



# Title

## **GROWTH FACTORS-BASED BENEFICIAL EFFECTS OF PLATELET LYSATE ON UMBILICAL CORD-DERIVED STEM CELLS AND THEIR SYNERGISTIC USE IN OSTEOARTHRITIS TREATMENT**

**Presented by:**

Samira Anvari

**Adviser:**

Dr farsinejad

# OSTEOARTHRITIS

## 10 Different Types of Arthritis

1. Osteoarthritis



2. Rheumatoid Arthritis

3. Ankylosing Spondylitis



4. Cervical Arthritis

5. Fibromyalgia



6. Pseudo Gout

8. Psoriatic Arthritis

9. Reactive Arthritis

7. Gout



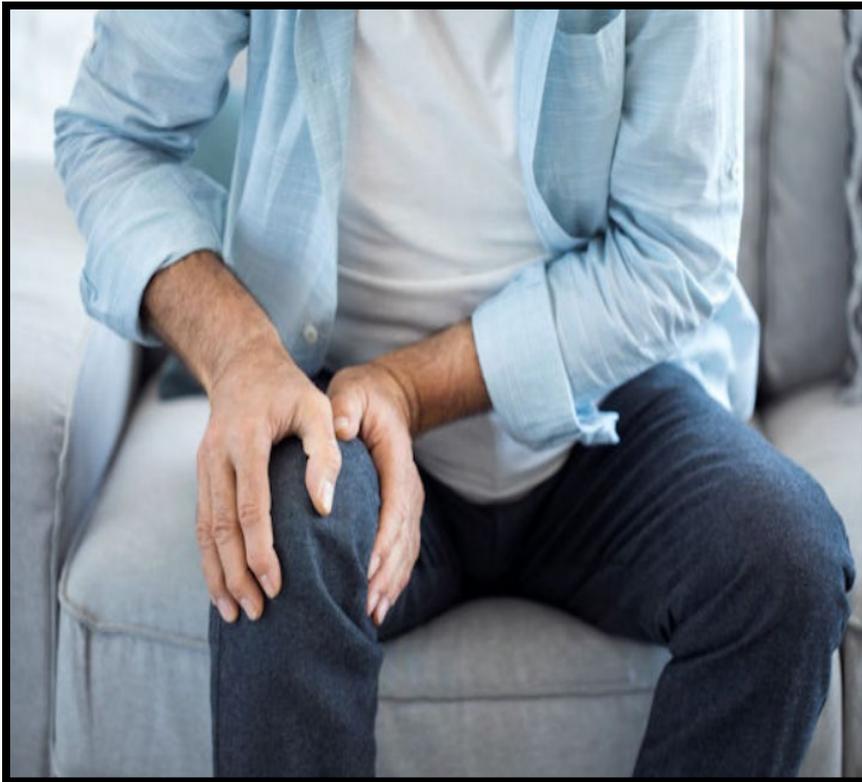
10. Osteonecrosis

Visit : [www.epainassist.com](http://www.epainassist.com)

Visit : [www.epainassist.com](http://www.epainassist.com)

