



利用細胞培養來 進行疾病研究

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**Why do we need to study
the cell culture system?**

**Cell culture provides a
simplified system**

**What is different between
the cultured cells and the
cells in the body?**

**Cell culture is
an artificial system**

**What do we need to know
about the cell culture system?**

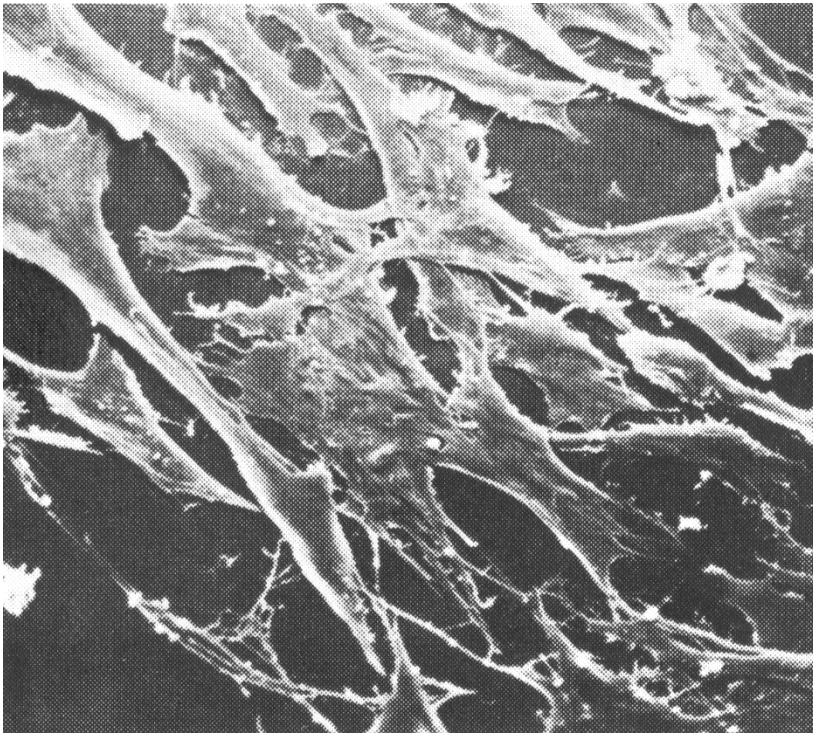
**Are they the right cells
in the right conditions?**

Primary cell culture

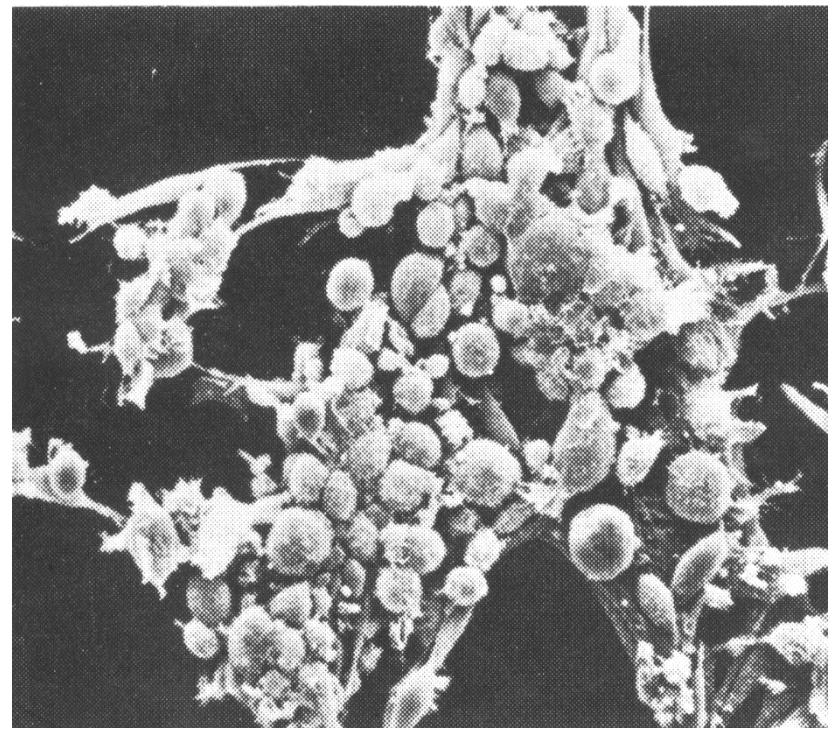
vs.

