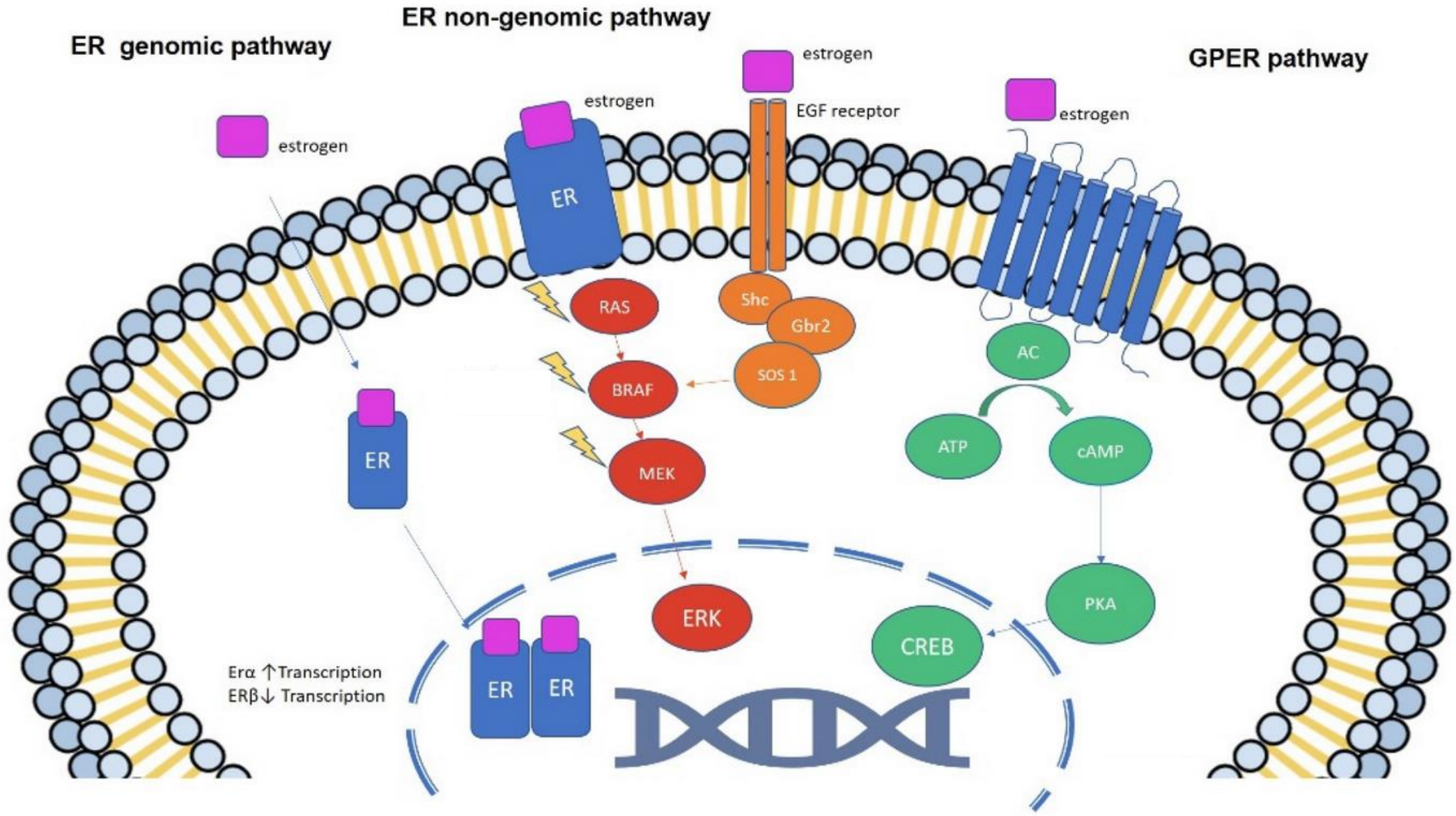
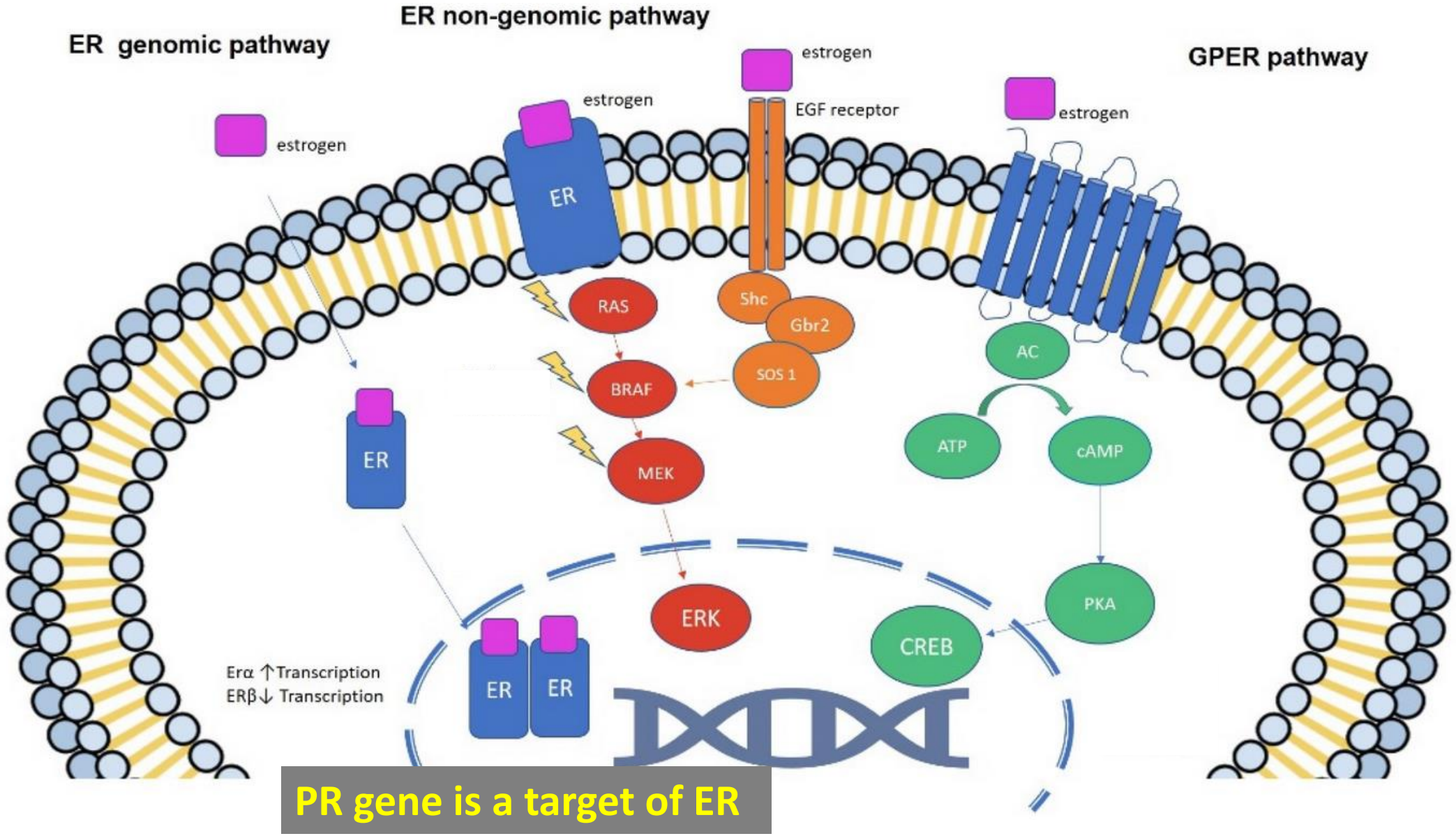
Estrogen receptor signaling