10. OSTEONECROSIS

# SYMPTOM



Pain

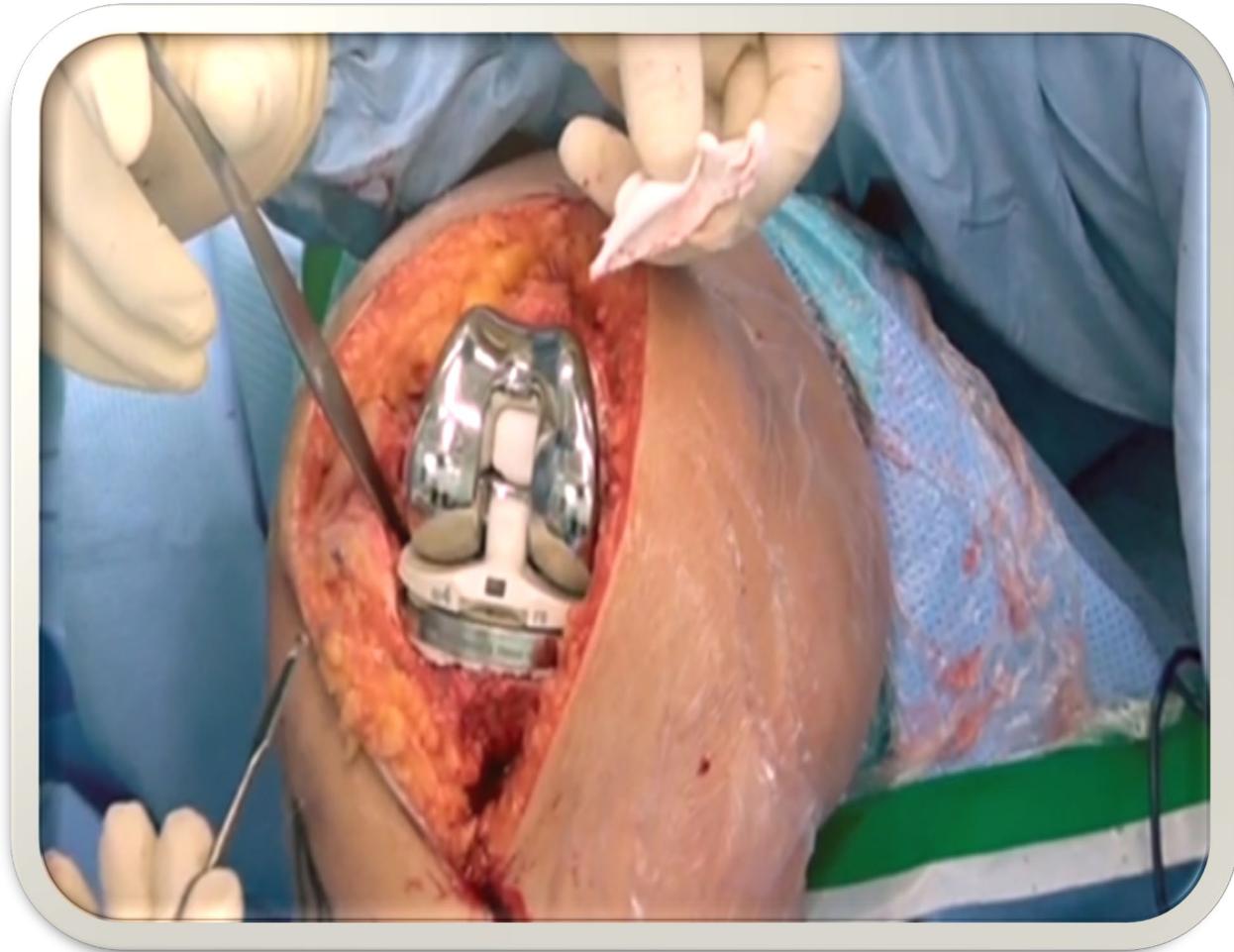
Excessive stiffness

swelling

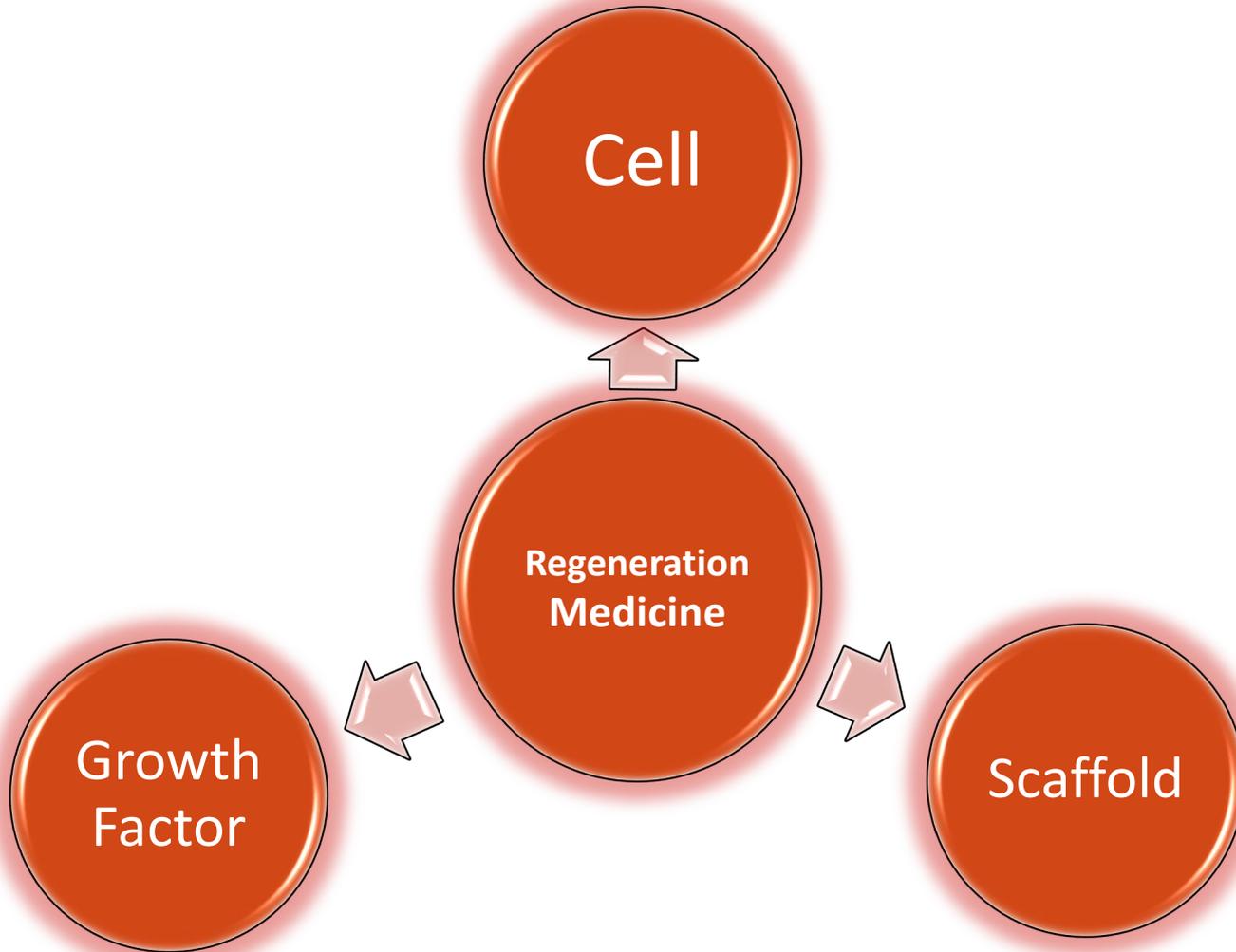
Joint Malformation

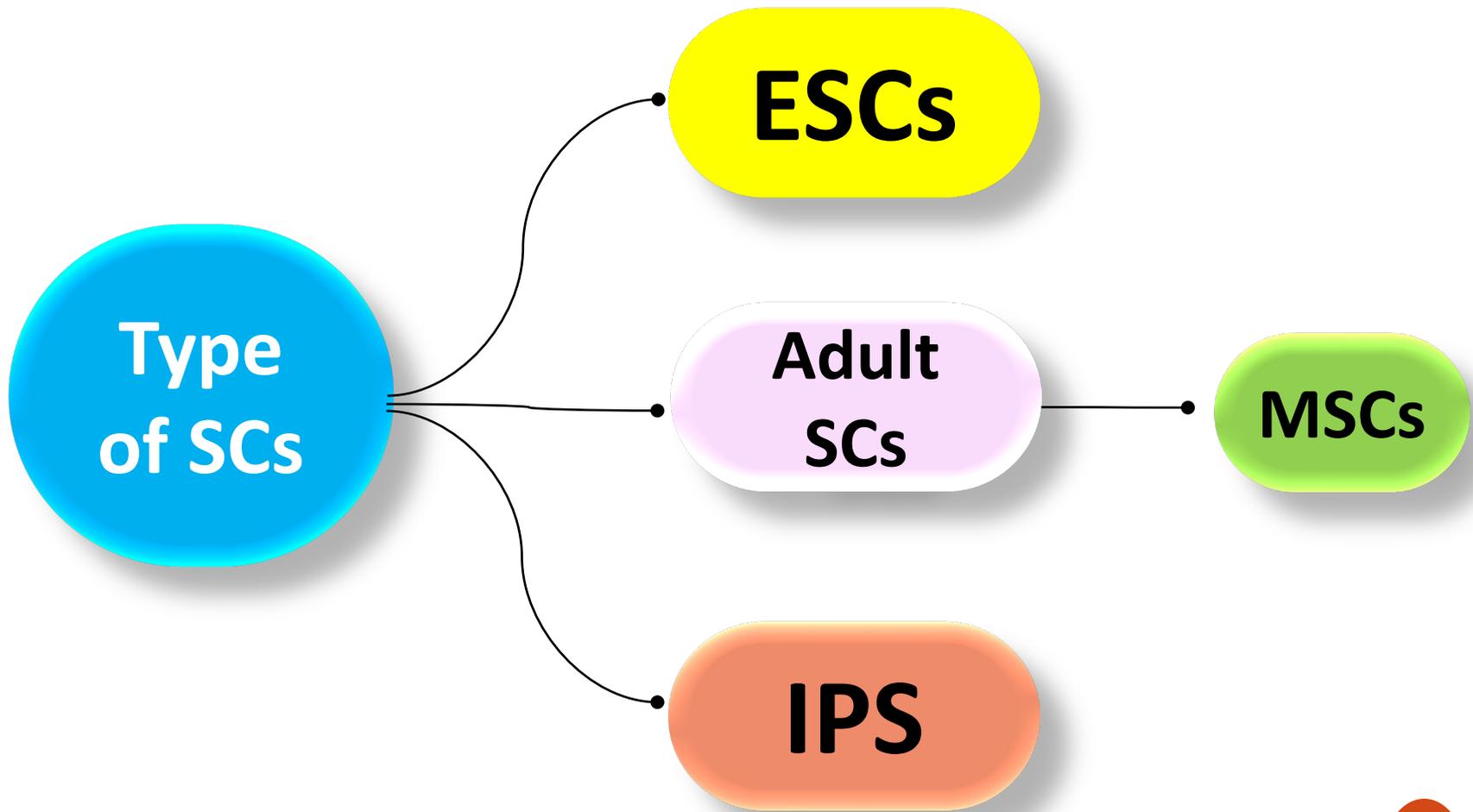
# TREATMENT

Knee  
replace  
ment

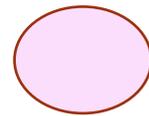
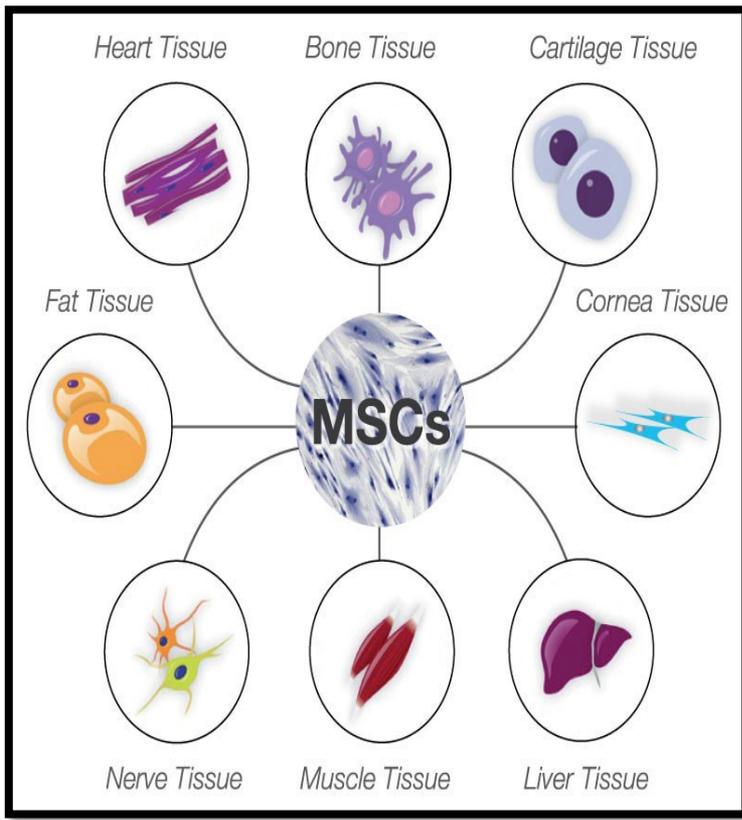


# REGENERATION MEDICINE

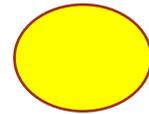




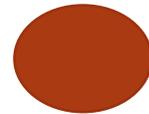
# Mesenchymal Stem Cell



NON-Ethical issues



Cartilage regeneration



Sources of MSCs

- Bone marrow
- Adipose tissues
- Peripheral blood
- Umbilical cord blood
- Dental pulp

