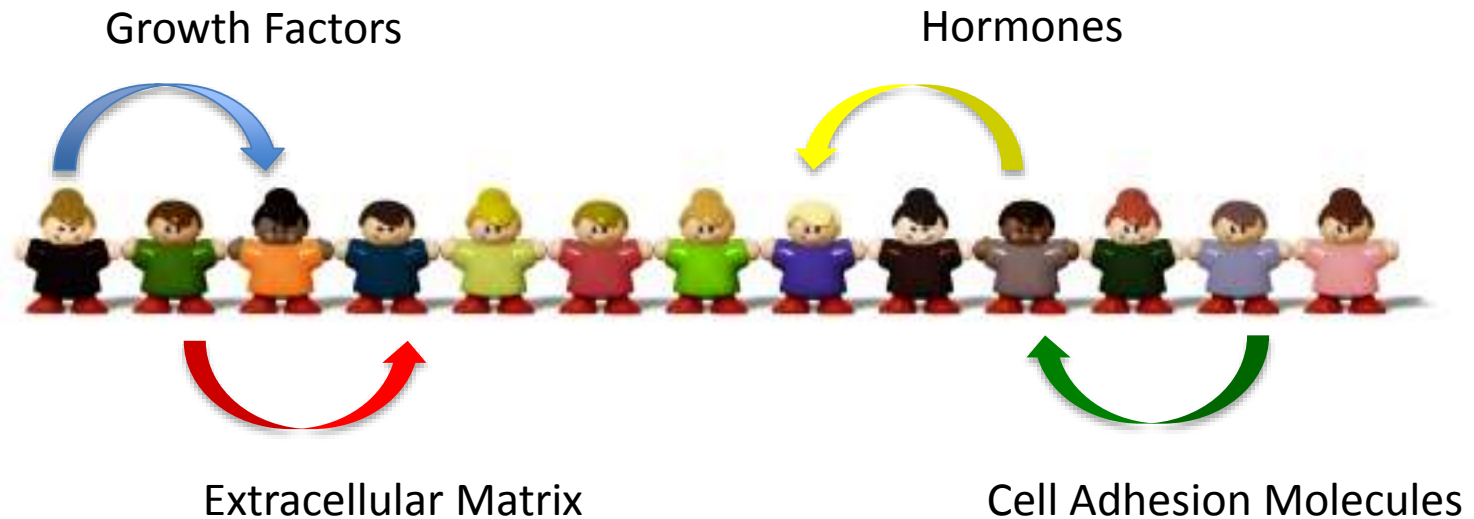
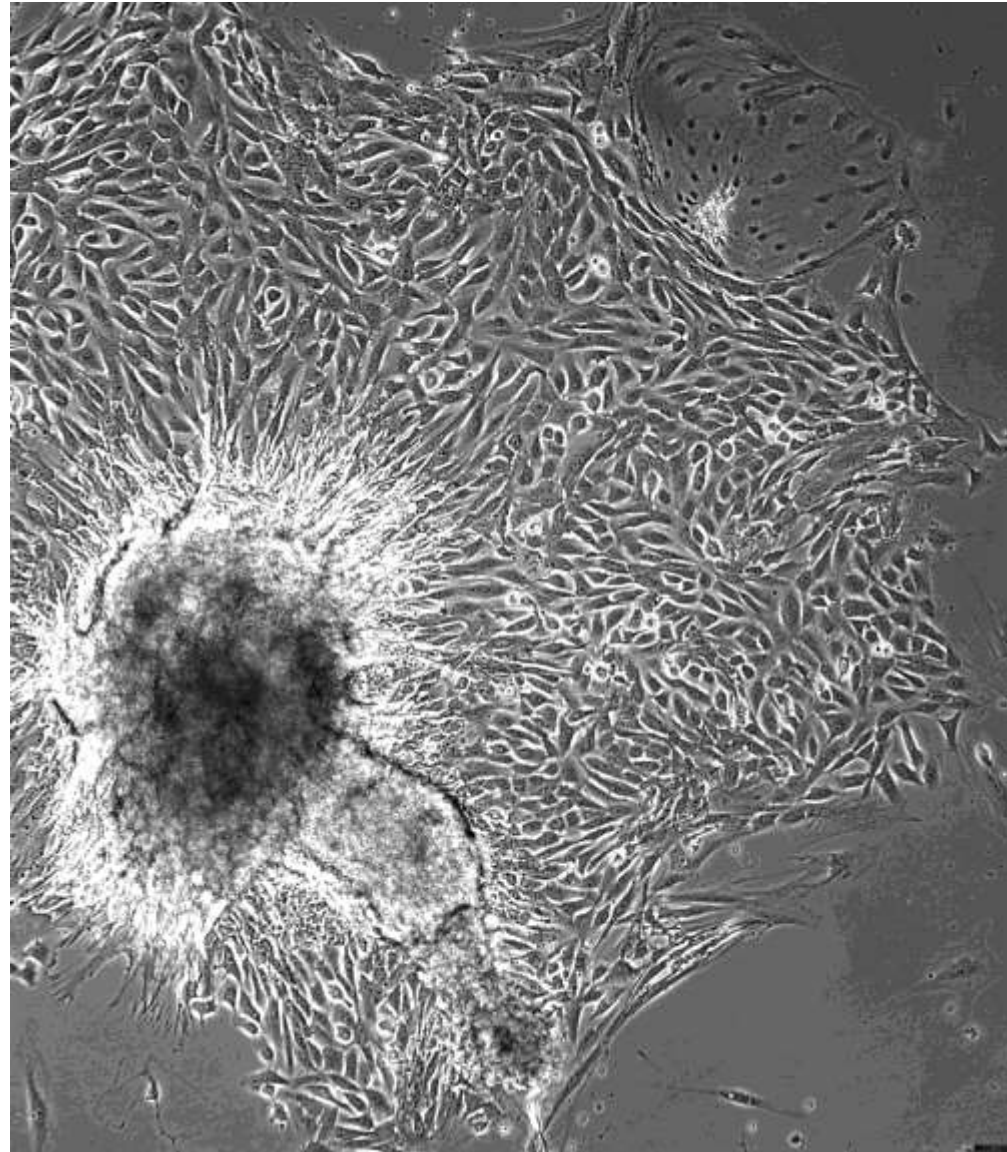
