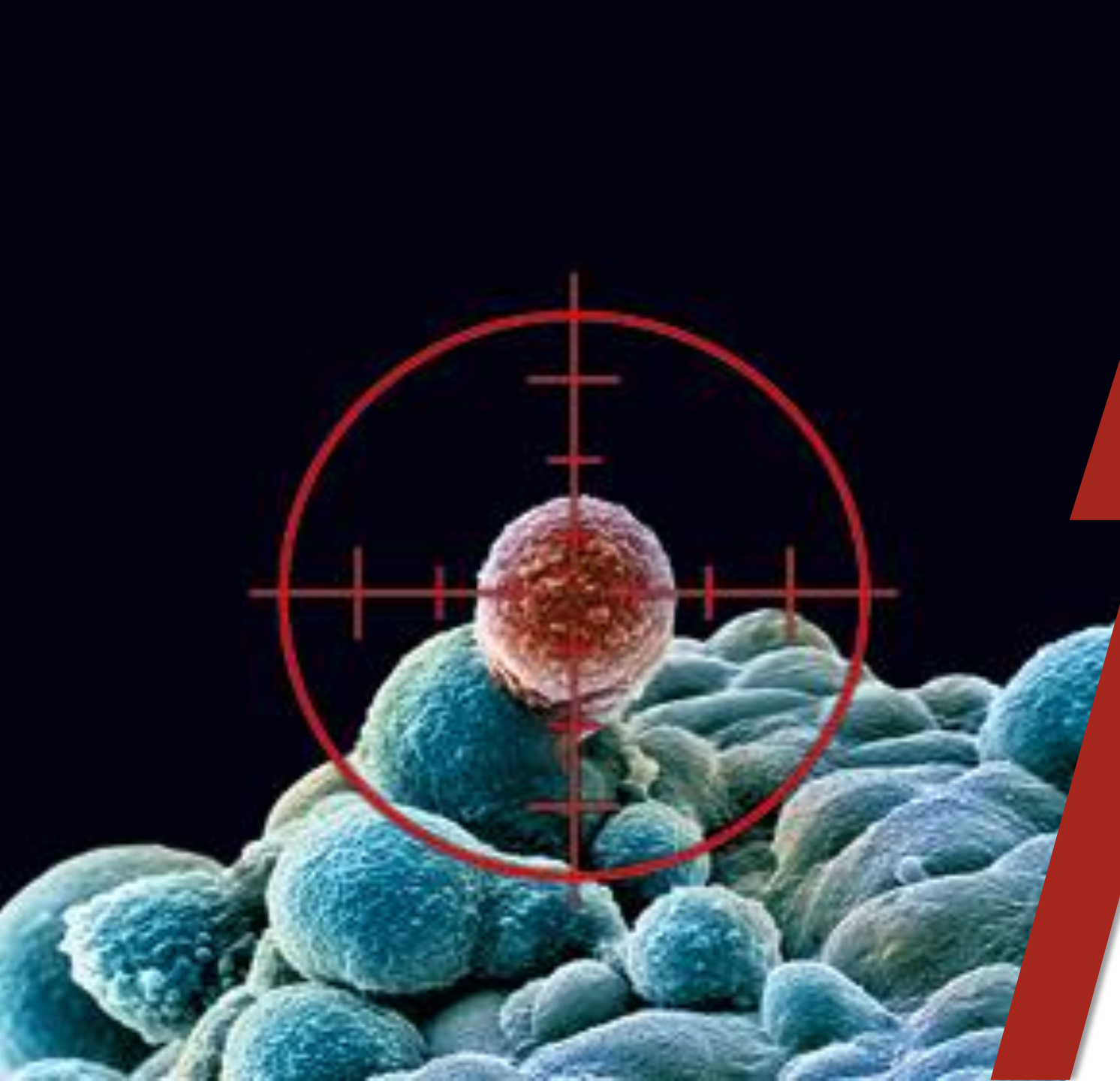
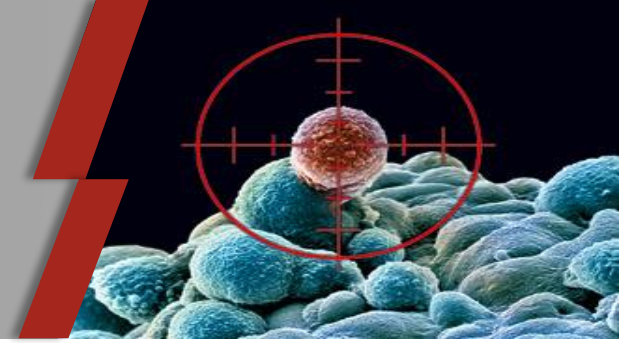


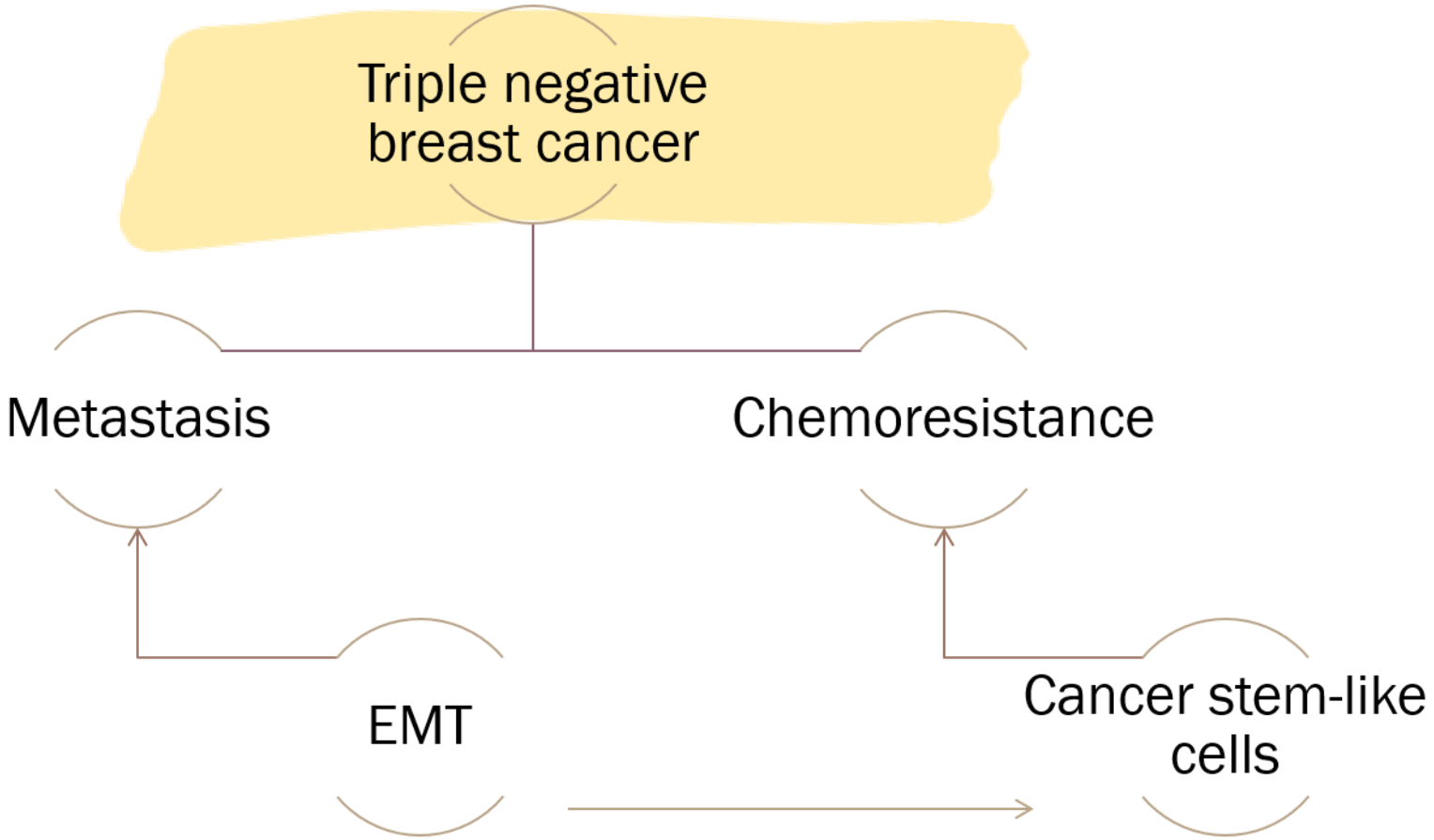
The Science of Healing:

Cutting Edge Cancer Biology Research

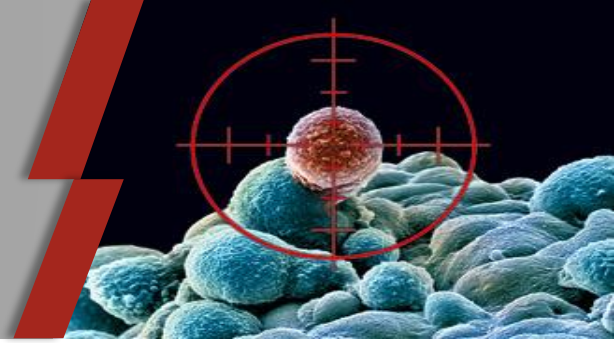
Keighley Reisenauer
Present Your PhD

Understanding healing requires understanding the disease

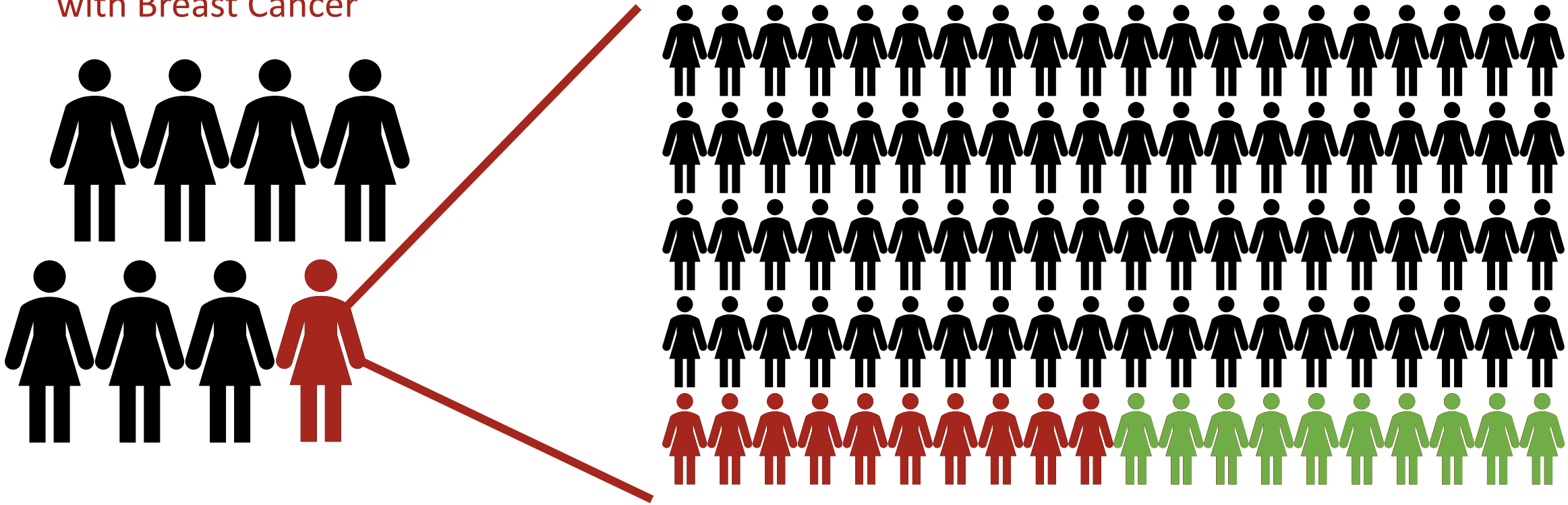




The target: Triple Negative Breast Cancer

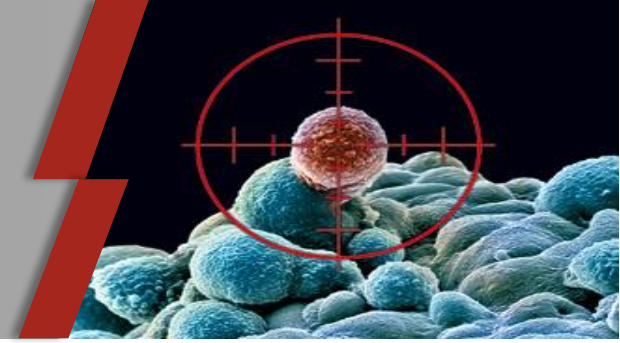


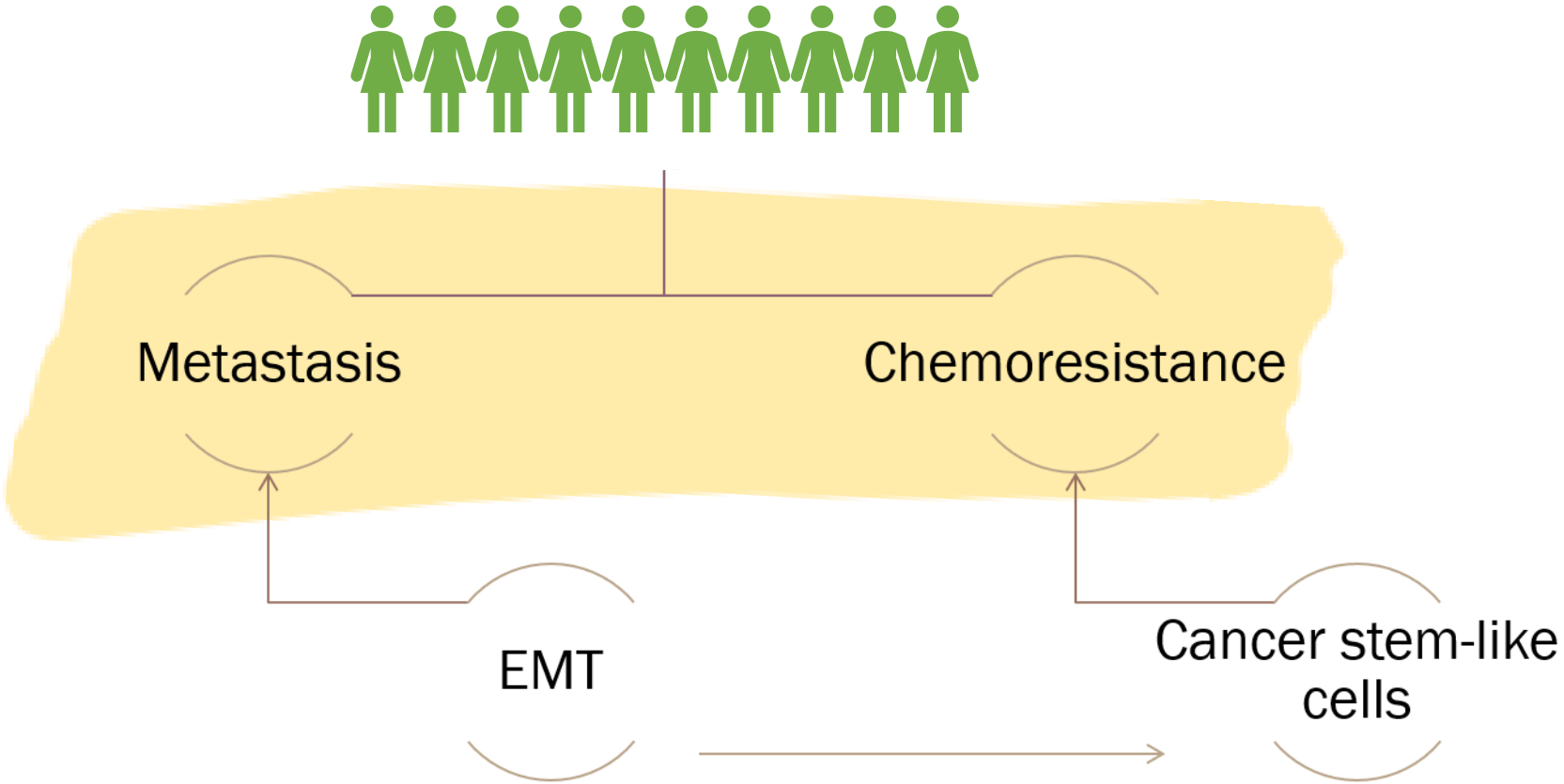
Women diagnosed with Breast Cancer



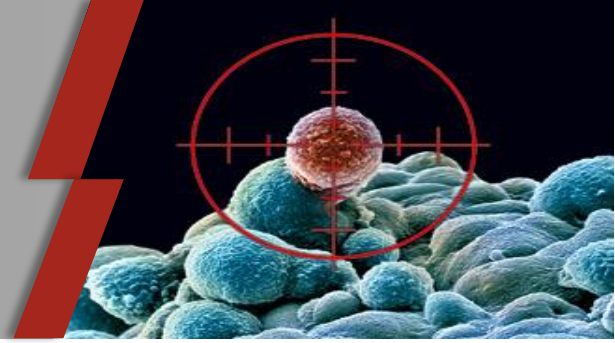
Women diagnosed with Triple Negative Breast Cancer

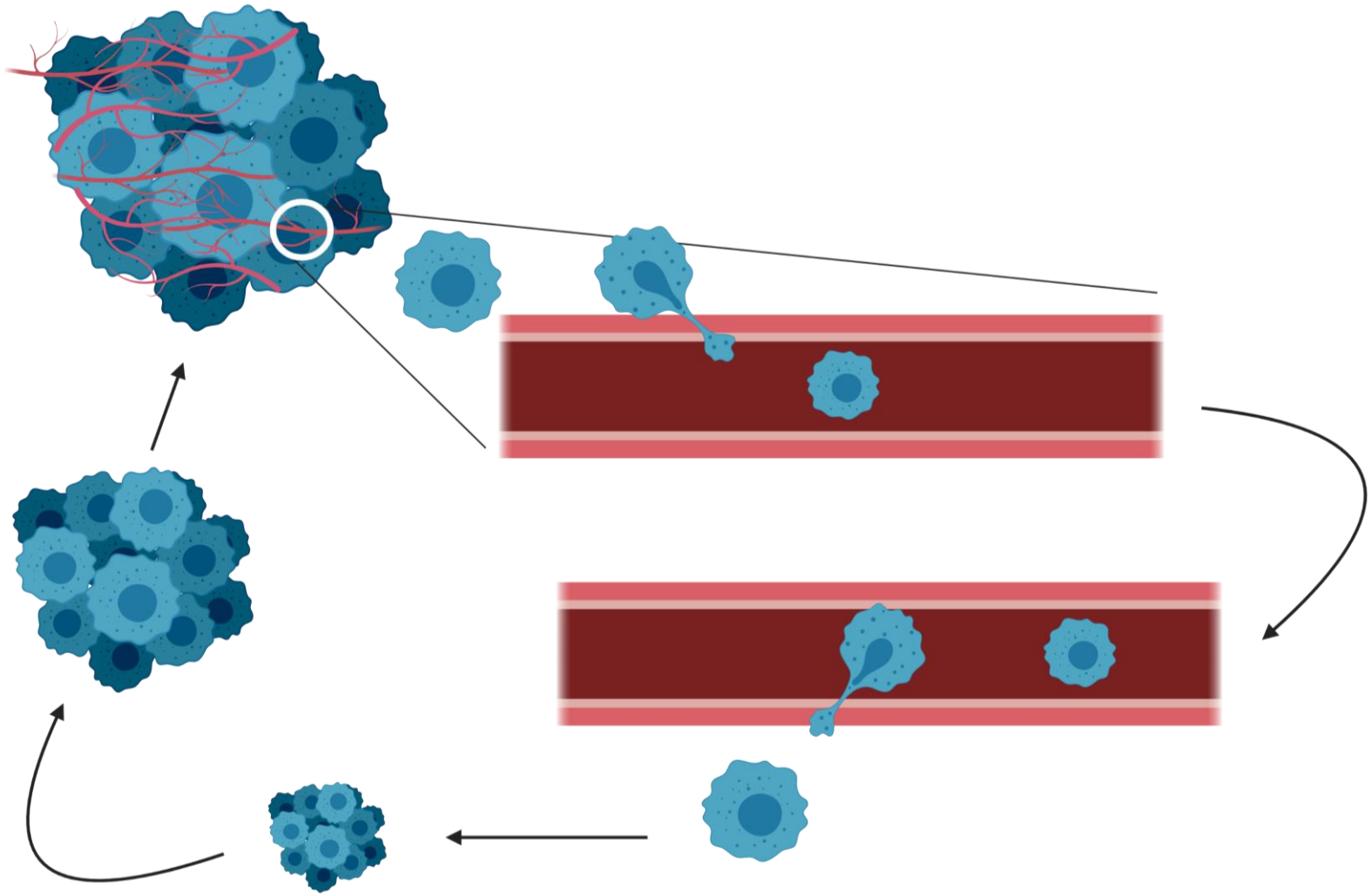
To help these patients, scientists have to overcome two major hurdles





Metastatic Cascade



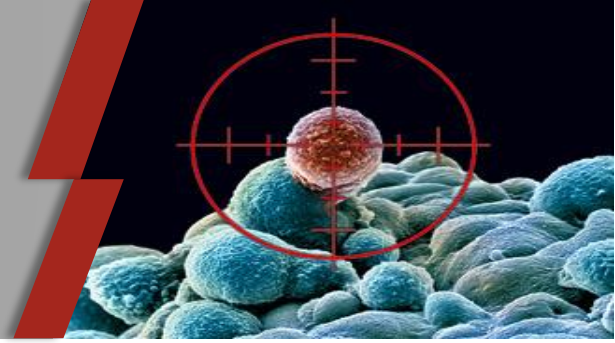


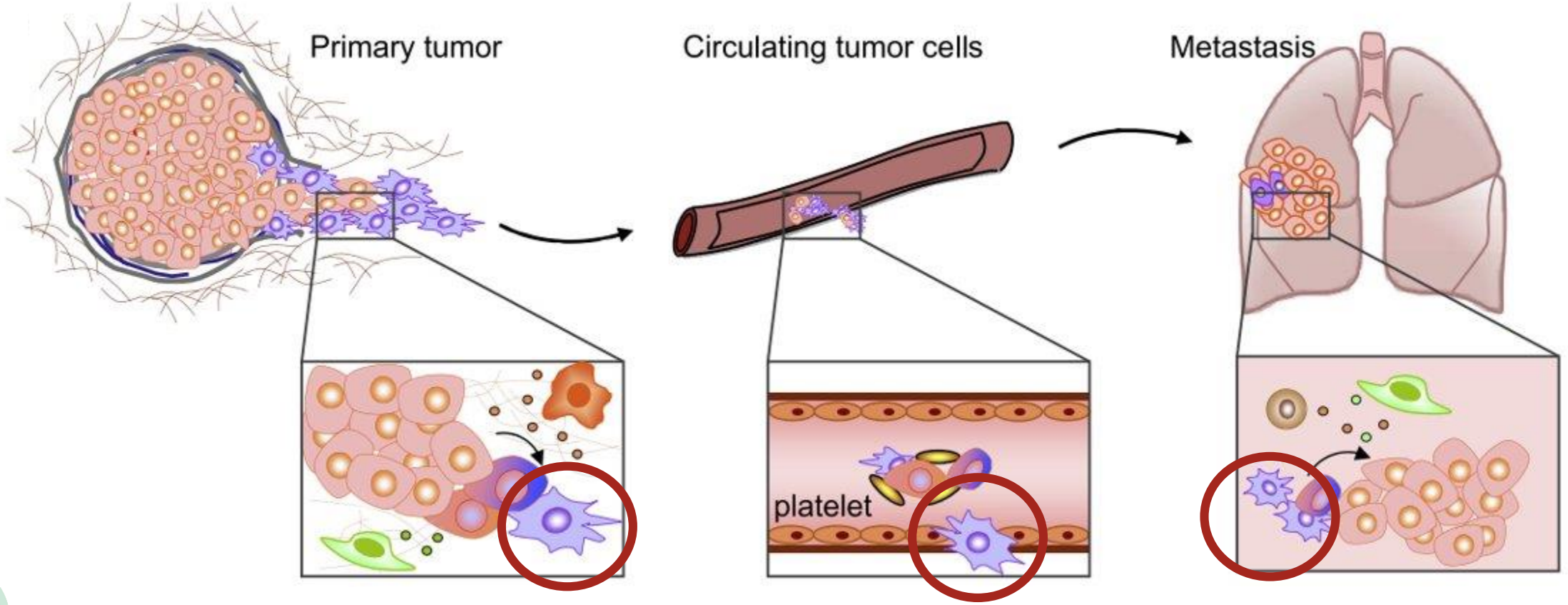
Metastasis kills

50%

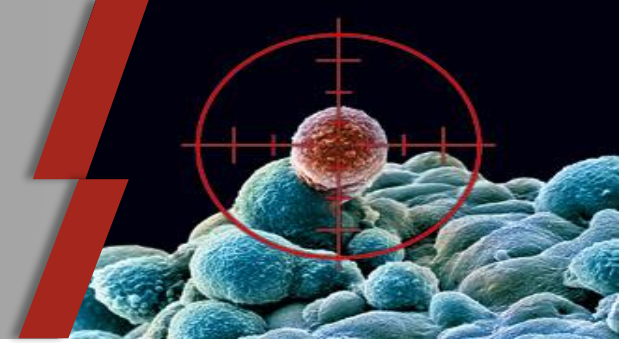
of chemo non-responsive patients

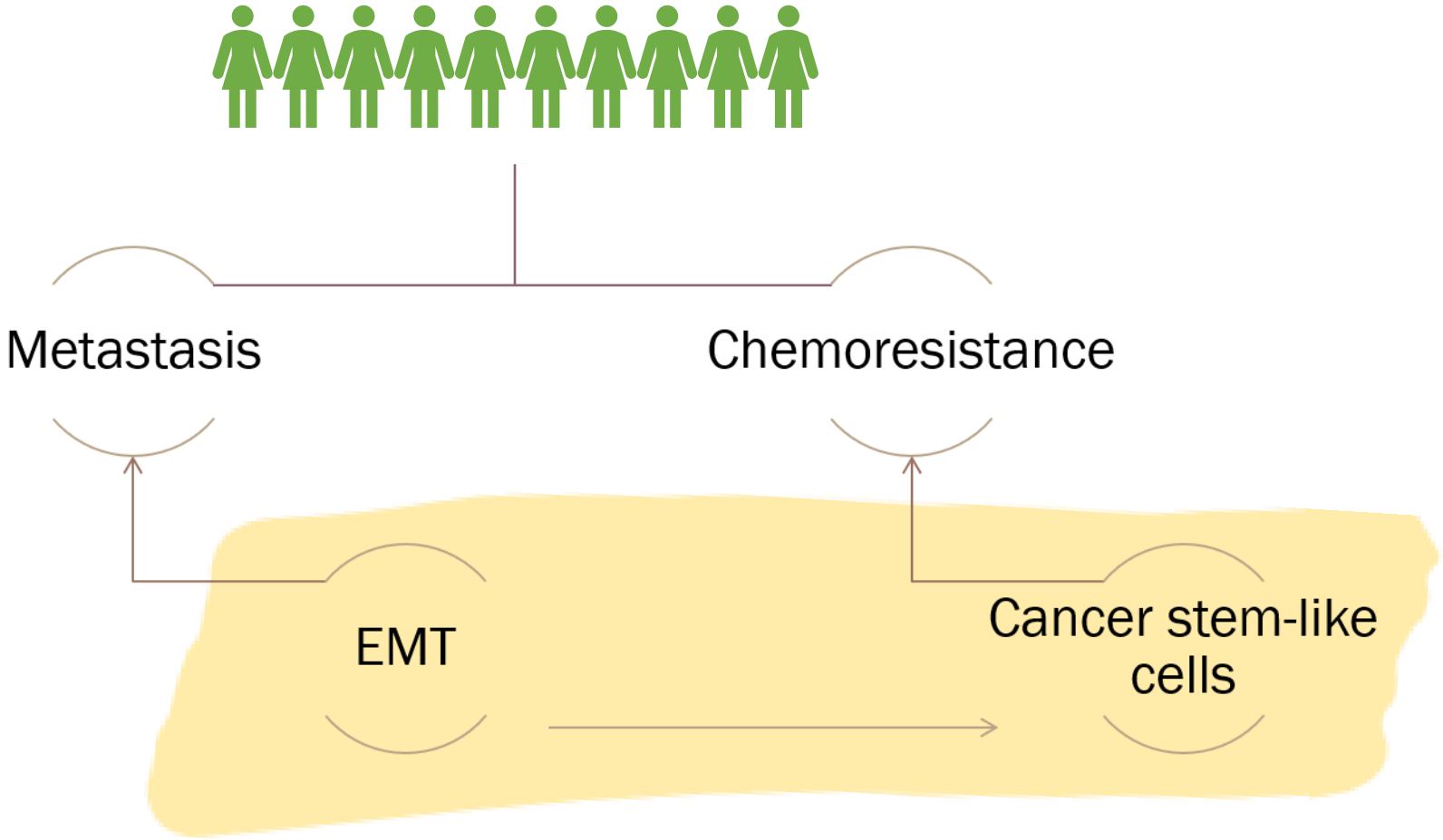
How does metastasis contribute to chemotherapy resistance?



