



Best-in-class Synthetic Feeder Cells for Cell Therapy

Presenting Native Signals to Activate and Expand Immune Cell



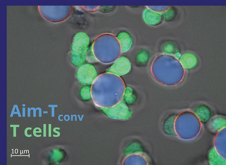
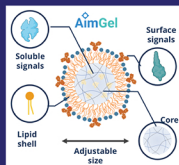
Technology Highlights

- › 30% faster generation of healthier T cells
- › Rapid optimization of signals for NK Cell, stem cell and future new CGT
- › Potential as a vaccine adjuvant, immunomodulator, and targeted mRNA/protein delivery vehicle

Description

Allegrow Biotech Ltd is a drug delivery platform company. Aim to provide products/solutions for controlled cell activation/expansion/differentiation, to enable and accelerate the R&D and clinical translation of next-generation immune cell therapy, ultimately provide cost-effective and high-quality cell therapeutic products to millions of patients in need.

- Technology: Awarded Gold medal in 2023 Geneva International Exhibition of Inventions
- Product: POC data demonstrated best-in-class performance in activating and expanding T cells
- Funding: Secured more than 1M HKD prize money and government grants for MVP development



Cancer Treatment with Sonic Hedgehog Secretion Control

Secretion-Management the Disruption of Sonic Hedge-SURF4 Interaction for Skin Cancer



Source: 2013 The Cancer Caret Health Alliance. www.greinerhealth.com/health

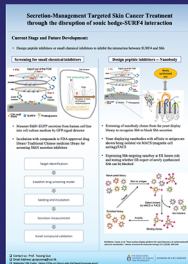
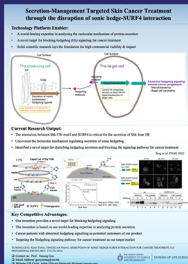
Technology Highlights

- ▶ A unique target for blocking hedgehog signalling
- ▶ More potent in downregulating Sonic hedgehog signalling than current drugs
- ▶ Variety of drug types can be developed

Description

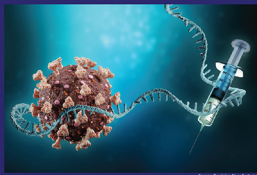
Abnormal activation of the Hh signalling pathway has been shown to promote cancer progression. Our invention pertains to compositions and methods that block the interaction between Sonic hedgehog (Shh) and Surflet locus protein 4 (SURF4), particularly for treating subjects with cancer or at risk of suffering from cancer.

- Uncovered the molecular mechanism regulating secretion of sonic hedgehog, and identified a novel target for blocking hedgehog signaling
- General Research Fund by Research Grants Council (RGC) was the founding source, and the research work was published on PNAS
- US patent submitted: Yusong Guo, Xiao Tang, Tingxuan Wang. Disruption of sonic hedge-SURF4 interaction for cancer treatment (Ref.: TTC.PA.1652)



Triple the mRNA Vaccine Efficacy Via Tailored Tail Sequence

*Enhancing antigen expression duration and intensity
by modifying mRNA tail sequences*



Technology Highlights

- › 3-10 times extend protein production time and yield
- › Enhancing in vivo immune response without causing cell stress
- › Technology can be adapted to all existing mRNA/saRNA technologies

Description

We leverage advanced research in mRNA tail modification to enhance and prolong protein production. Our proprietary technology, based on the findings of the groundbreaking paper "Cytidine-containing tails robustly enhance and prolong protein production of synthetic mRNA in cell and in vivo", enables us to optimize synthetic mRNA for improved efficacy and protein production duration.

