



A Bit of Radiobiology

CELINE KARLE

MASTER THESIS

Prof. Joao Seco (E041)

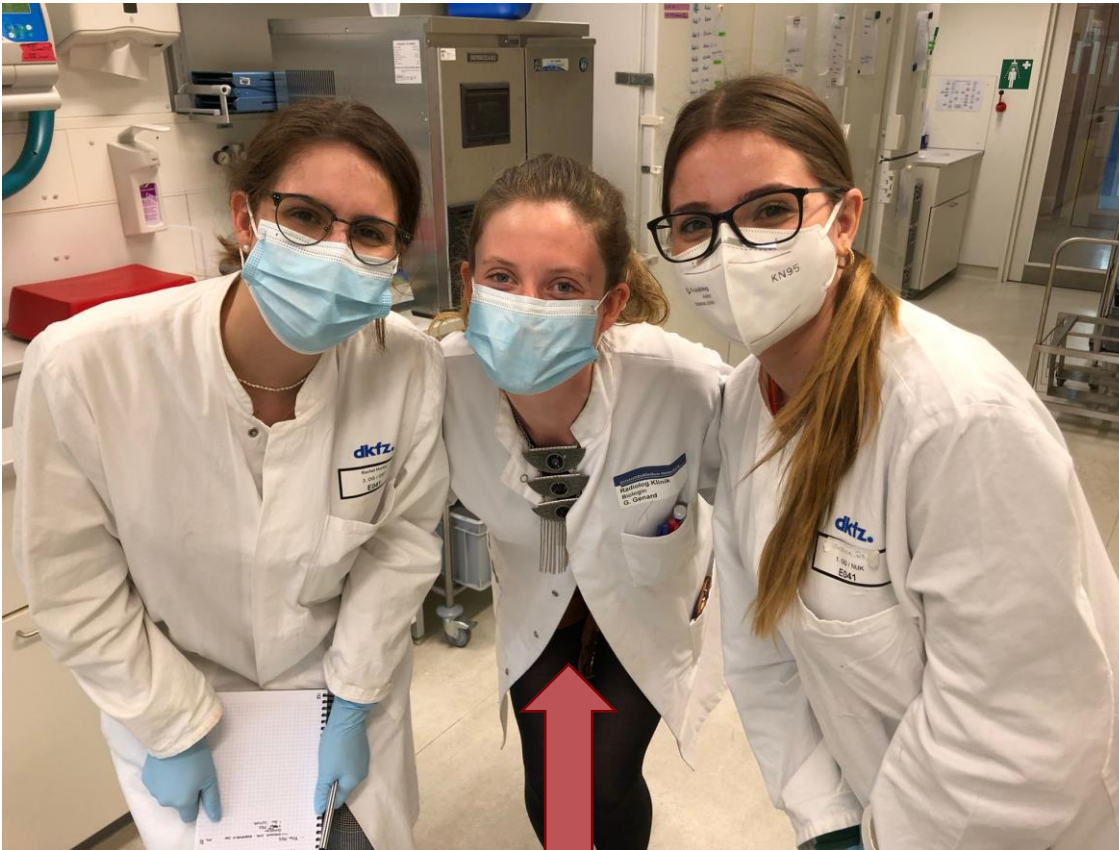


dkfz.