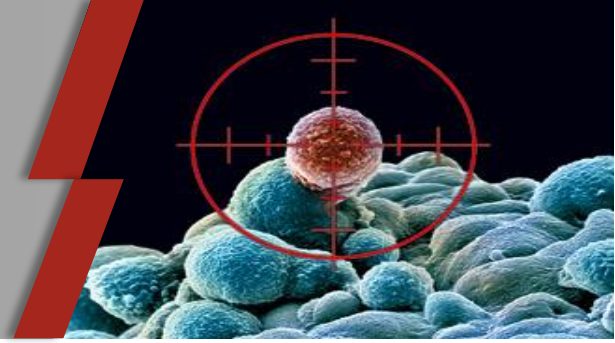


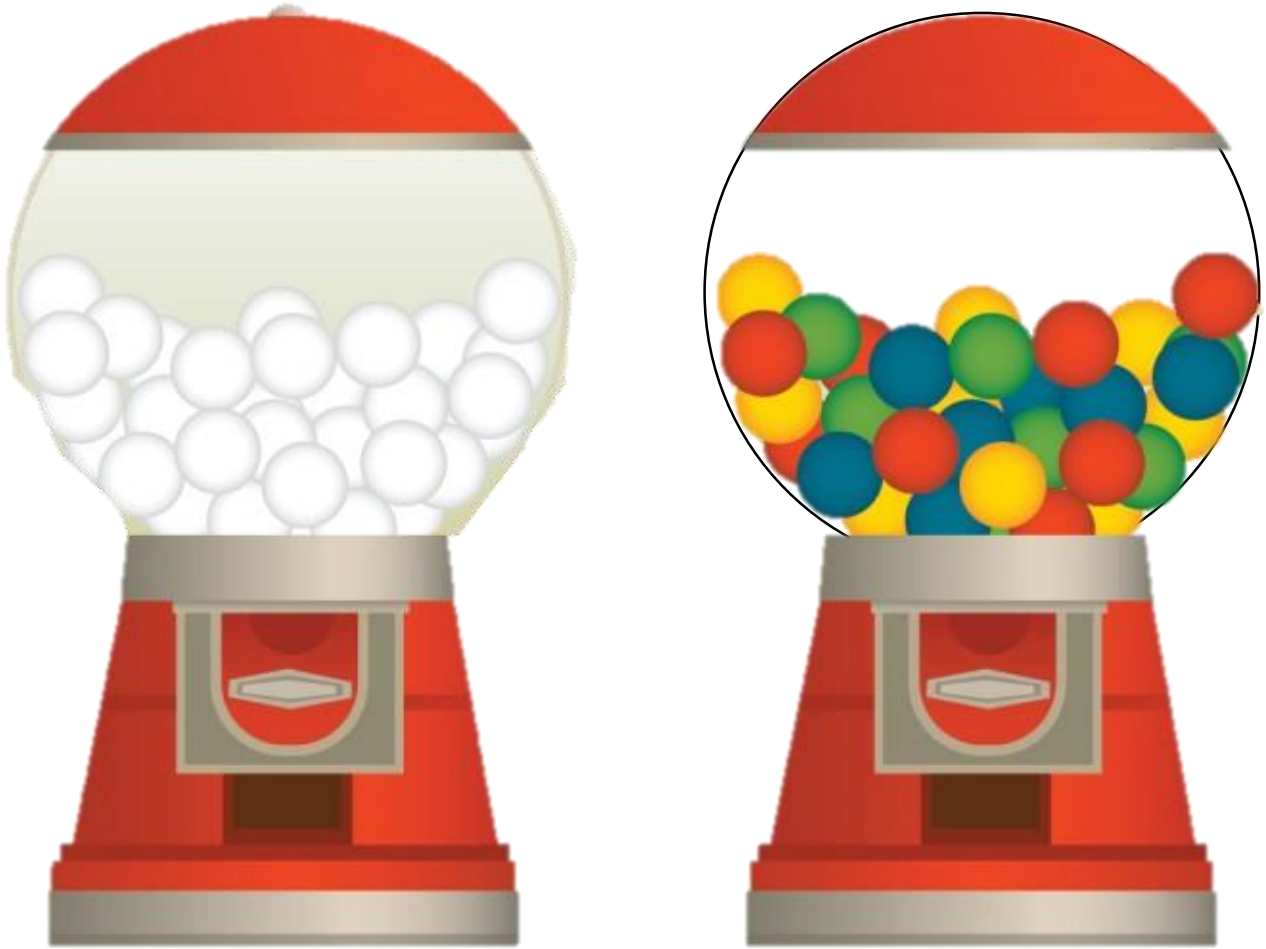
Chemoresistance and metastasis are driven by two related cell types



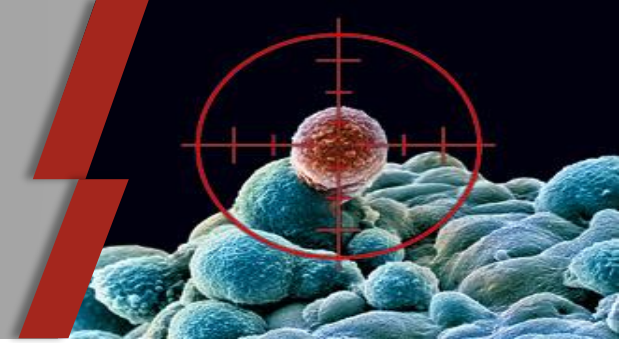


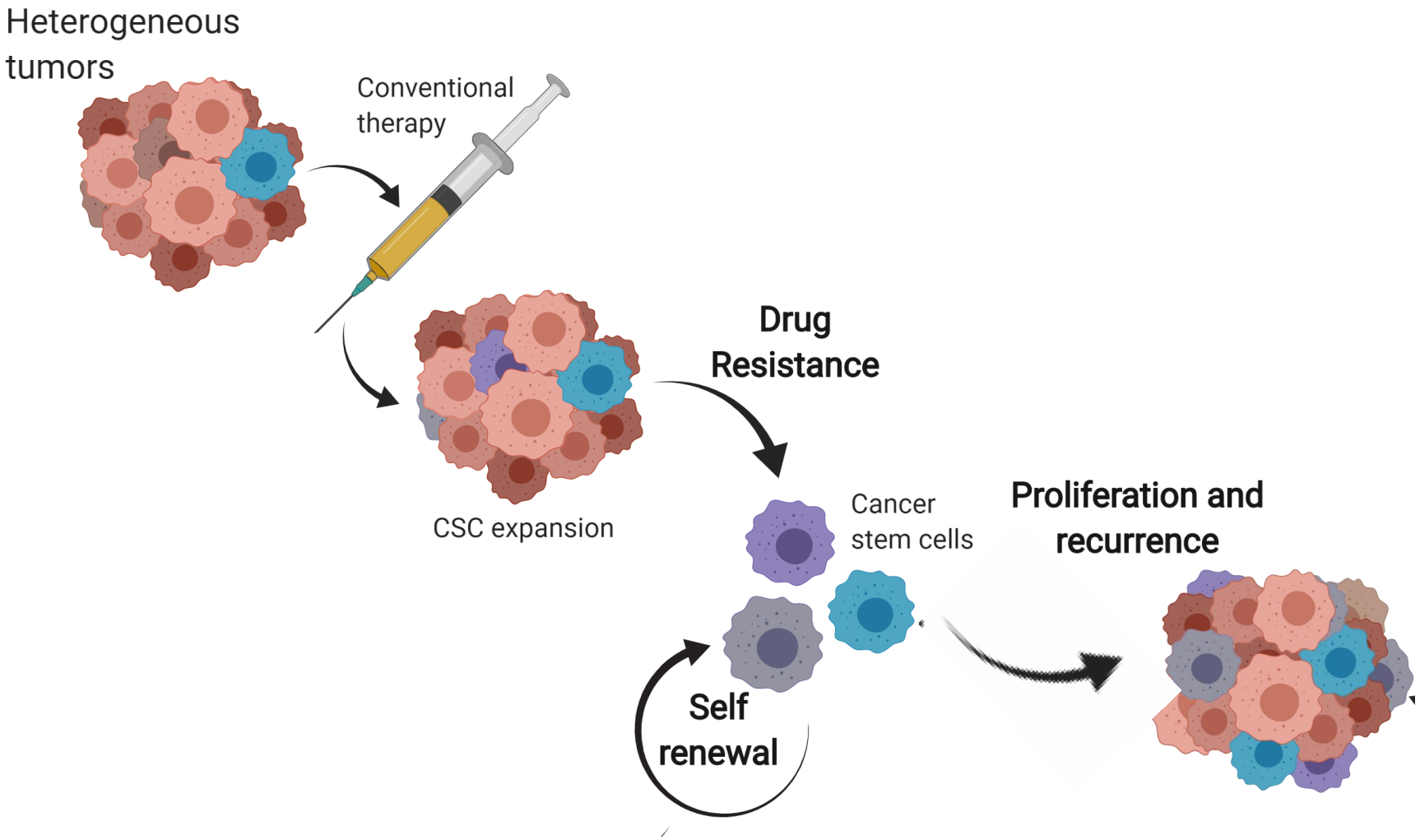
Tumors are not comprised of one type of cell



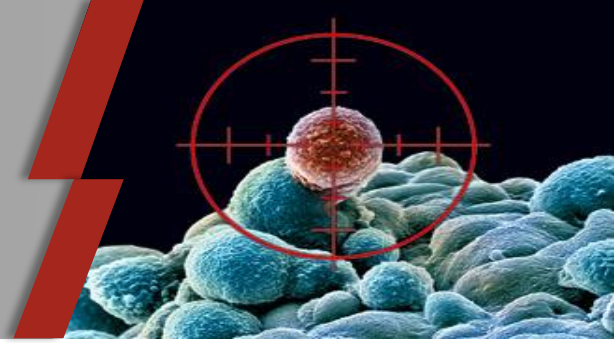


Cancer stem-like cells are responsible for resistance



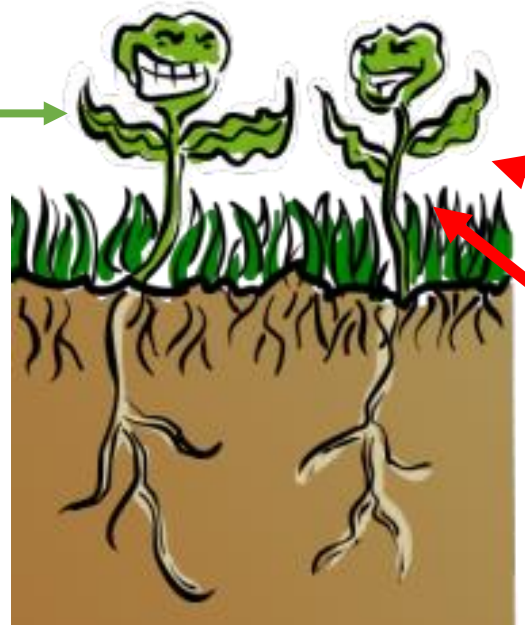


Cancer stem like cells are like weeds



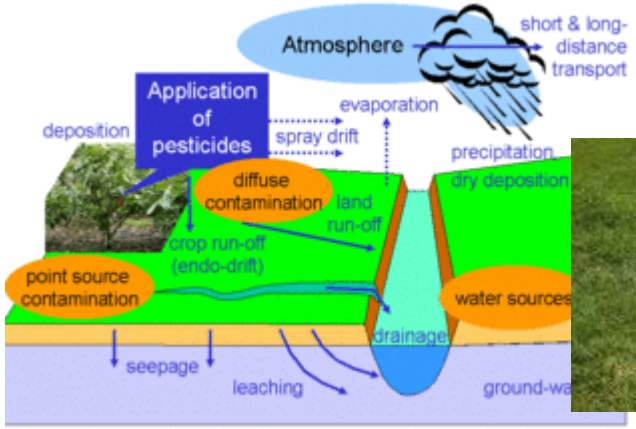
Cancer stem cells

Healthy body



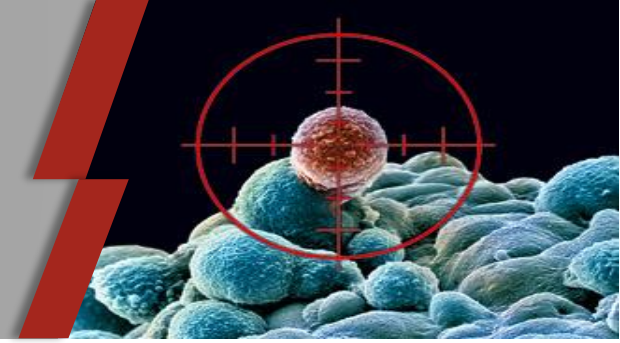
"Surgery"

