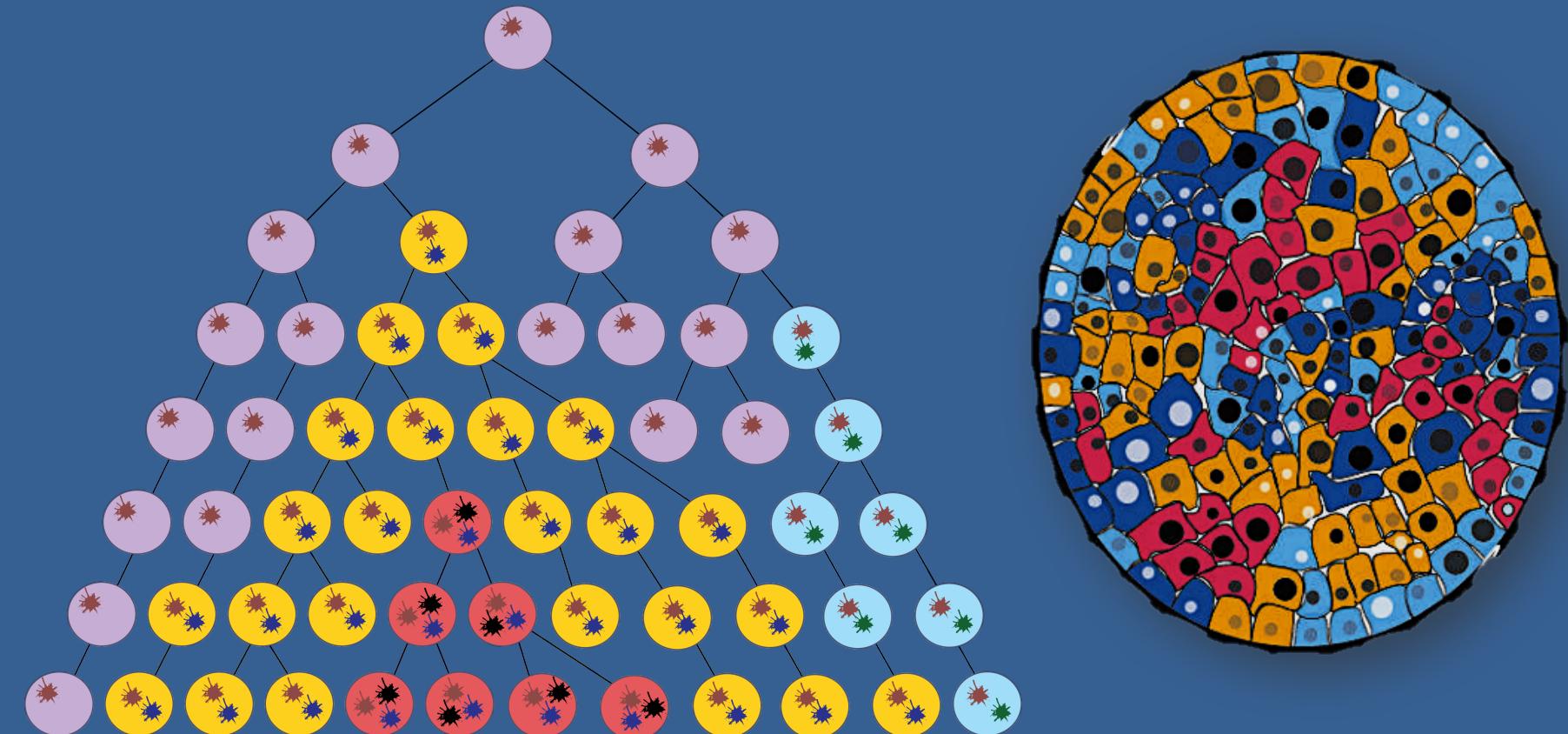


Tumors are heterogeneous colonies of “out-of-control” mutant cells

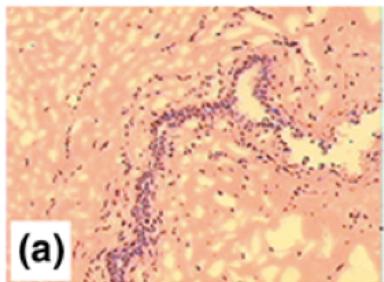


How can we detect cancer?

