



Dr. Sophie Reay PhD, Quillified Ambassador

INTRODUCTION

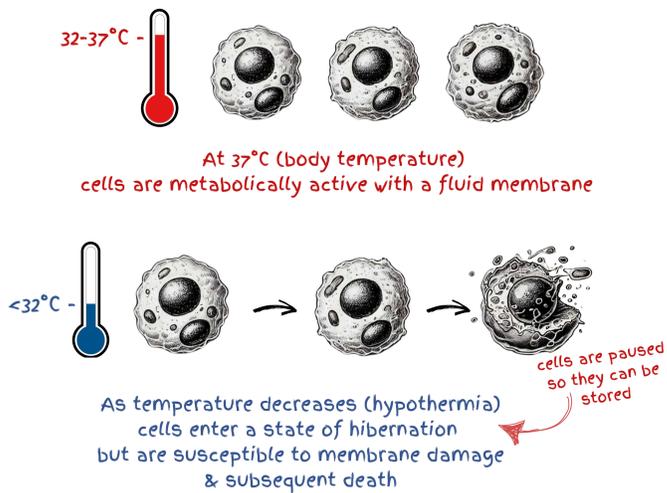
The procurement of high quality fresh tissue is crucial for driving drug discovery to replicate the disease-specific, physiologically relevant state necessary to assess new drugs. Tissue must be collected from the point of surgery and delivered to the point of processing within 24 hours resulting in a very inflexible supply chain with geographical restrictions, high resource, and significant wastage.

Tissues, including cancer tissues, are often the starting material for advanced *in vitro* models alongside iPSC (induced Pluripotent Stem Cell)-derived cells, and primary cell lines. Advanced cell models, including organoids are often difficult and time-consuming to culture resulting in high failure rates and delayed projects. The complexity of tissues and advanced cell models make them very difficult to freeze.

By extending the shelf life of fresh organoids to over a week without freezing, Atelex's technology removes key logistical barriers in advanced model workflows. TissueReady™ and WellReady™ preserve the viability, phenotype, and structural integrity of complex 3D models, protect against mechanical damage during transport, and enable flexible storage and shipment.

METHODS

The problem with hypothermic preservation



Our approach...

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



works on anything with a lipid membrane!

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

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

INCREASING THE FLEXIBILITY OF LIVE TISSUE ACQUISITION

Currently...



The user is notified that surgery is being scheduled for resection.



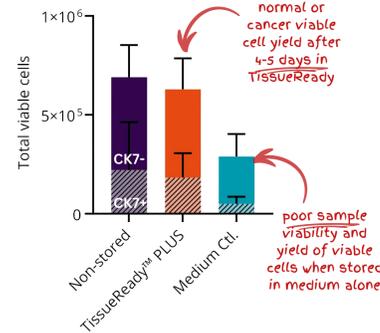
Couriers must be rapidly coordinated to collect and deliver the tissue **within 24 hours**.



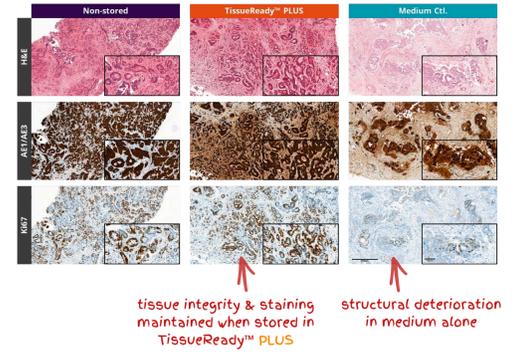
Tissue must be used immediately on arrival - **no flexibility, high resource, high wastage**.