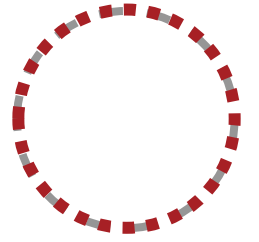
**GERMAN
CANCER RESEARCH CENTER
IN THE HELMHOLTZ ASSOCIATION**



MASTER THESIS



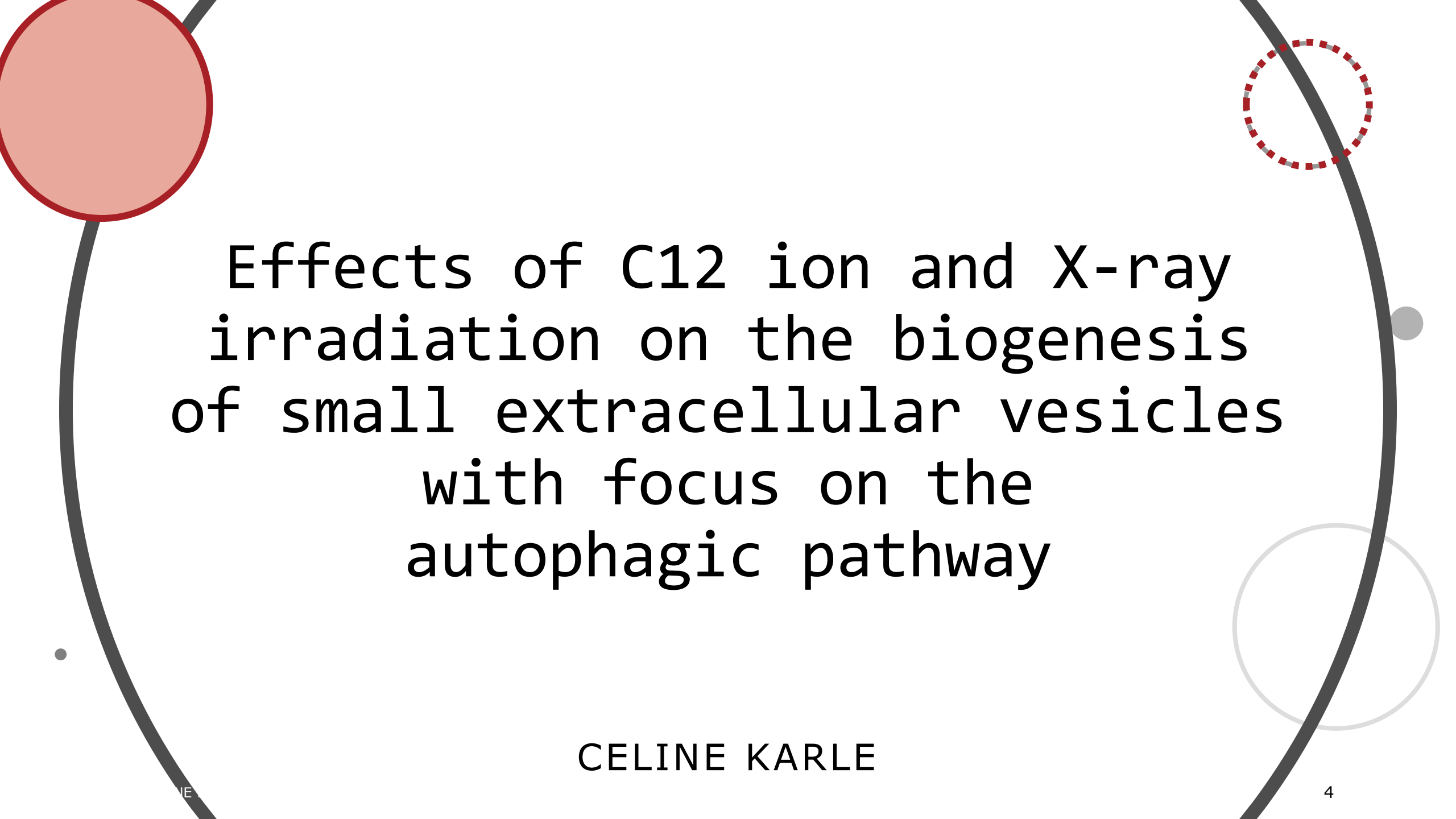
Dr. Géraldine Genard



dkfz.

