

Companion PowerPoint slide set
Obesity-associated breast cancer
risk: a role for epigenetics?

This work was funded by the National Institute of Environmental Health Sciences (P42ES005948; P30 ES010126).

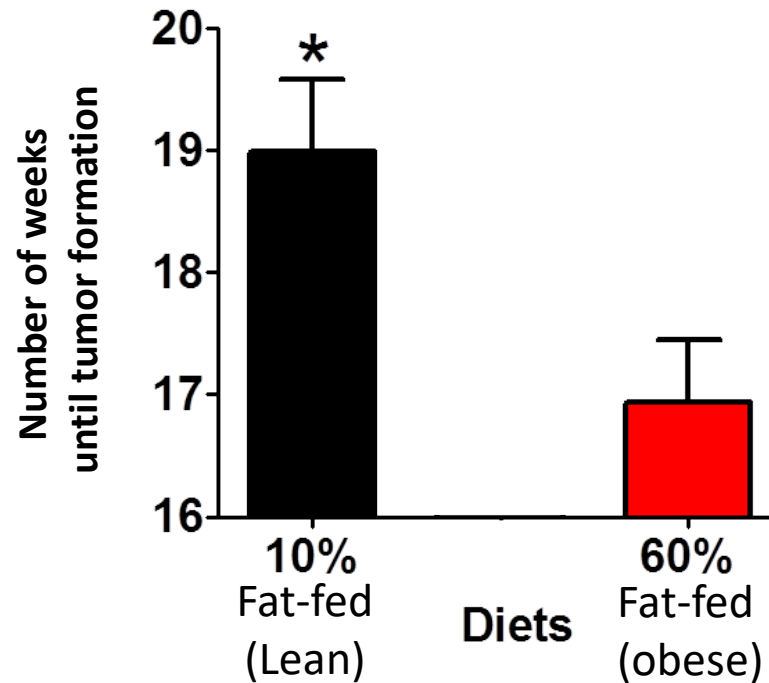
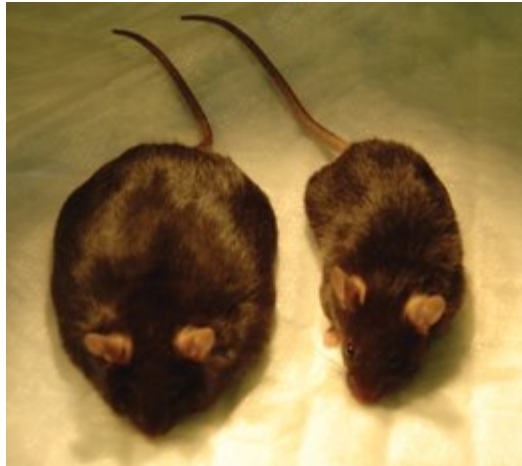
Dr. Liza Makowski

Studies Basal-like Breast Cancer (BBC)

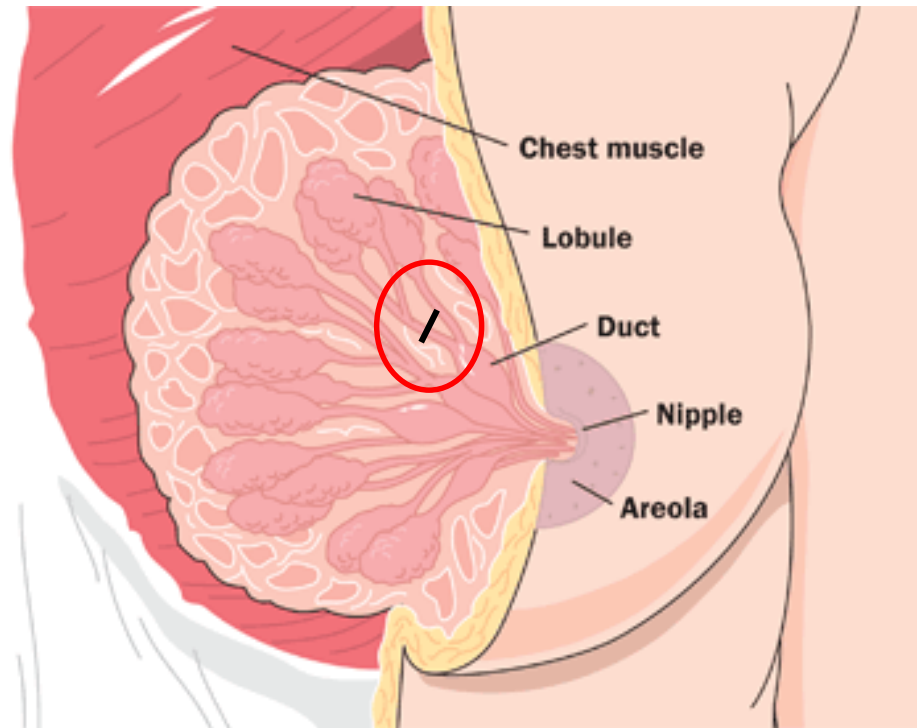


- Aggressive cancer
- No specific drug therapies
- Short survival time if it spreads beyond breast tissue (metastasis)
- More prevalent in young pre-menopausal women
- More prevalent in African Americans
- **Obesity is a risk factor for all breast cancers**

