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ATELERIX

ADVANCING MICROPHYSIOLOGICAL SYSTEMS THROUGH HYDROGEL-ENABLED, CRYO-FREE PRESERVATION AND DISTRIBUTION

MPS WORLD SUMMIT
CONNECT, EXCHANGE, EDUCATE

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INTRODUCTION

Microphysiological systems (MPS), including organoids, organ-on-chip platforms, and other complex *in vitro* models, are transforming the modelling of human biology and drug development. However, their broader adoption is constrained by fragile supply chains, limited transport windows, and the incompatibility of conventional cryopreservation with complex tissues and advanced in vitro models.

Current workflows typically require highly specialised, long-term culture to achieve maturity, complexity, and physiological relevance of advanced models limiting their accessibility. There is increasing demand to access ready-to-assay complex in vitro models to reduce resource burden, failure rates and variability.

Atelerix has developed a hydrogel-based preservation technology that stabilises cell membranes and maintains structural integrity at refrigerated or ambient temperatures, enabling the shipment of complex biosamples. This technology preserves viability, phenotype, and function across diverse biospecimens and MPS formats while extending usable timeframes and simplifying global distribution.

METHODS

Our approach...

Our alginate hydrogels stabilise cell membrane integrity allowing samples to be held at room or refrigerated temperatures for extended periods

7 quick & easy-to-use products available depending on your sample type

works on anything with a lipid membrane!

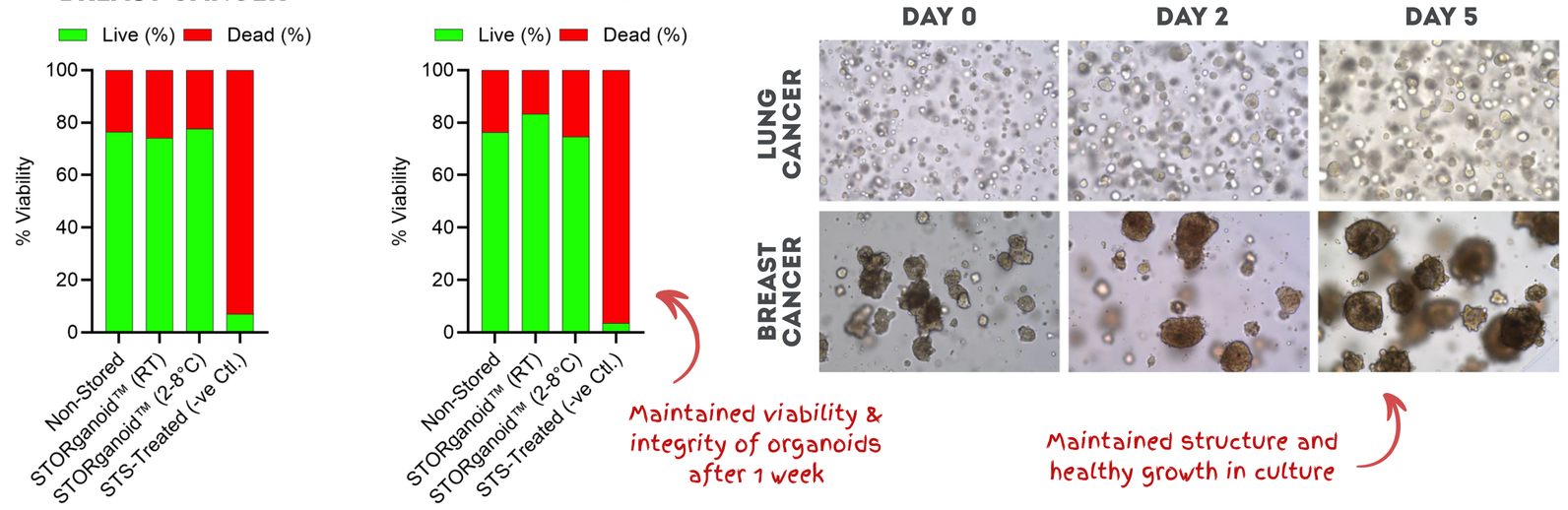
Fresh cells, cell models, tissues, bloods & viruses can be stored for up to 2 weeks without the need to freeze

Our impact...