**GERMAN
CANCER RESEARCH CENTER
IN THE HELMHOLTZ ASSOCIATION**

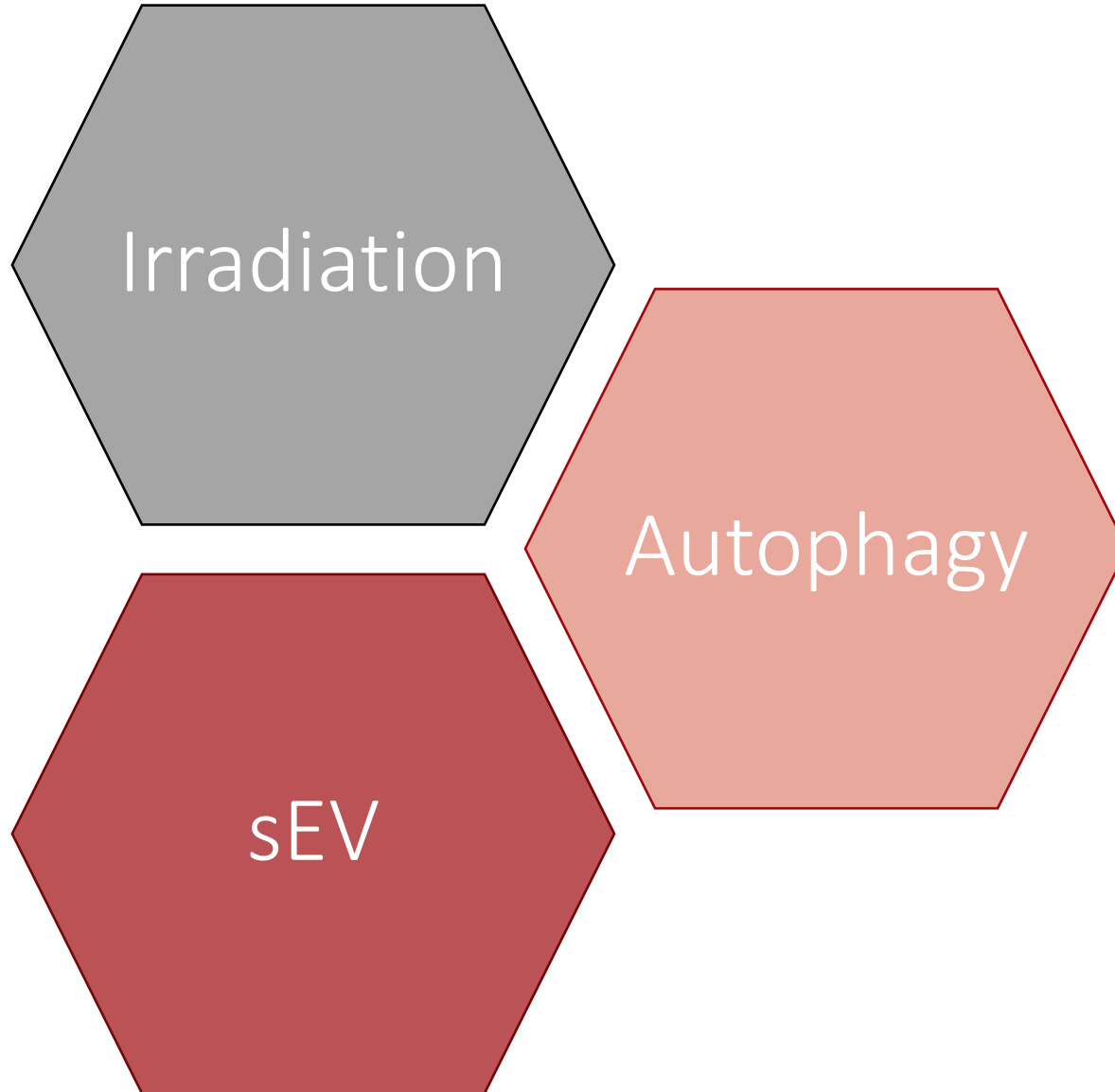




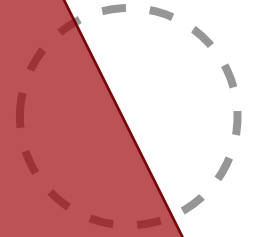
Effects of C12 ion and X-ray
irradiation on the biogenesis
of small extracellular vesicles
with focus on the
autophagic pathway