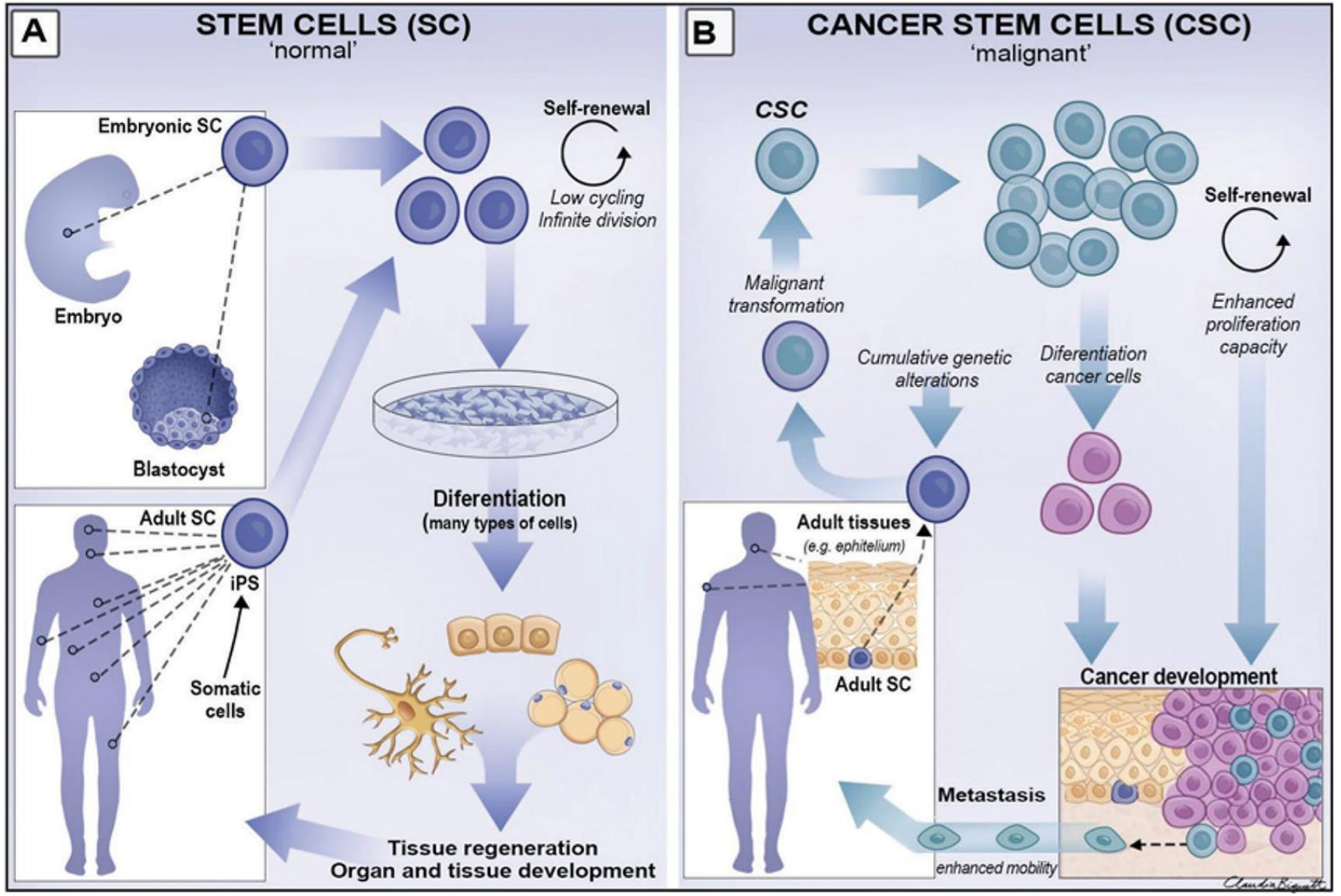
"Chemo"



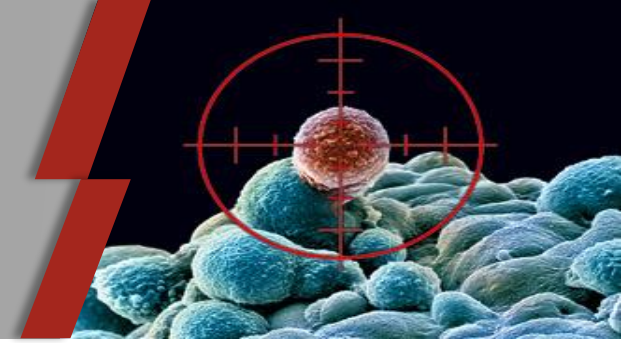
GOAL

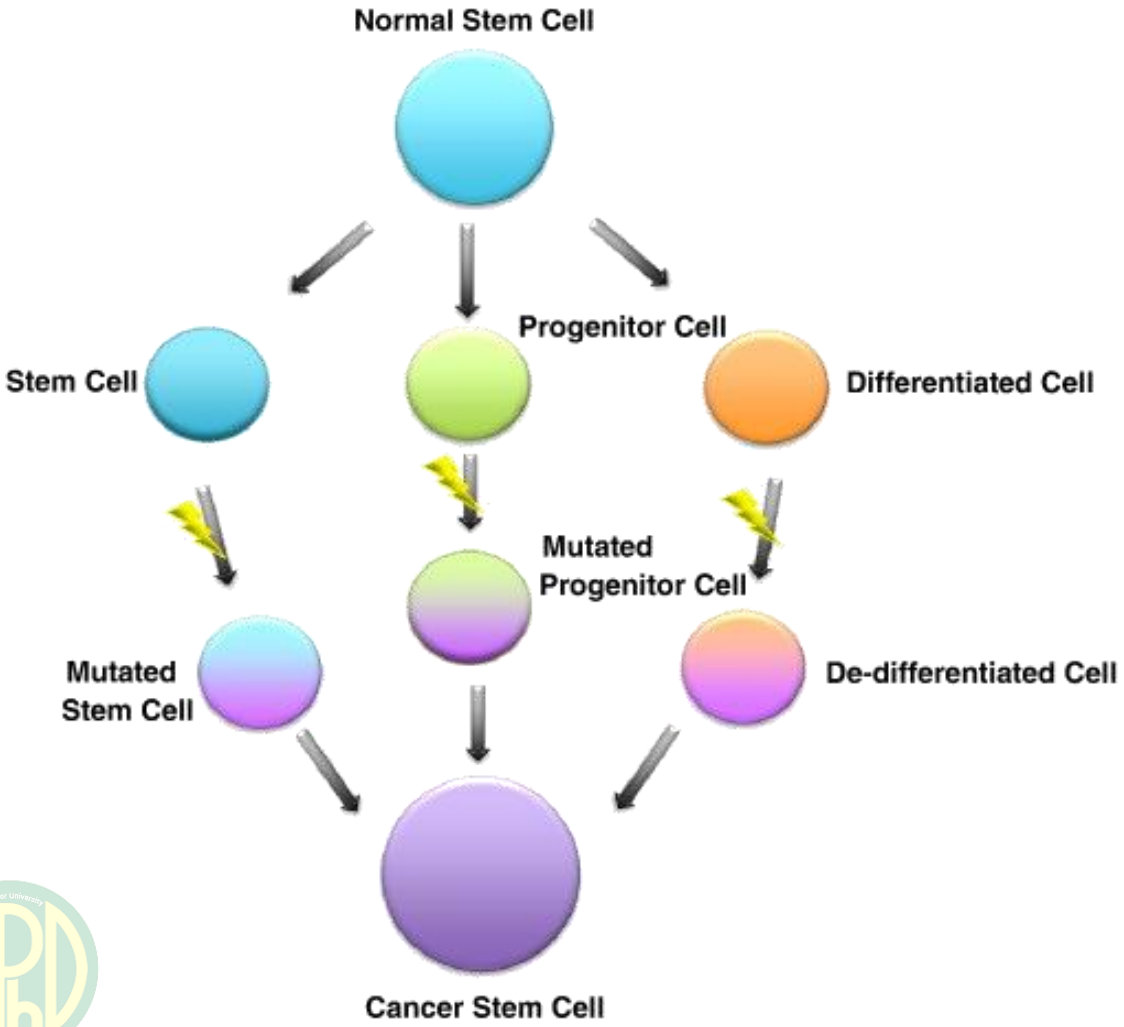
Why are they called “stem-like”?

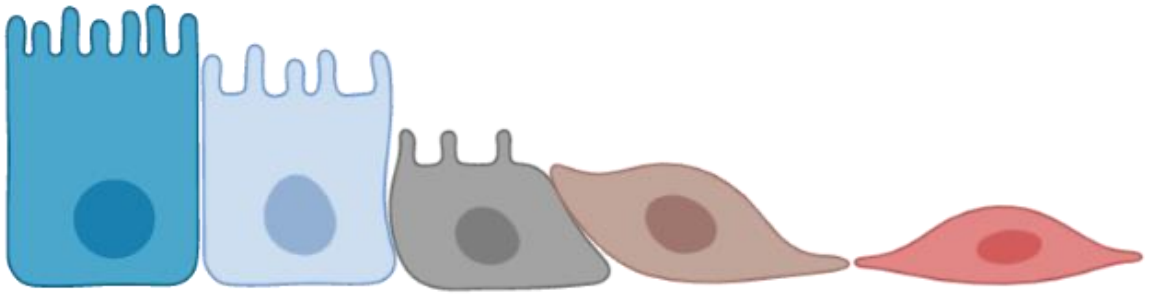




Where do these cells come from?

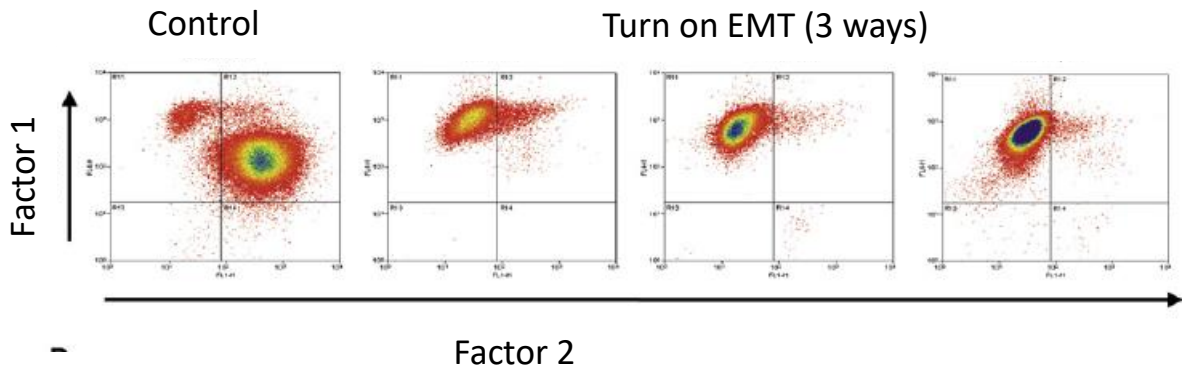




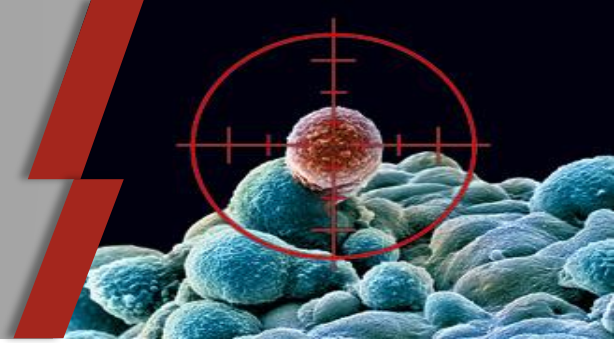


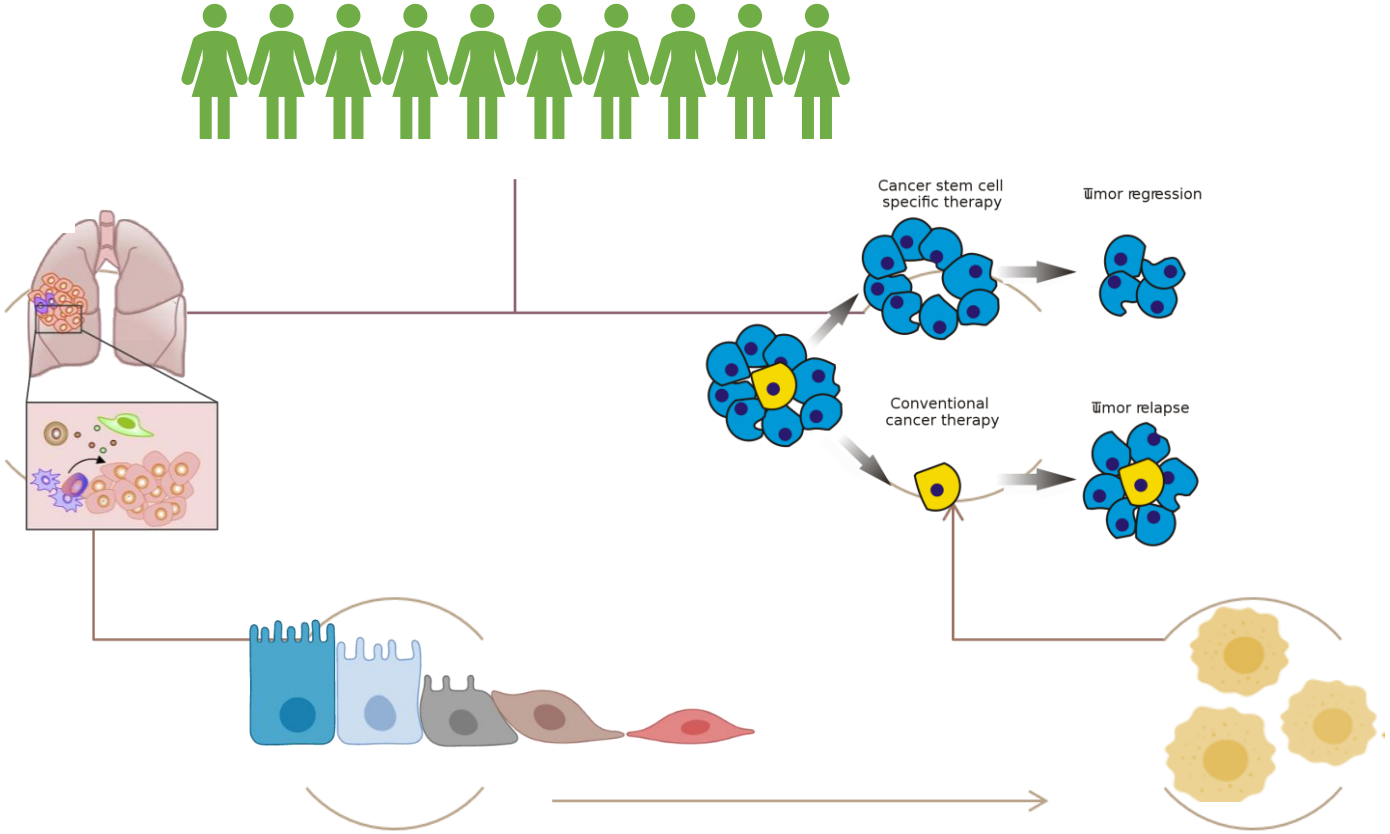
The Epithelial-Mesenchymal Transition Generates Cells with Properties of Stem Cells