Estrogen receptor signaling



PR gene is a target of ER

Cancer cell lines

Cancer cells that keep dividing and growing over time, under certain conditions in a laboratory.

Cancer cell lines are used in research to study the biology of cancer and to test cancer treatments.

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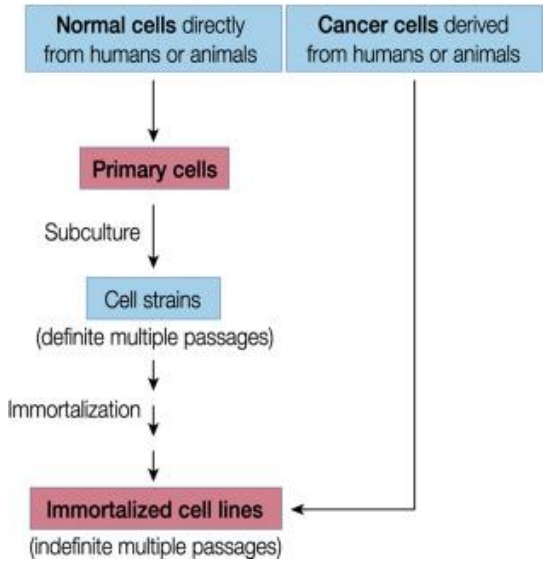
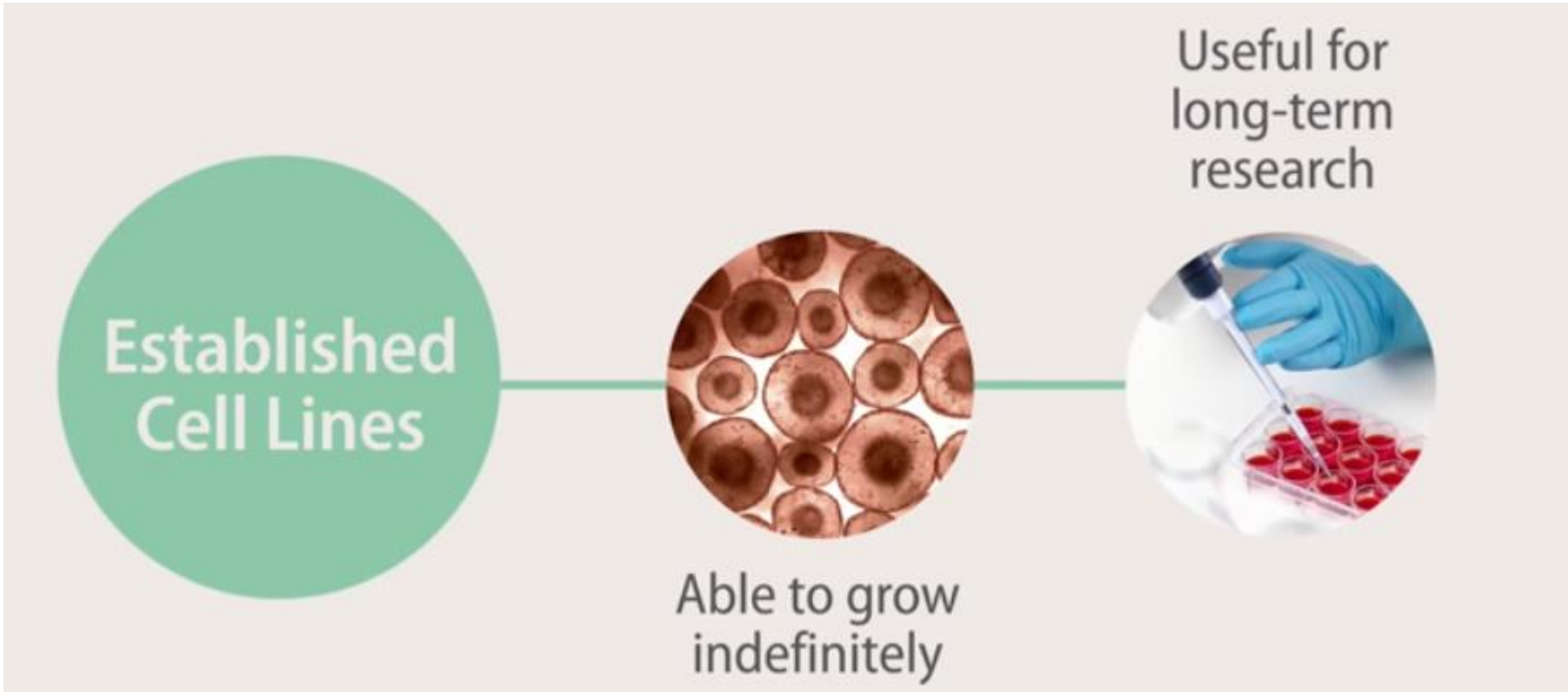
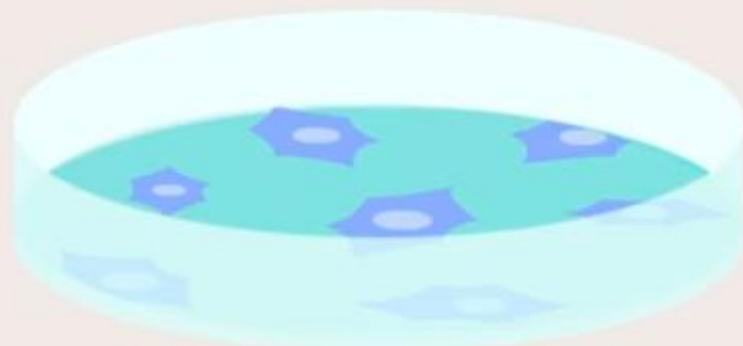
MAJOR EXPERIMENTAL TOOL




