A NEW APPROACH TO HALTING PULMONARY HYPERTENSION PROGRESSION

Published on 28th August 2025

SMALL MOLECULE THERAPEUTICS

Pulmonary arterial hypertension (PAH) is a severe condition predominantly affecting women, causing progressive damage to the pulmonary vessels and leading to heart failure. Current treatments offer only symptomatic relief without addressing the underlying causes. A multidisciplinary team from Monash Institute of Pharmaceutical Sciences (MIPS), Monash University, led by **Dr Chengxue Helena Qin**, is developing a novel therapy targeting a G-protein coupled receptor involved in lung vessel inflammation.

The Pipeline Accelerator scheme facilitated access to TIA's Australian Translational Medicinal Chemistry Facility (ATMCF) and Phenomics Australia's Monash Genome Modification Platform (MGMP). Initial successful CRISPR-engineering of humanised mice, through MGMP, resolved translational barriers caused by species differences in receptor biology. Early lead compounds were identified through high-throughput screening at the National Drug Discovery Centre using libraries prepared by Compounds Australia, two TIA-supported facilities. Co-funding enabled validation of hits from a 300,000-compound screen, identifying promising structures. Additional support from a NHMRC Ideas grant ($730,000), a NHMRC Development Grant ($999,000) and from BioCurate's Proof-of-Concept Fund ($499,000) allowed the team to expand on these early leads, synthesising over 50 compounds and identifying three promising chemical series with strong potential for drug development.

The project has already yielded several hits with optimisable scaffolds and promising selectivity for the target receptor. These early breakthroughs set the stage for developing potent, selective agonists, paving the way for future clinical applications. The team is now exploring collaborations with ATMCF and the Centre for Drug Candidate Optimisation, both within MIPS, to advance the project through lead optimisation and preclinical validation, with the ultimate goal of delivering a disease-modifying treatment for PAH. Should this program continue to maintain its current success over 2025, then BioCurate has indicated its willingness to consider executing its exclusive option to license the project or potentially support the formation of a spin-out company.

> "Drug discovery is a team effort, and having the right infrastructure and industry support makes all the difference. Huge thanks to Therapeutic Innovation Australia for helping us take science to the next level while also supporting the next generation of researchers. Your commitment to innovation and collaboration is truly appreciated!"
> **Dr Chengxue Helena Qin**

Impact: Collaboration, Proof of Concept, Grant, IP, Publications, Industry Engagement

TRL 1 | TRL 2 | **TRL 3** | **TRL 4** | **TRL 5** | TRL 6 | TRL 7 | TRL 8 | TRL 9