



# Human Cancer Models Initiative

## Patient-derived Cancer Models

As part of our pledge to elevate biological models, ATCC is collaborating with the Human Cancer Models Initiative (HCMI) to offer scientists a wide variety of next-generation 2D and 3D patient-derived *in vitro* cancer models, including organoids and conditionally reprogrammed cells (CRCs). ATCC is committed to making available a growing collection of models generated by the HCMI, which will include both common as well as rare and understudied examples of cancer from numerous tissues. These HCMI models are valuable tools to study cancer, identify and target novel therapies, and facilitate translational cancer research.

To enhance their clinical relevance, the sequence data and patient clinical information for each model is available to the research community.

Various types of 2D and 3D models

- All models are human patient-derived
- Diverse genetic backgrounds
- Advanced models such as organoids
- Clinical and sequencing data available via the HCMI portal
- Models from primary, metastatic, and recurrent cancer
- Rare and pediatric cancers included
- Model-specific, easy-to-follow culturing protocols

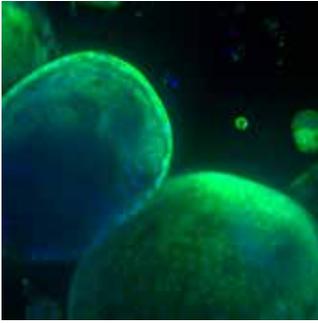
Patient-derived cancer models of the following physiological systems will be available:

- Circulatory System
- Digestive System
- Excretory System
- Integumentary System
- Musculo-skeletal System
- Nervous System
- Reproductive System
- Respiratory System



## Next-generation Cancer Models

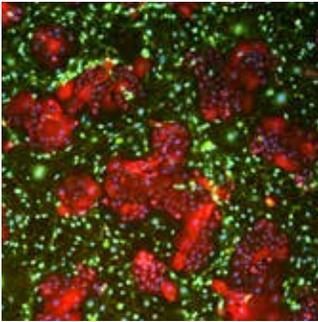
### Organoids



Organoids are complex, self-organizing *microtissues* grown embedded within 3D extracellular matrix. Primary patient-derived organoids have been described for various tissues, healthy and cancerous, including colon, intestine, stomach, breast, esophagus, lung, liver, prostate, and pancreas. Organoids are invaluable pre-clinical models for studying cancer and offer many advantages over existing human or non-human animal cancer models.

- May contain multiple differentiated cell types
- Exhibit cellular polarization
- Often possess a central lumen or other *in vivo*-like architecture
- Can remain phenotypically and genotypically stable after long term expansion

### Conditionally Reprogrammed Cells (CRCs) and Other Non-organoid Models

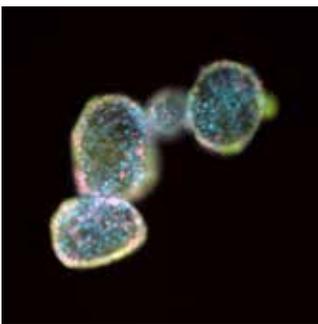


Conditional reprogramming is a cell culture technique that can be used to rapidly and efficiently establish patient-derived cell cultures from both normal and tumor cells. A major advantage of this system is that it:

- Eliminates the need for immortalization via transduction of viral or cellular genes
- Allows the expansion of a patient's tumor cells
- Reverts to differentiated phenotype in physiological culture conditions
- Makes it possible to identify the specific mutations in these cells and to screen the cells for sensitivity to drugs

In addition to CRCs, various other 2D and 3D model types, such as neurosphere models, are among the next-generation cancer models offered by the HCMI.

### About Human Cancer Models Initiative (HCMI)



HCMI is an international consortium that is dedicated to generating novel human tumor-derived culture models with associated genomic and clinical data. The HCMI consortium comprises funding agencies and cancer model development institutions. The consortium's funding agencies include:

- National Cancer Institute (NCI)
- Cancer Research UK (CRUK)
- Hubrecht Organoid Technology (HUB)
- Wellcome Sanger Institute (WSI)

NCI-funded model development institutions include the Broad Institute and the Cold Spring Harbor Laboratory. CRUK and WSI co-fund organoid development in the United Kingdom; CRUK provides the patient samples, while WSI derives and sequences the organoid models. The foundation HUB is a Netherlands-based not-for-profit organization that derives and sequences organoid models. ATCC was selected as the sole distributor for the HCMI models. At ATCC the models are authenticated, expanded, preserved, and made available for global distribution. The HCMI model data is provided as an open source to the research community.

10801 University Boulevard  
Manassas, Virginia 20110-2209

 703.365.2700

 703.365.2701

 [sales@atcc.org](mailto:sales@atcc.org)

 [www.atcc.org](http://www.atcc.org)

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