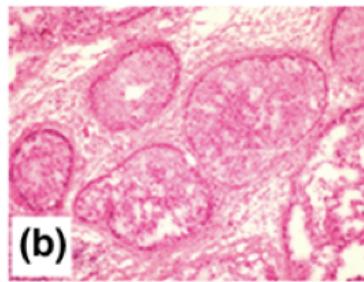
We can look at the cells under the microscope – tumor cells can have different morphology

Morphological Characteristics

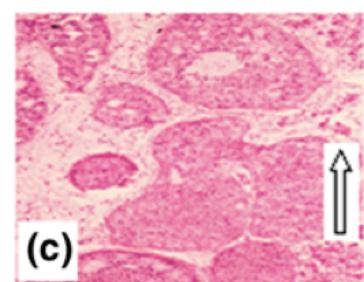
Non-neoplastic \neq Pure DCIS \sim DCIS-IDC \neq IDC



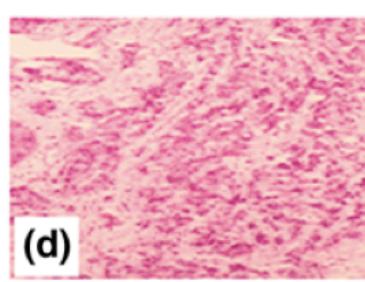
(a)



(b)



(c)



(d)

We can look at the cells under the microscope – tumor cells can have different morphology

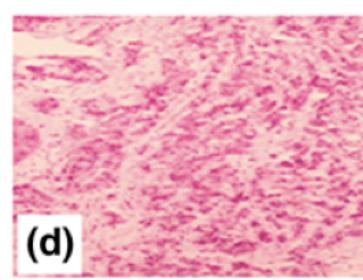
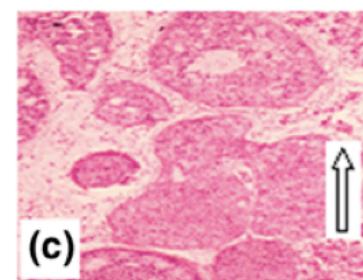
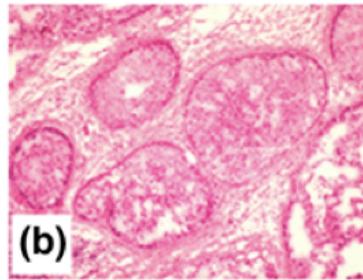
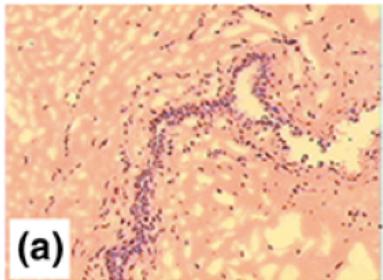
Gene Expression Profile

