

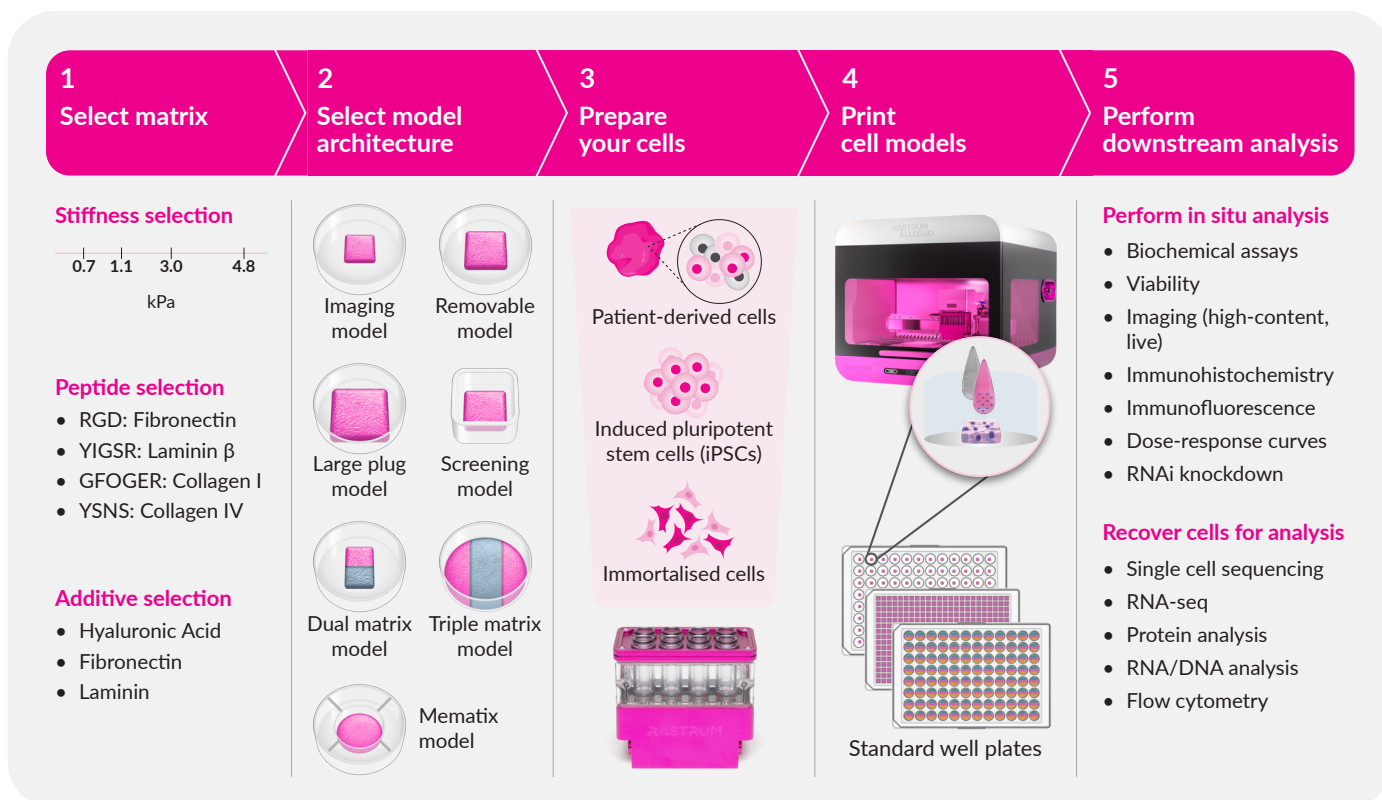


Produce your own 3D cell models in minutes

Tailored to meet the needs of your drug discovery or disease research, RASTRUM™ makes complex biology more accessible. Explore biology in 3D by recreating dynamic tissue microenvironments and studying realistic cell behaviors under biologically relevant conditions. Advance disease understanding and accelerate therapeutic discovery with customizable disease-specific models, and scalable, reproducible drug screening.

Getting started with the RASTRUM platform

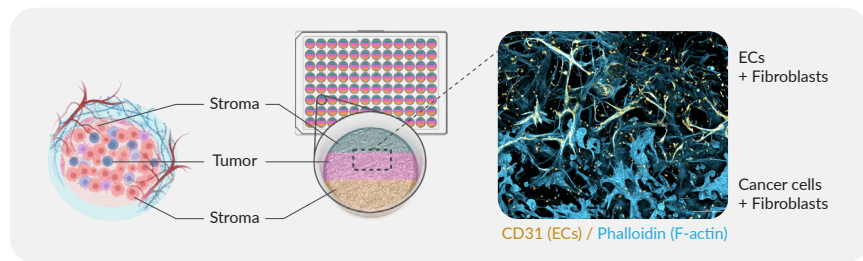
RASTRUM streamlines 3D cell model development from matrix selection through printing and downstream analysis. Build models around your own biology, or use a Validated Solution as a proven starting workflow. Tissue-relevant matrices, defined architectures, protocols, and workflow-driven software simplify setup while keeping you in control of the experimental design.



