand 1 (anti-PD-L1), which have complimentary mechanisms. As we develop an understanding of the profiles of these drugs, we aim to find partners with complimentary capabilities to jointly advance their development, or ones that share our vision and have capabilities to develop and eventually commercialize them. Our ultimate goal is for these drugs to reach doctors rapidly so they have the necessary tools to eradicate cancer.

Phanes Therapeutics