Non-neoplastic \neq Pure DCIS \neq DCIS-IDC \sim IDC



Morphological Characteristics

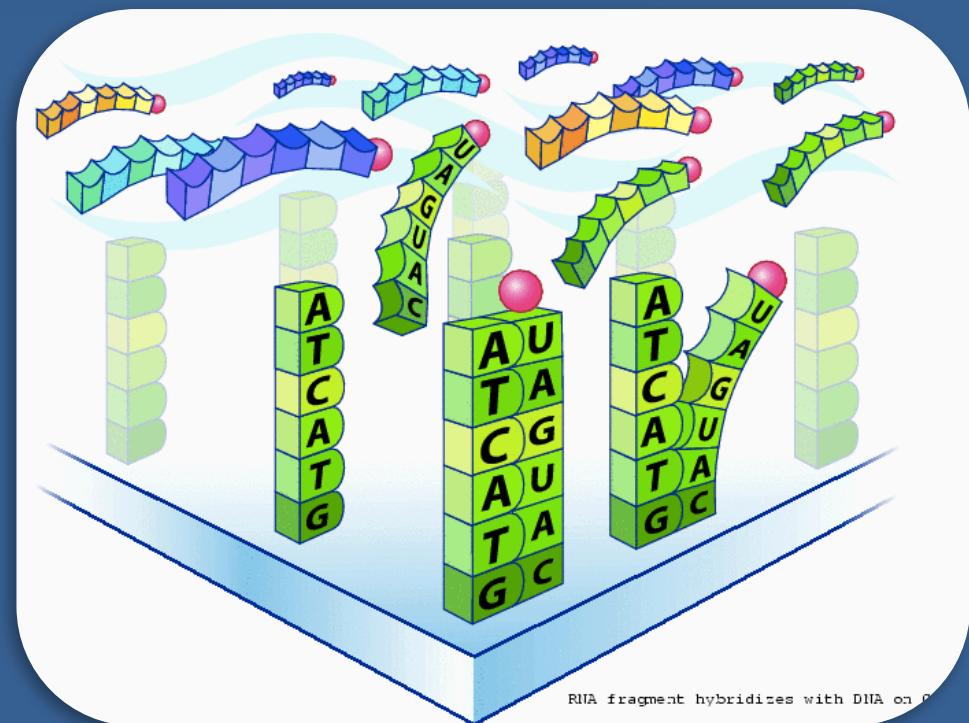
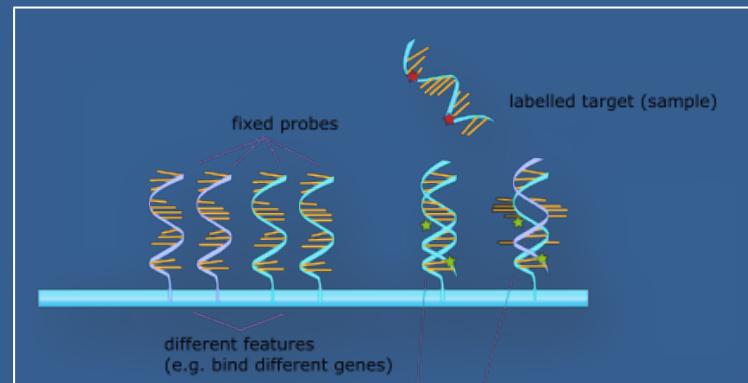
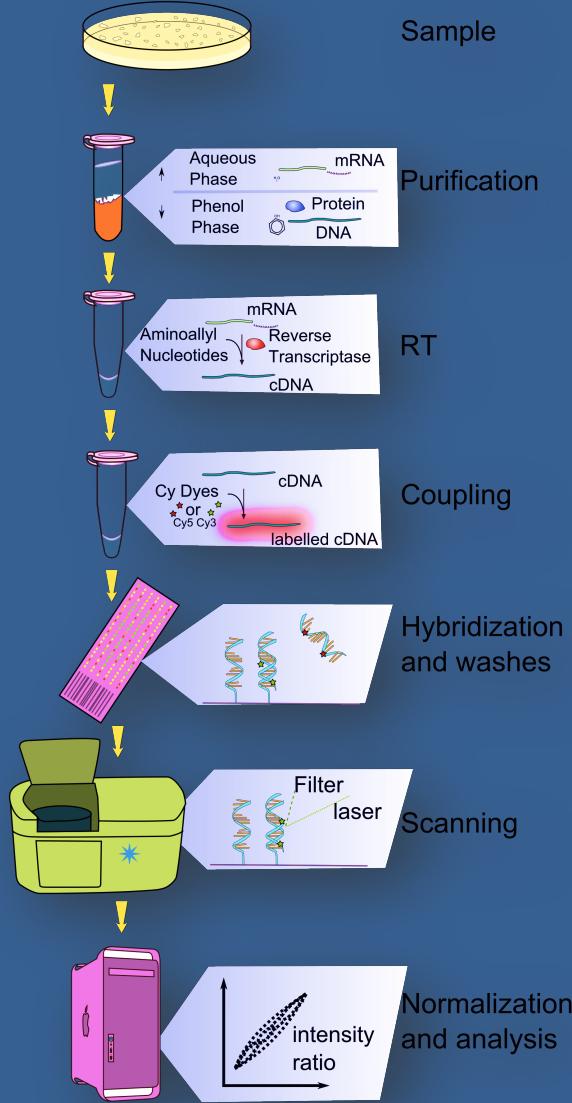
Non-neoplastic \neq Pure DCIS \sim DCIS-IDC \neq IDC



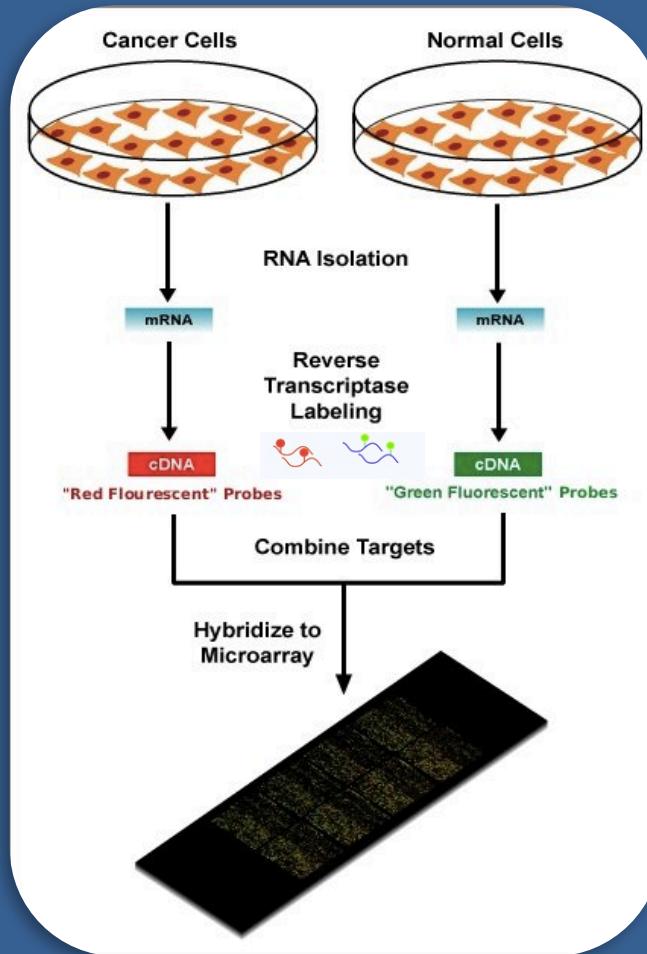
How can we tell what the cell is doing?