- The findings have been published on molecular therapy nucleic acids
- Currently holding three patents on the relevant technology
- The team has already demonstrated the finding on animal model



A Better Option for Replacing HPLC

Innovative Equipment for Large-scale, Cost-effective and Environment-friendly Purification of Chemical Materials



Technology Highlights

- > 50% cost saving on chemical purification
- > Separating the extremely similar molecules
- > ESG Friendly: Less waste and less pollution



Description

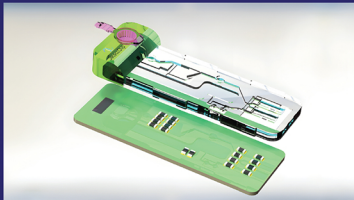
PuroChem Ltd is committed to promoting the dispersed mobile phase counter current chromatography (DMCC) technology developed by the HKUST team. It is expected to provide a large-scale, cost-effective and environmentally friendly platform technology for the purification of pharmaceutical raw materials urgently needed by our aging society.

- Technology Start-up Support Scheme for Universities (TSSSU) 2023/24 awardee
- Enterprise Support Scheme (ESS) grant awardee
- IncuBio Incubation Programme company at Hong Kong Science and Technology Parks



Portable Rapid DNA Test Device

Portable Device for Rapid DNA Testing Using CRISPR/Microfluidic Technology



Technology Highlights

- › Rapid Results & Simple Operation in 40 mins
- › High Sensitivity & Low Cost as PCR level detection (96%)
- › Single-Step disposable microfluidic chip as RAT

Description

DetectChip, founded in 2022 by HKUST researchers, aims to revolutionize disease testing with an at-home system combining molecular precision and rapid antigen test strip ease. Focusing on STI infections, we develop multiplexed diagnostic kits and integrate e-health solutions for disease management, making healthcare convenient, accessible, and accurate.

- Raised HK\$ ~10 million from research and commercial funds to develop the platform and launch the business
- Awarded the gold prize at the Asia International Innovation Invention (2023) and Hong Kong Youth Innovation and Entrepreneurship Competition (2022)
- Successfully engaged in negotiations and exploration of clients and partners from the USA, Hong Kong, and mainland China





The First in-class Drug for CNS Regeneration

*Drug Development Targeting ENP for the Treatment of
Central Nervous System Injuries*



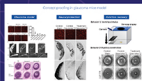
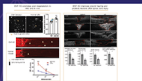
Source: 2021.comerstonfamilychina.com and hku.org.hk/cg

Technology Highlights

- ▶ Small molecule compounds targeting identified novel targets with efficacy
- ▶ Promising in vivo effects on wound healing, immune suppression, neural protection, and axon regeneration
- ▶ High-throughput screening platform with clinically animal models enables large-scale screening for CNS injuries

Description

Leveraging our 15-year research expertise in CNS regeneration, we have conducted comprehensive studies on PTEN, GPCR, Lipin1, and cGAS-STING. This intensive exploration has led us to discover a potentially therapeutic target that could be instrumental in treating conditions such as Glaucoma, Stroke, and Spinal cord injury, paving the way for a first-in-class drug for CNS regeneration.





New Treatment for ALS/FTD: Resolving Nucleic Acid Super Structure

Selective G4C2 Expansions Binding Molecule Design and Synthesis



Source: Margarida Almeida, 2015.
Quality of Life And Depression in ALS Patients Focus of Recent Study.
almeida@hku.hk

Technology Highlights

- ▶ The first reported lead compounds targeting specific G4 structures which result in the fatal neurodegenerative disease ALS/FTD
- ▶ High selectivity and specificity of drug candidates through synthesis
- ▶ Structural determination of G4C2 G4 in complex with lead compounds

Description

Drug discovery in targeting G-quadruplex (G4) caused by hexanucleotide repeat expansions C9orf72 GGGGCC in ALS/FTD . The main goal is to develop selective G4 ligands which can target specific G4 conformations. These small molecules which target G4s could be a potential therapeutic agent in treating ALS/FTD disease.

- Resolved DNA / RNA GGGGCC structures by NMR and X-ray crystallography methods
- Identified small molecules from natural marine products that can target GGGGCC repeats
- Obtained more highly specific small molecules
- HKUST funded research project