Sendurai A. Mani,[1,3,10,*] Wenjun Guo,[1,10] Mai-Jing Liao,[1,10] Elinor Ng. Eaton,[1] Ayyakkannu Ayyanan,[4] Alicia Y. Zhou,[1,2] Mary Brooks,[1] Ferenc Reinhard,[1] Cheng Cheng Zhang,[1] Michail Shipitsin,[5,6] Lauren L. Campbell,[5,7] Kornelia Polyak,[5,6,7] Cathrin Brisken,[4] Jing Yang,[8] and Robert A. Weinberg[1,2,9,*]

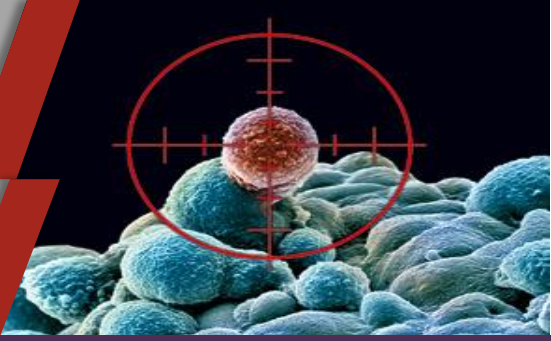


A lot of moving parts makes cancer hard to target

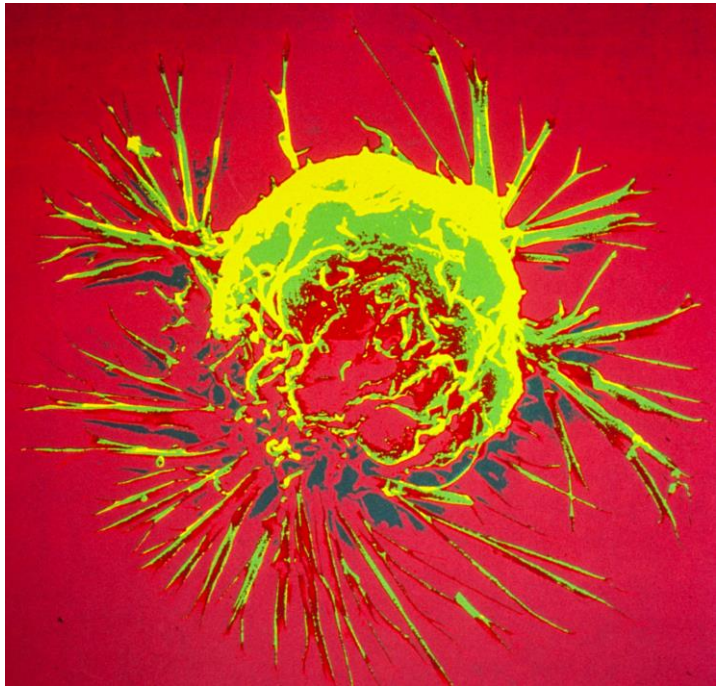




Let’s check in… Questions?

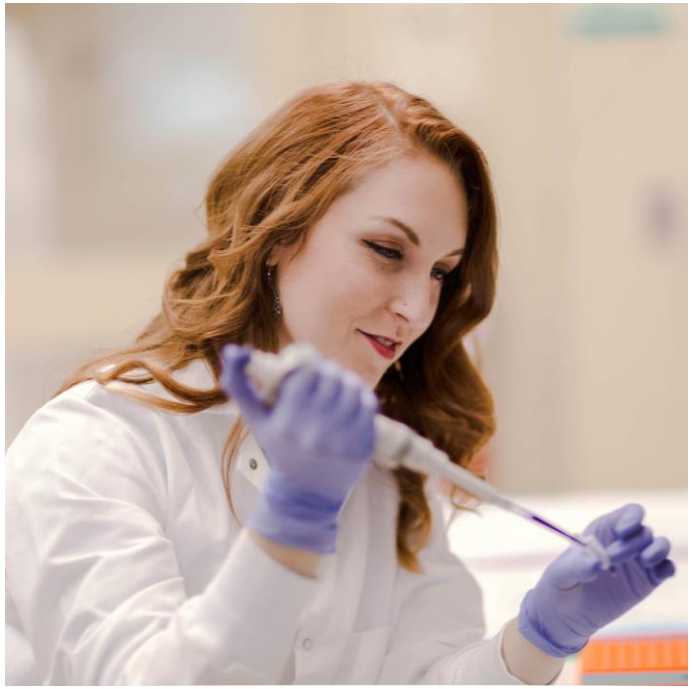


Where to next?



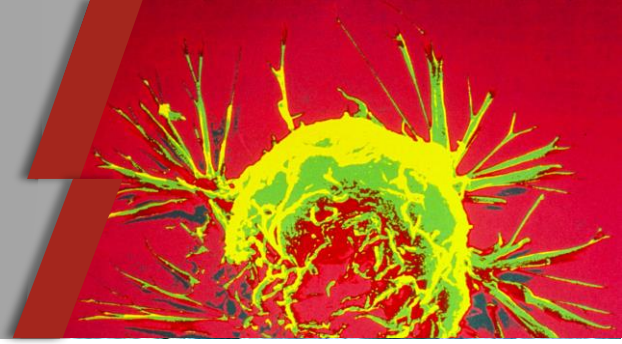
How do we study these cells?

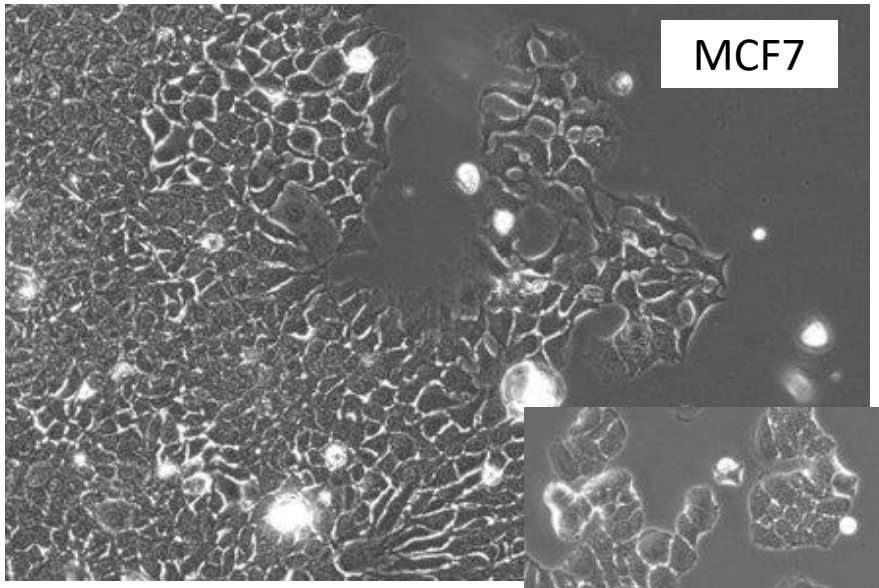
How did I get to studying cancer?

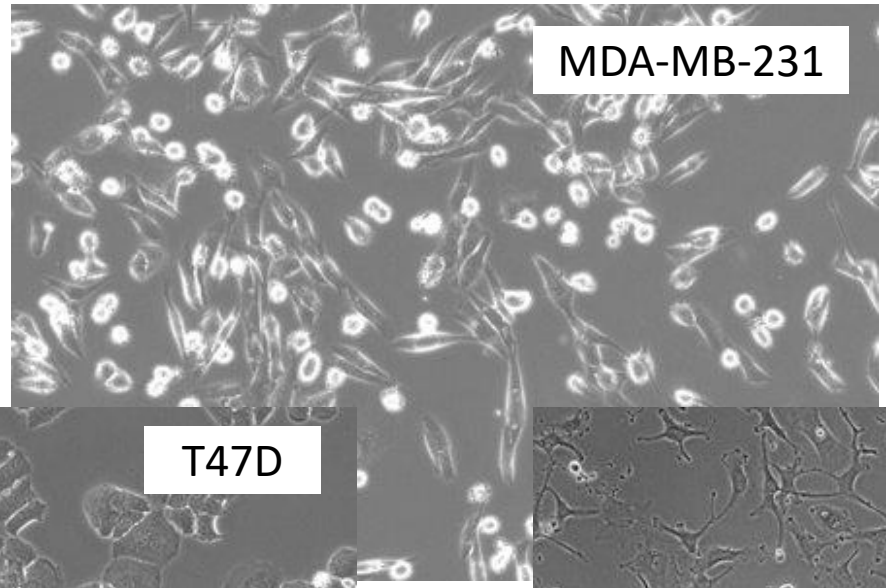


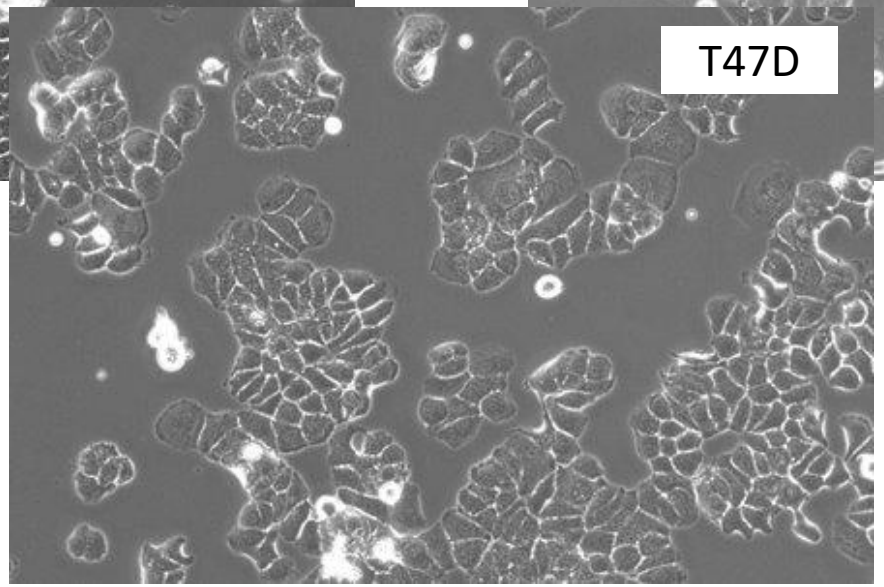
Let’s test your cell knowledge!

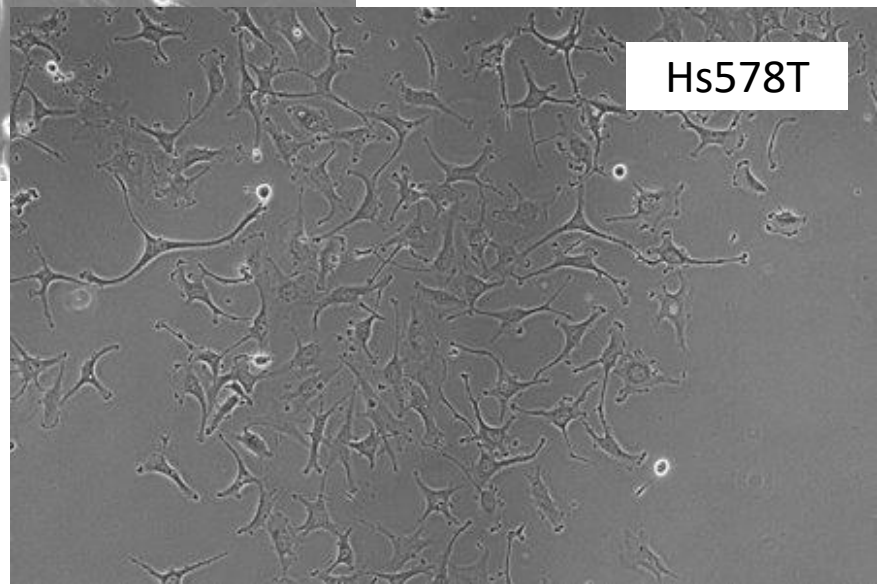
How do we study these cells?