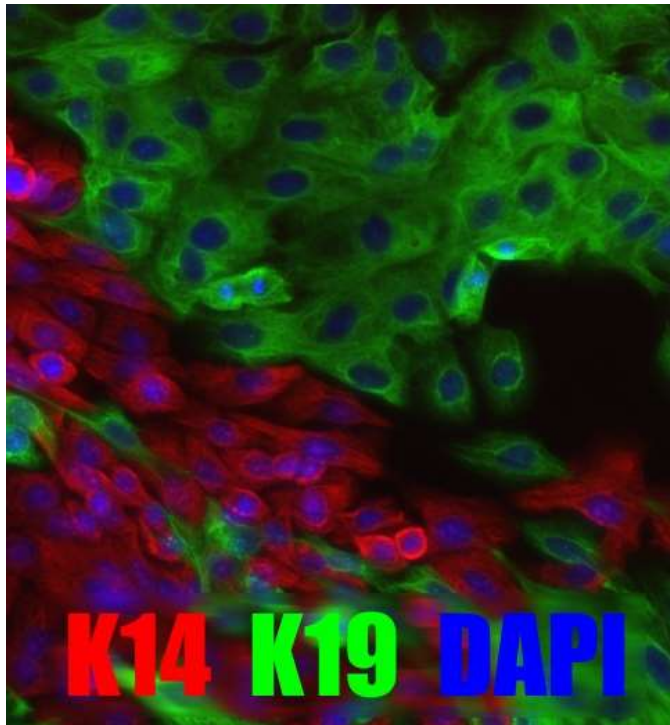