Established Cell Lines
Able to grow indefinitely
Useful for long-term research


Established Cell Lines
Obtained from:
+ Clinical tumors
+ Transforming primary cells with viral oncogenes or chemical treatments

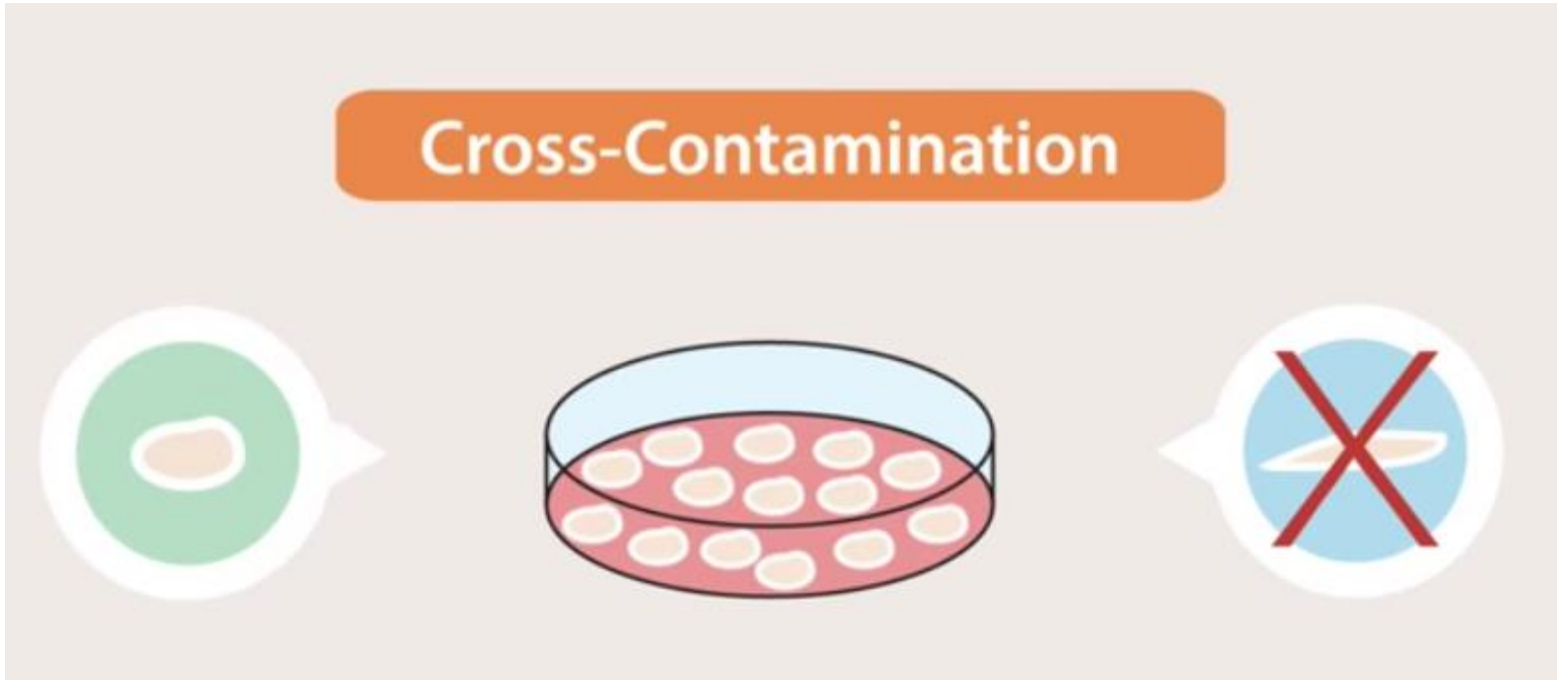
- ✓ Proliferate indefinitely
- ✓ Avoid batch-to-batch variation
- ✓ Same phenotypes and genotypes



