

# Organoids

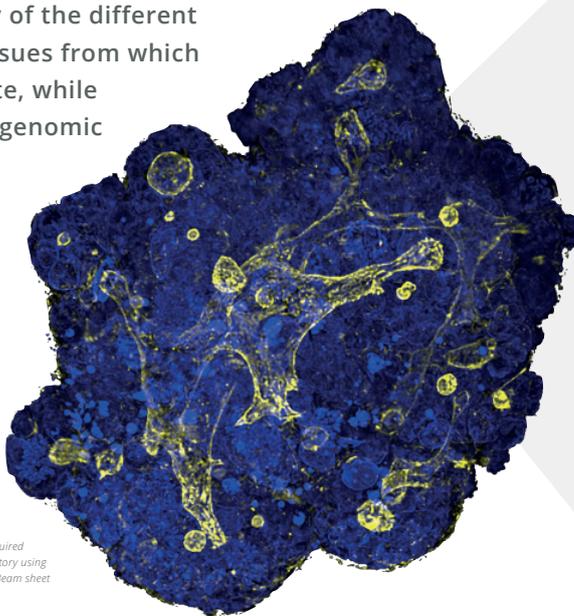
Cellesce specialises in the development, scale up and manufacture of patient-derived organoids (PDOs), which will potentially revolutionise life science drug discovery and development for the benefit of human health.

Cellesce's products and services help to accelerate life sciences progress. Its organoid technology delivers solutions to leaders in the biotech ecosystem, enhancing their therapeutic programs. PDOs are more predictive

of the efficacy and safety of drugs in patients – meaning effective new products can be efficiently identified, prioritised, and fast-tracked.

## Patient Derived Organoids

PDOs are self-organising structures that recapitulate aspects of multi-cellular composition, 3D architecture and functionality of the different epithelial tissues from which they originate, while maintaining genomic stability.



*Colorectal tumour organoid, stained with Hoechst to detect DNA in the nuclei (blue) and phalloidin to detect F-actin in the cytoskeletal structure (yellow), showing the lumen of the organoids. Images were acquired at the National Physical Laboratory using M Squared Losers' Aurora Airy Beam sheet imaging system.*



### Multicellular & 3D

Models tissue and cell interactions



### Genetically diverse

Can model by tumour or mutation subtype



### Faithful and predictive

Can be used in diagnostics and personalised medicine



### Model major tissue types

Wide range of cancer types  
Normal tissue - other therapies



### Scalable and consistent

Can be used in high throughput applications



### Can add immune cells

Can use in immune & cell therapy applications

## The Cellesce organoid expansion process - efficient, reproducible, scalable

Cellesce has invented and patented a unique bioprocess for the expansion of human-derived, normal and cancer organoids for a multitude of applications including drug discovery and organ-on-a-chip applications.

Until recently, organoids could only be grown and expanded manually. This is a technically challenging, time-consuming, and labour-intensive process resulting in small numbers of inconsistently sized organoids, limiting their suitability for use in high throughput applications and widespread use by big pharma and biotech.

### Manual organoid expansion



Batch-to batch variation  
Not efficiently scalable

### Cellesce bioprocess



Reproducible batches  
Scalable

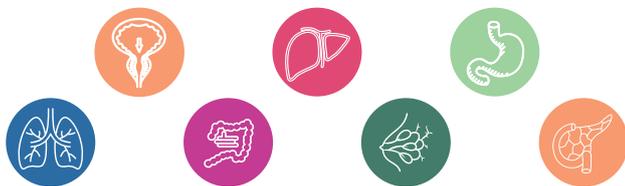
The patented 'disruptive' Cellesce bioprocess, now in its second generation has enabled a significant increase in PDO production compared to manual processes. Furthermore, better process controls utilising in-line sensors and real-time monitoring ensure precise culture

conditions, improved yield and control of organoid size and reduced batch to batch, user to user variability. A significant step-change to existing manual PDO culture methods, enabling organoids to enter the mainstream earlier in the drug discovery cascade.

 <p>45 x plates -static culture (Manual organoid expansion)</p> <p>Not efficiently scalable</p>	 <p>14 plate-based bioreactors (First generation bioprocess)</p> <p>Semi-scalable</p>	 <p>Patented 2nd generation bioprocess</p>  <p>Fully scalable</p>
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## Cellesce Products and Services

Experience gained through multiple research projects has enabled Cellesce to develop its IP and introduce a range of organoid products and services.



## Commercially available PDOs

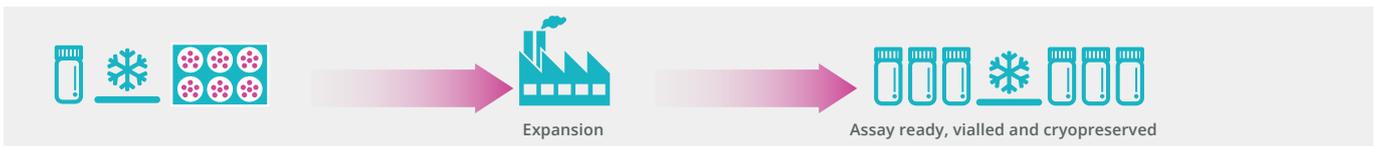
In an assay ready, vialled and cryopreserved 'off the shelf format'

- Colorectal cancer PDOs
- Breast cancer PDOs
- Normal 'healthy' intestinal PDOs including colon and duodenal
- Under development - pancreatic and lung PDOs plus further patient matched gastrointestinal PDOs (normal and cancer)

## Fee for service or via strategic partnership

Bioprocess-grown PDOs at scale with validation and quality assurance

- Expansion of Cellesce's portfolio - range of PDO lines with key mutations in cancer and normal lines
- Expansion of customer's own or supplied PDO or PDX derived organoid lines
- Bespoke PDO line generation and expansion from either human biopsy tissue or PDX tissue



## Cellesce R&D – business pillars

Cellesce's research and development continues at pace encompassing these main business drivers:

<p>① Scale-up &amp; bioprocessing</p> 	<p>② Expand organoid tissue types and lines</p> 	<p>③ Functional analysis and morphometry</p> 	<p>④ Immuno-oncology organoid models</p> 
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Cellesce continues to build relationships within the organoid ecosystem to enable this patient centric technology and to drive forward PDO utilisation earlier in R&D.

- High throughput & immuno-oncology applications
- High throughput screening of NCEs or organ-on-a-chip applications
- High content (phenotypic) analysis with 3D imaging and big data (AI & machine learning) analysis
- Long-term medicinal-chemistry drug projects
- Developing complex in-vitro assays leveraging PDOs with immune, vasculature and other cells



Cellesce is a licensee of HUB Organoid Technology