Cancer is not a disease of individual cells, but principally a failure of cells and tissues to communicate properly

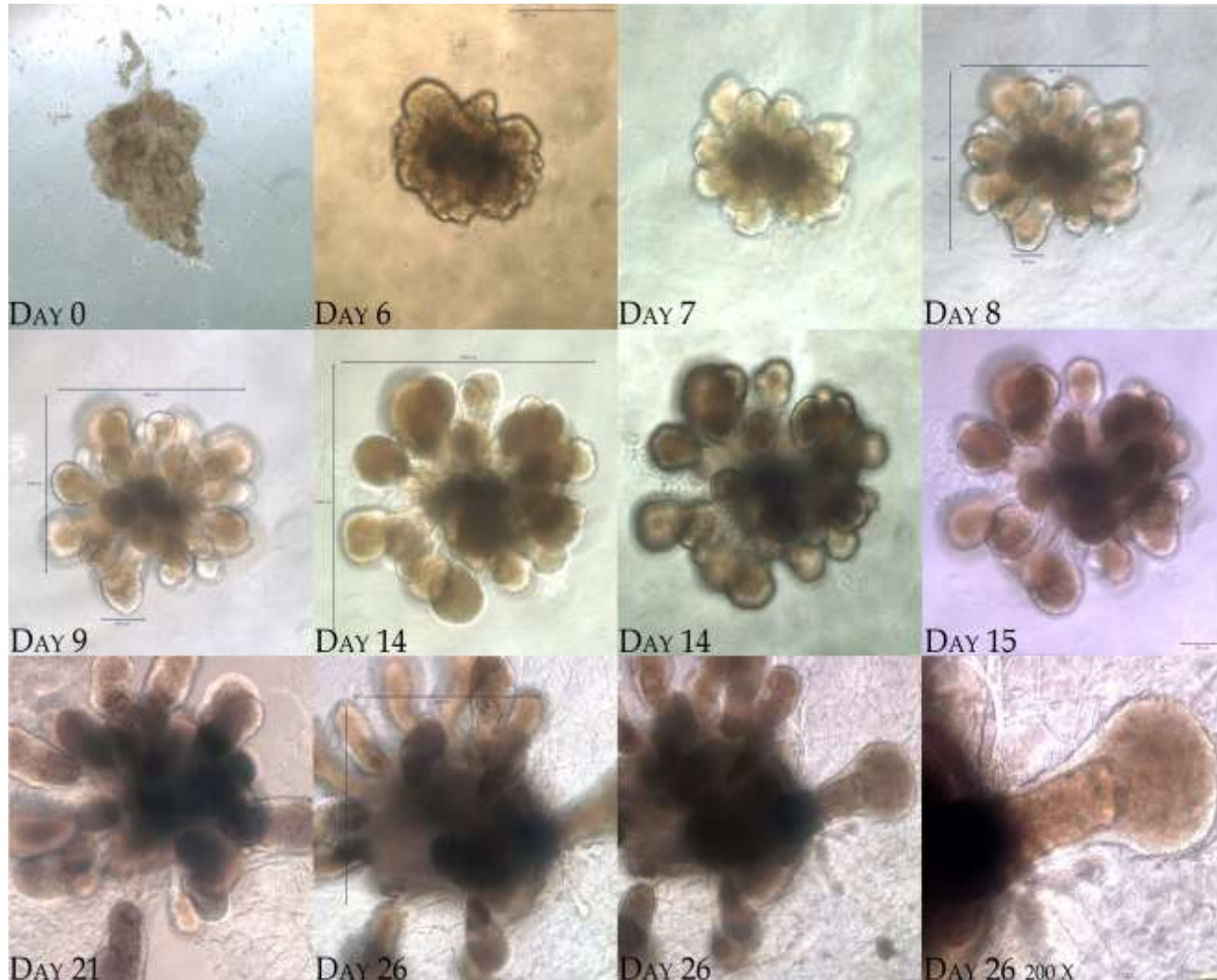


- Key to understanding breast cancer is understanding basic mammary biology.
- Research focused on critical developmental factors will improve understanding of the possible effects of environmental agents.