Explore RASTRUM's capabilities

Reproducibly model the tumor-stroma interface

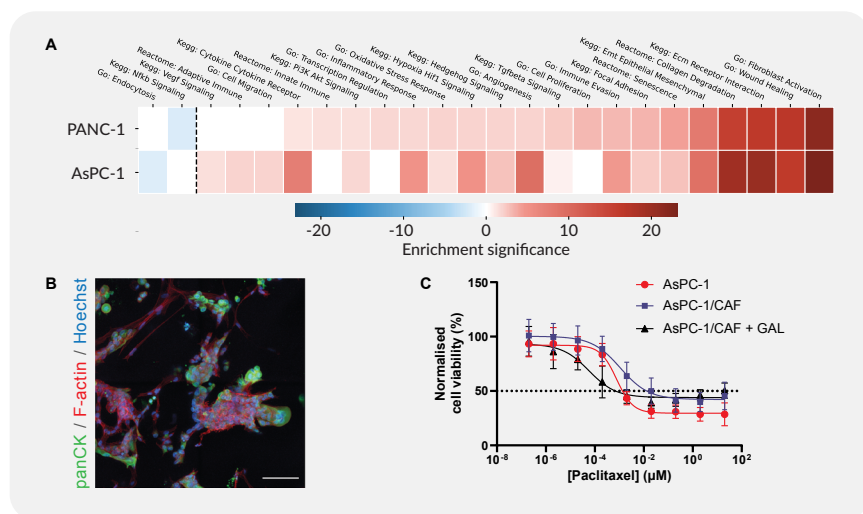
Create complex models that generate a tissue-like tumor-stroma interface to study cell population crosstalk, tumor growth, progression, metastasis, and drug screening.



In vitro model of the tumor-stroma interface. A co-culture of primary normal human lung fibroblasts (NHLF cells) and primary human vascular endothelial cells (HUVECs) was printed to interface with A549 lung adenocarcinoma cells, using a triple matrix model architecture. Cell nuclei (purple) were labeled with DAPI, filamentous actin (blue) with phalloidin, and the endothelial marker CD31 (gold) with a protein-specific antibody, at day 9 post-printing.

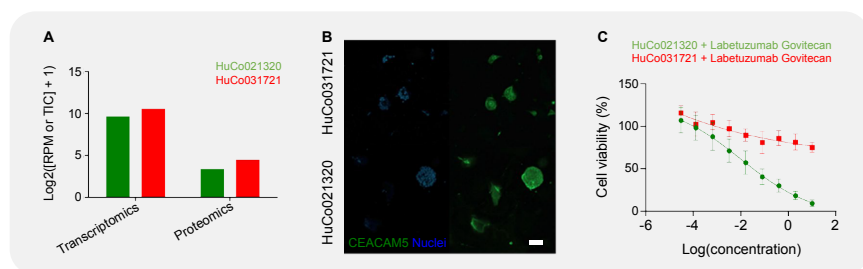
Easily adopt 3D tumor-stroma models designed for translational research workflows

Accelerate the development of effective therapies for pancreatic ductal adenocarcinoma (PDAC).



RASTRUM-generated PDAC models reveal pathway activation associated with tumor-stroma signaling in co-cultures compared to monocultures. (A) Differential gene expression analysis highlights pathways related to fibroblast activation, extracellular matrix remodeling, and therapeutic resistance. (B) Immunofluorescence assessment of cancer cell-CAF interactions in RASTRUM models. (C) RASTRUM co-culture models demonstrate increased resistance to paclitaxel relative to monoculture conditions, consistent with stromal-mediated chemoprotective effects observed in PDAC. Addition of the TGFBR1 inhibitor galunisertib (GAL) reverses the chemoprotective effects in co-cultures.

Patient-derived models allow for identification of intrinsic ADC resistance mechanisms for stratification of subtype responses



CEACAM5 expression and ADC responses in patient-derived colorectal models. (A) Transcriptomic [log2(RPM+1), left] and proteomic [log2(TIC+1), right] CEACAM5 levels for HuCo021320 (green) and HuCo031721 (red). (B) Immunofluorescence staining of HuCo031721 (top) and HuCo021320 tumoroids (bottom) for CEACAM5 (green, nuclei shown in blue). Scale bar = 100 μm. (C) 3-day ADC dose-response for HuCo021320 (green) and HuCo031721 (red).

Additional applications

- Generation of 3D ovarian cancer models for drug-repurposing screens against ROR1-expressing high-grade serous ovarian cancer. Liu et al., 2026, Therapeutic Advances in Medical Oncology, doi.org:10.1177/17588359251409010
- Forebrain cortex model combining neurons, astrocytes and microglia to quantify neurite outgrowth deficits in Alzheimer's disease. Corbett et al., 2025, Bioengineering, doi.org:10.3390/bioengineering12030245
- High-throughput paediatric tumor models for precision oncology and personalized drug screening. Jung et al., 2025, Molecular Systems Biology, doi.org:10.1038/s44320-025-00152-y
- Study cytotoxic T lymphocyte migration, immune synapse formation, and killing capacity under varying matrix stiffness. Seyedzadeh et al., 2026, Science Advances, doi.org:10.1126/sciadv.ady2299
- 3D bioprinted breast cancer models reveal matrix stiffness-driven cancer stem cell phenotypes and drug resistance. Kopecky et al., 2026, Advanced Healthcare Materials, doi.org:10.1002/adhm.71371
- Macrophage-pathogen co-culture models across healthy and fibrotic lung matrix stiffness to study immune responses and bacterial clearance. Graf et al., 2026, RSC Applied Polymers, doi.org:10.1039/d5lp00285k

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