Two main growth conditions

Monolayers
(Adherent cultures)

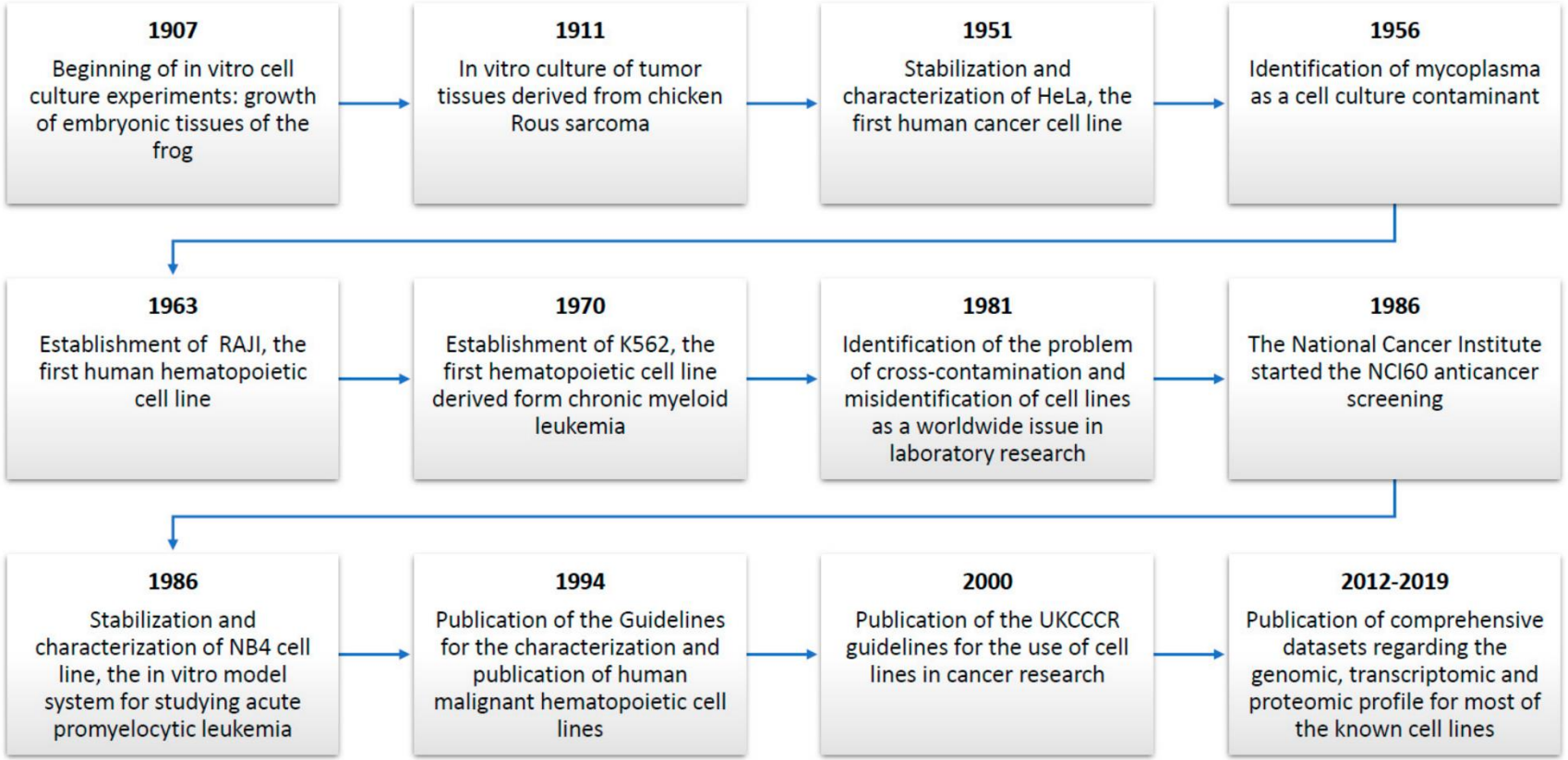
Free-floating
(Suspension cultures)


Cross-Contamination

Contamination of **cultured cell lines** is a serious problem in medical research.

A 2015 article in *Science* quoted geneticist Christopher Korch as saying, "…tens of thousands of publications, millions of journal citations and potentially hundreds of millions of research dollars" are connected to studies using **misidentified cell lines**. Efforts are underway to expose commonly used cell lines that contain other types of cells.