2D breast cell cultures on plastic do not organize and communicate correctly



3D organotypic cultures retain the ability to organize and communicate correctly

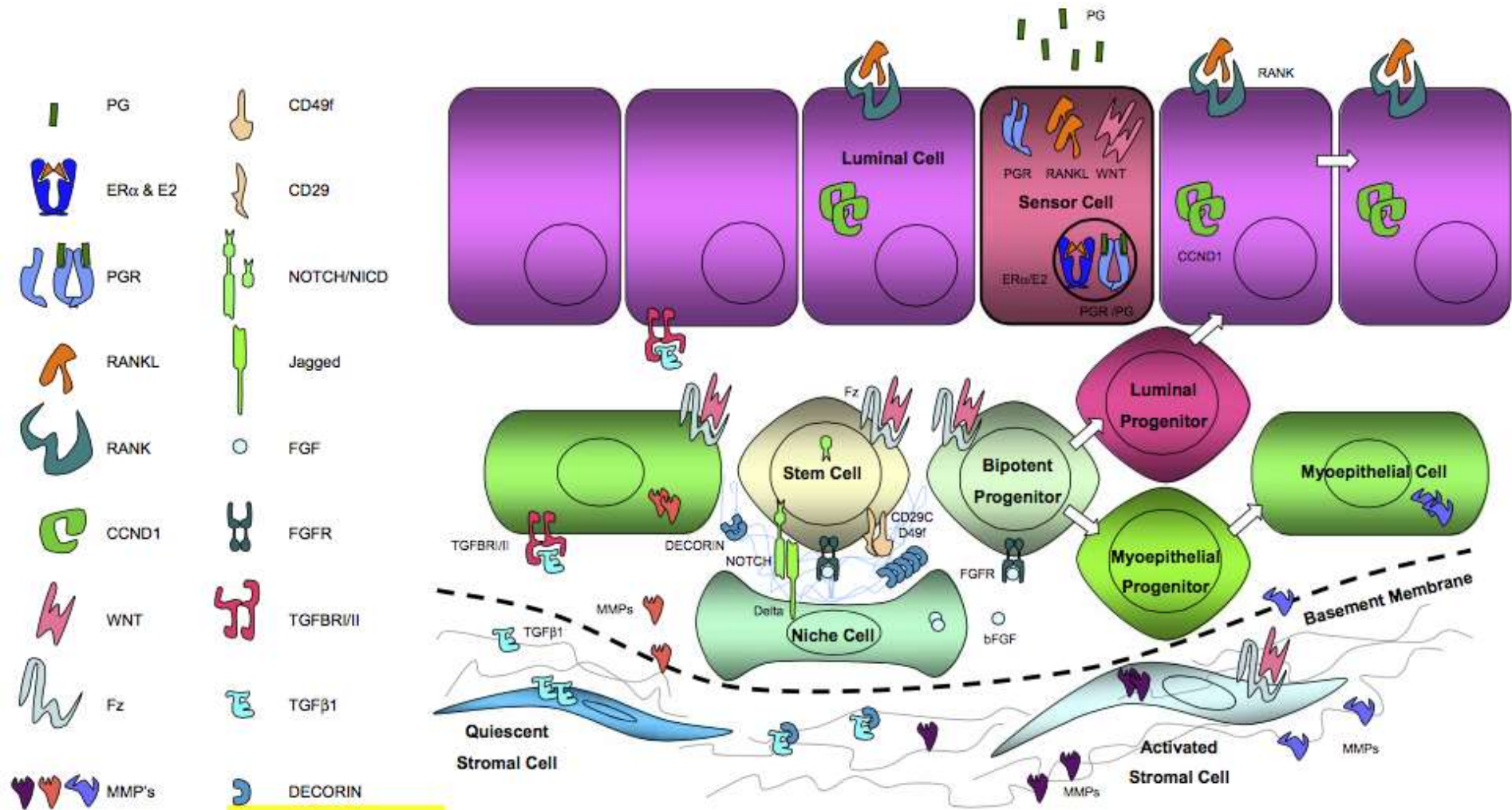


Human mammary cell culture models

Culture	ER α (+)	Organization	Secretion
Tumor cell lines (e.g., MCF7, T47D)	+++	-	-
Immortal cell lines (e.g., MCF10A)	-	+	-
Primary cells	+	+/- *	+
HMSC-derived cells	+	+	+

* Although primary cells exhibit organization, it is heterogeneous and unpredictable.