***Obesity causes BBC tumors
to form at a faster rate
compared to lean mice***

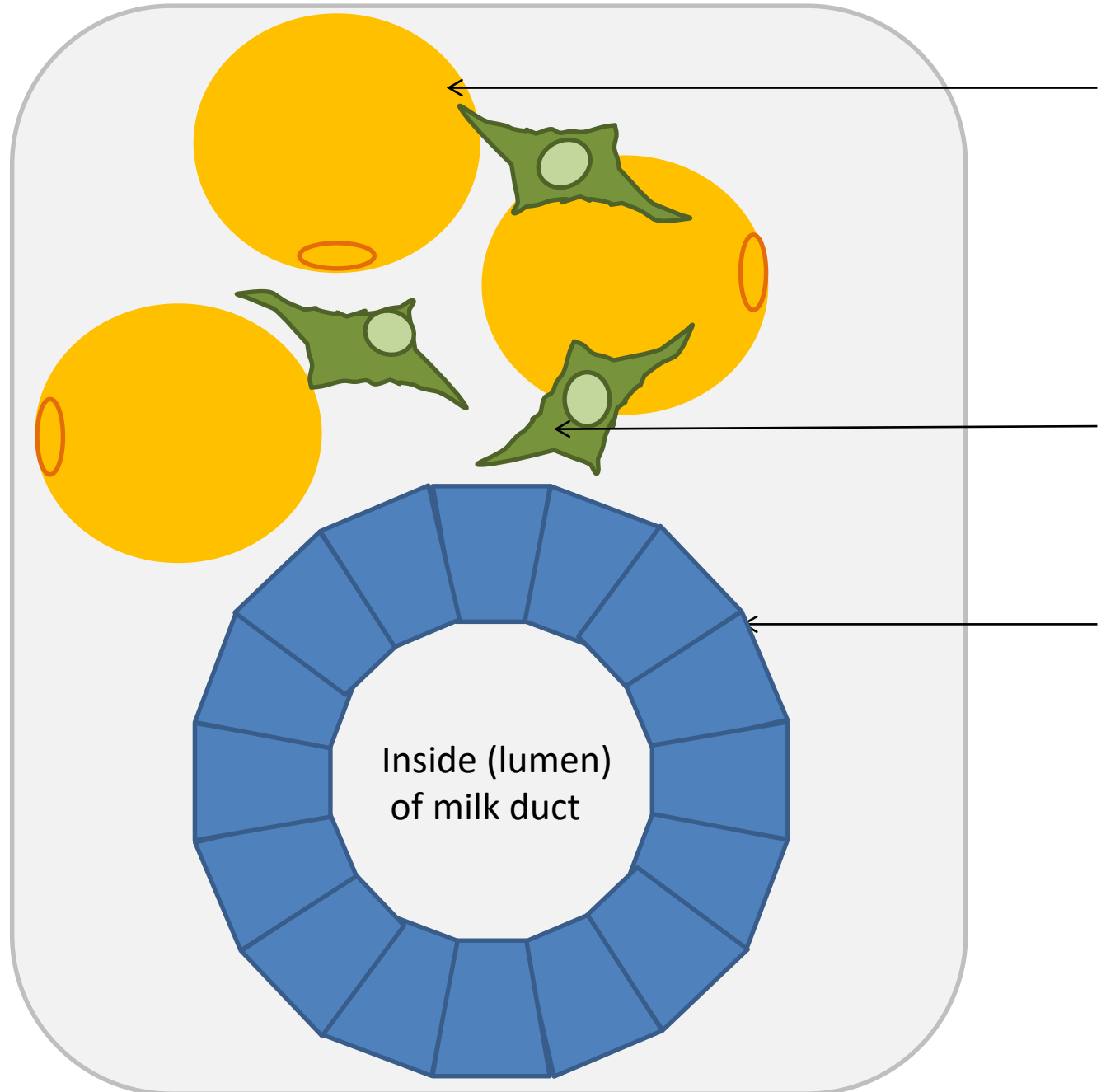


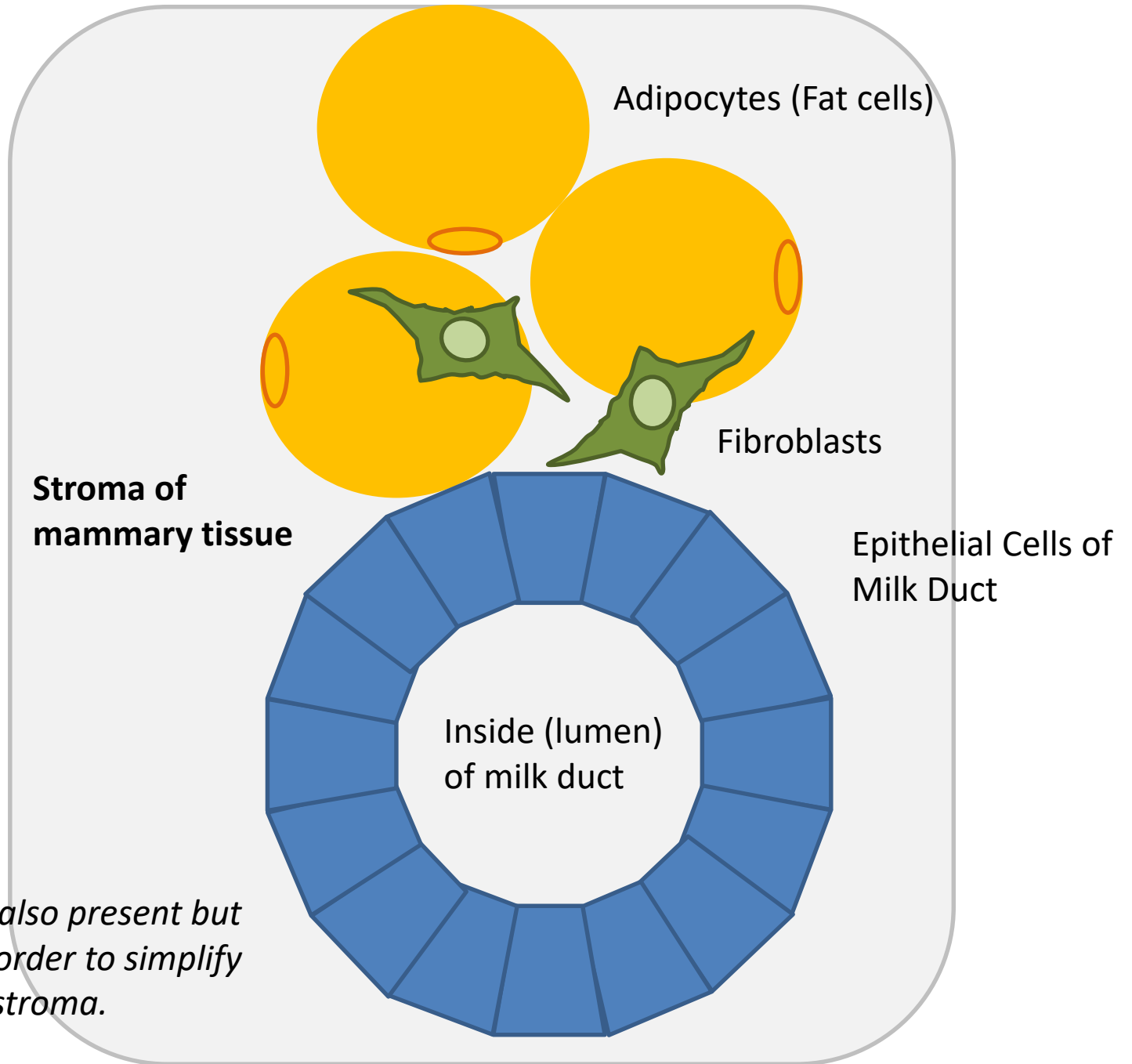
Cross-section of mammary (milk) duct



<http://www.womenshealth.gov/breast-cancer/what-is-breast-cancer/>