CELINE KARLE

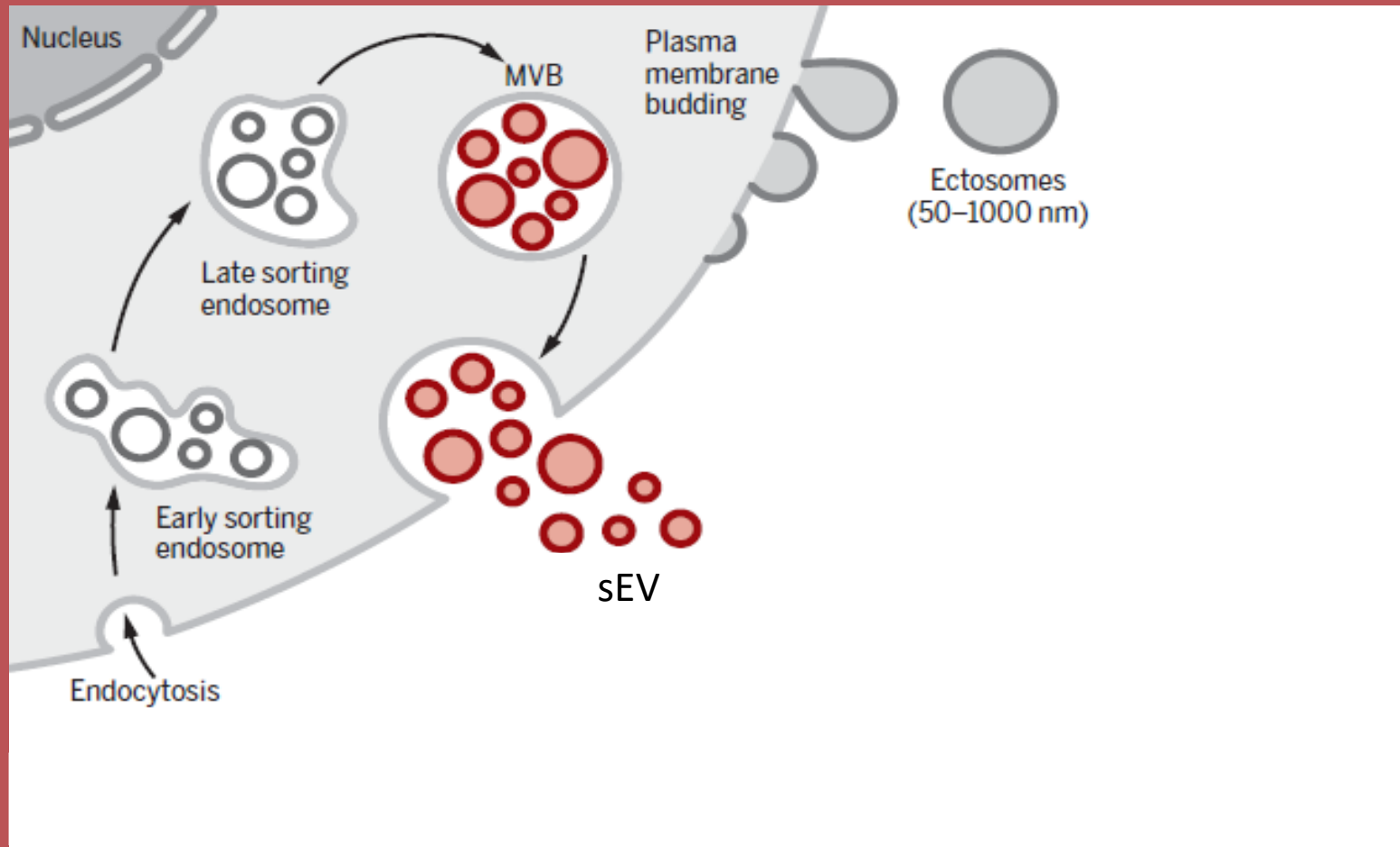
THEORY



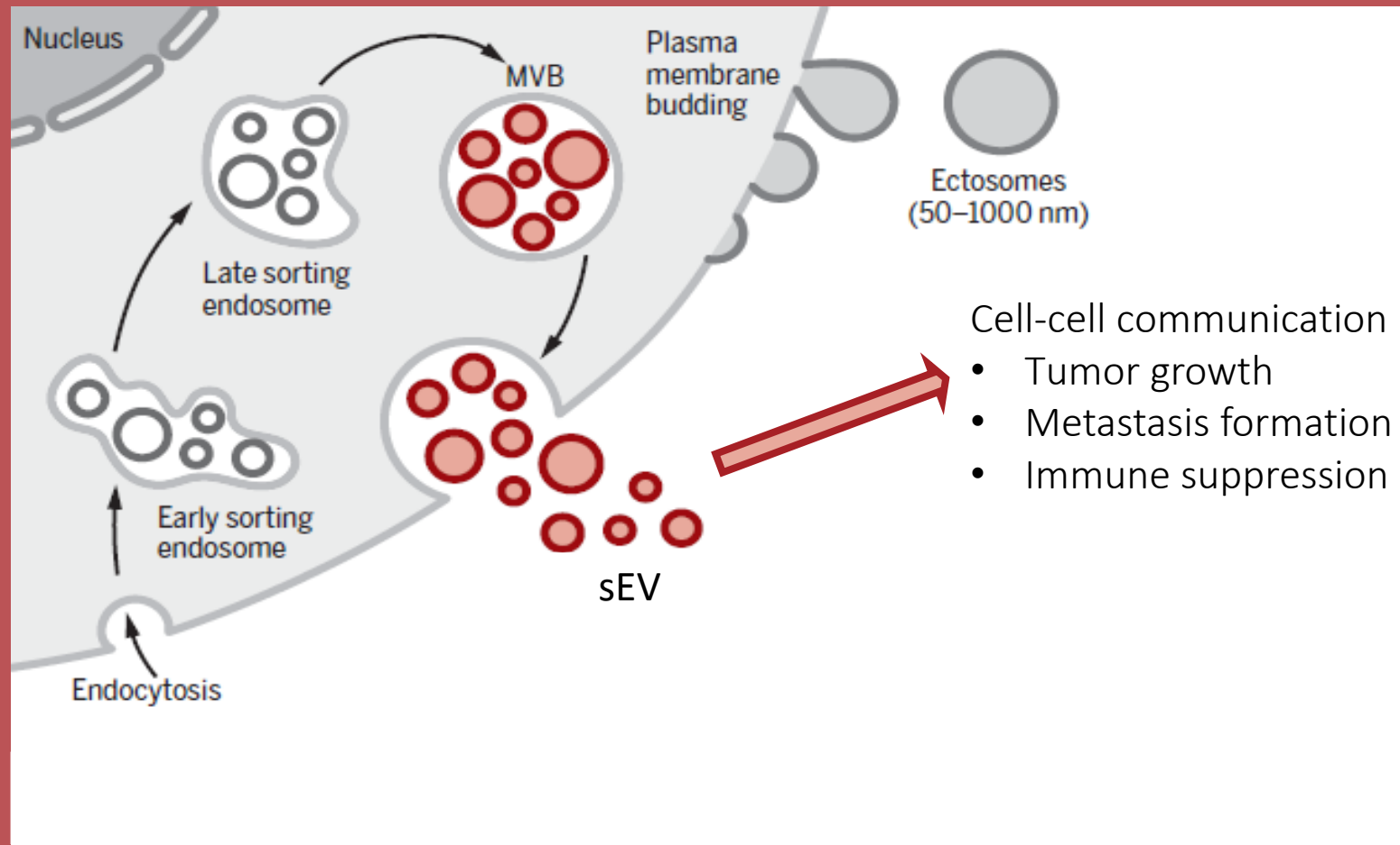
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