History of culture cell lines



History of culture cell lines

1907
Beginning of in vitro cell culture experiments: growth of embryonic tissues of the frog

1911
In vitro culture of tumor tissues derived from chicken Rous sarcoma

1951
Stabilization and characterization of HeLa, the first human cancer cell line

1956
Identification of mycoplasma as a cell culture contaminant

1963
Establishment o
first human her
cell lin

1981
on of the problem
ntamination and
cation of cell lines
ldwide issue in
tory research

1986
The National Cancer Institute started the NCI60 anticancer screening

1986
Stabilizatio
characterization
line, the in vit
system for stud
promyelocytic

2000
n of the UKCCCR
for the use of cell
ancer research

2012-2019
Publication of comprehensive datasets regarding the genomic, transcriptomic and proteomic profile for most of the known cell lines

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In vitro culture of tumor tissues derived from chicken Rous sarcoma

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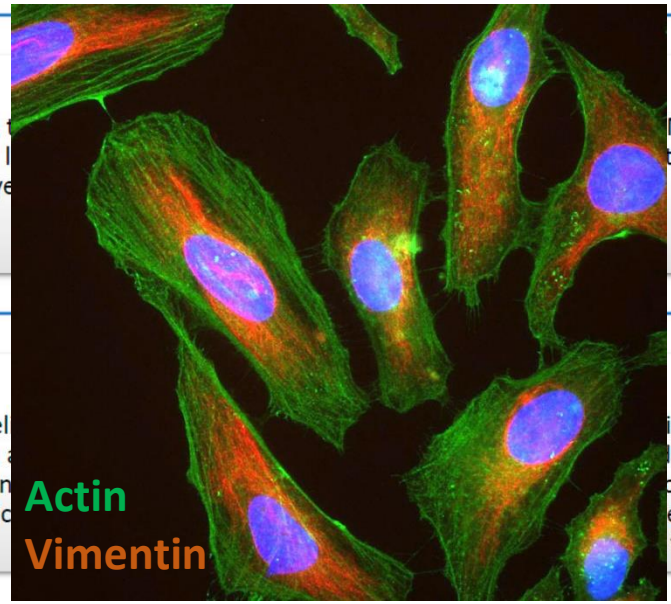
Stabilization and characterization of HeLa, the first human cancer cell line

1956
Identification of mycoplasma as a cell culture contaminant

1963
Establishment of RAJI, the first human hematopoietic cell line

1970
Establishment of K562, t
first hematopoietic cell l
derived form chronic mye
leukemia



1986
National Cancer Institute
ted the NCI60 anticancer
screening

1986
Stabilization and characterization of NB4 cell line, the in vitro model system for studying acute promyelocytic leukemia