Label **epithelial cells**, **fat cells** and **fibroblasts** on the diagram below:



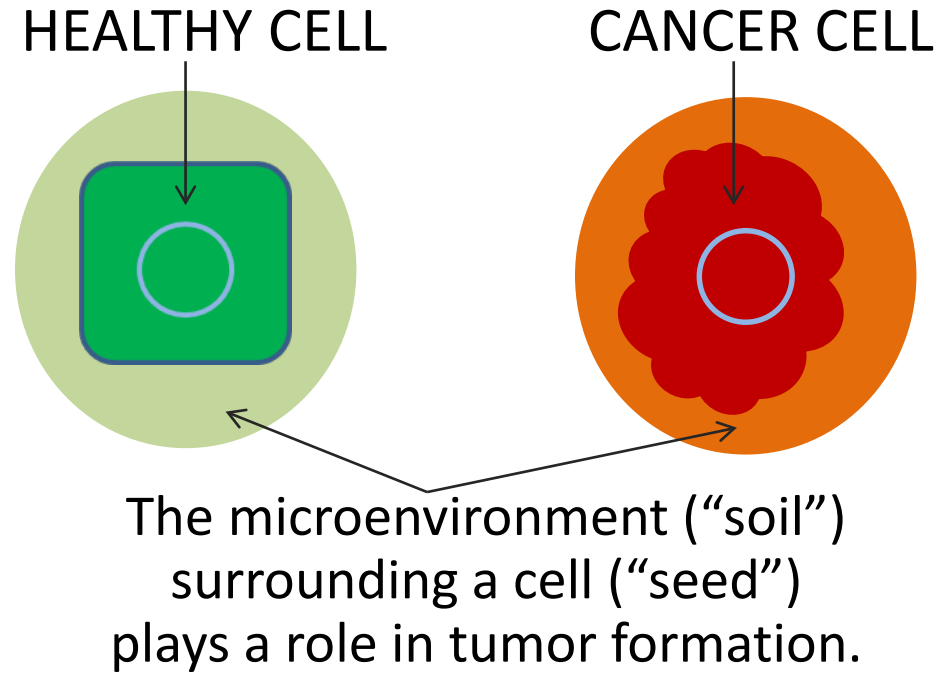


Immune cells are also present but are not shown in order to simplify schematic of the stroma.