Immortalized cell line

Some cancer cells pile up when they grow



Normal cells



Malignant cells

Cultured primary cells

- **Lack cell-cell interaction**
- **Dedifferentiation**
- **Change the characters after several passages**
- **Microenvironment**

Passage vs. Generation

**Why is the passage of cells
needed to be concerned?**

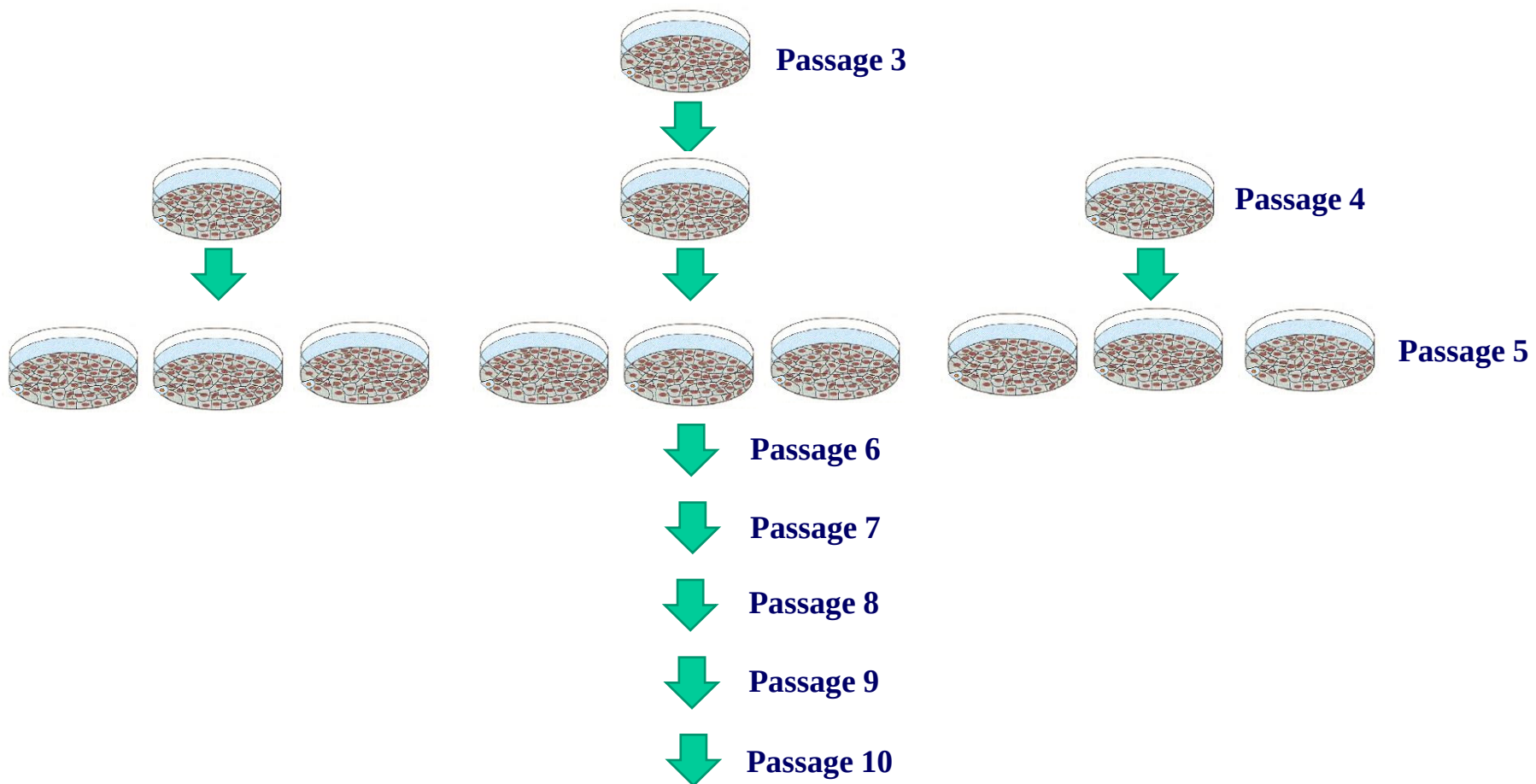
**Different cell passages or cells
from different donors might
have different responsiveness**