# UMBILICAL CORD STEM CELL

- Non invasive
- Higher proliferative potential
- Availability
- Great expansion capability
- No formation of teratomas
- Immunomodulatory

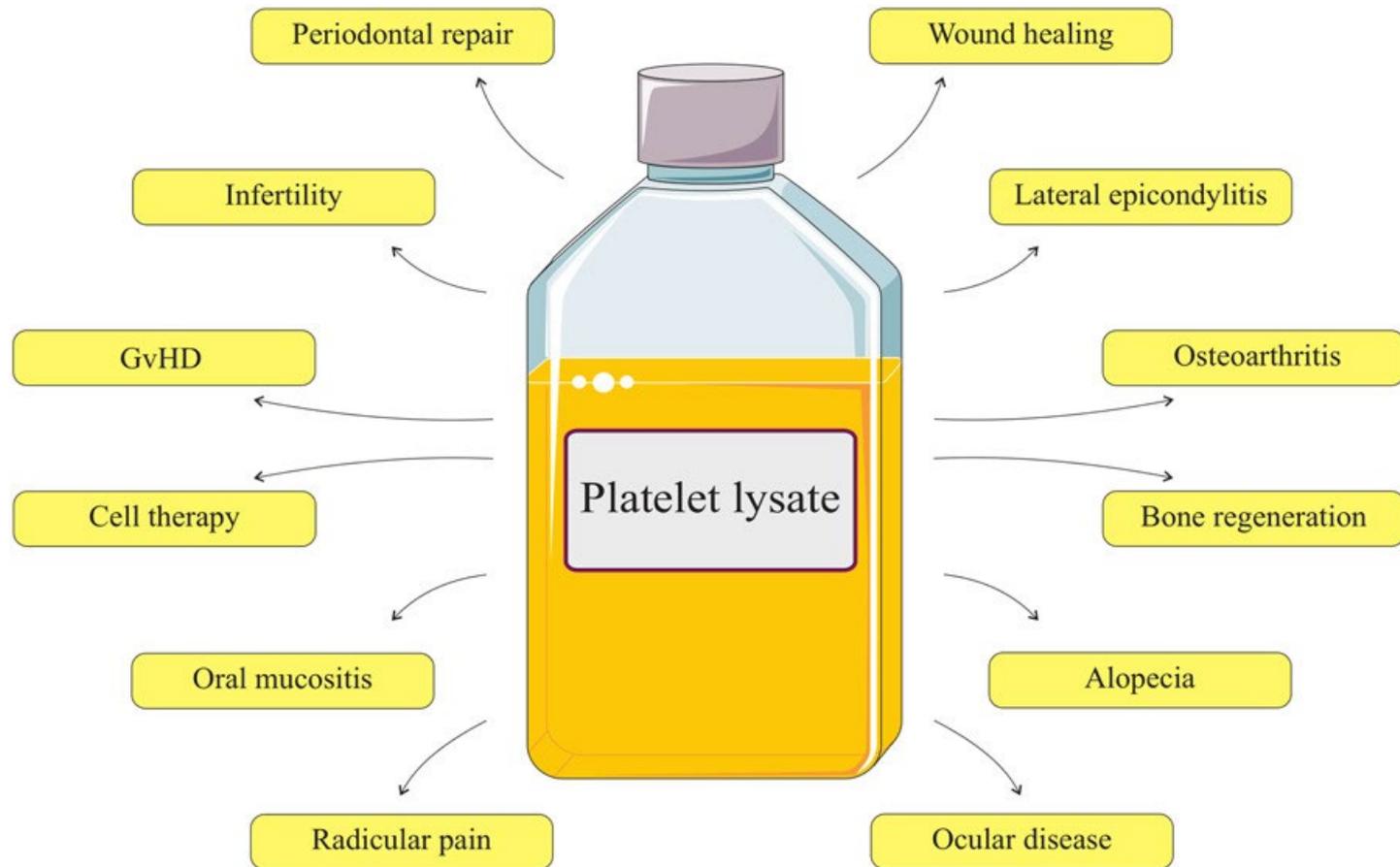


# PLATELET

- Hemostasis
- Wound healing
- Tissue regeneration

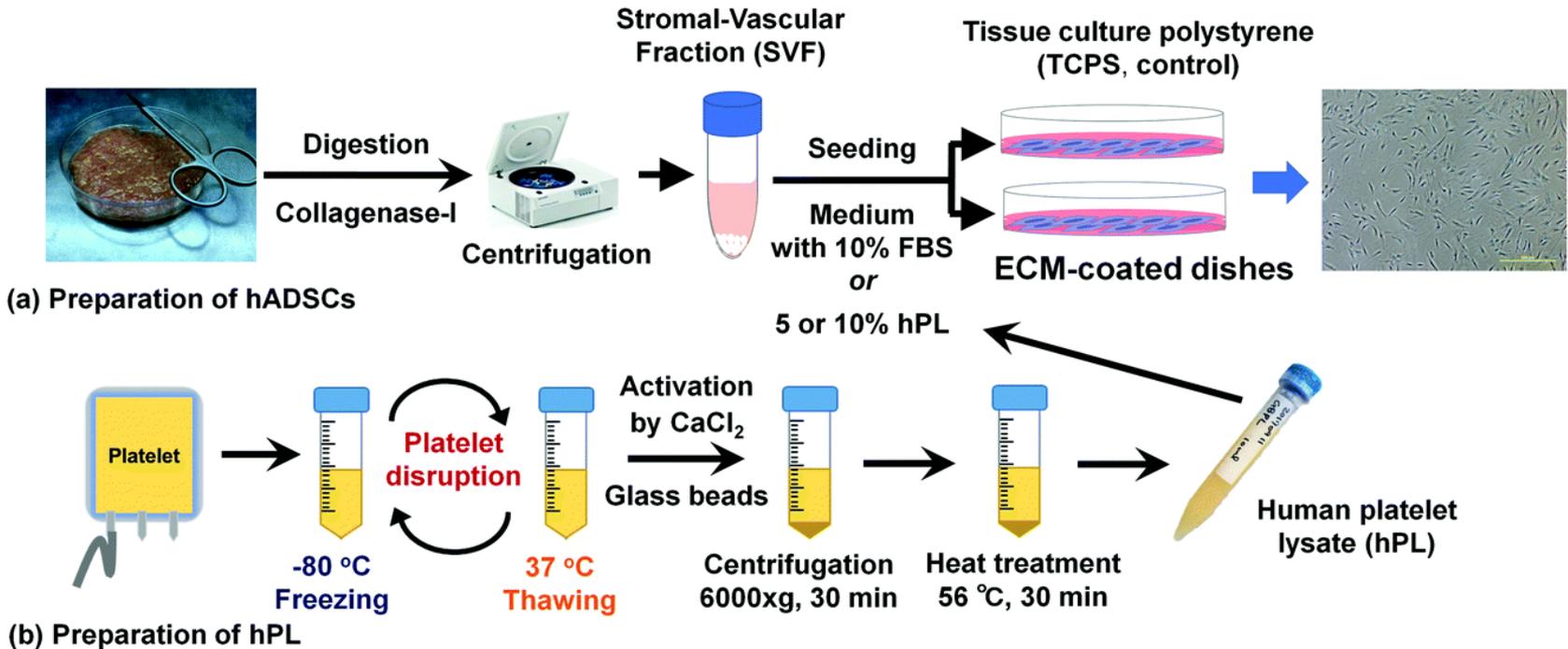