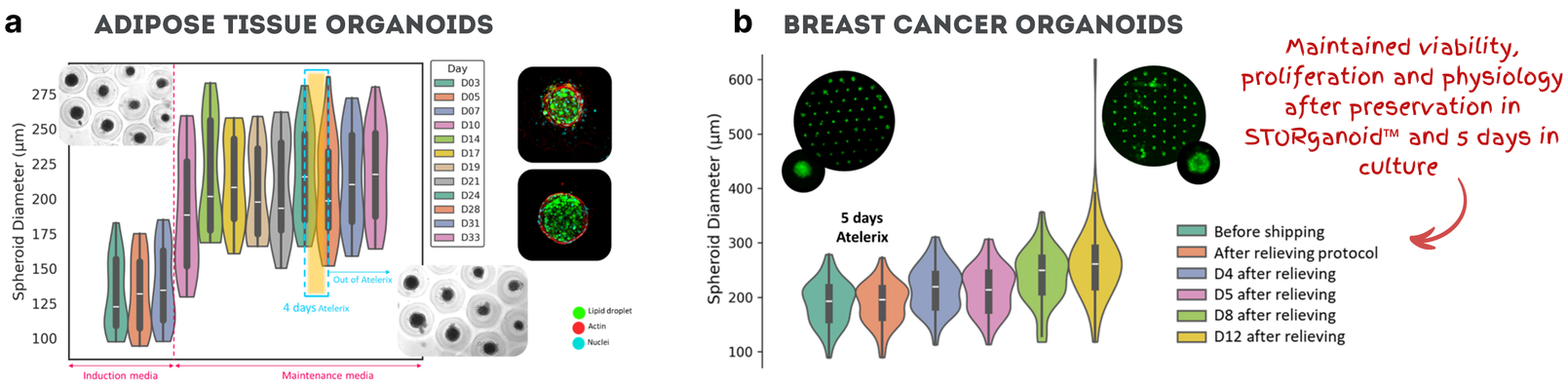
HYPOTHERMIC STORAGE OF ASSAY-READY CANCER ORGANOIDS

a PRESERVE ORGANOID VIABILITY (BREAST & LUNG CANCER ORGANOIDS)

b PRESERVE INTEGRITY & GROWTH (BREAST & LUNG CANCER ORGANOIDS)



Preservation of cancer organoids using STORganoid™. *Breast and lung cancer organoids were resuspended in medium before being encapsulated using STORganoid™-M at densities up to 625,000 organoids/vial. After storage for 1 week at either room temperature or 2-8°C, organoids were released and assessed for % viability (a) before returning to normal culture conditions for up to 5 days (b). This study was conducted in collaboration with Crown Bioscience..*



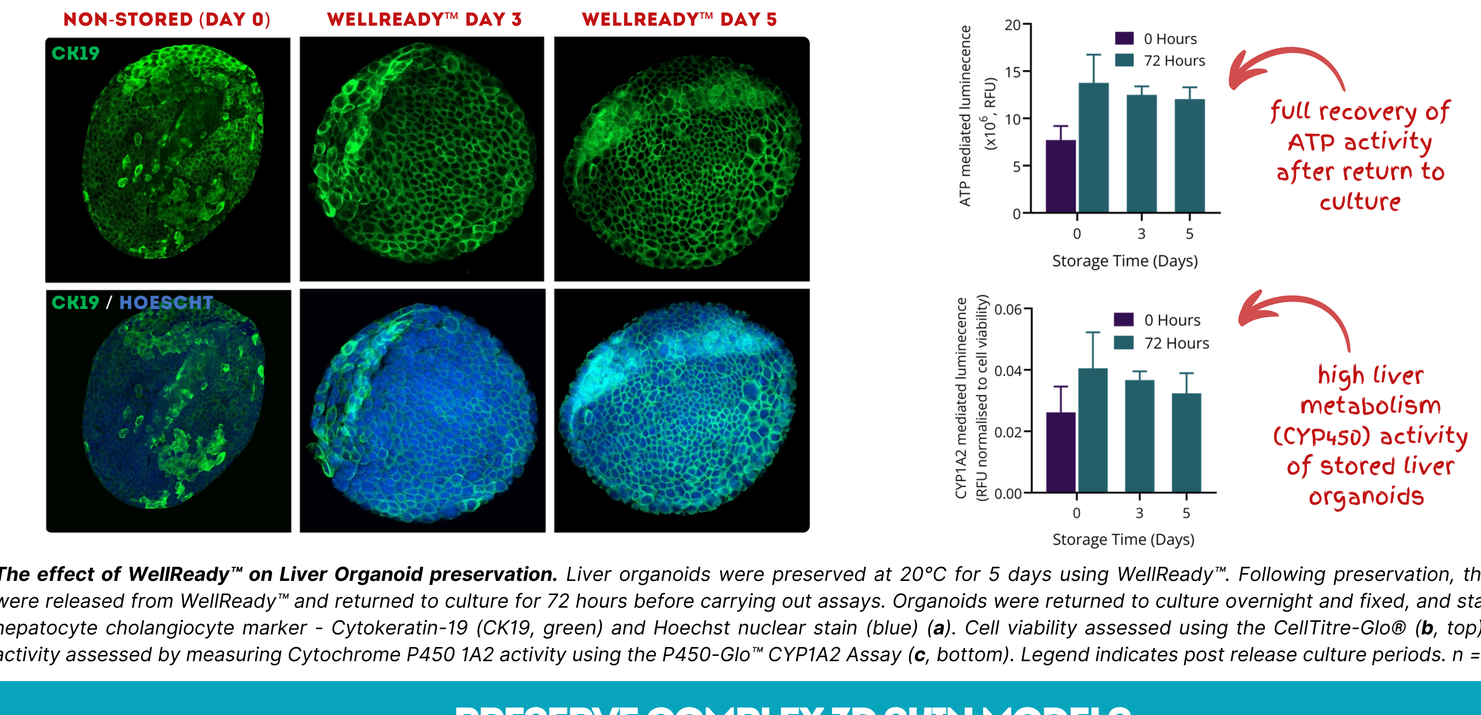
Preservation of adipose and Triple-Negative-Breast-Cancer (TNBC) organoids using WellReady™. *Adipose-derived stem cells and MDA-MB-231 TNBC cells were cultured in SmartSphero plates to generate self-assembled adipose tissue organoids (a) and breast cancer organoids (b). Both models were embedded in Atelerix WellReady™ hydrogel at room temperature and later released without compromising viability. Adipose organoids retained mature adipocyte characteristics, while TNBC organoids showed no reduction in size or proliferation capacity post-release. Live/dead staining confirmed high viability across both systems, demonstrating effective preservation using WellReady™.* ***Data generated by Cherry Biotech.***