microenvironment

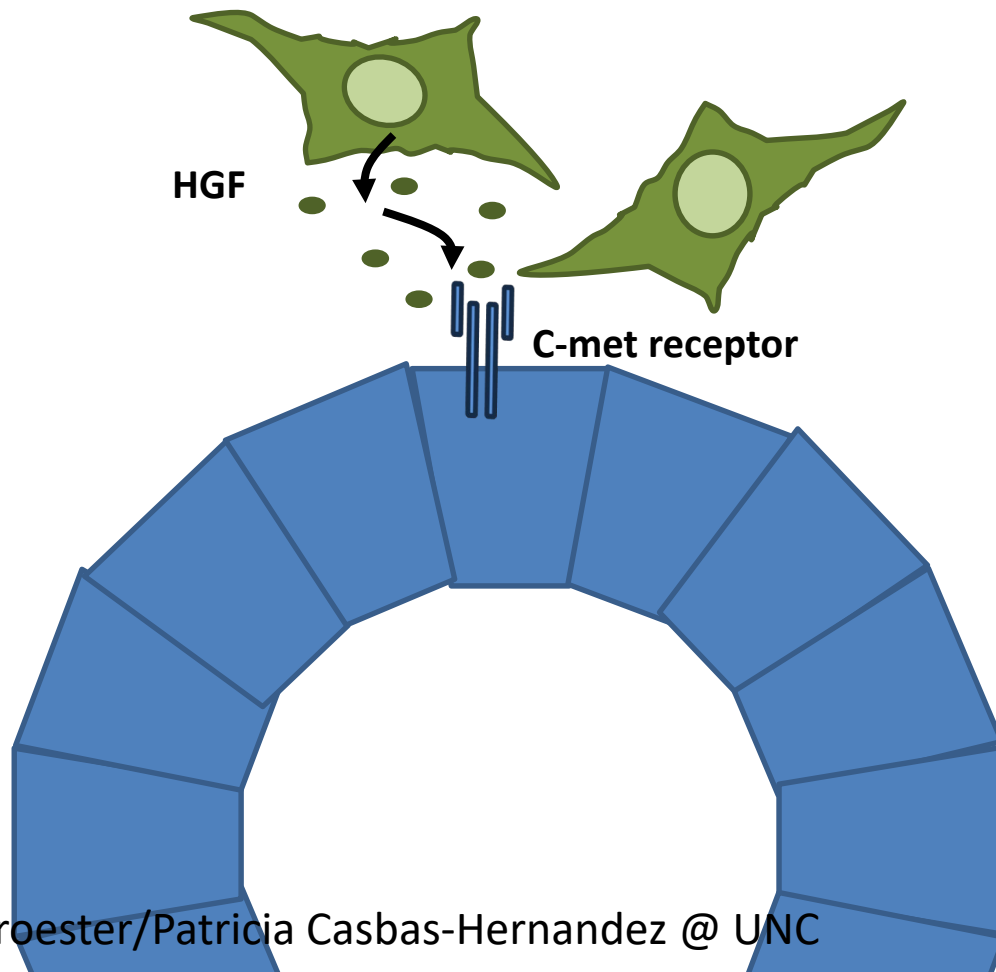
Cancer & the microenvironment



Liza Makowski: **“How does obesity alter the microenvironment in breast cancer?”**