# PLATELET LYSATES

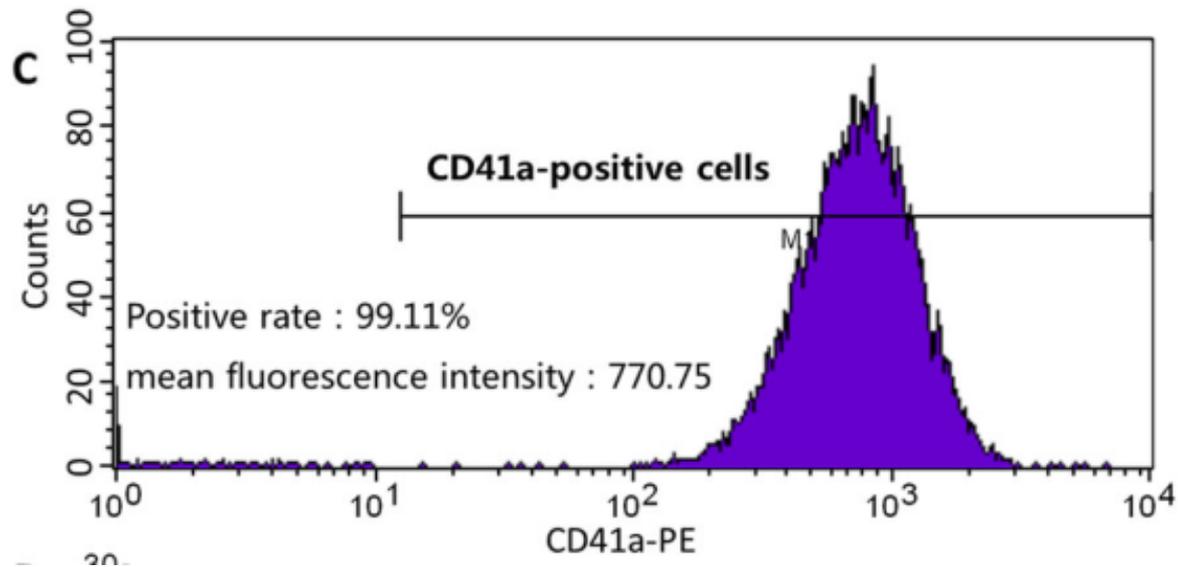


# METHODS AND RESULTS

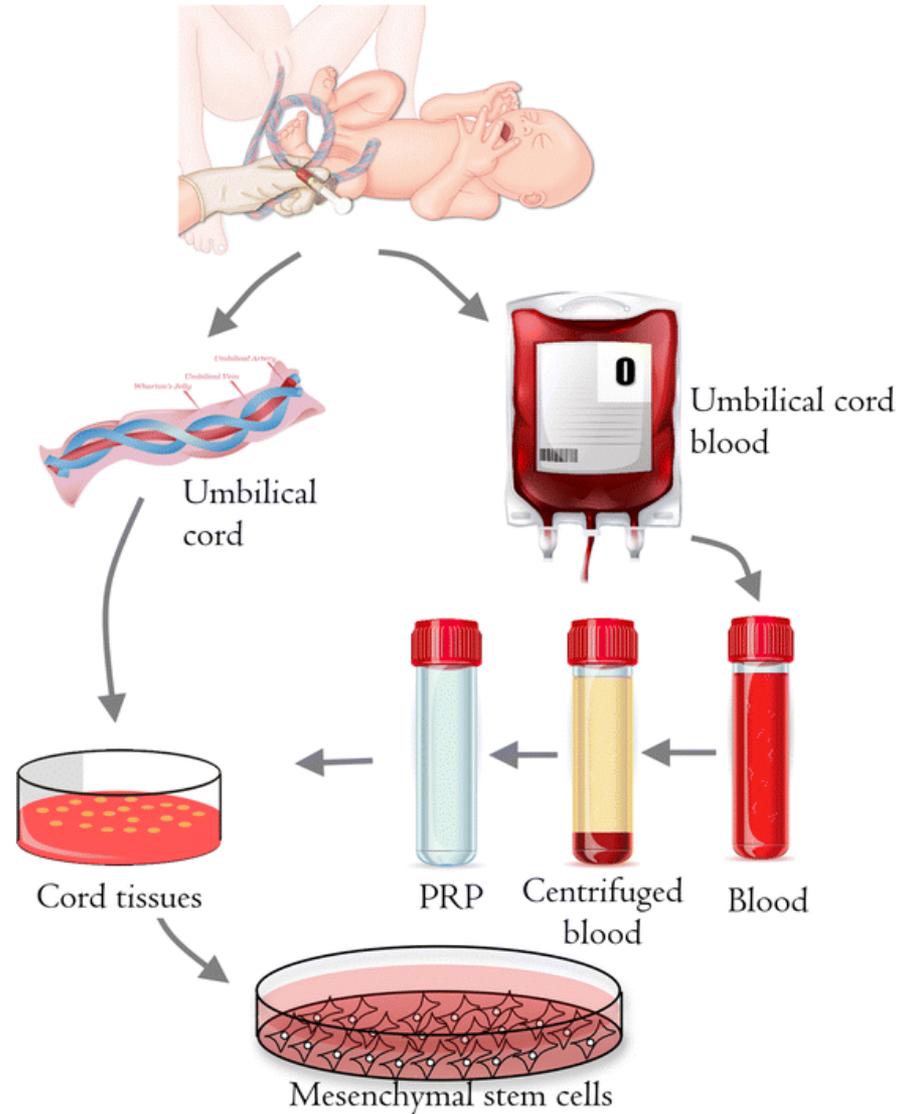
## Human PL extraction

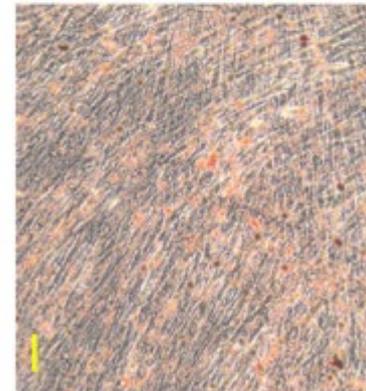
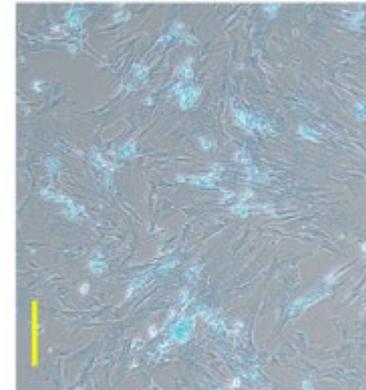
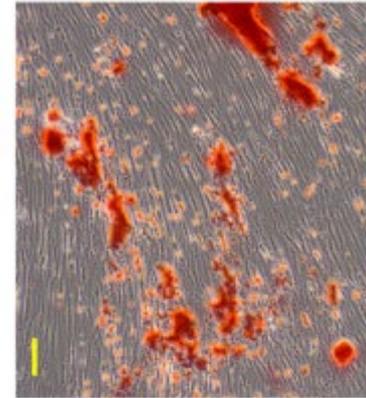
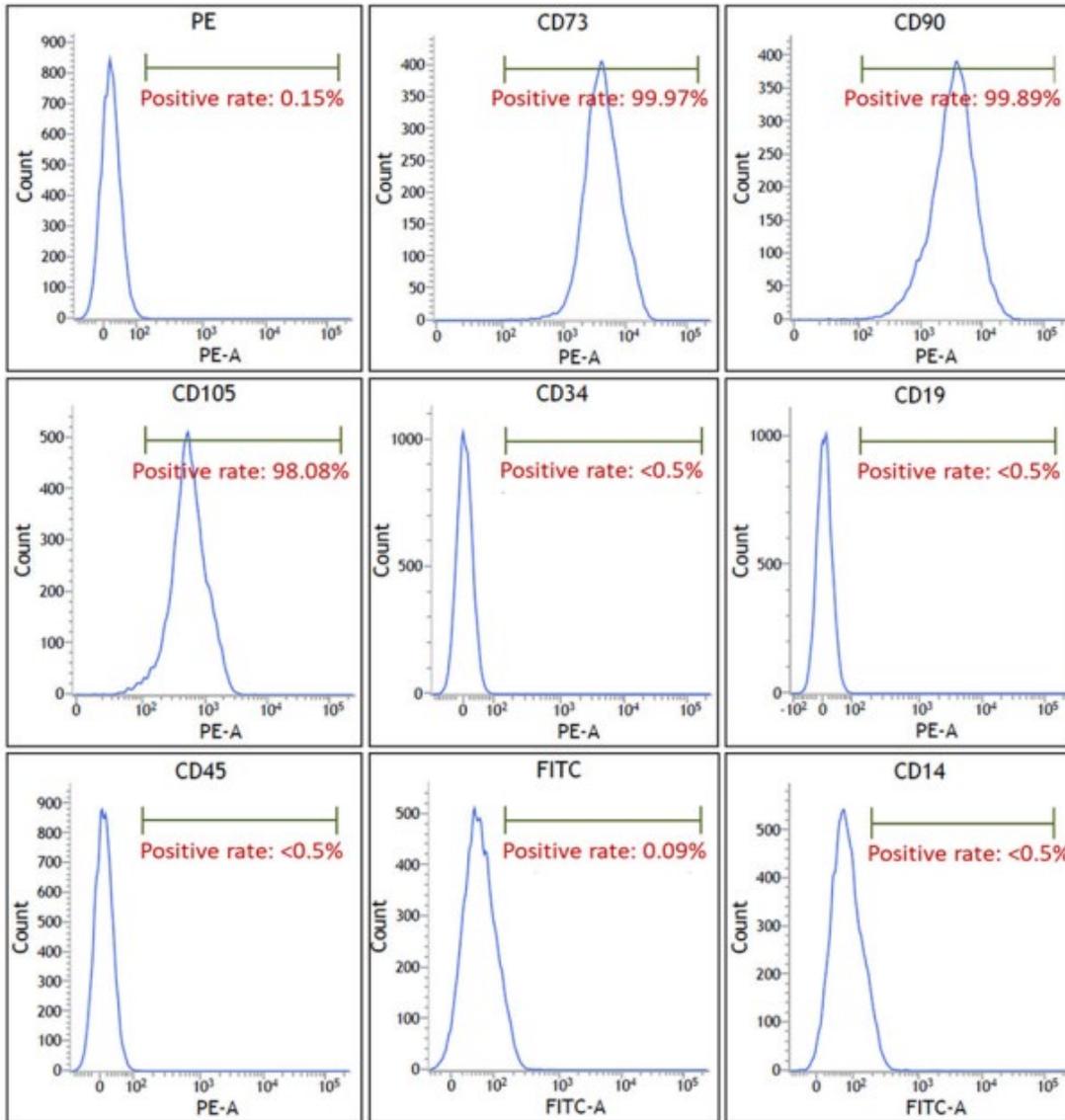