1994
Publication of the Guidel
for the characterization
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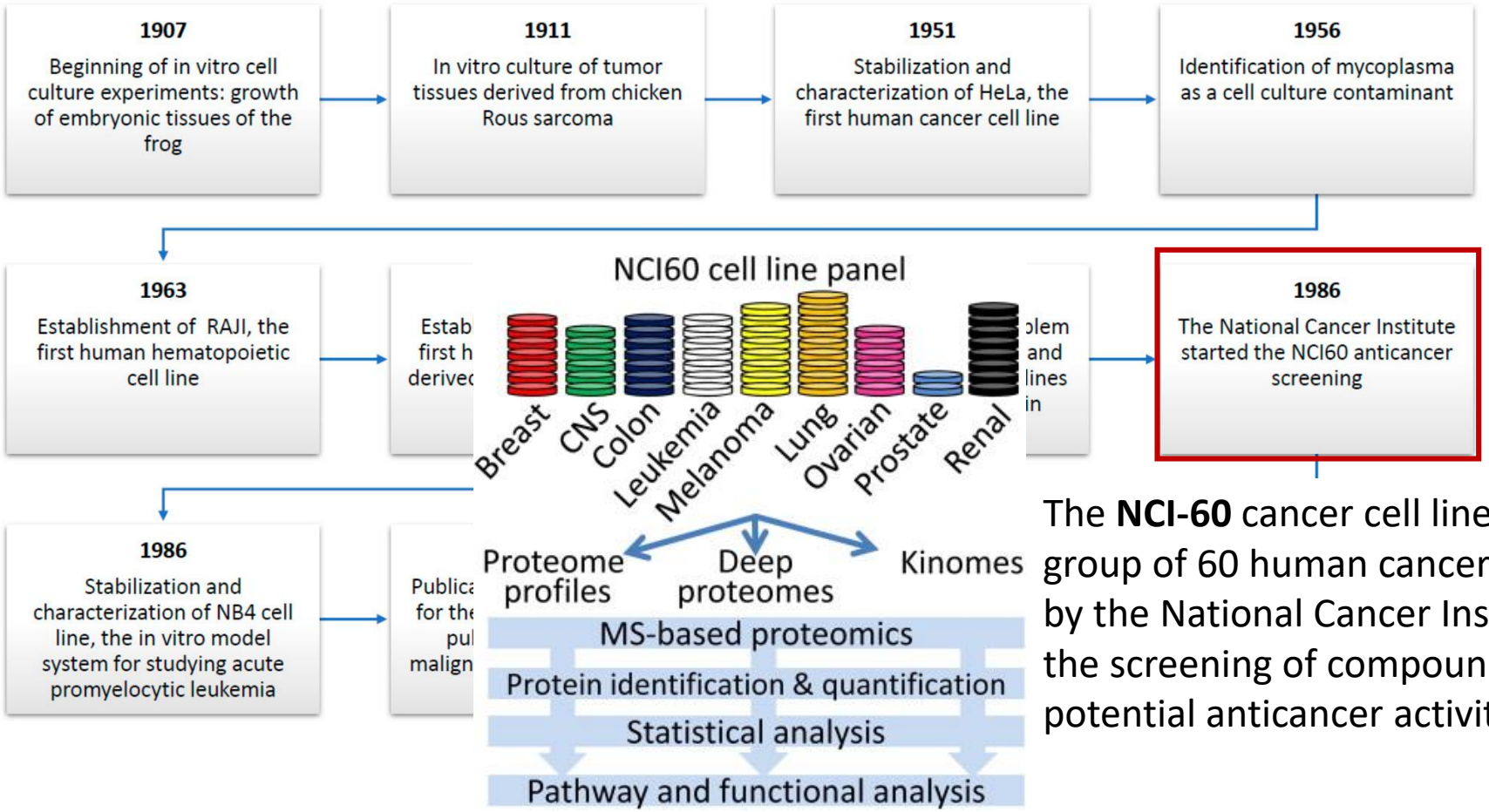
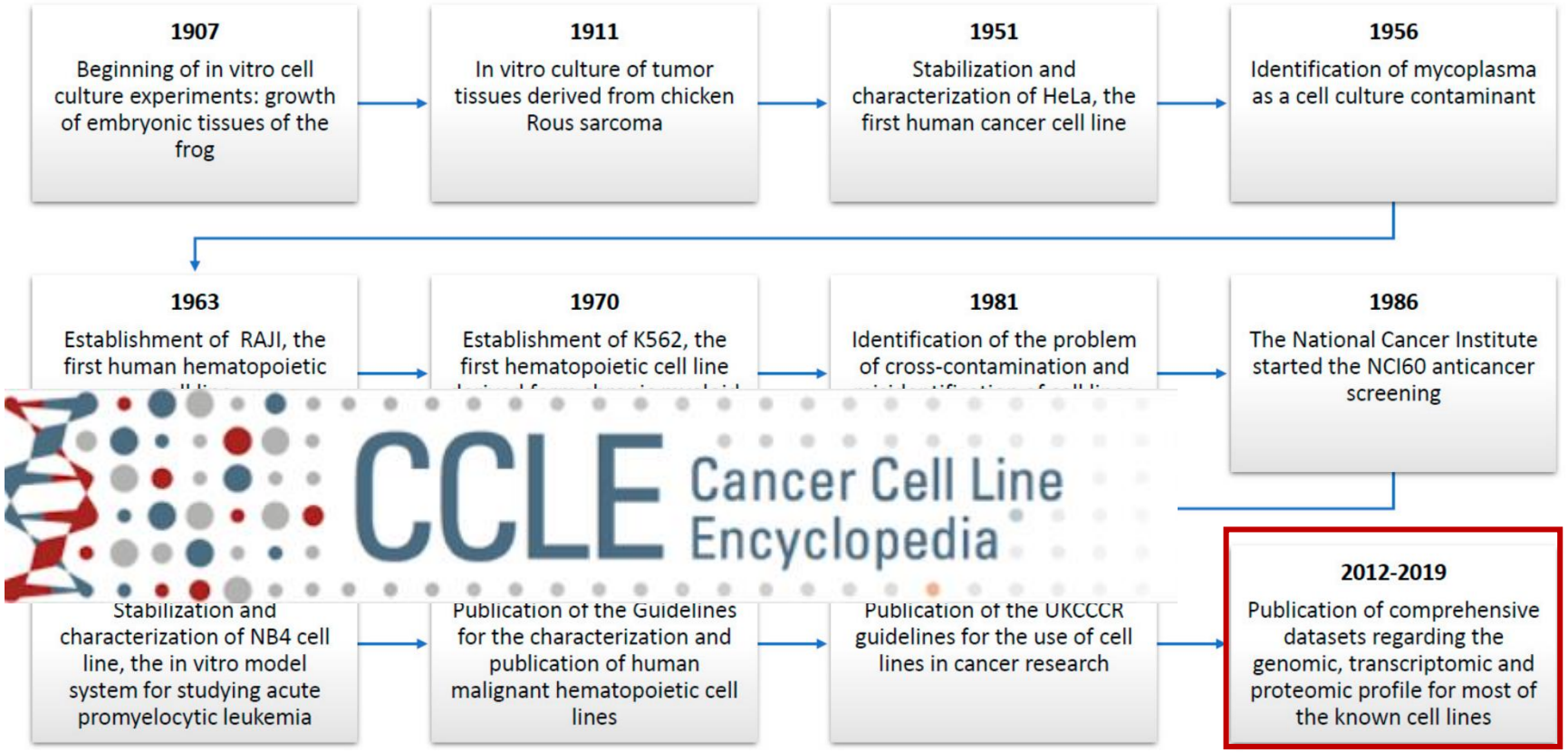
History of culture cell lines