CHERRY BIOTECH

SHIP ASSAY-READY IPSC-DERIVED ORGANOIDS

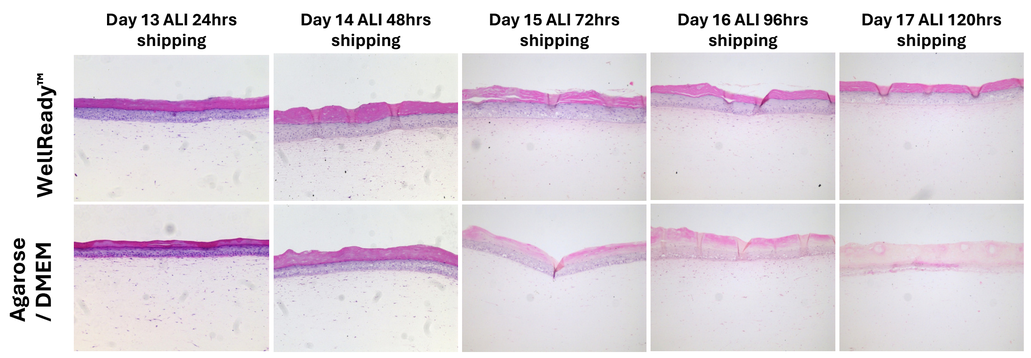
a PRESERVE ORGANOID STRUCTURE & PHENOTYPE (LIVER ORGANOIDS)

b PRESERVE VIABILITY & FUNCTION (LIVER ORGANOIDS)



The effect of WellReady™ on Liver Organoid preservation. *Liver organoids were preserved at 20°C for 5 days using WellReady™. Following preservation, the organoids were released from WellReady™ and returned to culture for 72 hours before carrying out assays. Organoids were returned to culture overnight and fixed, and stained for the hepatocyte cholangiocyte marker - Cytokeratin-19 (CK19, green) and Hoechst nuclear stain (blue) (**a**). Cell viability assessed using the CellTitre-Glo® (**b**, top). Functional activity assessed by measuring Cytochrome P450 1A2 activity using the P450-Glo™ CYP1A2 Assay (**c**, bottom). Legend indicates post release culture periods. n = 3.*

PRESERVE COMPLEX 3D SKIN MODELS



Preservation of Labskin's 3D Skin Full Thickness Model using WellReady™. *H&E staining of LabSkin-S models grown over a 120hr period, with constructs fixed and stained at 24hr intervals. The LabSkin-S constructs were prepped for shipping for up to 5 days in either 1:1 Agarose:DMEM mix or WellReady™. Once the shipping period was complete, the models were moved to media for four hours then fixed. LabSkin-S constructs preserved in Atelerix's WellReady™ showed preserved integrity after 5 days shipment, while the medium control showed structural deterioration after 72h of shipment.* ***Data generated by LabSkin.***

LabSkin SKIN SCIENCE

SUMMARY

Atelerix's platform addresses key bottlenecks in the MPS supply chain by enabling flexible, scalable, and cost-effective distribution. By improving accessibility, reducing waste, and enhancing reproducibility, it supports broader adoption and harmonisation of advanced cell models across drug discovery and development worldwide.