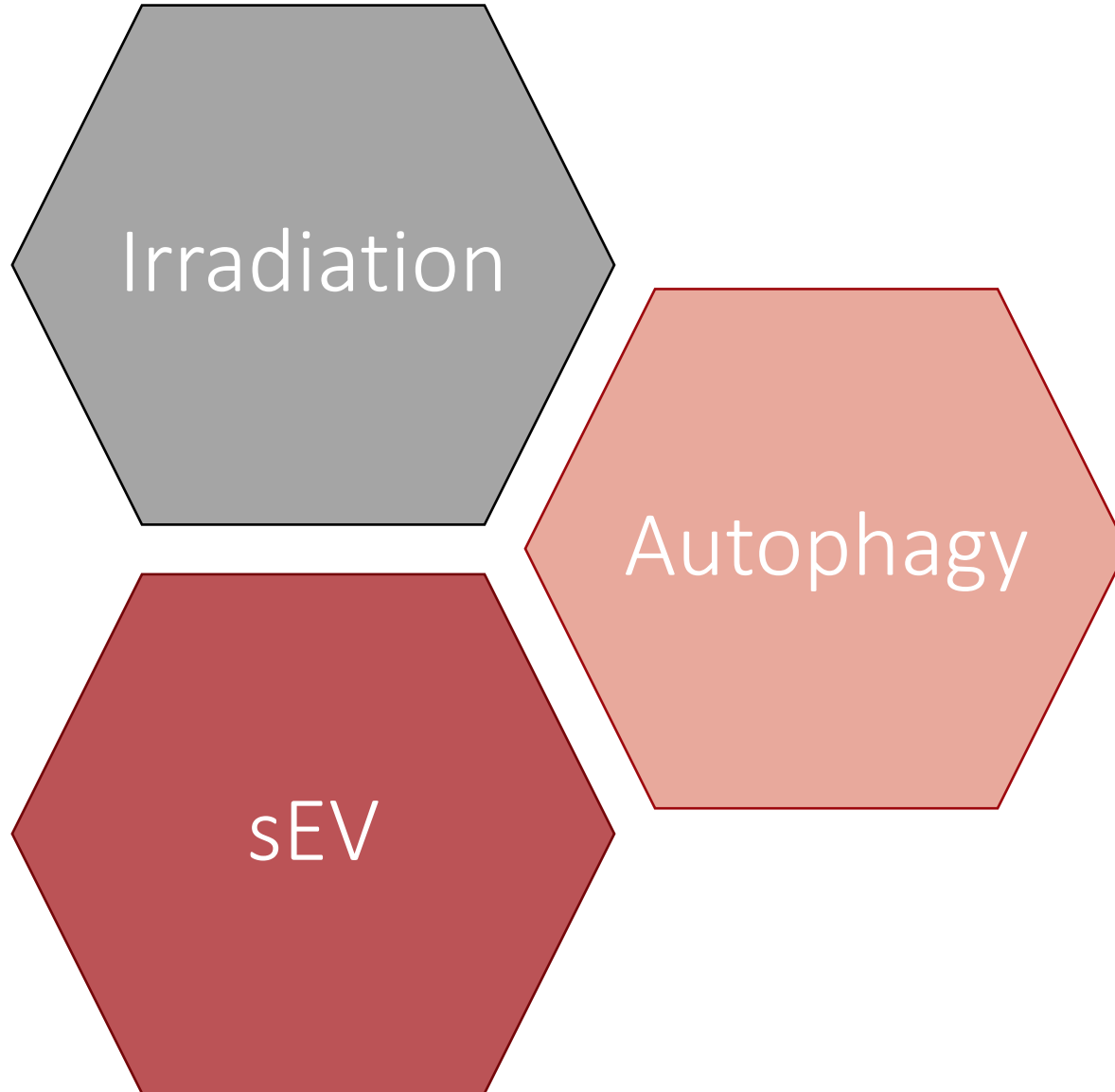
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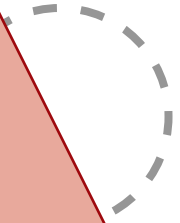
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