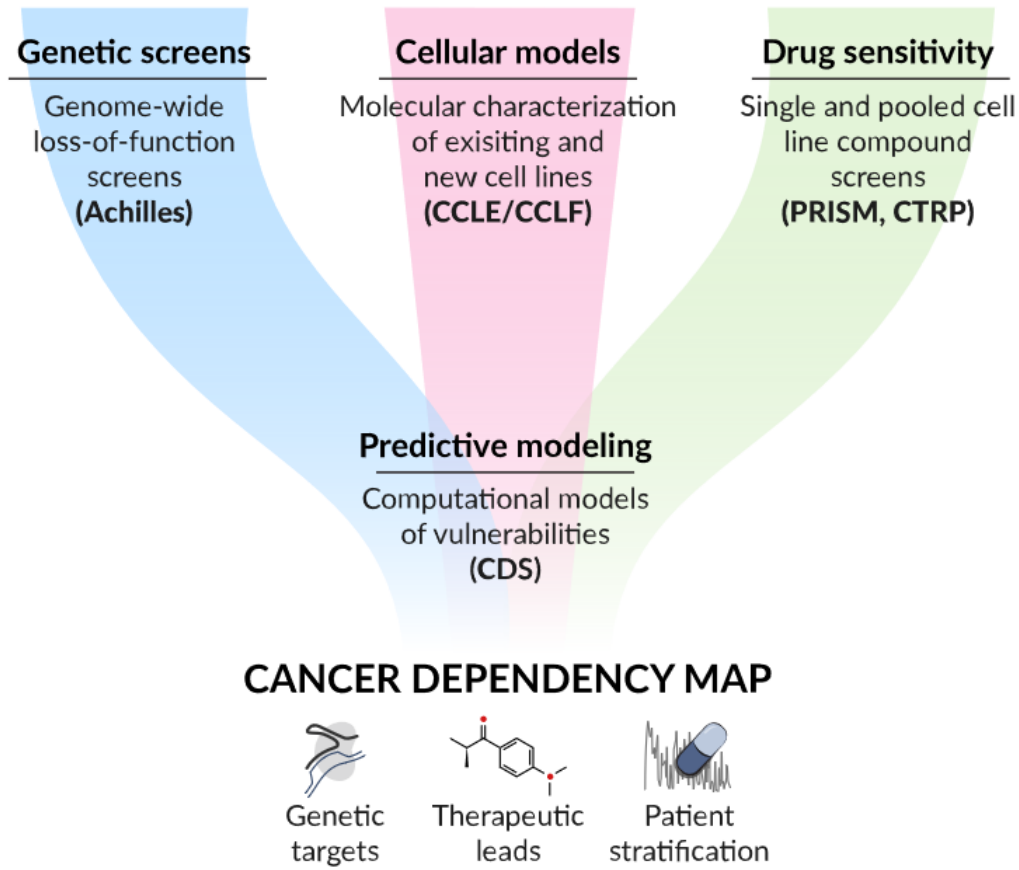
The **NCI-60** cancer cell line panel is a group of 60 human cancer cell lines used by the National Cancer Institute (NCI) for the screening of compounds to detect potential anticancer activity.