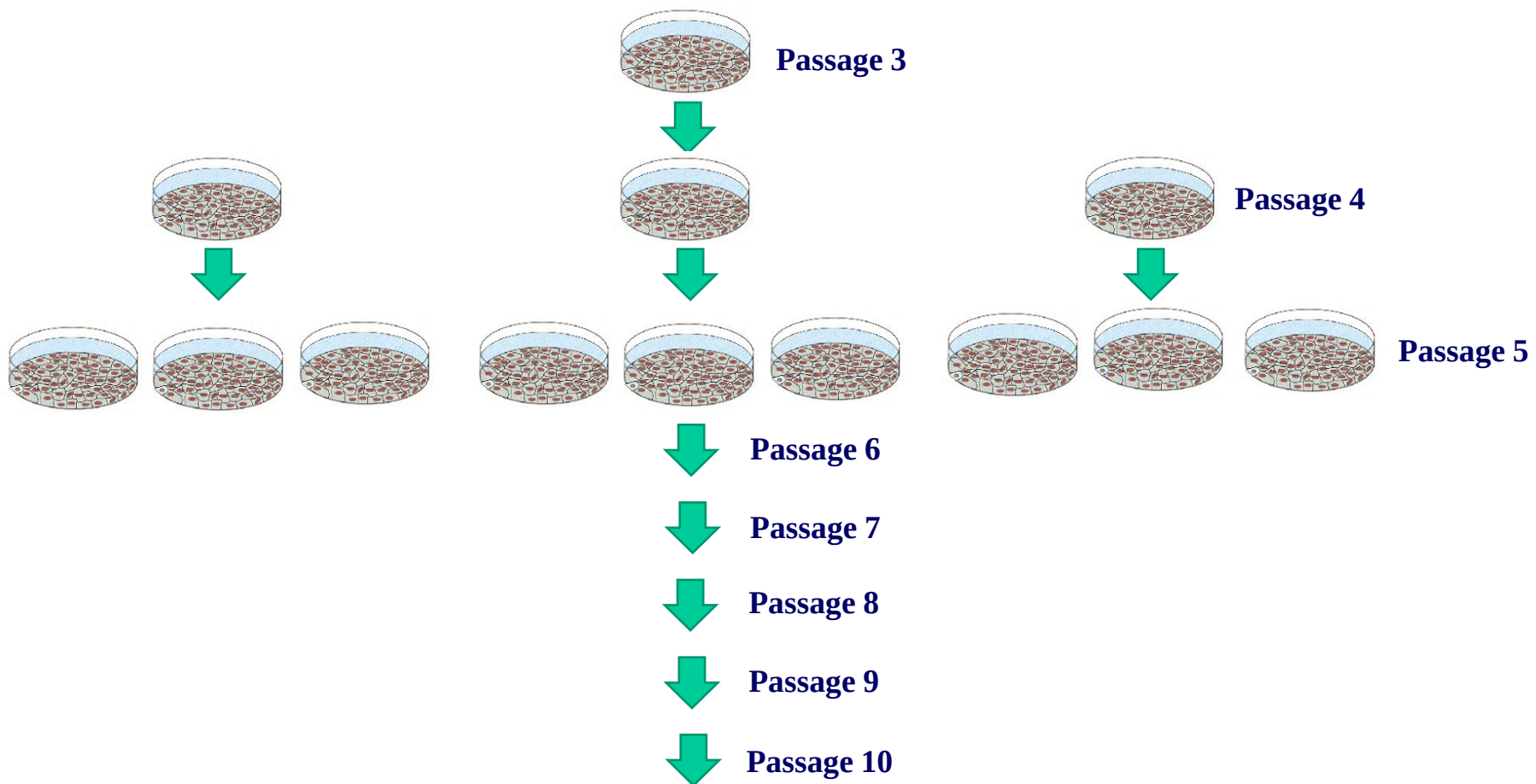
2 years vs. 22 years vs. 54 years
endothelial cells

Aging

- **Age of donors**
- **Passage**

**How can you keep enough
cells for experiments?**





**Cells from different sex donors
need to be concerned**

HDMVEC

(human dermal microvascular endothelial cells)

