

Revolutionizing Fertility Care with Intelligent Reproduction Technology (IRT)

Philip C.N. Chiu (Dept. of Obstetrics and Gynaecology, HKU)
 Kevin K.M. Tsai (Dept. of Electrical and Electronic Engineering, HKU)
 Ernest H.Y. NG (Dept. of Obstetrics and Gynaecology, HKU)
 Y.Q. Yao (China's National Expert Group on Quality Management of Assisted Reproductive Technology)
 Erica T.Y. Leung (Dept. of Obstetrics and Gynaecology, HKU)
 Michelle C.K. Lo (Advanced Biomedical Instrumentation Centre)
 Advanced Biomedical Instrumentation Centre (ABIC)
 AxileLife Limited
 Basecare Medical Corporation Limited

- **Infertility is a significant global public health challenge**, affecting approximately one in six couples of reproductive age.
- Major components of assisted reproductive technology (ART), including fertility assessment, gamete and embryo selection, and gamete and embryo preservation, **depend largely on manual procedures and subjective clinical judgment.**
- This project will overcome current limitations by integrating expertise in biomedical engineering, AI, reproductive biology, and clinical medicine, to **build the world's first fully automated, AI-powered assisted reproduction (IRT) platform.**
- IRT platform is expected to **increase ART success rates, reducing the number of treatment cycles and overall patient costs.** By improving gamete/embryo assessment and quality control, it should **lower the risk of pregnancy complications and genetic abnormalities, leading to better birth outcomes.**
- **Research team includes academia, healthcare and industry** creates a strong foundation for successful implementation and efficient translation of our research into clinical practice and commercialized products.

Three patented core technologies can be applied to sperm, oocyte and embryo quality assessment and sorting

1. Advanced 2D/3D optical imaging system (FACED technology)

Conventional scientific cameras VS Our imaging technology

Stain-free, high-speed, in vivo imaging can capture structural differences at the cellular level

2. Patented design microfluidic chip

Excitation beam Collected samples Discarded samples

Strong consistency, improved imaging quality; Non-destructive sorting, supporting active cell screening

3. Patented imaging combined with AI cell analysis technology

Accurately assess cell quality