# PL CHARACTERIZATION



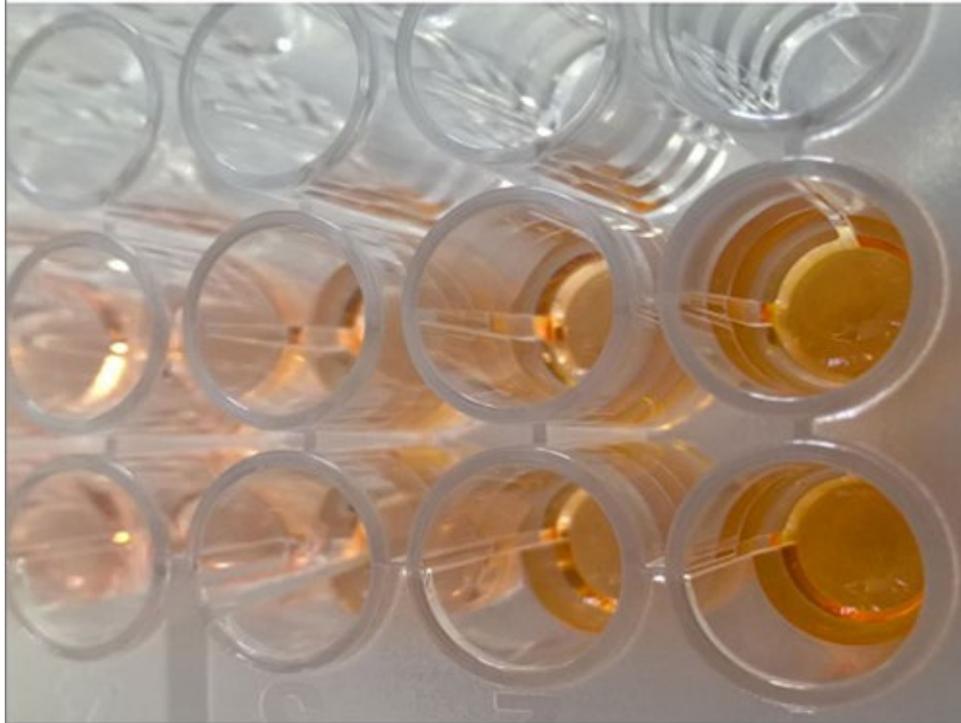
# Huc-MSCs isolation and identification





# CELL VIABILITY ASSAY

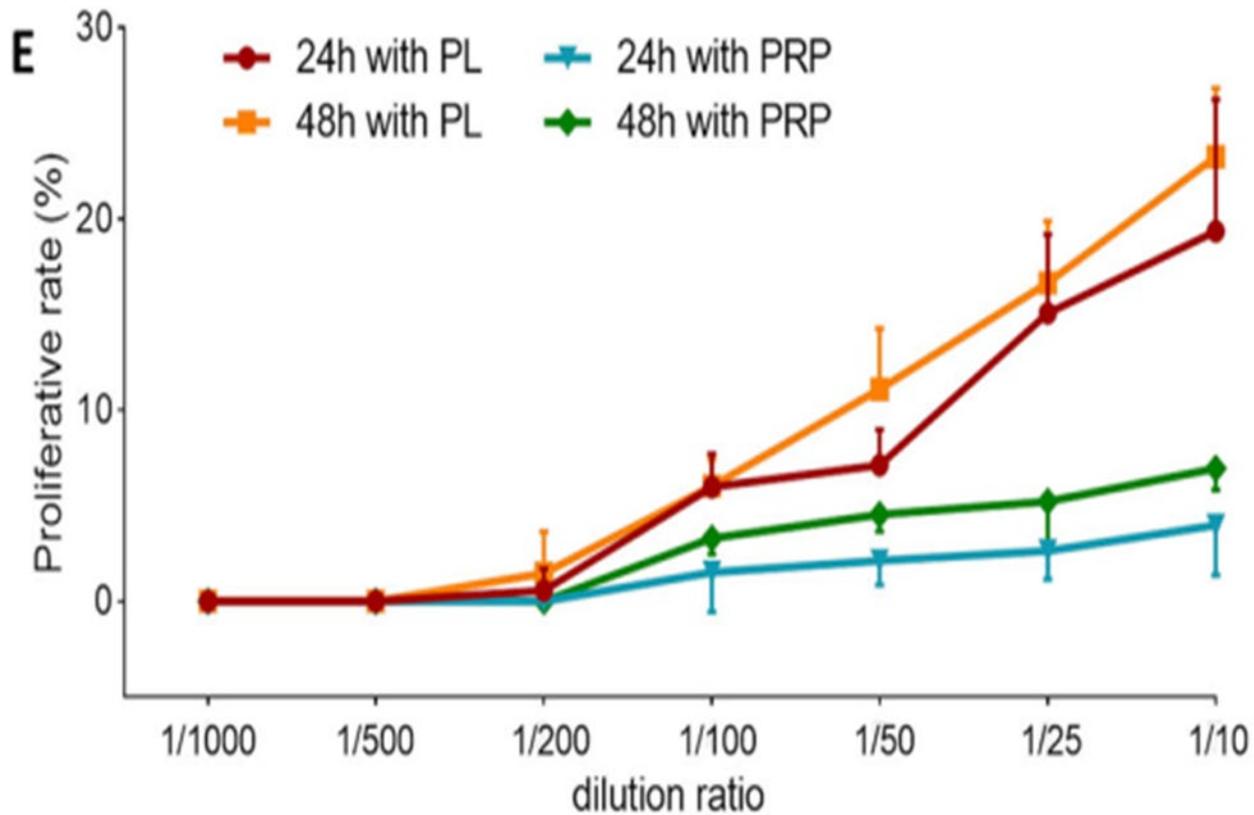
## CCK-8 Assay



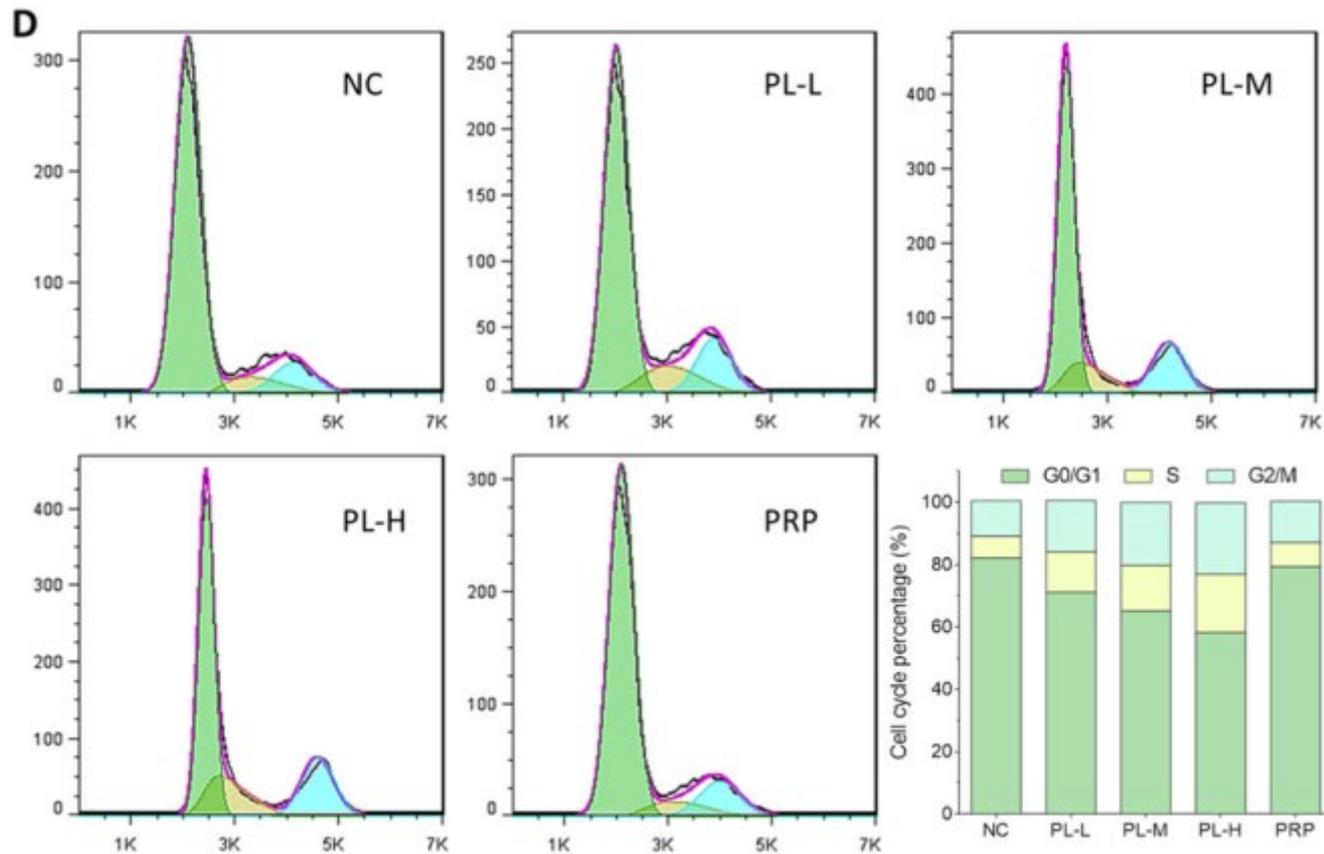
# CCK-8 VS MTT

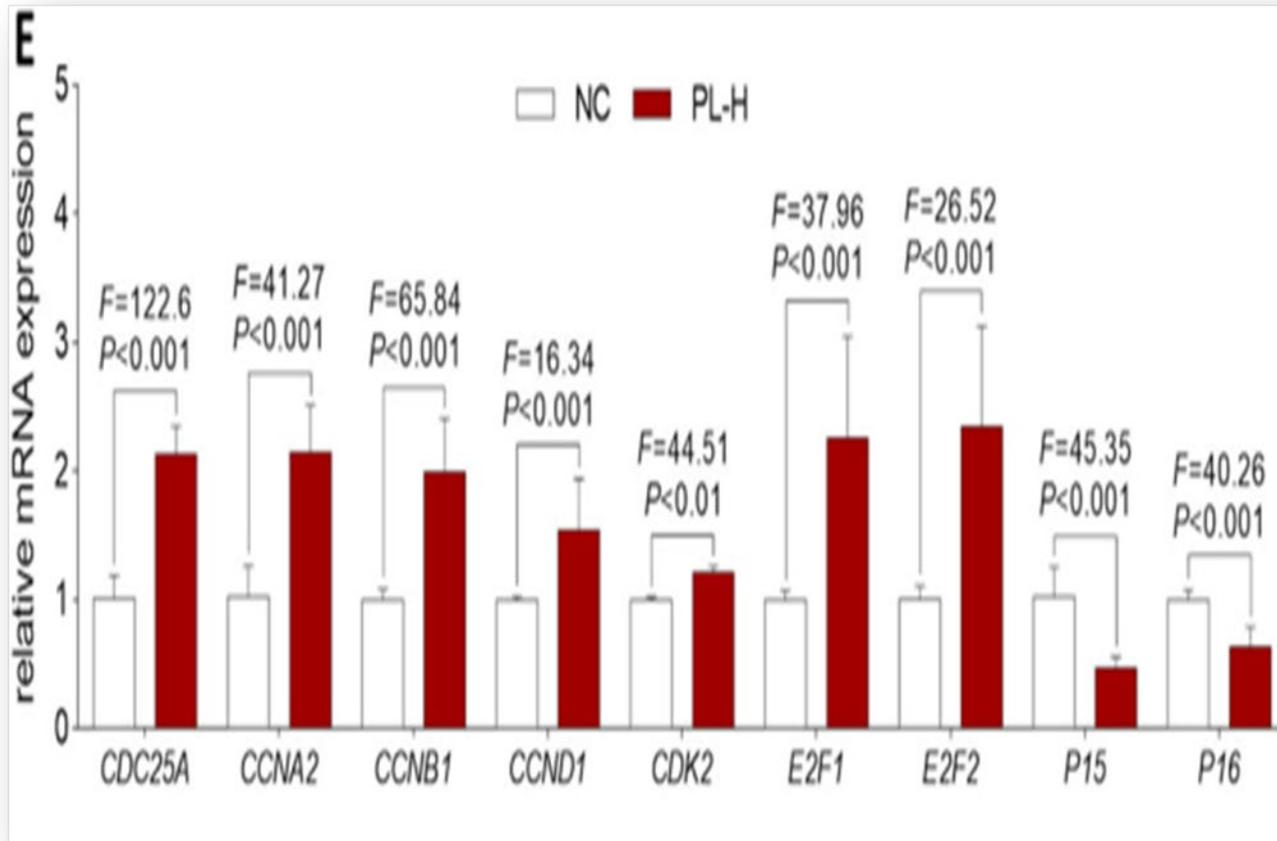
Cell counting method	MTT method	CCK method
Formazan solubility	Bad	Good
Product properties	Powder	Solution
Usage method	Pre configuration	No pre configuration
Detection time	> 4 hours	1-4 hours
Sensitivity	Ordinary	Higher
Detection wavelength	560~600nm	430~490nm
Cytotoxicity	High, The morphology of the cells disappears completely	Low, cell morphology remained unchanged.
Reagent stability	Ordinary	Good
DMSO dissolution needed	Yes	No
Convenience	Ordinary	High