HUVEC

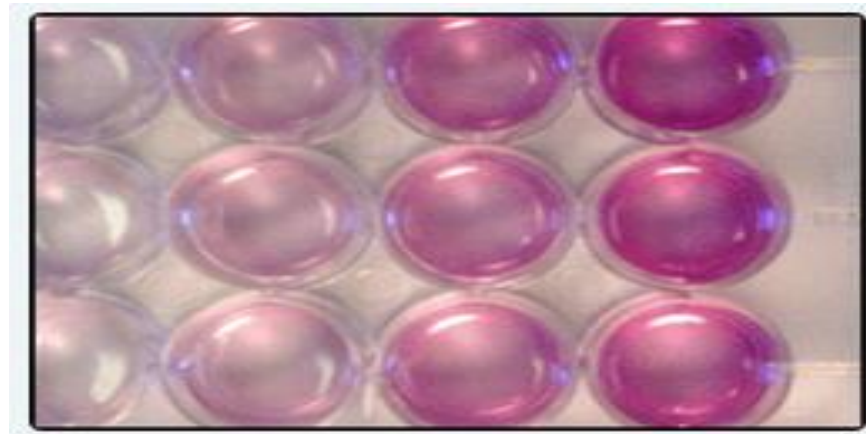
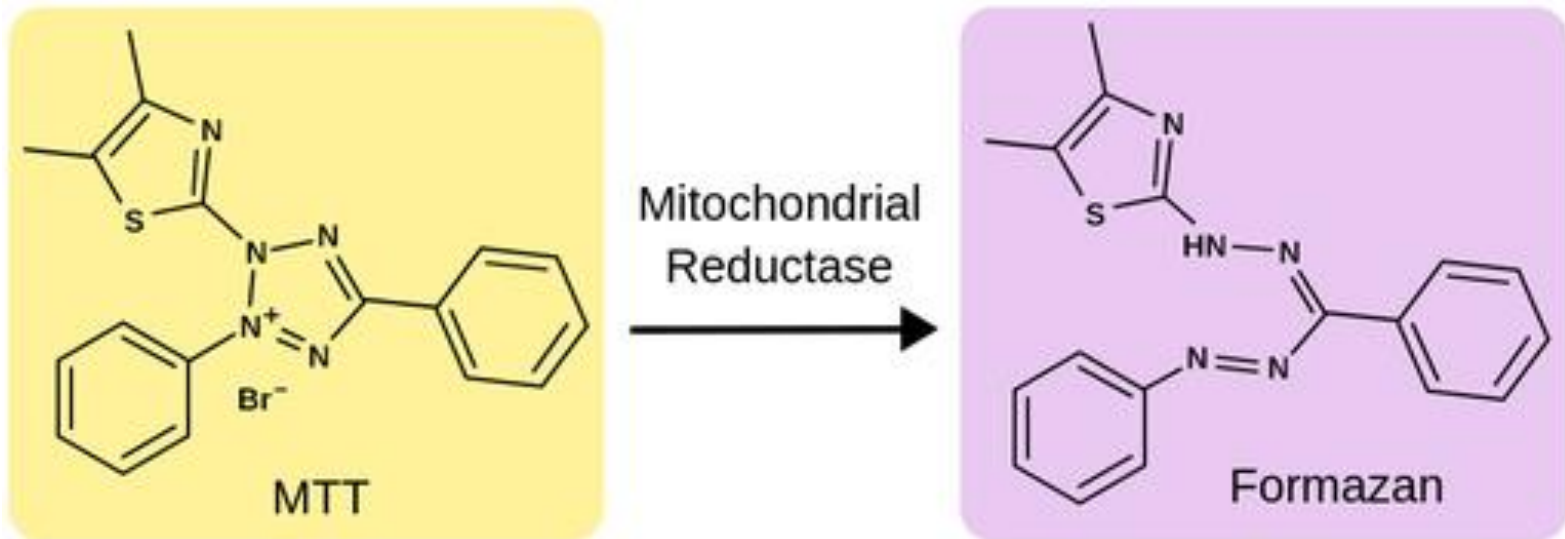
(human umbilical vein endothelial cells)

Physiological response

vs.

Pharmacological response

MTT assay



MTT assay

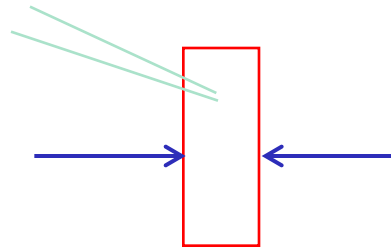
- **Cell viability**
- **Cell proliferation**

Invasion assay

vs.