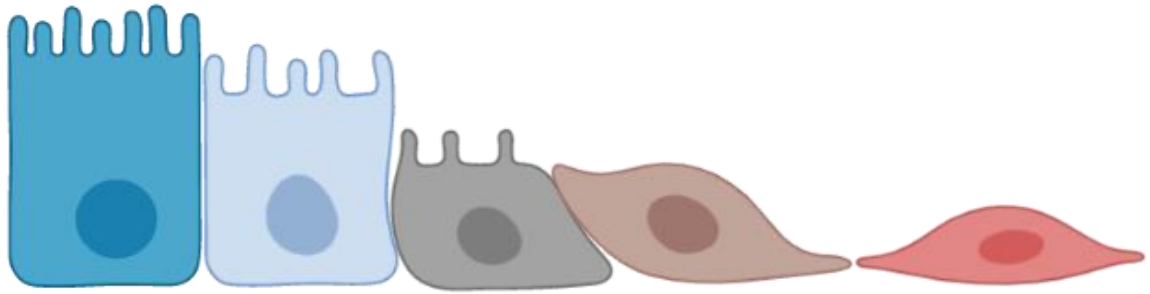


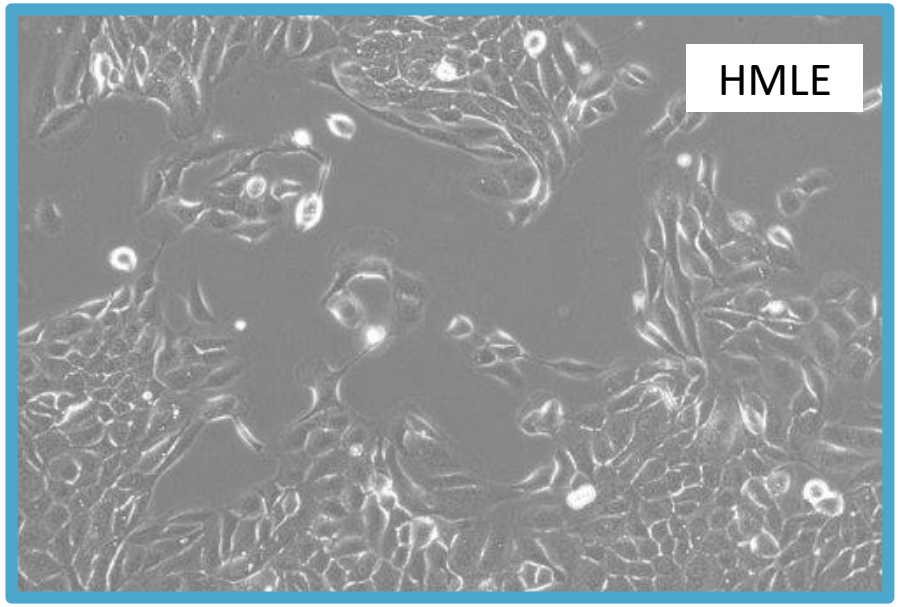


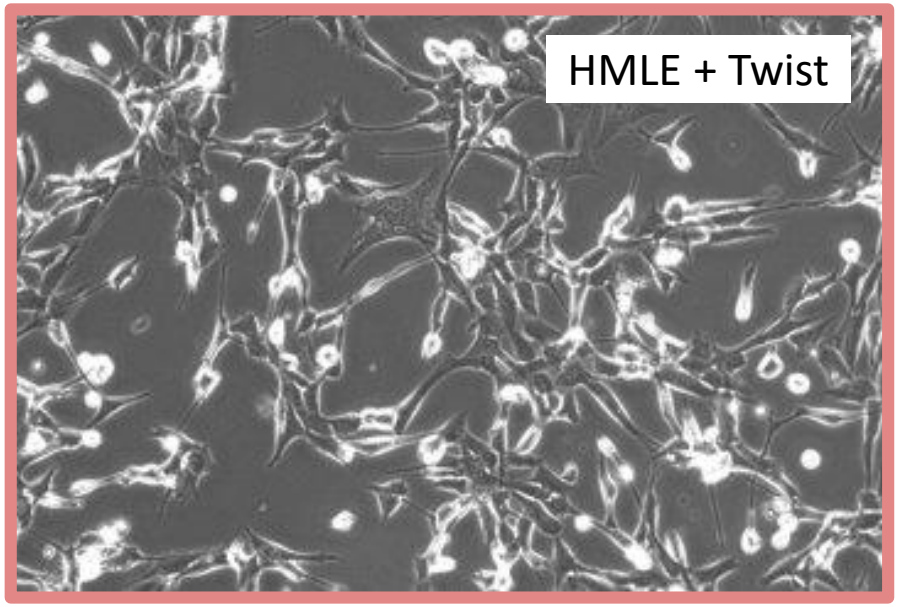


Using breast cancer cell lines…

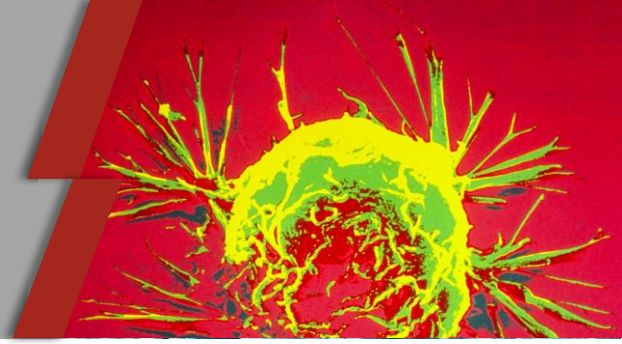
…and models of EMT

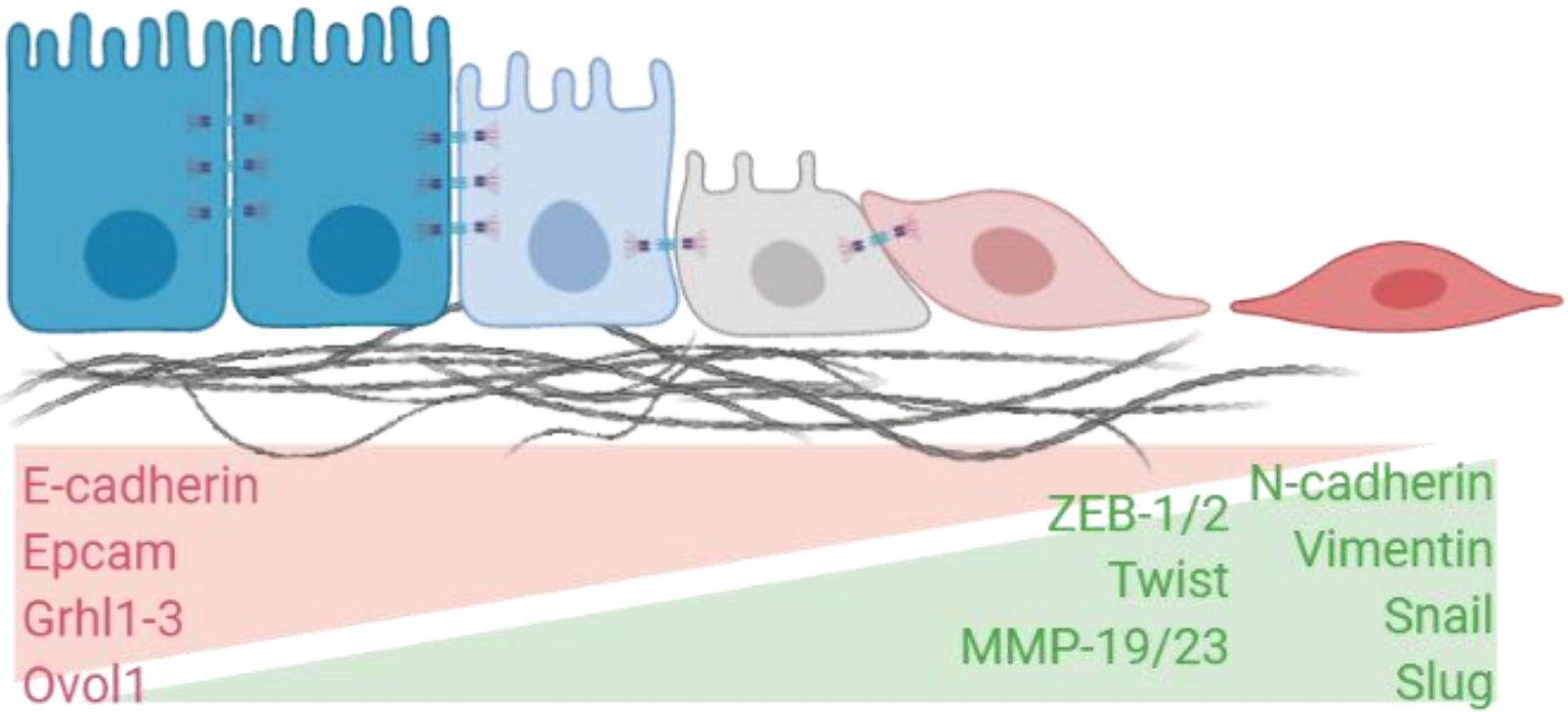




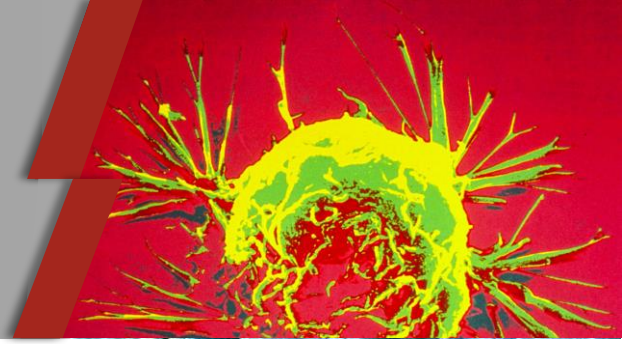


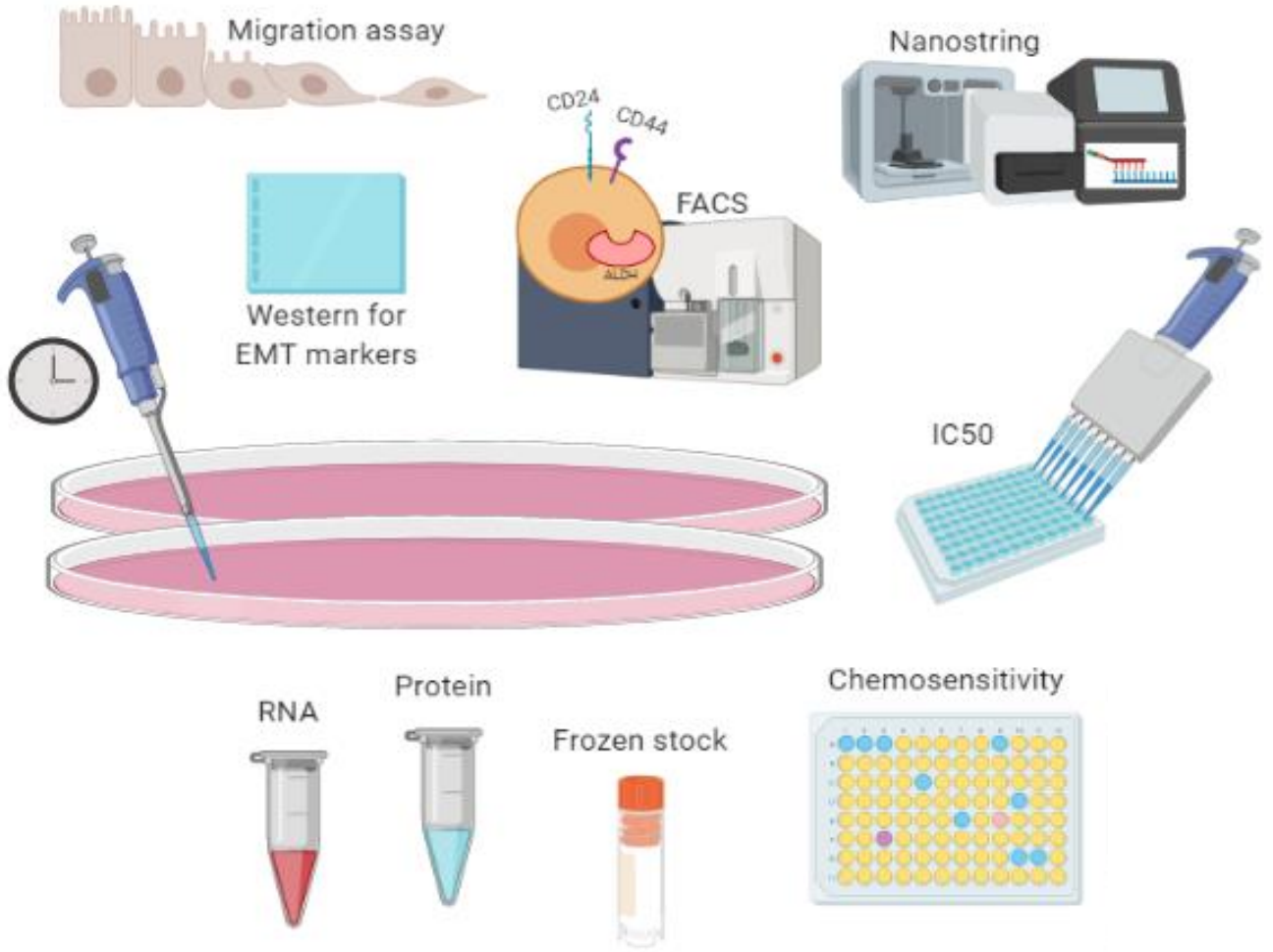
What is Twist? Why does it matter?





What kind of experiments do you do with these cells?