# CELL VIABILITY ASSAY

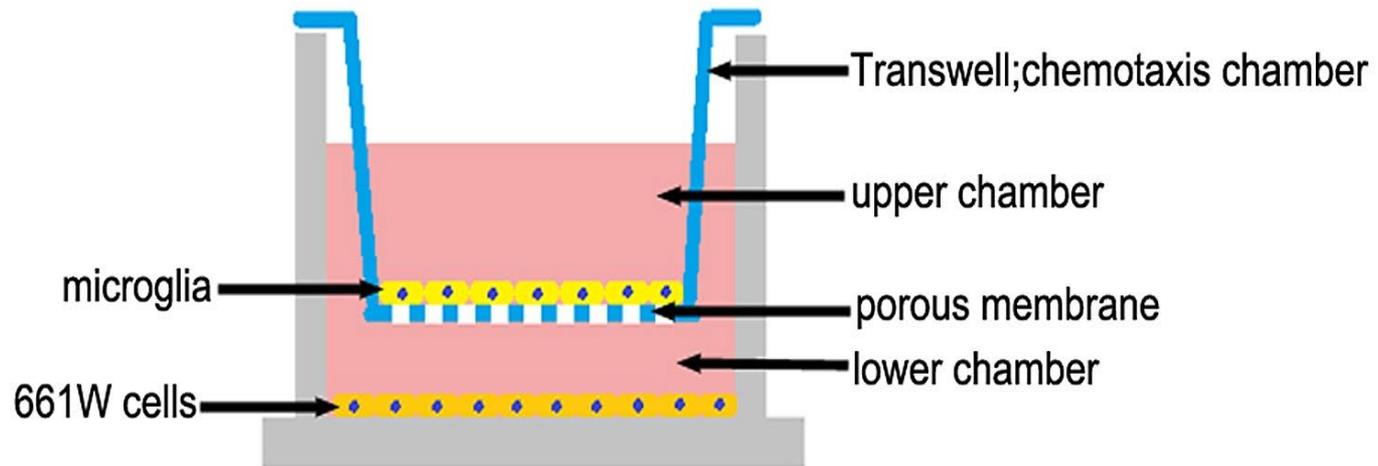


# CELL CYCLE ANALYSIS

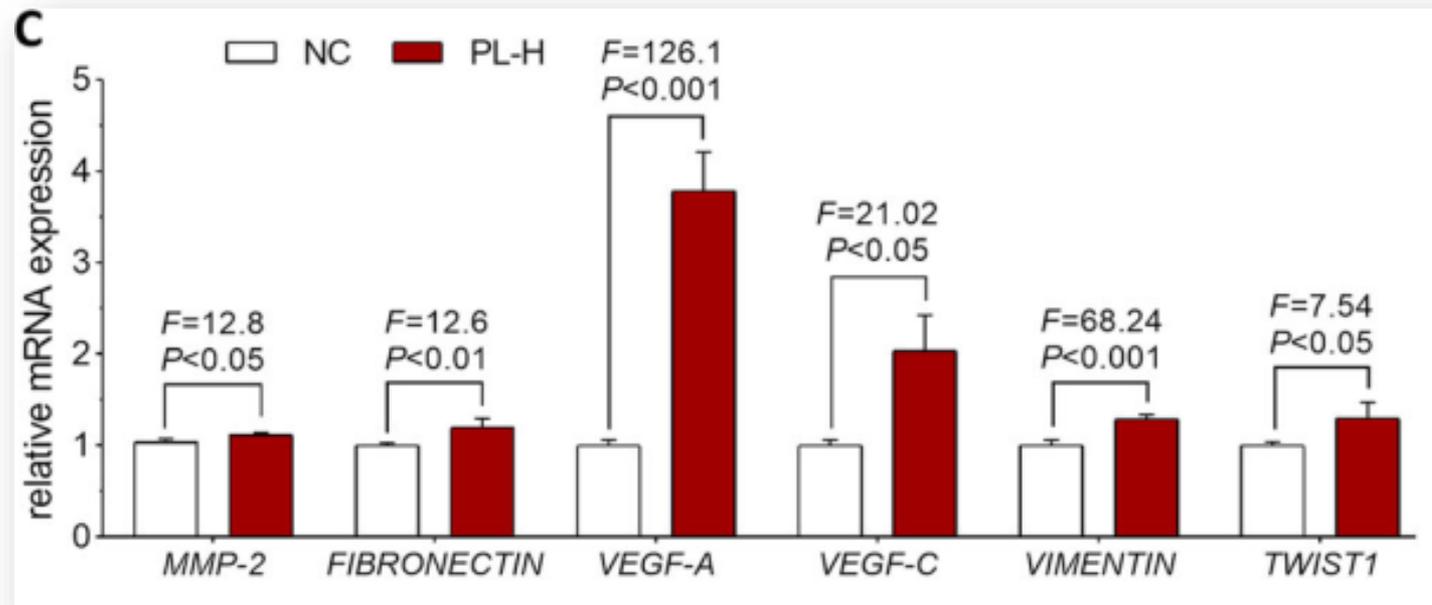




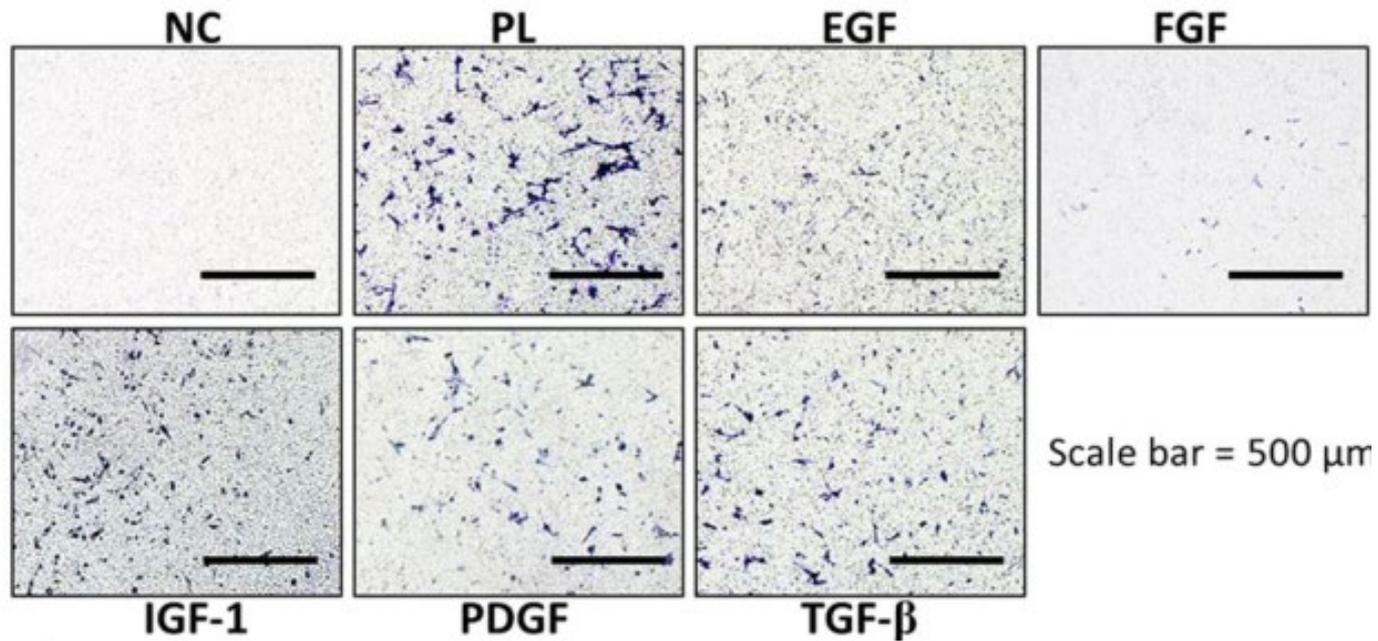
# TRANSWELL MIGRATION ASSAY



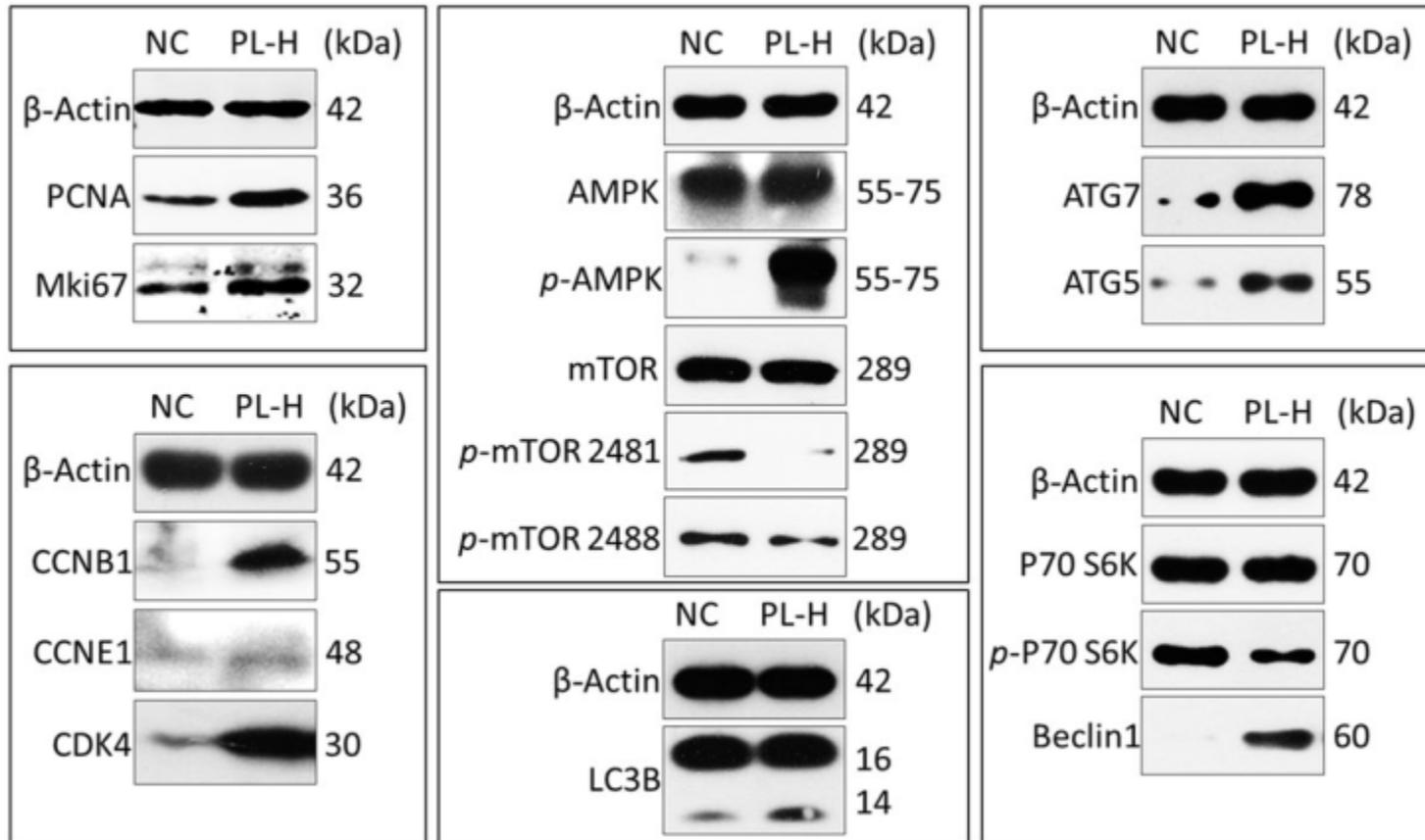
# TRANSWELL MIGRATION ASSAY

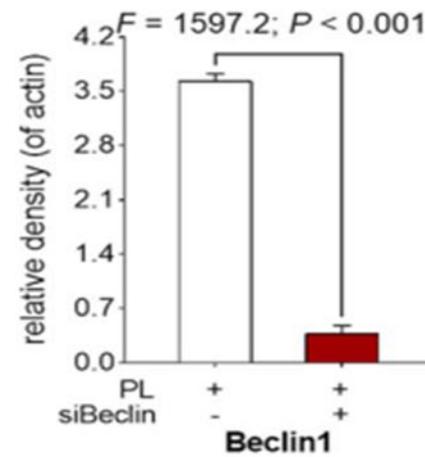
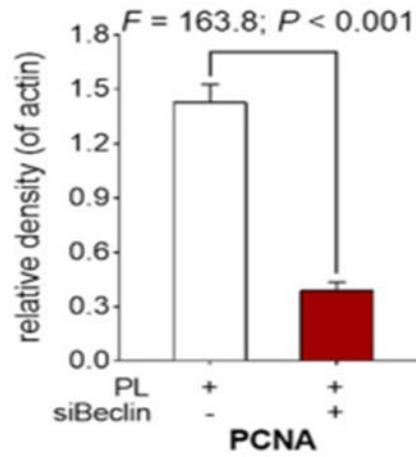