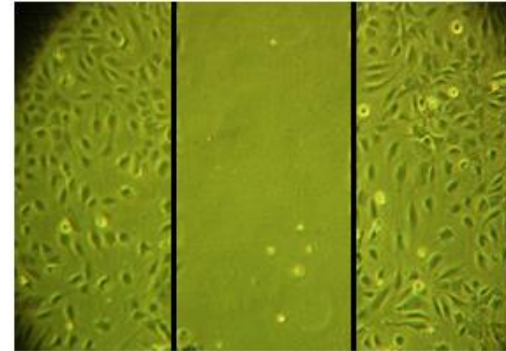
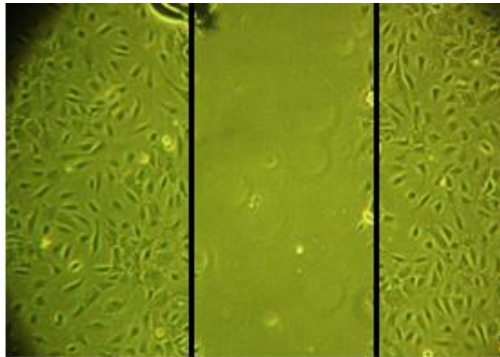
Migration assay

Wound healing assay

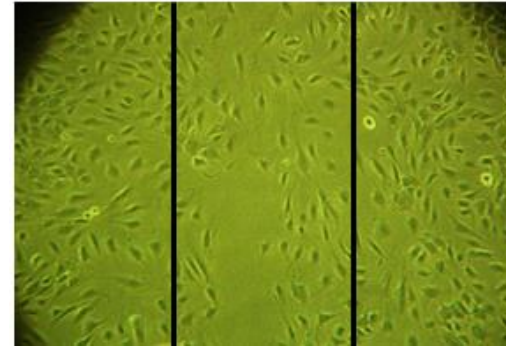
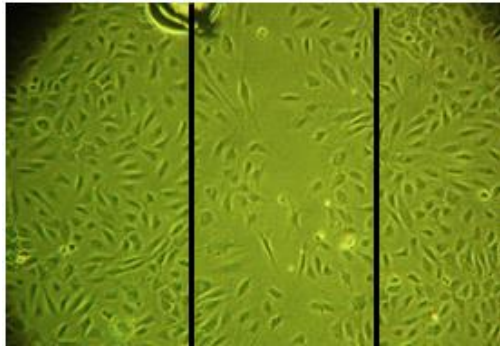