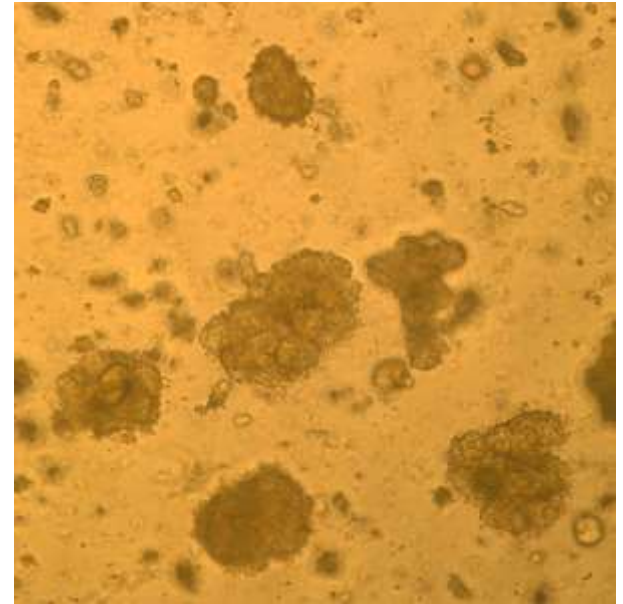
Stem cells and their progeny in adult breast tissue



Primary cultures vs. HMSC-generated cultures

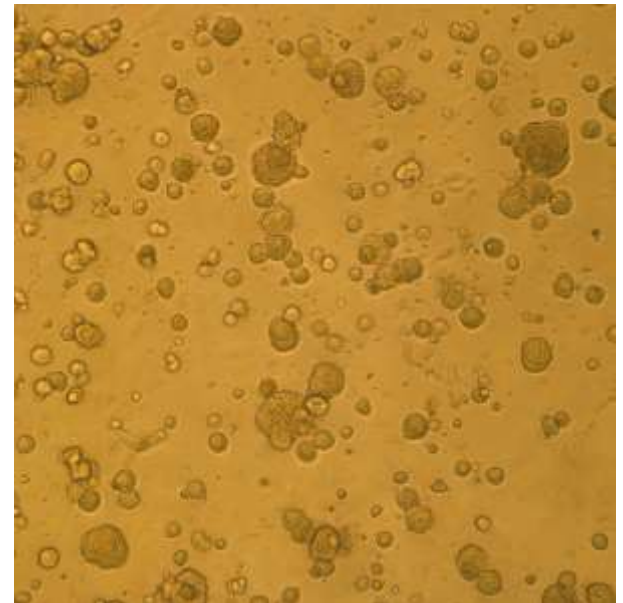
Primary cultures prepared directly from tissue

- Cells in various states of repair and remodeling
- Variable stem and progenitor cell content
- Variable ER α and PGR expression
- No control of developmental staging