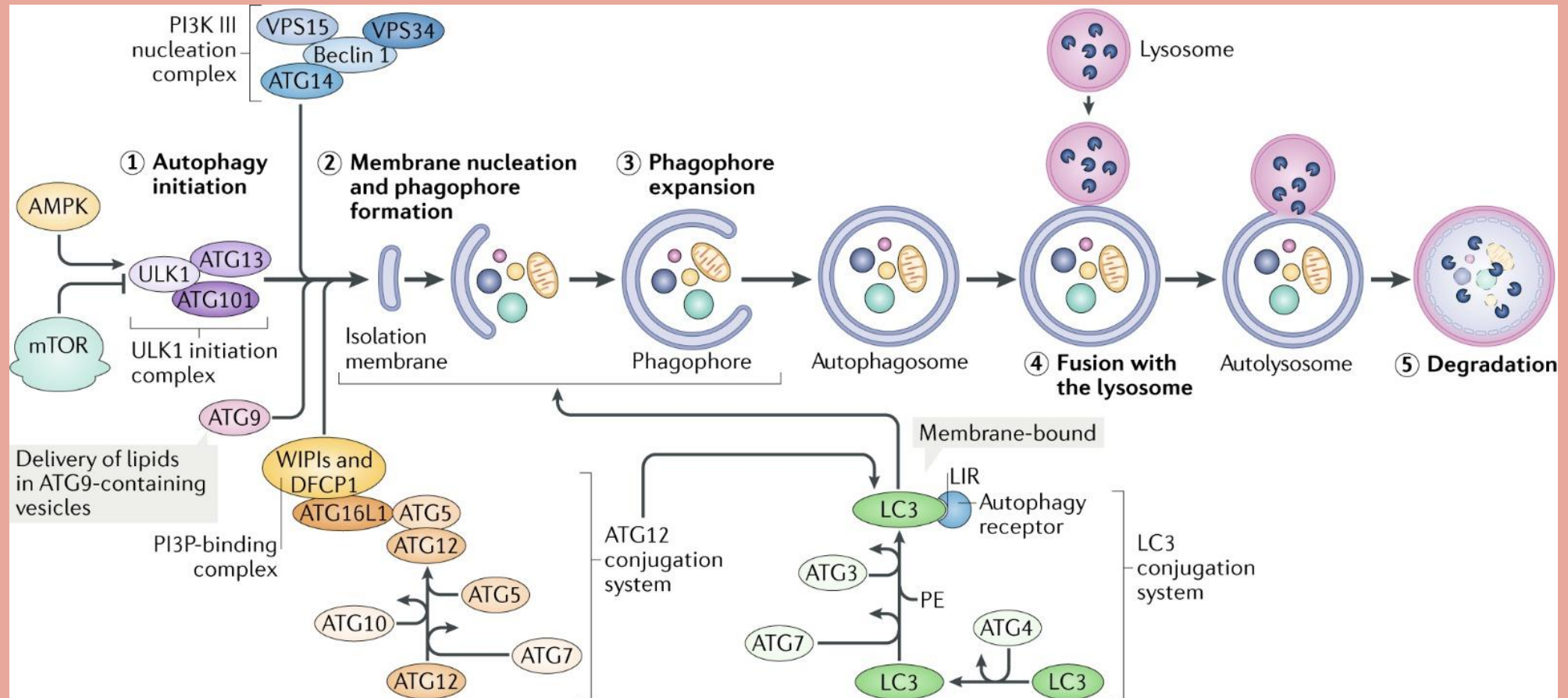
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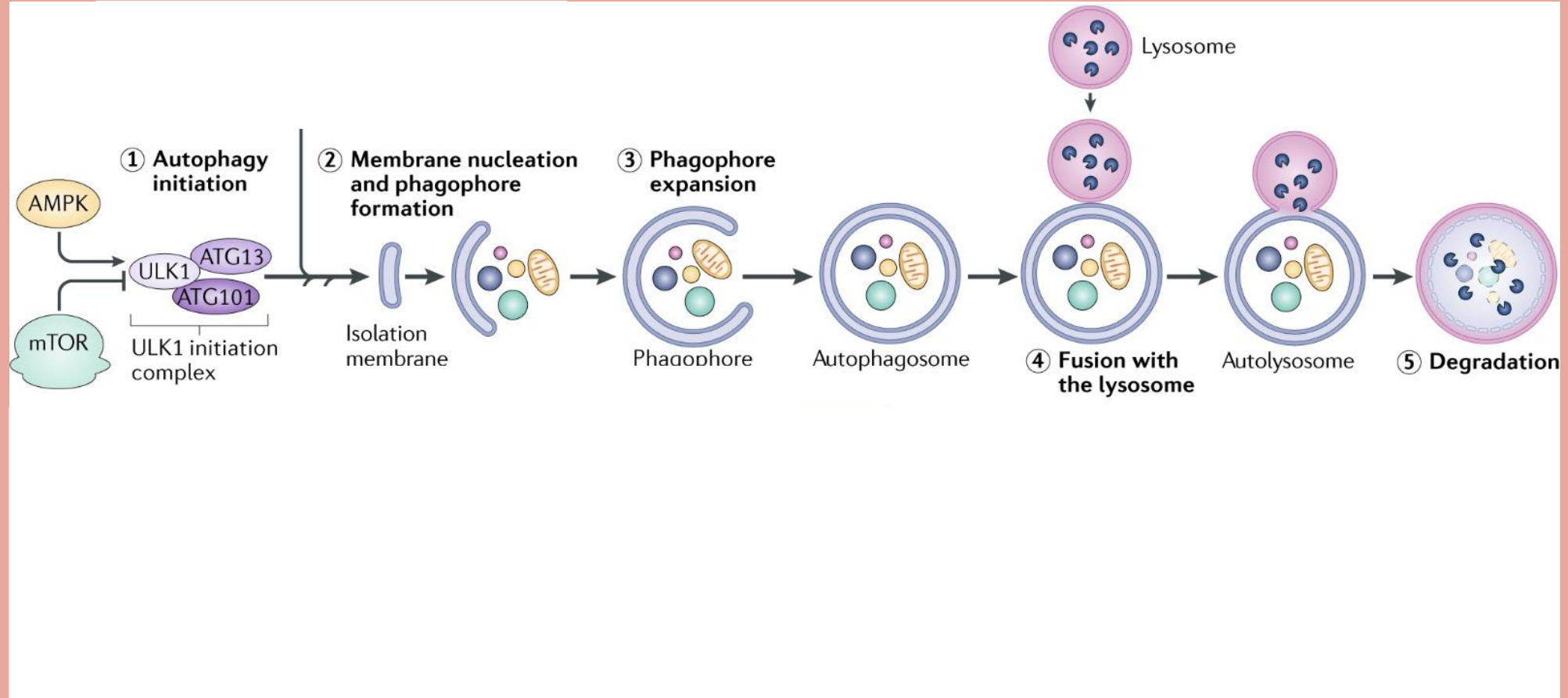
AUTOPHAGY



