Superluminal Medicines Announces a Selective, Biased, MC4R Agonist is Advancing to IND-enabling Studies for the Treatment of Obesity

Compound to be evaluated as a potentially best-in-class treatment for rare genetic forms of obesity and hypothalamic obesity, as well as part of the treatment regimen for adult obesity patients

In preclinical studies, the molecule demonstrated high selectivity, a broad therapeutic window, and a favorable safety profile compared to existing treatments and those in development

IND submission expected in the second half of 2026

Boston, MA — July 22, 2025 — Superluminal Medicines, a drug discovery company integrating AI/ML, protein dynamics, and structural biology to rapidly unlock the most challenging G protein-coupled receptors (GPCRs), today announced the initiation of IND-enabling studies for its lead program. Superluminal's compound is an orally administered, highly selective, biased MC4R agonist initially targeting rare genetic forms of obesity and hypothalamic obesity, with potential as a treatment for general obesity in combination with GLP-1 drugs.

"Advancing our first program into IND-enabling studies is a significant milestone that highlights the power and speed of our drug discovery platform, which is designed to rapidly discover small molecule medicines for a broad range of challenging disease targets," said Cony D'Cruz, CEO of Superluminal Medicines. "We were encouraged by recent data presented at the Endocrine Society meeting (ENDO 2025), which demonstrates the strong potential for this class of treatments to lead to meaningful advances for patients. Our MC4R agonist was designed to deliver best-in-class efficacy while transcending the challenges that have plagued this class of medicines, including skin darkening, cardiovascular side effects at high doses, and dosing convenience. We will initially evaluate this treatment in rare forms of genetic obesity and hypothalamic obesity. We also believe this drug has strong potential as both a combination therapy and maintenance therapy for general obesity, which, despite recent breakthroughs, remains an area of high unmet need. We look forward to beginning clinical studies in the second half of next year and expect this to be the first of many exciting candidates we will move towards the clinic."

Superluminal's compound is a selective, biased MC4R agonist engineered to unlock the full potential of this validated but underleveraged obesity target. The MC4R pathway plays a critical role in energy homeostasis and appetite regulation, with well-established clinical validation in rare genetic conditions such as Bardet-Biedl Syndrome (BBS) and hypothalamic obesity. Beyond these rare disorders, MC4R variants are also the most common genetic contributors to obesity in the general population.

Superluminal's molecule is designed to harness this biology in a highly selective manner, avoiding side effects by activating only the relevant MC4R signaling pathways, to offer a broad therapeutic window. In preclinical studies, the molecule demonstrated high selectivity against MC1R and a favorable safety profile. Additionally, combining MC4R agonists with incretin-targeting drugs has demonstrated a synergistic effect, resulting in a dose-dependent increase in weight loss.

"MC4R is one of the most exciting targets in obesity, with a mechanism that complements existing therapies like GLP-1 agonists," said Ajay Yekkirala, SVP and Head of Drug Discovery at Superluminal Medicines. "Our compound was built from the ground up for selectivity and a biased signaling profile that we believe will translate into an improved therapeutic index, potentially enabling both monotherapy and combination strategies, including with incretins. We are very excited to be progressing this molecule to the clinic and working to bring a potentially life-changing new treatment to patients in need."

About Hypothalamic Obesity and Rare Genetic Forms of Obesity

Hypothalamic obesity, which results from damage or dysfunction in the hypothalamus—a key area of the brain that regulates hunger and energy balance—often leads to early-onset, severe obesity that is difficult to manage with conventional treatments. Bardet-Biedl Syndrome, a rare genetic disorder, is characterized by a combination of obesity, retinal degeneration, and other systemic complications.

About Superluminal Medicines

Superluminal's platform has achieved a deep integration of AI/ML with biology, structural biology, and chemistry expertise to build the foundation for next-gen R&D and accelerate the discovery of candidate-ready compounds. The predict-design-test architecture accurately models protein shapes and designs highly selective compounds to target the precise structural change for therapeutic effect. Its discovery engine is powered by an industry-leading, pharmacokinetic and toxicology in silico prediction capability. The company's proprietary pipeline validates its platform with initial programs focused on high-value GPCR targets. Superluminal is headquartered in Lilly Gateway Labs, Boston, and is backed by a strong network of investors, including RA Capital, Insight Partners, Catalio Capital, Eli Lilly and Company, Gaingels, and Cooley.

For more, visit www.superluminalrx.com.

Media Contact
Sarah Sutton
Endurance PR
sarah@endurancepr.com
(518) 932-3680