History of culture cell lines



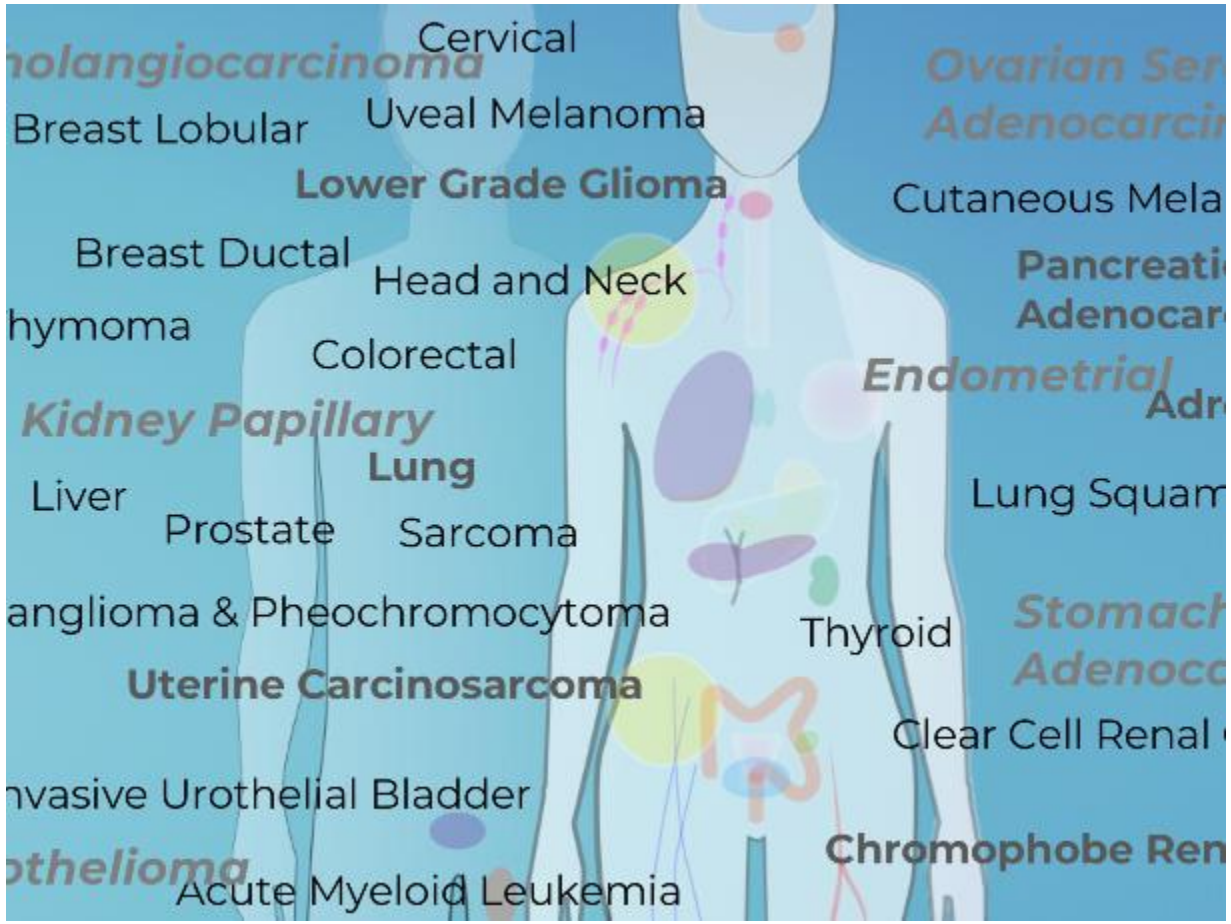
depmap

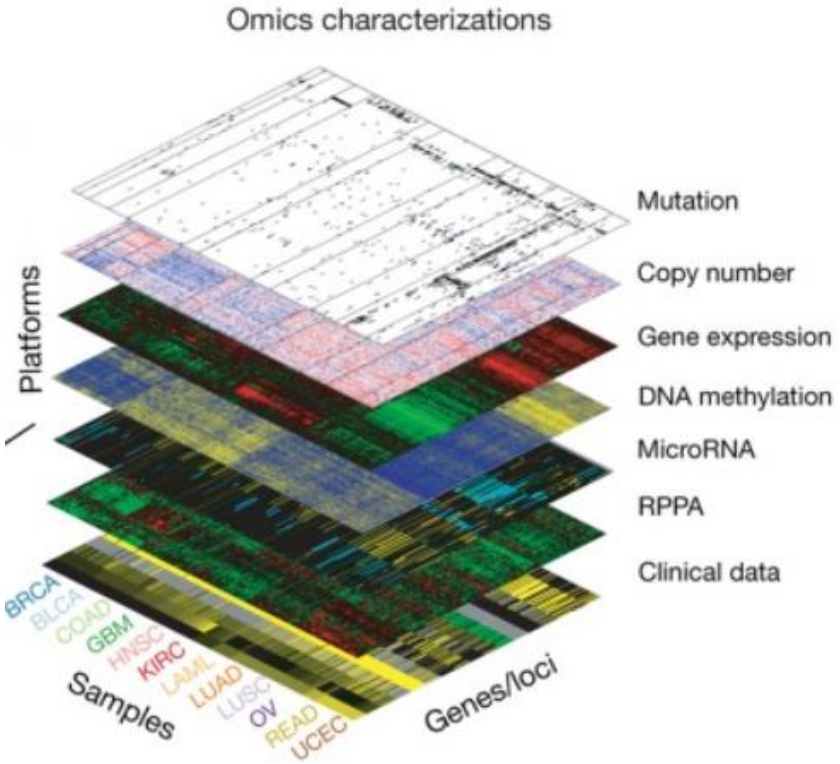
A Cancer Dependency Map to systematically identify genetic and pharmacologic dependencies and the biomarkers that predict them.



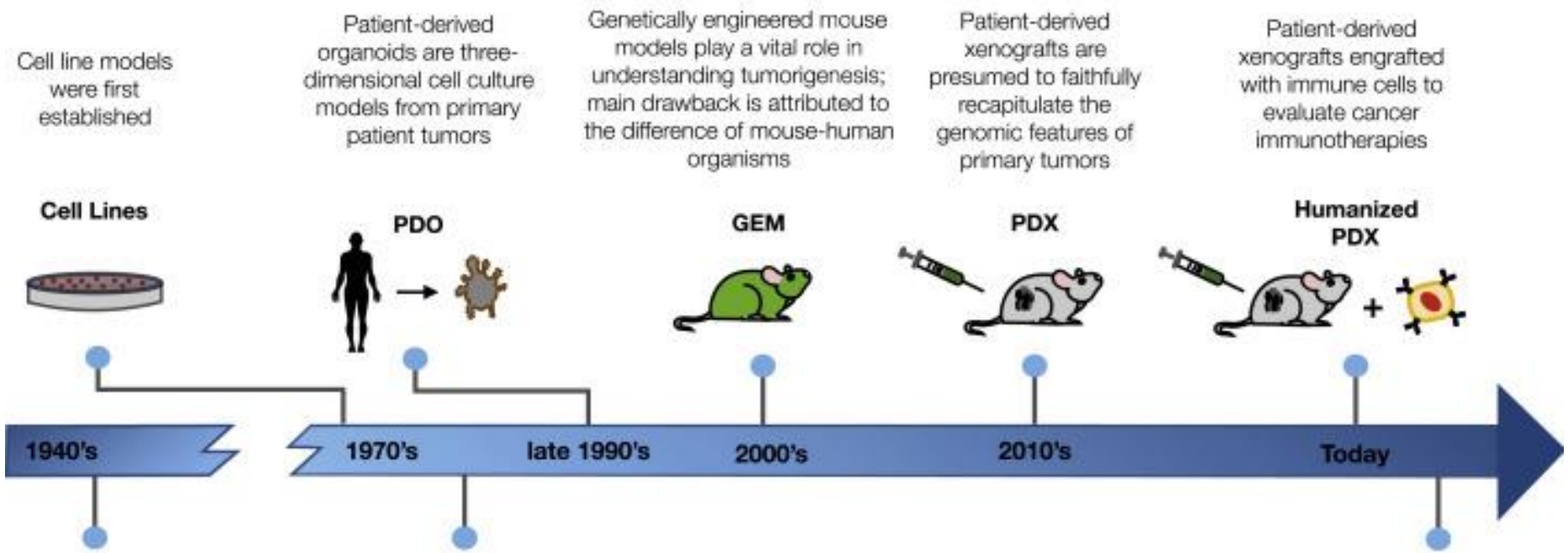
THE CANCER GENOME ATLAS

National Cancer Institute
National Human Genome Research Institute





CANCER MODELS



CANCER TREATMENTS