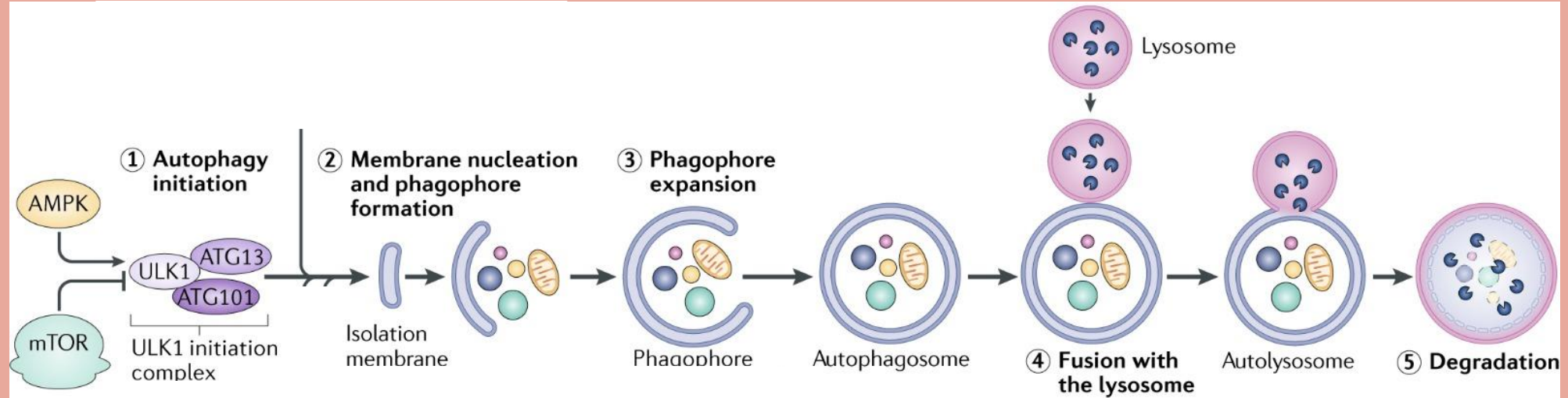
AUTOPHAGY



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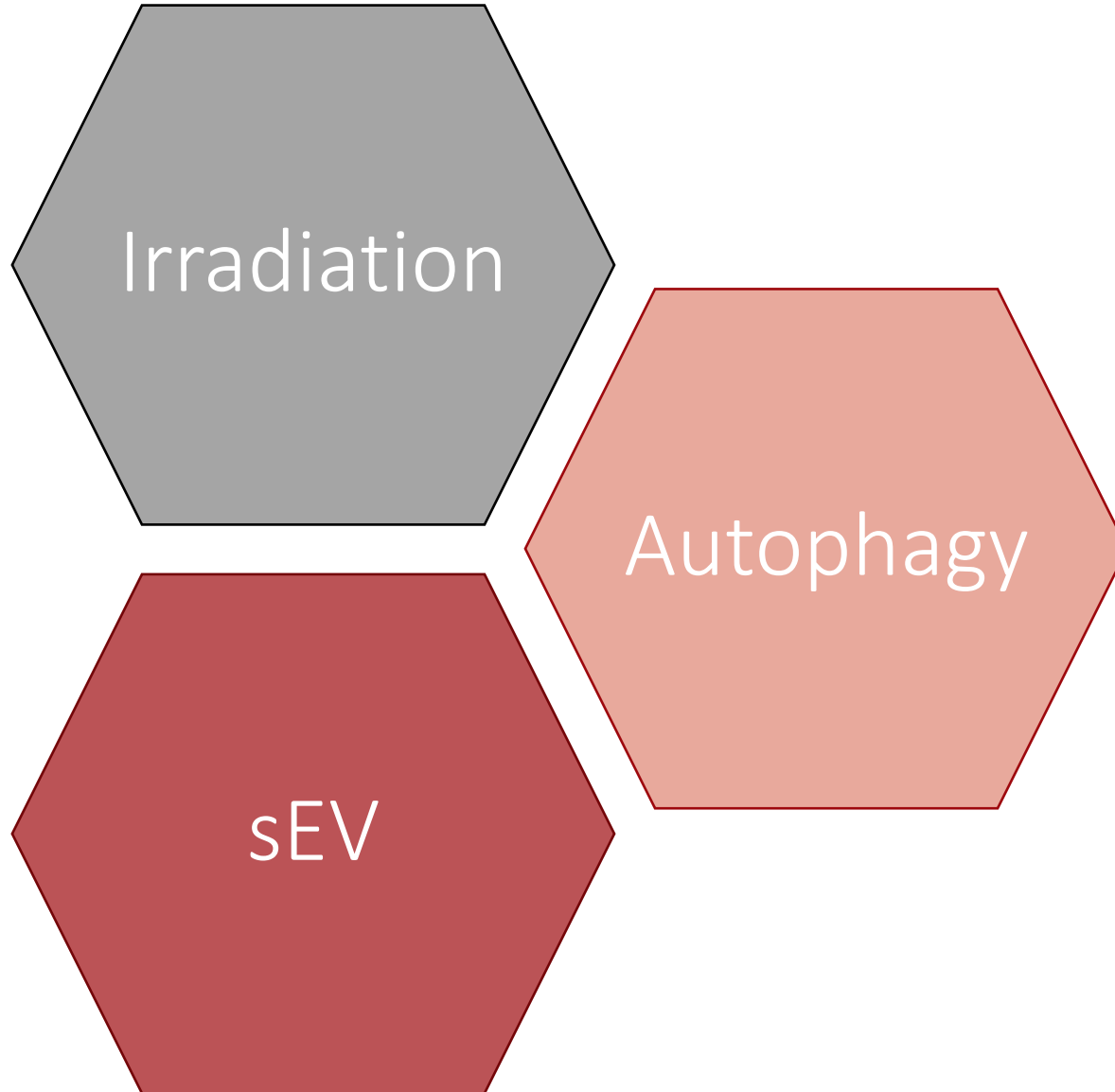


