Abalone Bio and University of Pennsylvania Announce Collaboration to Develop Next-Generation Obesity Drugs

EMERYVILLE, CA, UNITED STATES, March 11, 2025 /EINPresswire.com/ -- Today, Abalone Bio, the only antibody company measuring large-scale activity data to drive AI-powered discovery of active therapeutics, announced a collaboration with the University of Pennsylvania, Perelman School of Medicine, to develop next-generation antibody-based obesity drugs. The partnership brings together UPenn's expertise in metabolic disease research and preclinical screening with Abalone's ability to discover functional antibodies that activate G-protein coupled receptors (GPCRs).

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Obesity drugs such as GLP-1 receptor agonists have transformed weight management, but nearly 50% of patients discontinue treatment within a year, often due to intolerable gastrointestinal side effects. The collaboration aims to address this challenge by developing antibody-based therapies that selectively activate the neuronal circuits responsible for metabolic benefits while avoiding pathways linked to adverse effects.

Matthew R. Hayes, Ph.D., Albert J. Stunkard Professor in Psychiatry and Vice Chair of Basic and Translational Neuroscience in the Department of Psychiatry at UPenn, has spent years studying how different neuronal circuits regulate metabolism. Many existing obesity drugs act too broadly because their target receptors are distributed throughout the brain and body, leading to unintended side effects. The challenge has been finding a way to only engage the neurons responsible for beneficial metabolic outcomes, something that traditional small-molecule and peptide drugs struggle to achieve.

"For years, the missing piece in obesity therapeutics has been the ability to selectively target the right neurons without affecting others," said Matthew R. Hayes, Ph.D. "Many drugs act too broadly because their target receptors are distributed throughout the body. Abalone's unique approach allows us to find extremely hard-to-find antibodies that can selectively engage only the

neurons responsible for beneficial metabolic effects without triggering pathways that cause nausea and other adverse effects. This partnership enables us to create next-generation obesity treatments that are both effective and well-tolerated."

A major advantage of this collaboration lies in its dual approach. Dr. Hayes and his team have identified several cell-specific surface markers and targets that facilitate neuron-specific modulation through Abalone's activating antibodies. In parallel, UPenn's specialized preclinical screening capabilities provide a critical tool for identifying and eliminating drug candidates likely to cause nausea before they reach patients.

Most obesity drugs are tested in rodents before moving to human trials, but rodents lack the ability to vomit, making it difficult to predict whether a drug candidate will cause major GI side effects. UPenn's lab is one of just a select few in the world equipped with Asian musk shrews, a species that can vomit and provides a more accurate model for identifying nausea-inducing compounds. This unique capability will allow researchers to screen and refine antibody candidates that retain weight-loss benefits while minimizing side effects, improving the likelihood of long-term patient adherence.

Abalone's target-activating antibody platform is central to the effort. Unlike traditional antibody discovery methods that focus on binding affinity, Abalone's approach directly identifies functional antibodies that can precisely modulate GPCRs known for their central role in regulating metabolic processes and their difficulty as drug targets. GPCRs require precise structural adjustments to be activated or modulated, and finding antibodies that can do that to a target of interest is something few antibody platforms can achieve. By harnessing engineered biology to measure hundreds of millions of antibodies for activity rather than just binding, Abalone's technology generates large activity datasets that enable AI-driven discovery and optimization of antibodies to drug these challenging GPCR targets

"Working with Dr. Hayes and the University of Pennsylvania team, who have been instrumental in developing and conducting foundational clinical trials for leading obesity medications, accelerates our ability to apply our antibody discovery platform to the field of metabolic disease," said Richard Yu Ph.D., CEO and Co-Founder of Abalone Bio. "Our goal is to develop antibody-based drugs that allow more patients to benefit from obesity treatments without the burden of debilitating side effects."

The collaboration includes an exclusive option agreement covering key intellectual property developed through the partnership, with plans to advance promising candidates into clinical development. By integrating UPenn's expertise in obesity research and preclinical screening with Abalone's next-generation antibody discovery technology, the two teams aim to develop a new class of obesity therapeutics that redefine the standard of care.

About Abalone Bio

Abalone Bio is revolutionizing antibody drug discovery by addressing one of the most challenging problems in pharma: the functional modulation- especially activation- of hard-to-drug membrane proteins, starting with G-protein coupled receptors (GPCRs). Through its proprietary Functional Antibody Selection Technology (FAST), Abalone Bio is the only company measuring functional activity data at scale to enable AI-driven discovery of active therapeutics. By engineering yeast cells to assess the activity of millions of antibody variants, the company produces the scale of data necessary to leverage AI to discover and create functionally active antibodies. Abalone Bio's next-generation biologic therapies, starting in metabolic disorders and inflammation, are transforming the landscape of drug discovery.

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