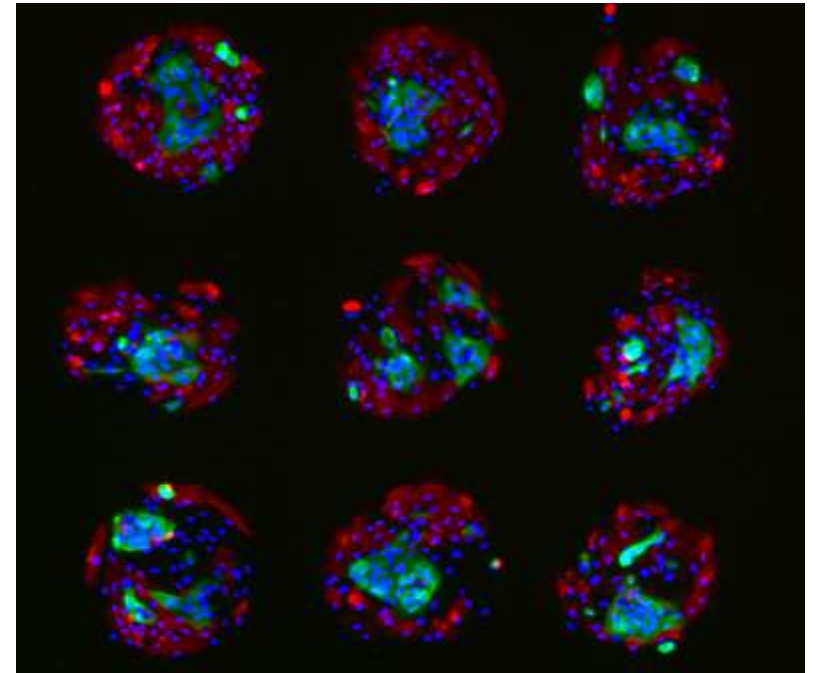
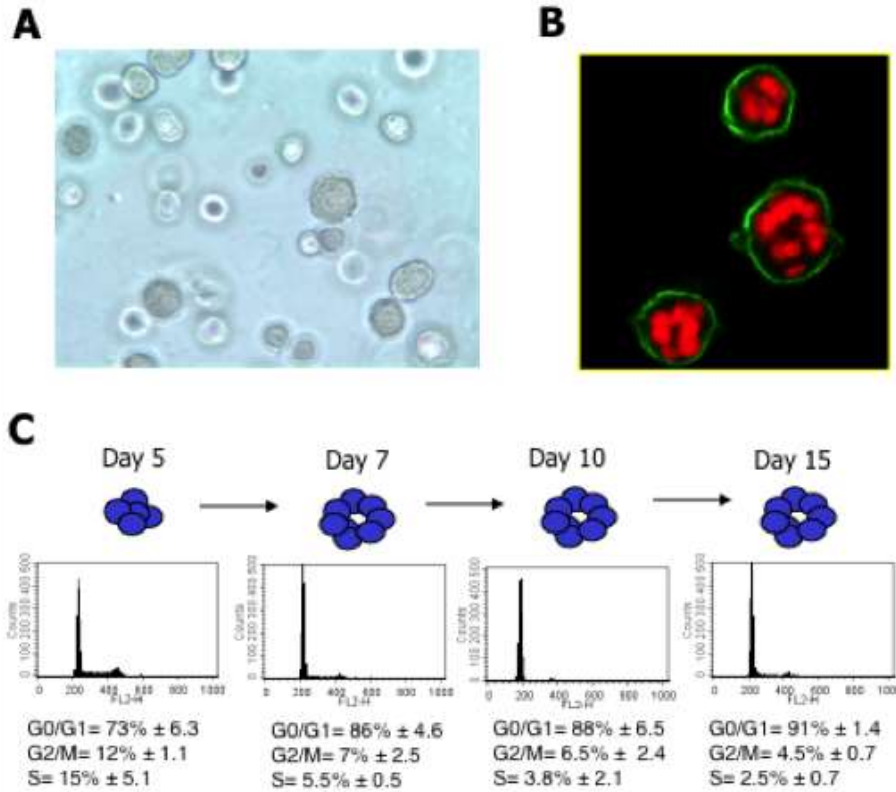


Secondary cultures prepared from HMSCs

- Synchronous growth and structure formation
- Consistent stem and progenitor cell content
- Consistent ER α and PGR expression
- Temporal control of developmental stages subject to environmental perturbations



Can we generate homogeneous yet representative 3D organotypic cultures?



Yaswen lab, unpublished

Fournier et al., 2006

3D Breast Cell Culture Objectives