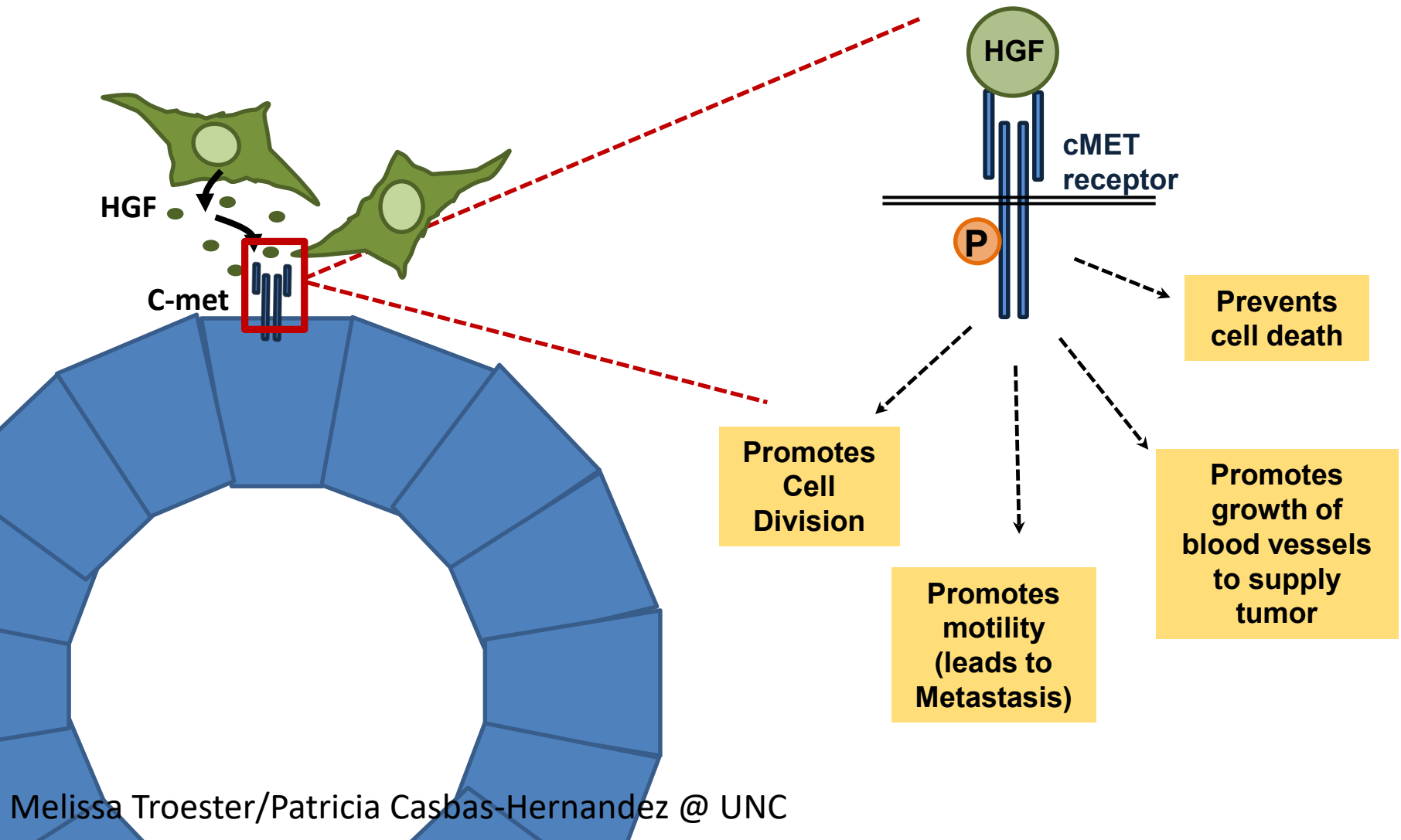
Cell to cell communication

HGF-cMET paracrine signaling



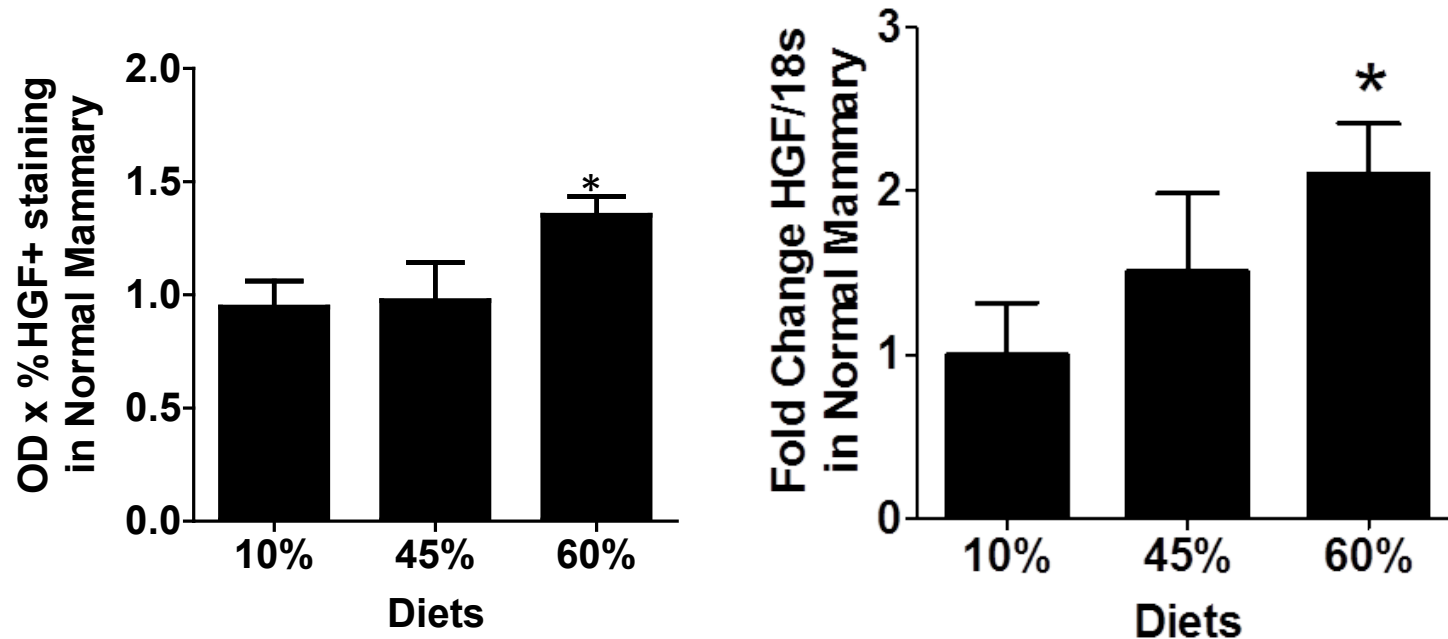
Cell to cell communication

HGF-cMET paracrine signaling