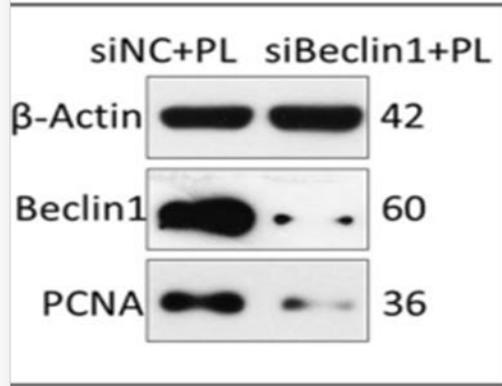
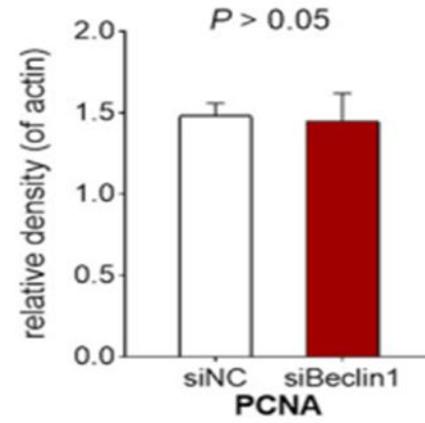
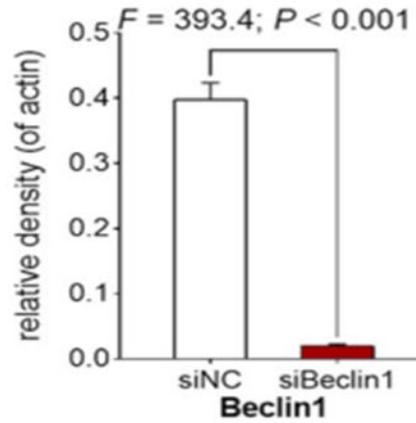
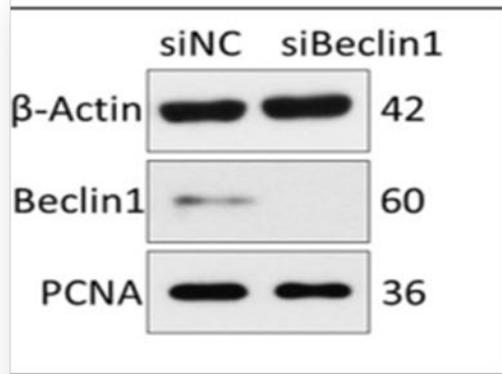


# EFFECT OF PL-CONTAINED GROWTH FACTORS ON HUC-MSCs

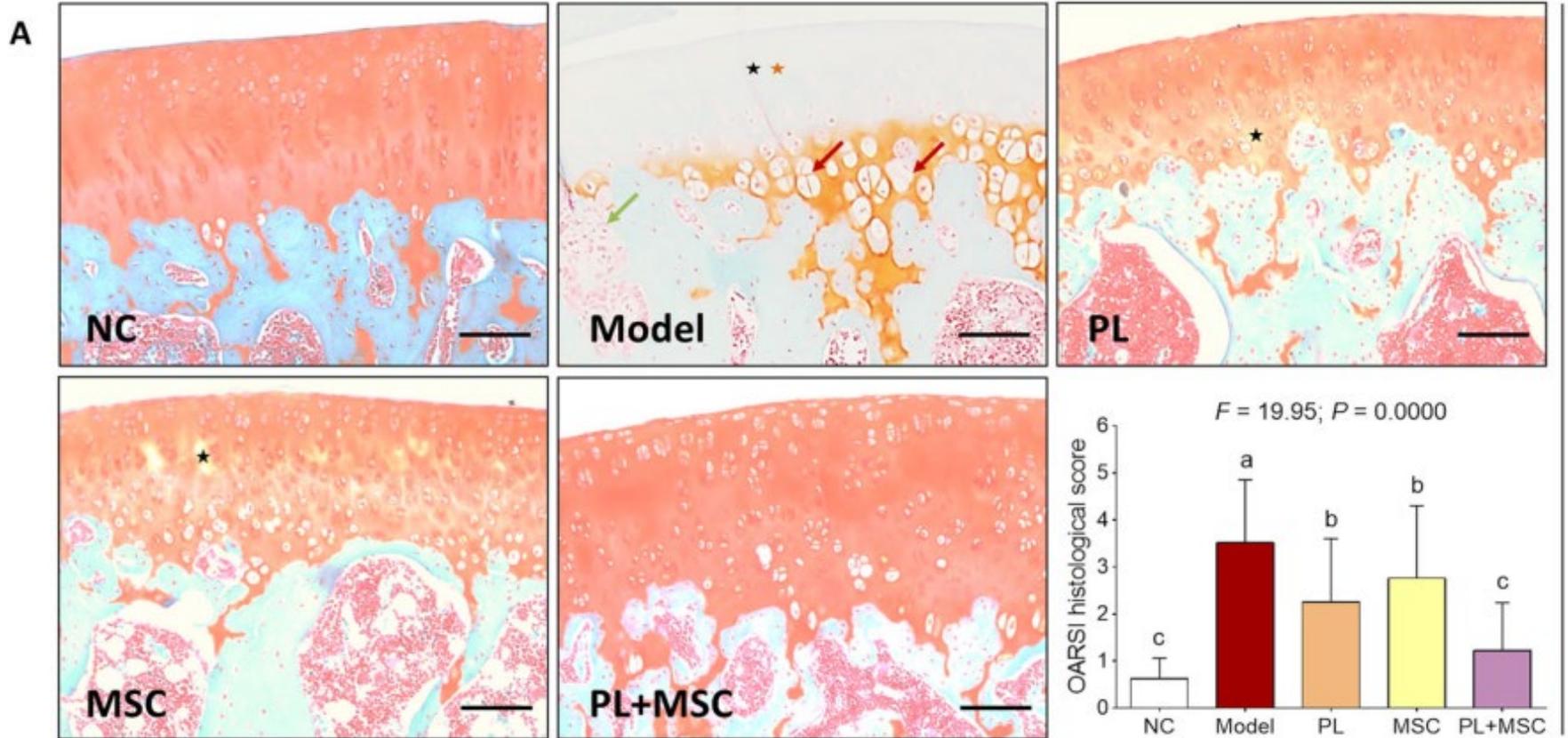


# Autophagy-related action mechanism of PL on huc-MSCs





# IN VIVO EVALUATION



# Discussion



Thank You!

