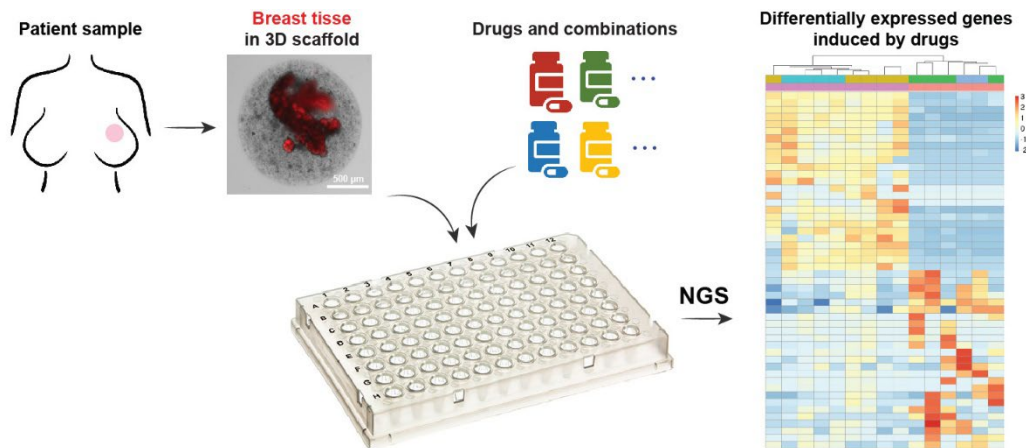


Miniatured *ex vivo* assay for drug / hormone screen in normal or malignant breast tissue



Ref. Nr

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Keywords

Breast, 3D model, biomaterial, hormone, drug screening, next generation sequencing, personalized medicine

Intellectual Property

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Publications

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Description

More than 70% of breast cancers are estrogen receptor positive (ER+) breast cancer and treated with endocrine therapy. The current standard endocrine therapies overlook that different patients have different hormone response status and drug response profiles that may affect therapeutic outcomes. To enable personalized medicine, *ex vivo* models are required for high throughput drug screening, however, current 2D and 3D *ex vivo* models fail to fully recapitulate original patient tumor samples and subsequently affect the drug screening outcomes.

We overcome the challenge by developing a biomaterial-based 3D *ex vivo* culture system for normal and malignant breast tissue microstructures that can maintain the most important features of breast tissue, hormone receptors and hormone responses, in basic culture medium. Furthermore, we incorporate molecular barcoding strategy into the system to realize transcriptomics-based readout with next generation sequencing technology (RNA-seq) for more reliable prediction of drug effectiveness according to gene expression regulations.

Advantages

- More physiologically relevant breast tissue culture and drug testing system in 3D biomaterial scaffold
- Miniatured system, less consumption of patient or patient-derived breast tissue, higher throughput of drug screening
- More reliable prediction of drug effectiveness based on gene expressions

Applications

- Drug screening service for patients, clinics and hospitals that are seeking personalized medicine
- Drug screening service for non-responsive or advanced-stage patients that are not responding to standard therapeutics and seeking novel drugs and/or their combinations
- Drug testing service or collaboration with pharmaceutical companies that are interested in testing their new drugs in our physiological relevant *ex vivo* model.