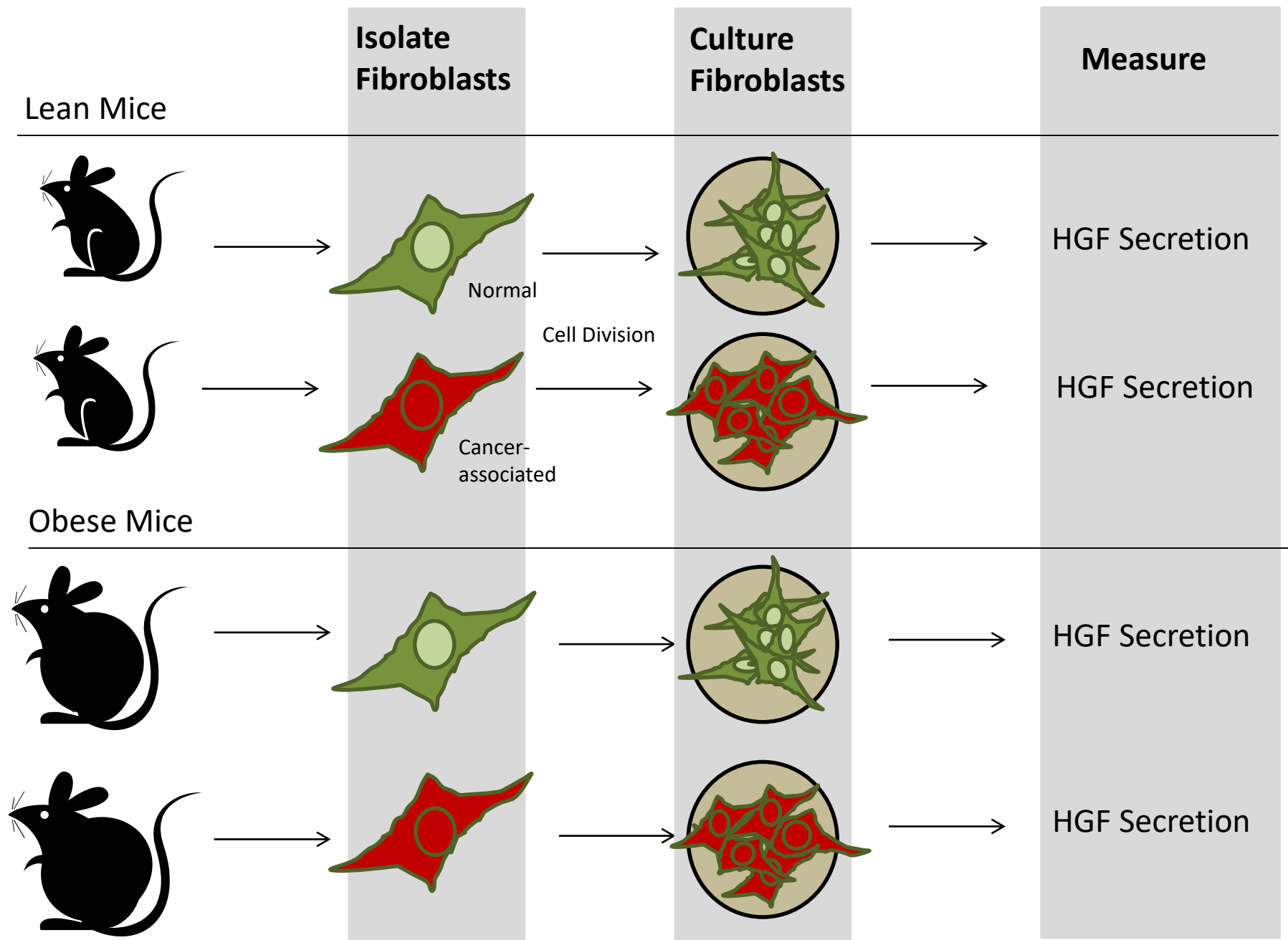


Obesity increases levels of HGF mRNA and protein in normal mammary tissue

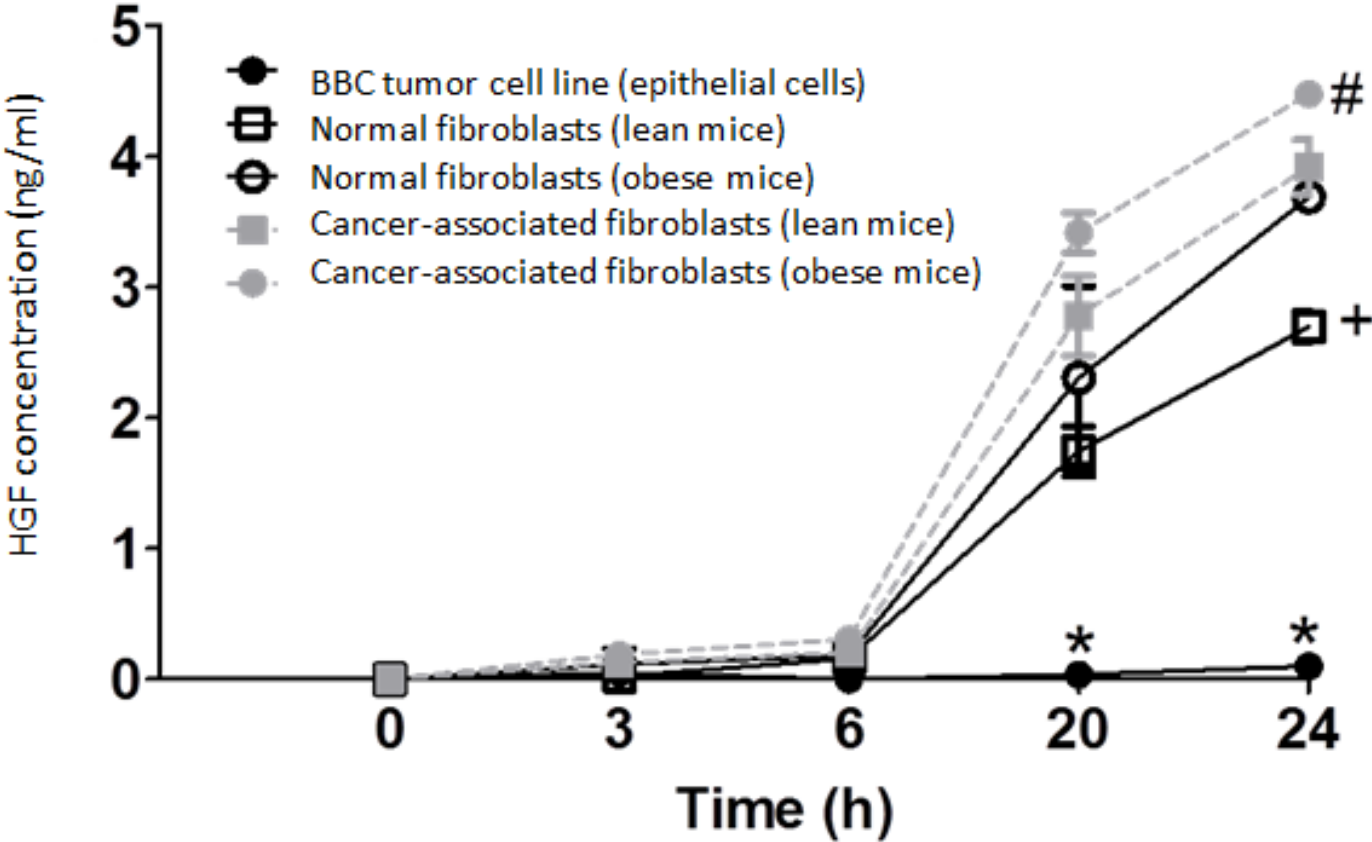


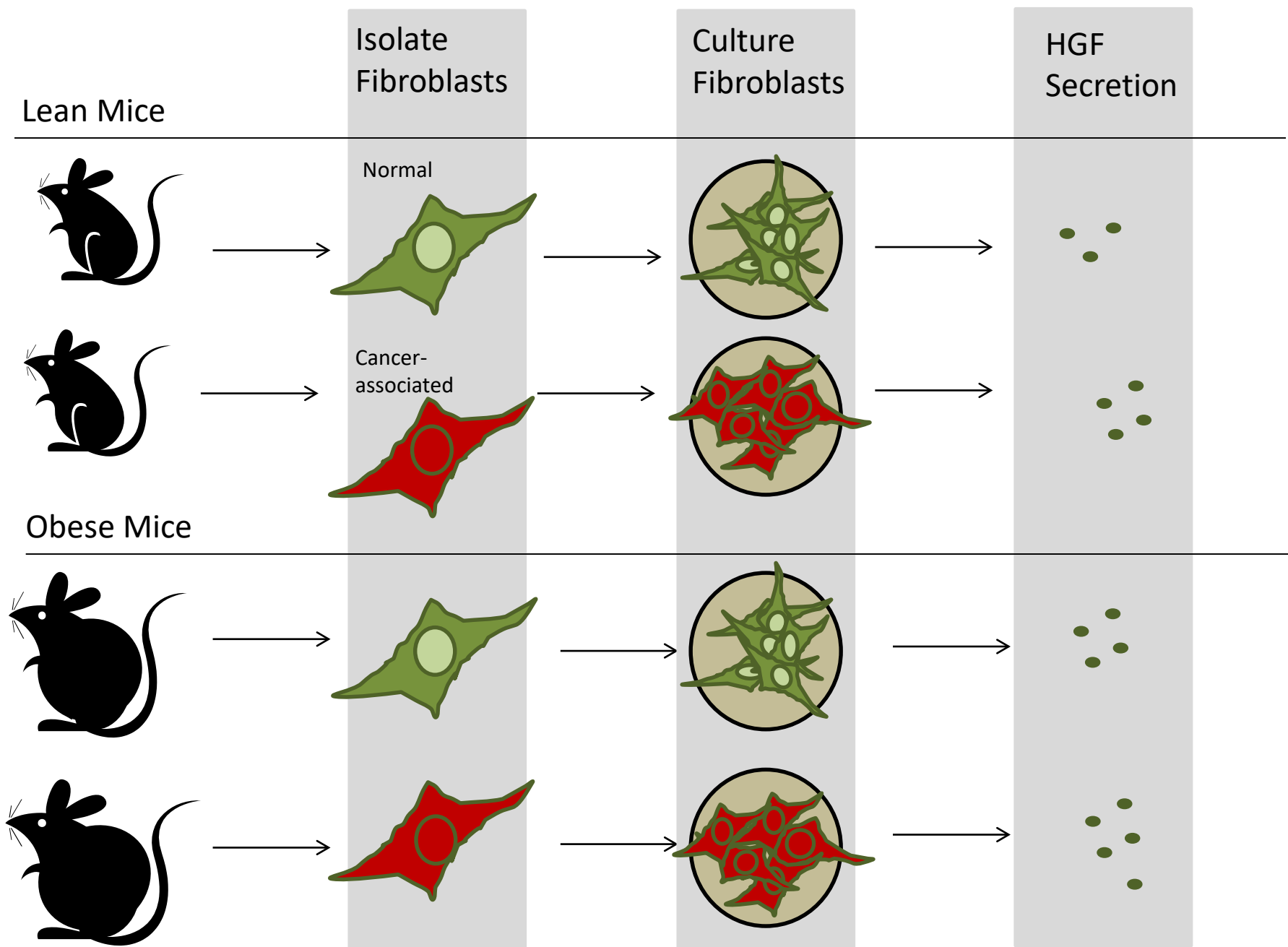