12 well

0 h



6 h

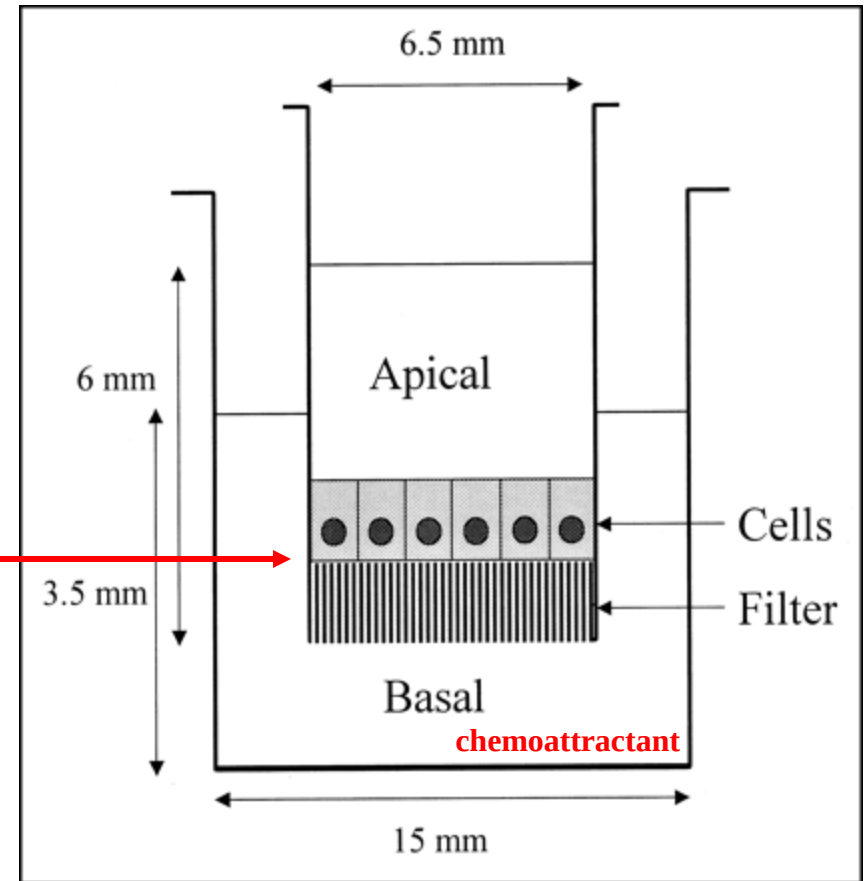


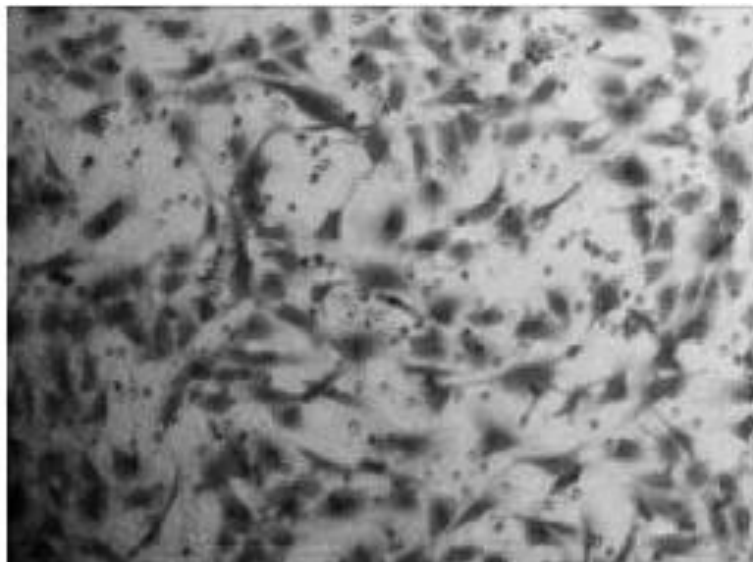


Transwell

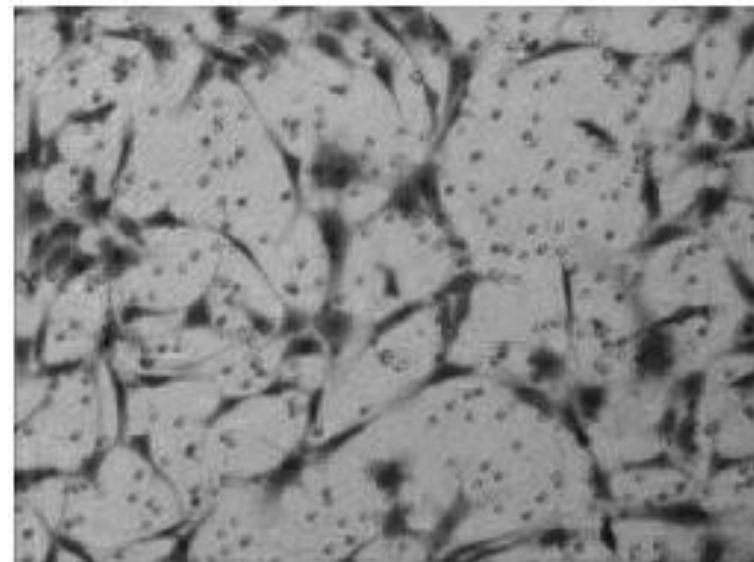


Coating



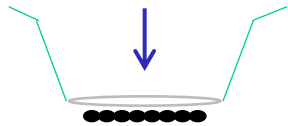


Control



TB (60 μ M)

Invasion assay



Transwells Assay

Cell Invasion

Cell Death

— **MTT Assay**

Cell Adhesion

— **Adhesion Assay**

MMPs Activity

— **Gelatin Zymography**

Cell Migration

— **Wound Healing**

**What we have seen in the
cell/tissue culture system do
not always occur in our body**

**What are the main difference
between in vitro study and in
vivo study**

Factors which might affect the results of in vivo studies

- **Absorption**
- **Distribution**
- **Metabolism**