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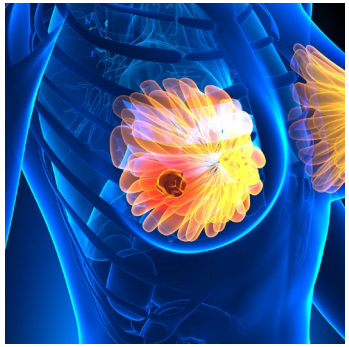
# Three-dimensional breast cancer tumor models based on natural hydrogels: a review



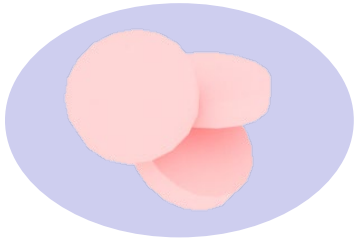
**Key words: Breast cancer, Tumor microenvironment, 3D tumor models, Decellularized extracellular matrix, Natural scaffold materials**

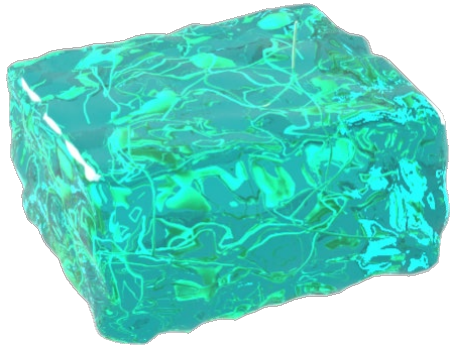
# *Research Summary*

**This review mainly focused on the 3D breast cancer models based on natural hydrogels are reviewed, which are mainly divided into the following parts:**



- **Breast cancer**
- **Metastatic breast cancer**
- **Tumor microenvironment**
- **Natural scaffold materials**
- **3D tumor models**





# *Innovation points*

- **Summarizes the studies on the application of natural materials (acellular matrix, gelatin, sodium alginate) to breast tumor models in vitro.**

- **The research on the construction of microbeads, 3D bioprinting, microfluidic and stentless models were summarized.**

- **Four types of 3D bioprinting and their related applications were summarized.**

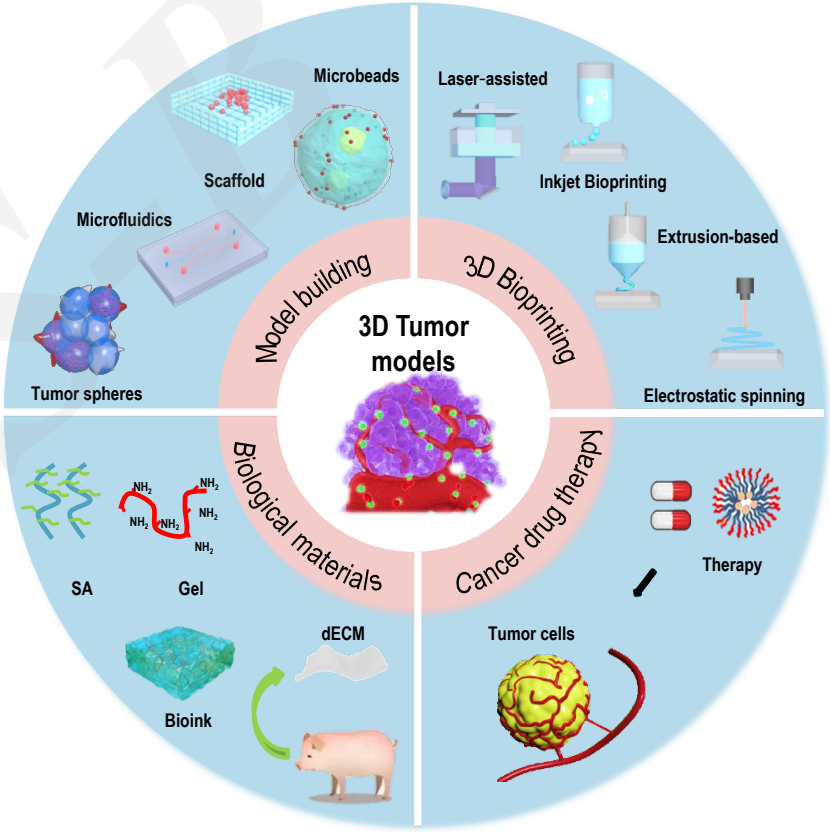



Figure 4

# *Innovation points*

**Two comprehensive tables were generated. 1: Examples of breast tissue applicated scaffolds based on natural materials. 2: Examples of 3D bioprinting composite scaffolds for breast tissue engineering.**

**Table 1 | The model manufacturing methods, cell types, cell inoculation density, cross-linking methods and research results were summarized.**

**Table 2 | The printing methods, biomaterials, cell types, cell inoculation density, cell inoculation methods and research results were summarized.**