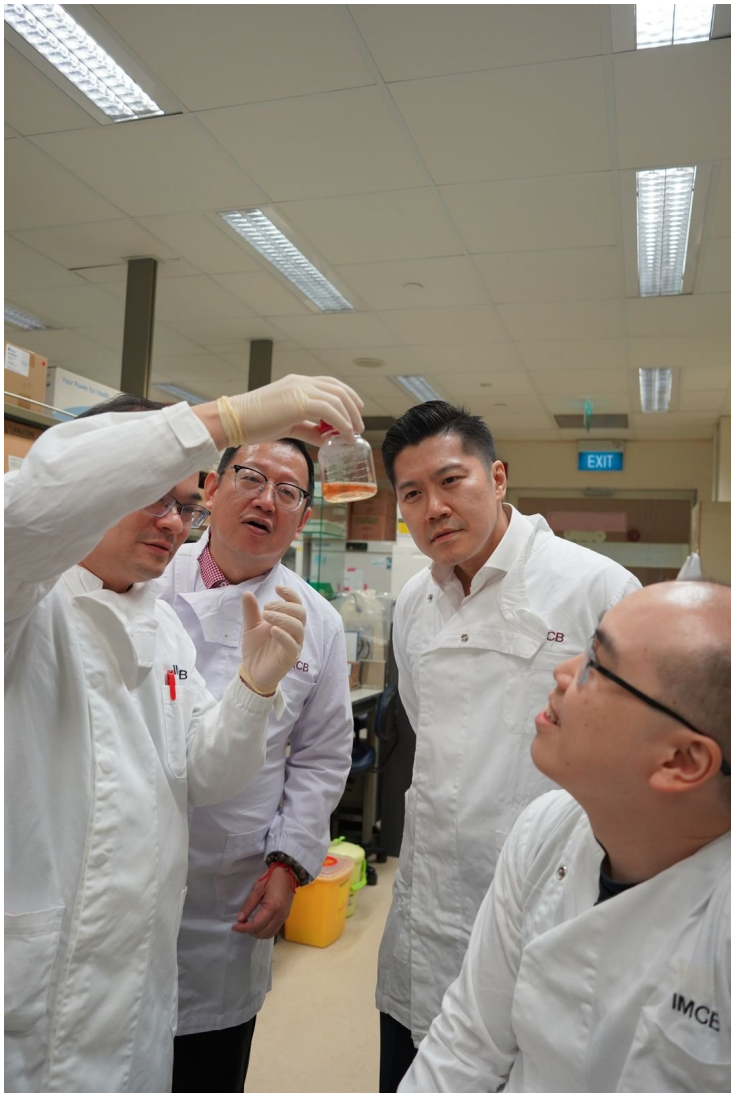
BioSpectrum
the business of Bio & Health Sciences
ASIA EDITION

# ARIA Bioscience collaborates with A*STAR to explore mitochondria-focused research for longevity aesthetics

July 13, 2026 | News

**The collaboration with A*STAR IMCB will explore mitochondrial biologics for consumer healthcare applications, including skin rejuvenation and hair restoration.**




ARIA Bioscience, Singapore's longevity biotech commercialisation firm, is collaborating with the A*STAR Institute of Molecular and Cell Biology (A*STAR IMCB) to explore the translation potential of mitochondrial biologics for consumer healthcare applications, namely skin rejuvenation and hair restoration.

Researchers from A*STAR IMCB have identified cellular mechanisms involved in genome maintenance, metabolism and mitochondrial function, and developed approaches to enhance cellular resilience and mitochondrial performance.

**A Fast-Growing Clinical Category: Longevity Aesthetics**

For decades, the aesthetics industry and clinical medicine have operated in parallel but largely separate tracks. Cosmetic interventions addressed the appearance of ageing; clinical medicine addressed its systemic consequences. What has been missing is a coherent, biology-first approach to both.

ARIA Bioscience aims to apply mitochondria-targeted science — the same science used in regenerative and metabolic medicine — to the management of skin and hair ageing. The collaboration will tap on A*STAR IMCB's research capabilities in cellular resilience and mitochondrial function.

Executive Director of Aria Bioscience, Mr Timothy Chen, said, "We are working closely with A*STAR IMCB to assess the translational potential of the technology through human safety and efficacy studies.

Our short-term goal is to launch medical grade serum for epidermal application within the next 6 months.

Our focus has always been working with world class researchers in the field of healthy aging, in which we can leverage our expertise in downstream development, commercial translation and global distribution."

**The Science: Why Mitochondria Are Central to Longevity Aesthetics**

Mitochondria are human cell's primary energy-generating organelles, producing ATP through oxidative phosphorylation. They also serve as critical hubs for calcium homeostasis, apoptotic signalling, reactive oxygen species (ROS) regulation, and the coordination of metabolic and immune responses.

With advancing age, this system degrades in compounding ways. Mitochondrial DNA accumulates mutations at a rate that outpaces the cell's repair mechanisms, and the proportion of damaged copies increases progressively — correlating directly with worsened clinical outcomes across multiple disease contexts. Simultaneously, the cellular machinery responsible for clearing damaged mitochondria slows, allowing dysfunctional organelles to accumulate in post-mitotic tissues including the dermis, keratinocyte layers, and hair follicle stem cells.

A*STAR has developed a patented technology that enables bioengineered mitochondria to selectively target specific cell types, enhancing the delivery of functional mitochondria from healthy cellular sources to support mitochondrial restoration.

While many existing approaches focus on activating the cell's own repair and stress-response pathways, their effectiveness may be limited when mitochondria have already accumulated age-associated damage and lost optimal function. By restoring mitochondrial quality and improving cellular energy metabolism directly, this technology aims to rejuvenate cellular performance at its foundation. In regenerative cell populations, including skin cells and hair follicle stem cells, enhanced mitochondrial function can support improved cellular repair, tissue maintenance, and restoration of youthful cellular activities. This mitochondria-targeted rejuvenation platform provides a foundation for developing next-generation longevity interventions that address ageing at the cellular level.

The consequences for skin and hair are specific and well-characterised. Reduced energy production in the dermis impairs the energy-intensive processes of collagen synthesis, cellular turnover, and extracellular matrix maintenance. In hair follicles — among the most metabolically active structures in human biology — mitochondrial insufficiency disrupts growth cycles, shortens follicle lifespan, and reduces hair shaft calibre. Elevated mitochondrial ROS further accelerates oxidative damage to structural proteins, compounding the visible effects of intrinsic ageing.