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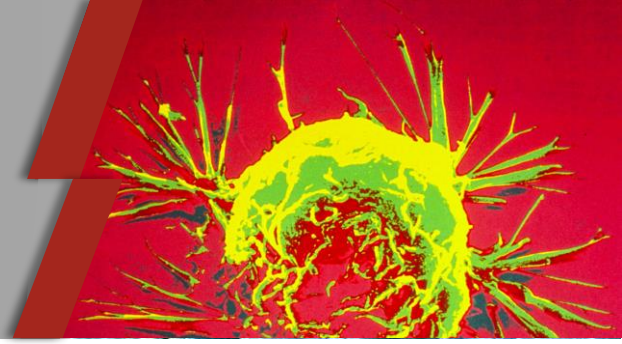
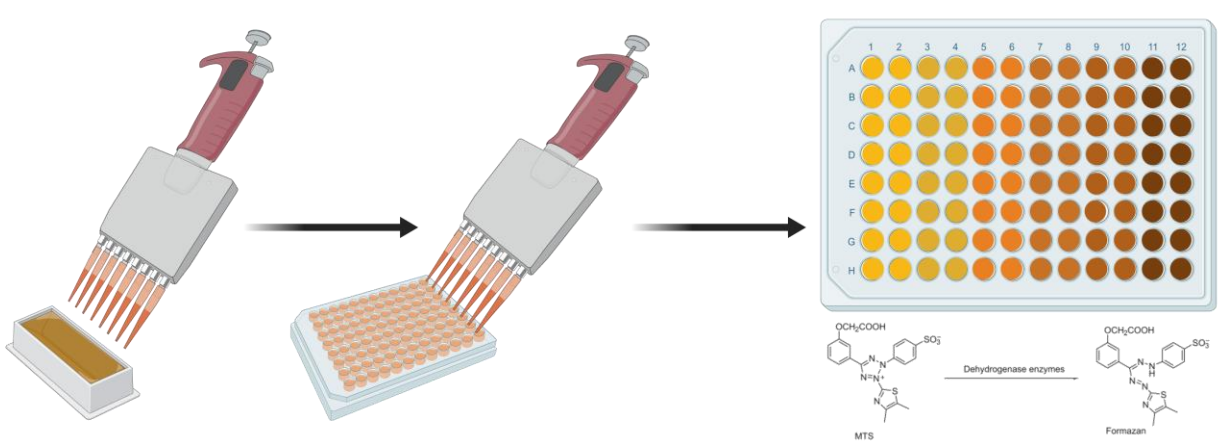
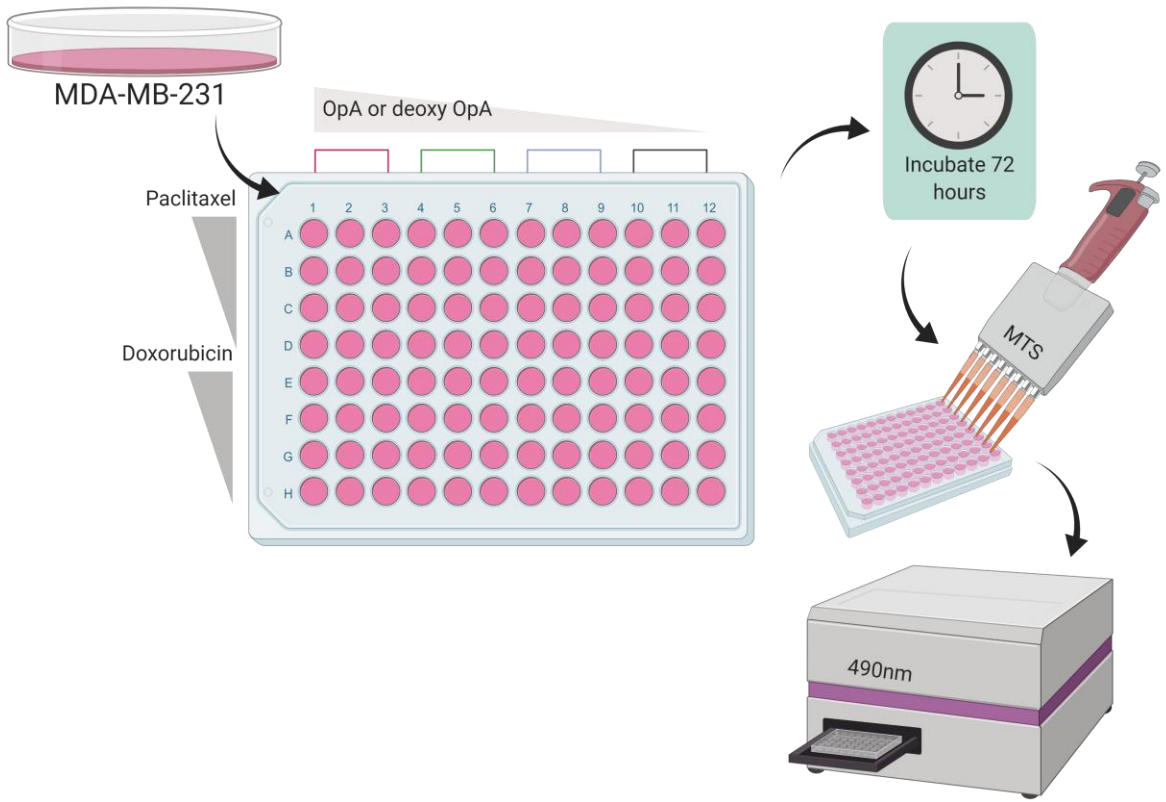