Ex vivo cell culture model

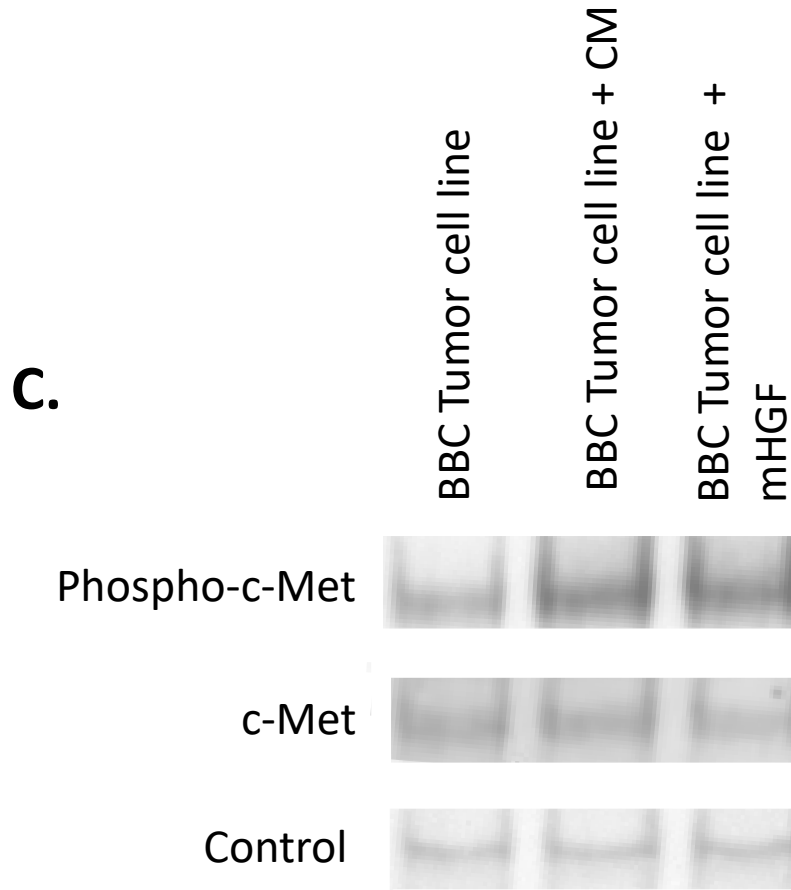


HGF secretion in cultured cells



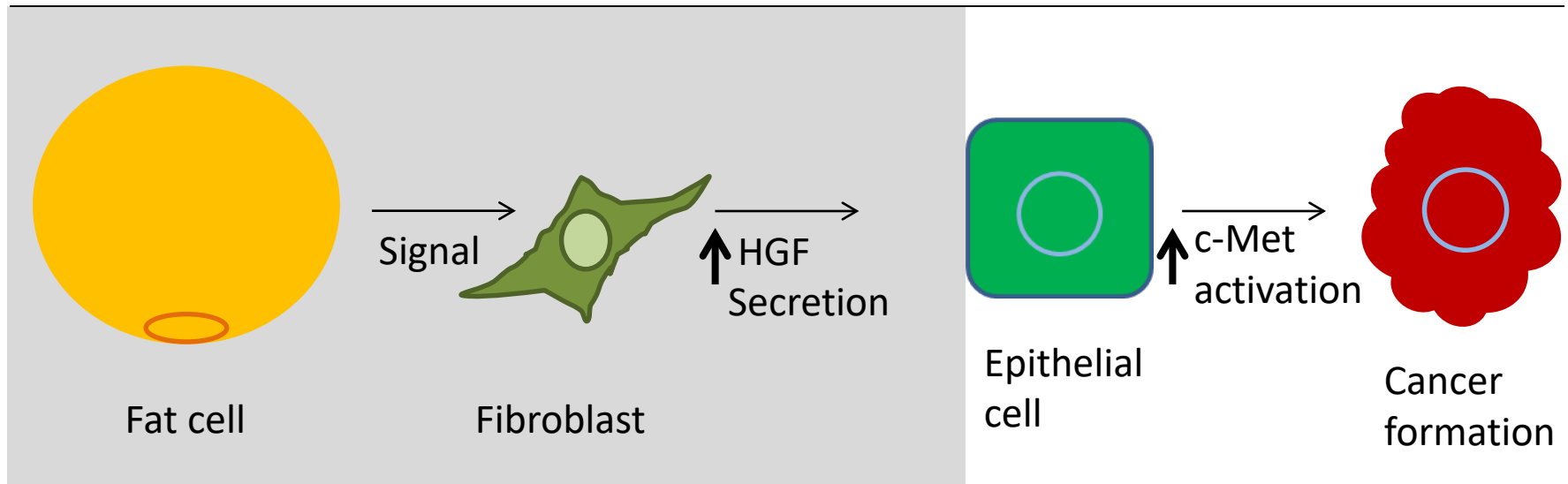


Analysis of c-Met protein levels in BBC tumor cell line





“How does obesity alter the microenvironment in breast cancer?”



Microenvironment

Conclusion: growth factor signaling pathway (HGF/cMet) was upregulated with obesity.