Extend fresh shelf life to up to 5 days with TISSUREADY™ PLUS

a Preserve Viability & Phenotype (Oesophageal Cancer)



b Preserve Histological Integrity (Liver Cancer)



The effect of TissueReady™ PLUS on Cancer Tissue preservation. Cancer tissues were shipped in either TissueReady™ PLUS or DMEM for up to 5 days at room temperature. a: Cells were dissociated after 4-5 days and viable cell yield was calculated by trypan blue exclusion. Cytokeratin-7 staining was used to quantify the number of cancer (positive) and normal (negative) cells. b: Histological assessment of samples was carried out after 2 days' storage at room temperature. Samples were fixed, paraffin embedded and sectioned before being stained for H&E, immunohistochemical markers - AE1/AE3 (cytokeratin cocktail) and Ki67 (proliferation marker). n = 3.

This study was conducted in collaboration with The Royal Victoria Infirmary, NovoPath BioBank (NHS), and Rare Cancer Group (University of Sheffield).

ENABLING THE DISTRIBUTION OF MATURE 3D IN VITRO MODELS

Currently...



Disease-specific cells are often shipped with specialised plates & media.



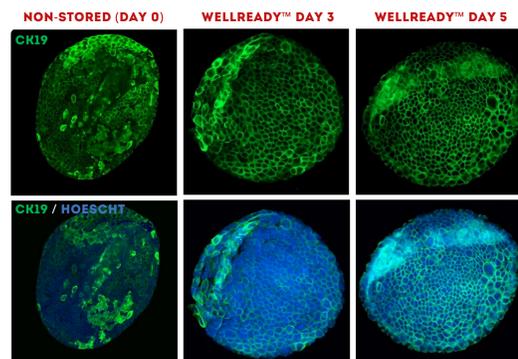
Complex protocols & long cell culture time are required for a mature, functional model.



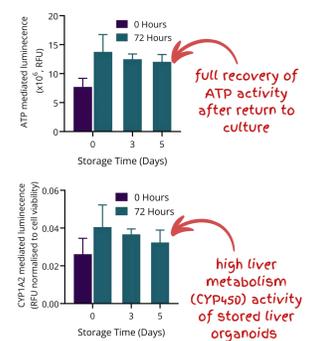
Complexity and time means **high resource, high failure rate, delays to projects**.

Send assay-ready 3D models with WELLREADY™

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 CellTiter-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.

With Atelex...



Ship ready-to-use, assay-ready organoids.



Reduced hands-on time and lower operational burden. Lower risk of failure and variability.

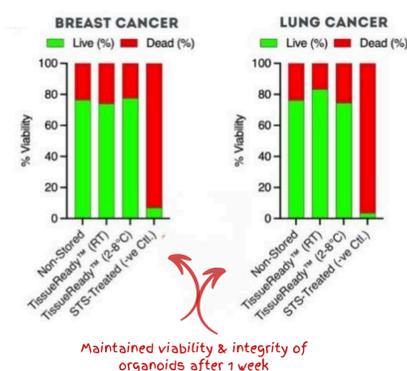


No complex protocols or extended culture required.

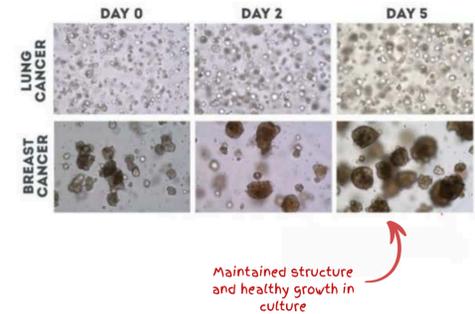
Functionally mature models available immediately.

Send assay-ready 3D models with TISSUREADY™

a Preserve Organoid Viability (Breast & Lung Cancer Organoids)



b Preserve Integrity & Growth (Breast & Lung Cancer Organoids)



Preservation of cancer organoids using TissueReady™. Breast and lung cancer organoids were resuspended in medium before being encapsulated using TissueReady™-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.

SUMMARY

Atelex's technology overcomes many of the challenges associated with storage and distribution of cellular products and complex models through extending fresh shelf life.

Our approach is cryo-free, hassle-free, and cuts costs of shipment by up to 10x whilst being kind to the environment!