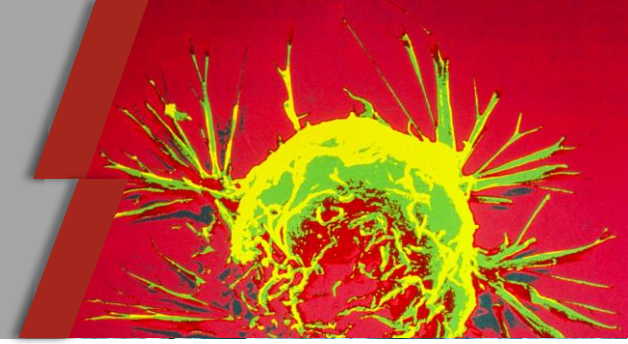


MTS Viability Assay

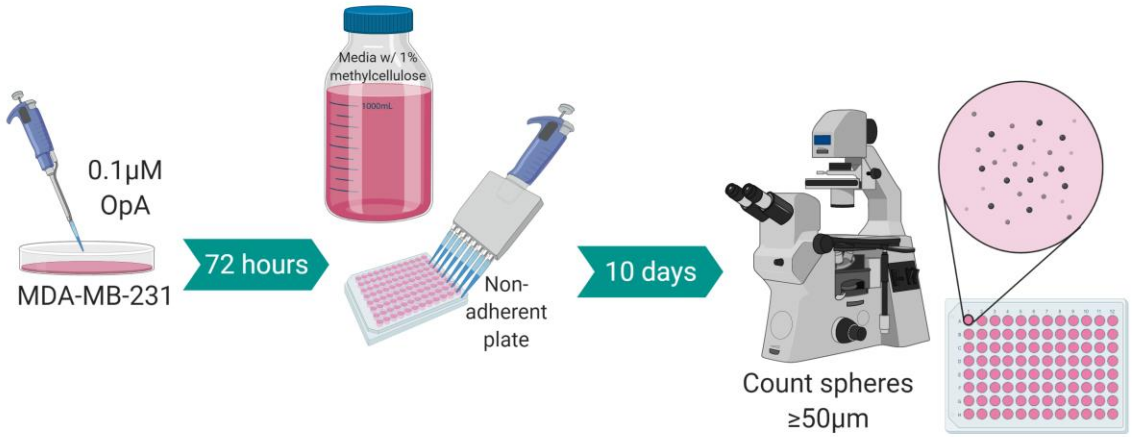


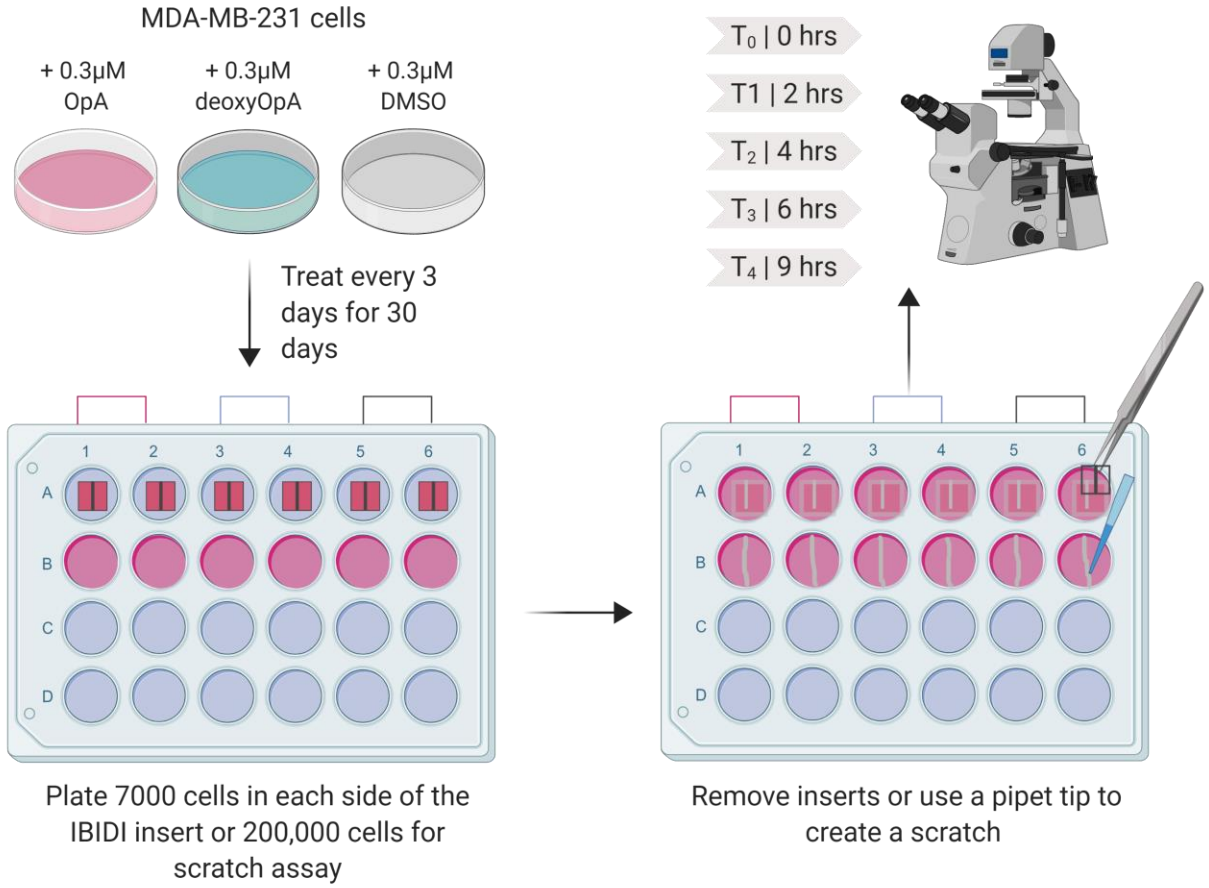
Testing differential sensitivity

Mammosphere and migration assays test intrinsic EMT properties



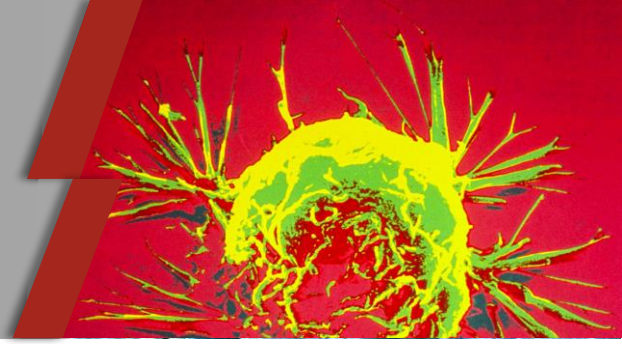
Mammosphere Formation

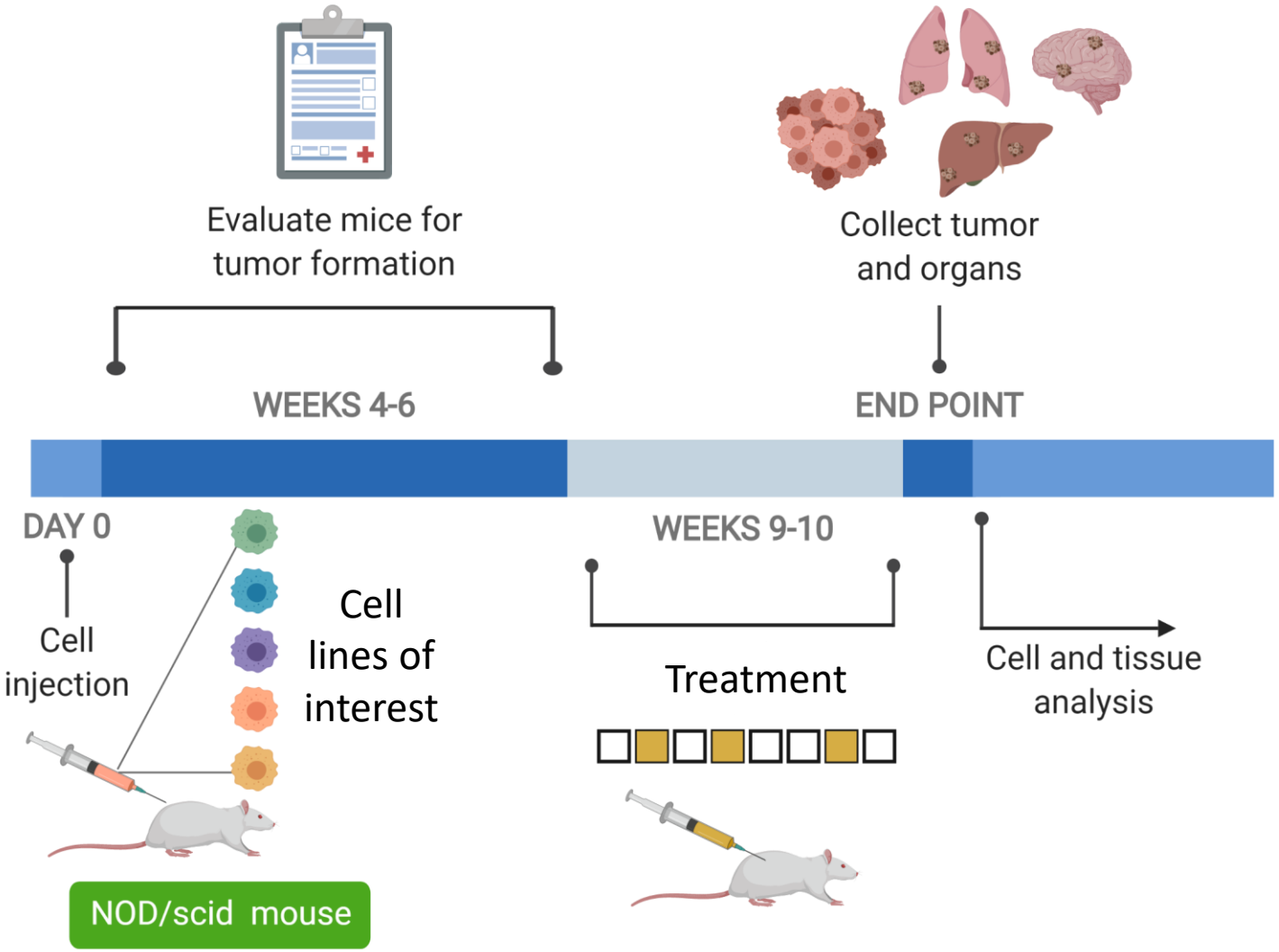




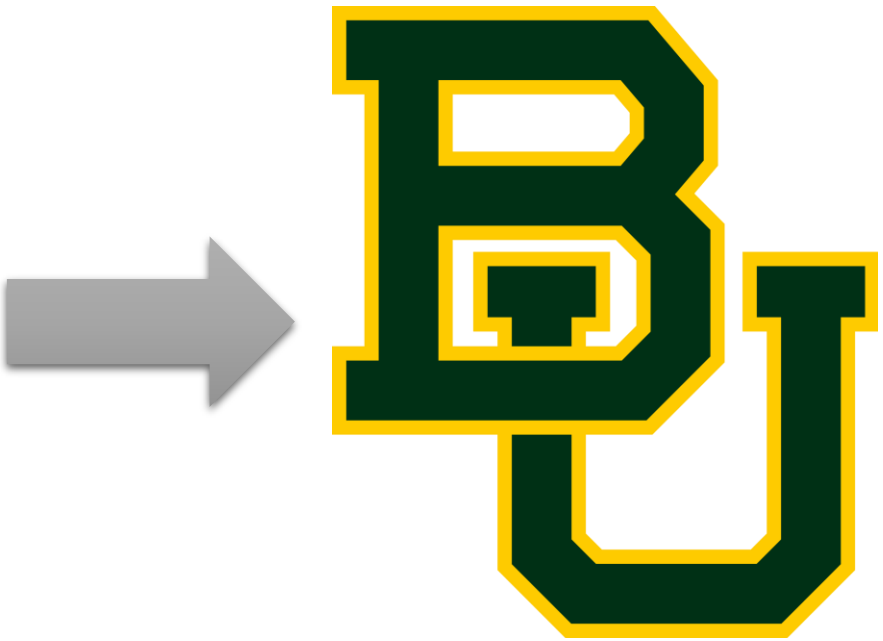
Migration

How do we test biological relevance?





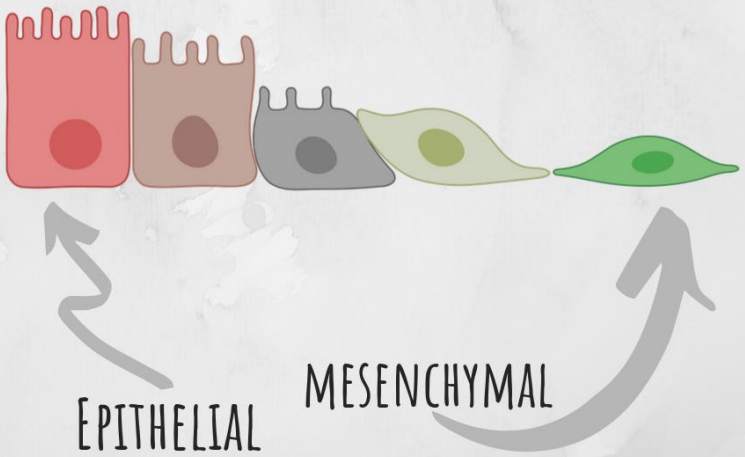
How did I get to studying cancer?



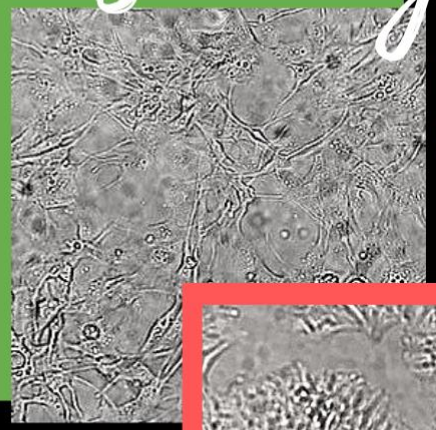
Let's play

CELL & CULTURE Chill

LET'S NAIL DOWN SOME *background info*

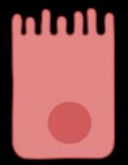


mesenchymal



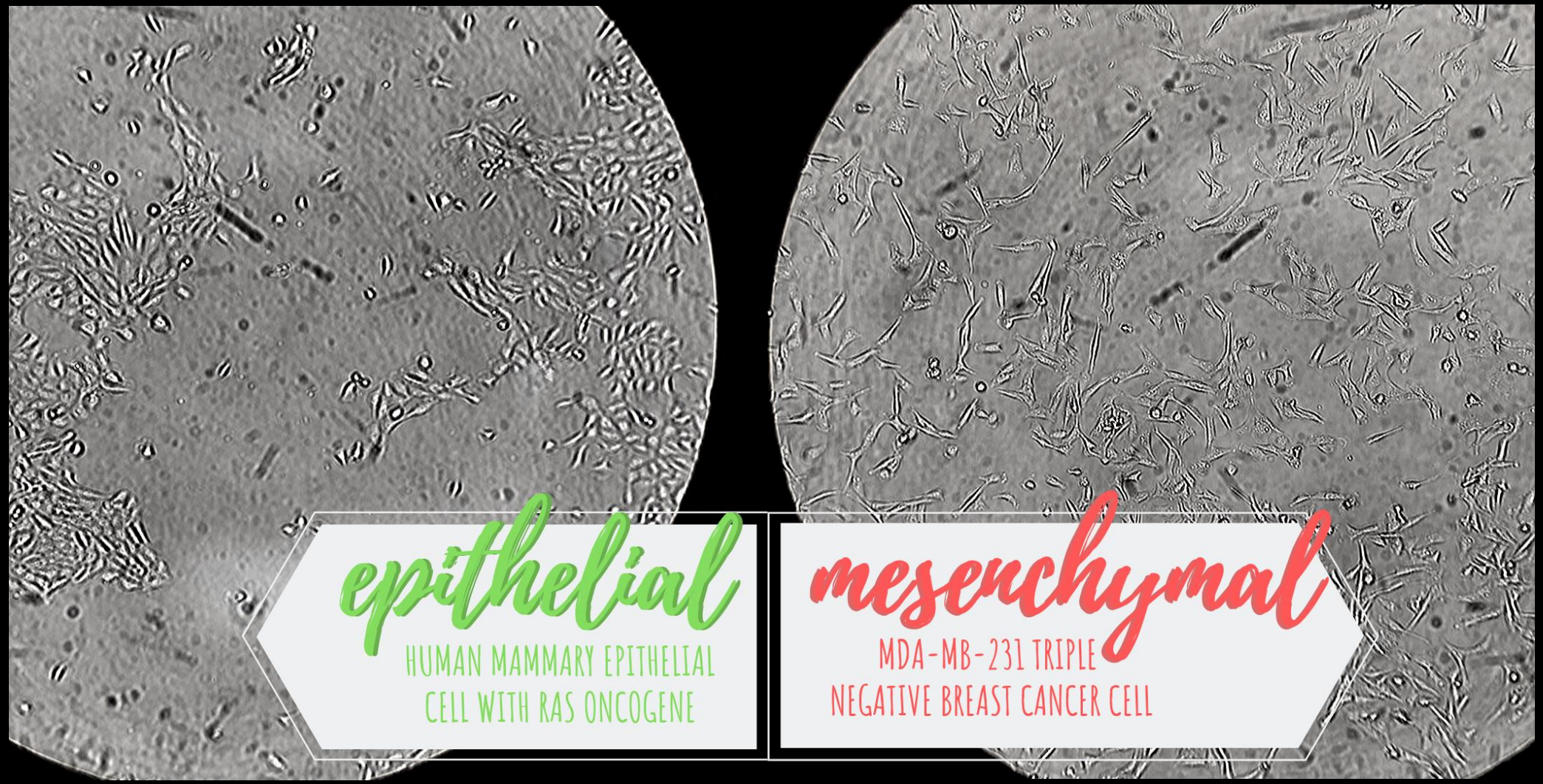
LONG AND THIN (SPINDLE-LIKE)
SPREAD OUT

epithelial



ROUNDED SQUARE
COBBLESTONE-LIKE

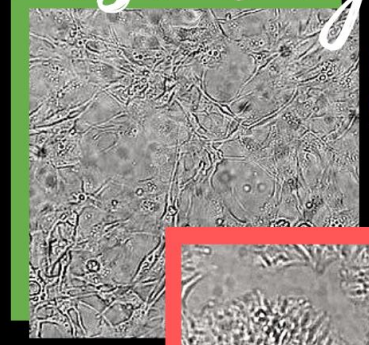
CELL & CULTURE Chill



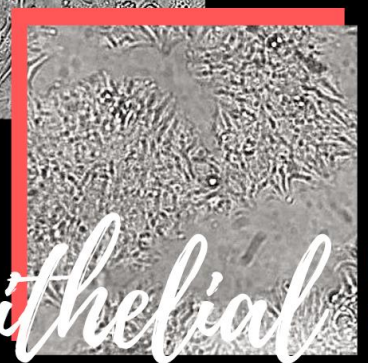
Epithelial or mesenchymal?

CELL & CULTURE Chill

mesenchymal



LONG AND THIN (SPINDLE-LIKE)
SPREAD OUT



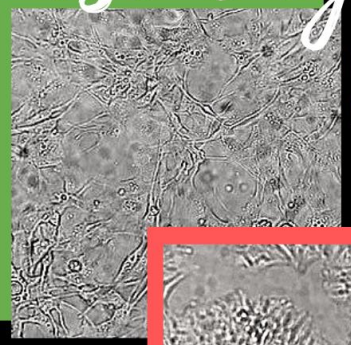
epithelial

ROUNDED SQUARE
COBBLESTONE-LIKE

Epithelial or mesenchymal?

CELL & CULTURE Chill

mesenchymal

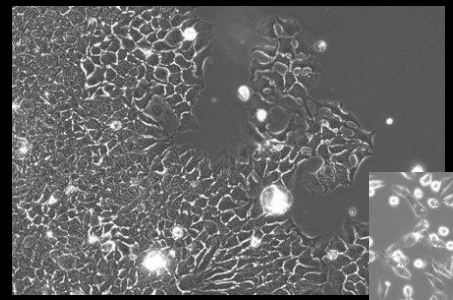


LONG AND THIN (SPINDLE-LIKE)
SPREAD OUT

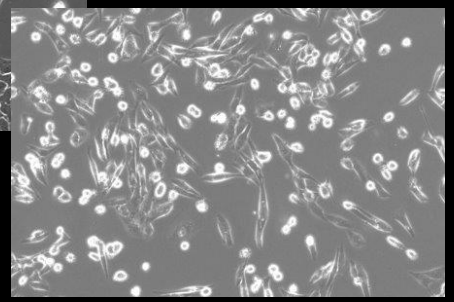
epithelial

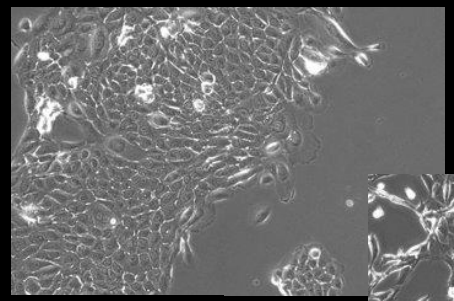
ROUNDED SQUARE
COBBLESTONE-LIKE

Cancer cell or not?

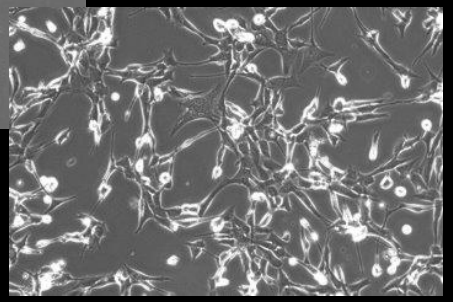


Cancer



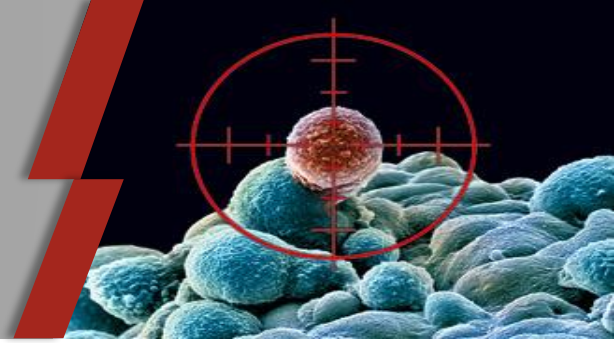


Not



CELL & CULTURE Chill

Thank you! Questions?



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