**Measure what proteins are
being made!**

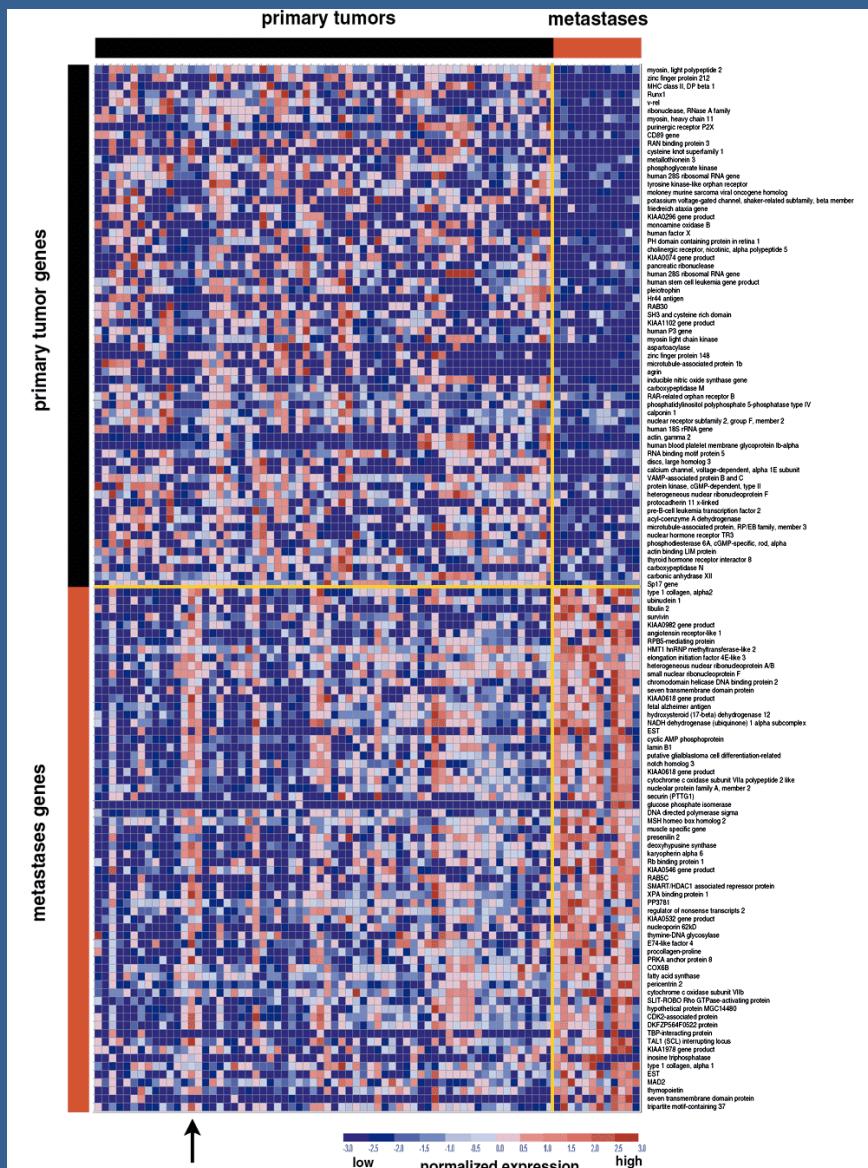
Gene Expression Profiling with Microarrays



Normal versus Tumor



Multiple tumor samples



If we had several examples of normal and tumor cell data, what would we do to determine whether an unknown sample is tumor or normal?