AUTOPHAGY

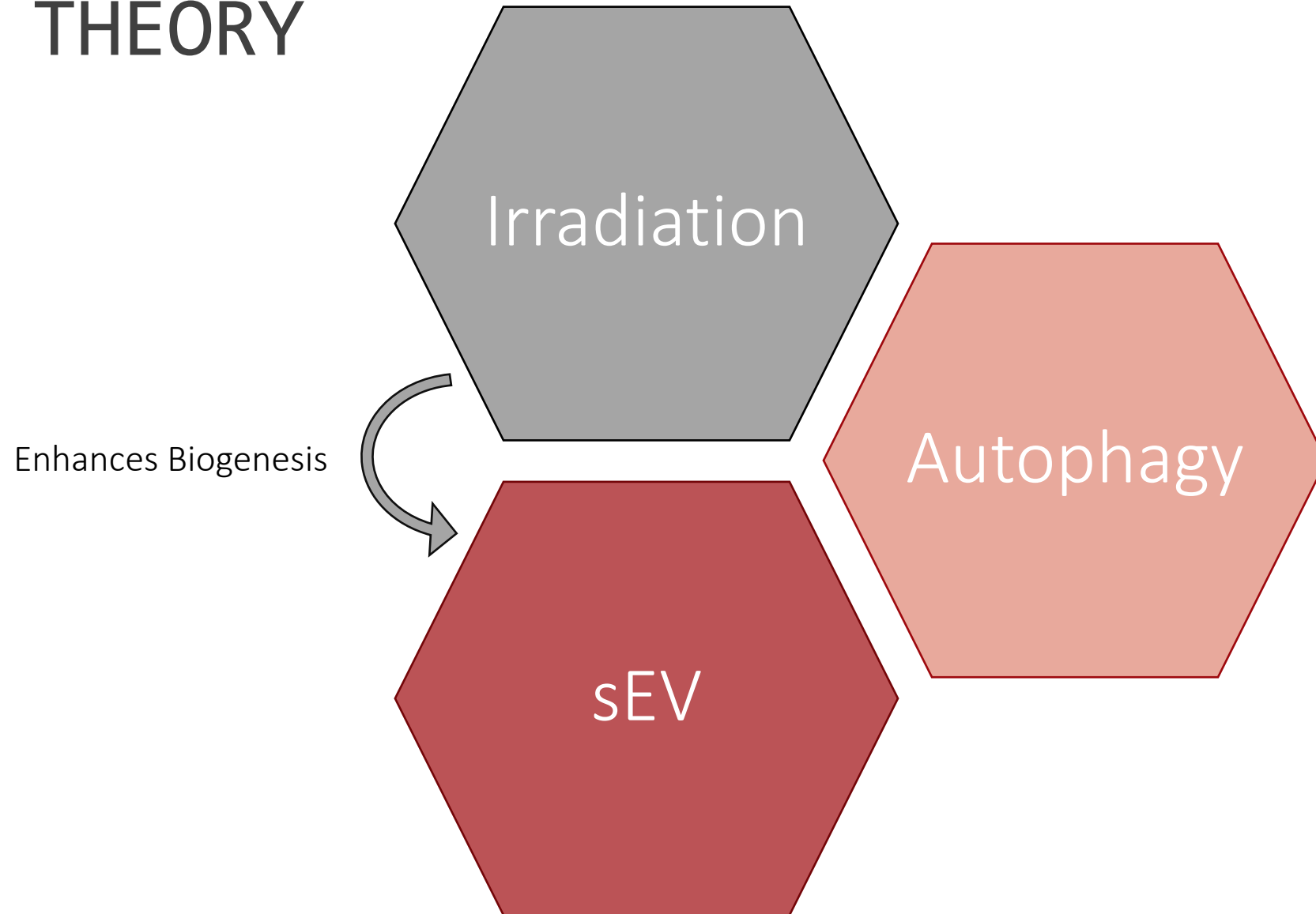


- Programmed cell death
- Maintain cellular health
- Degrades cellular waste

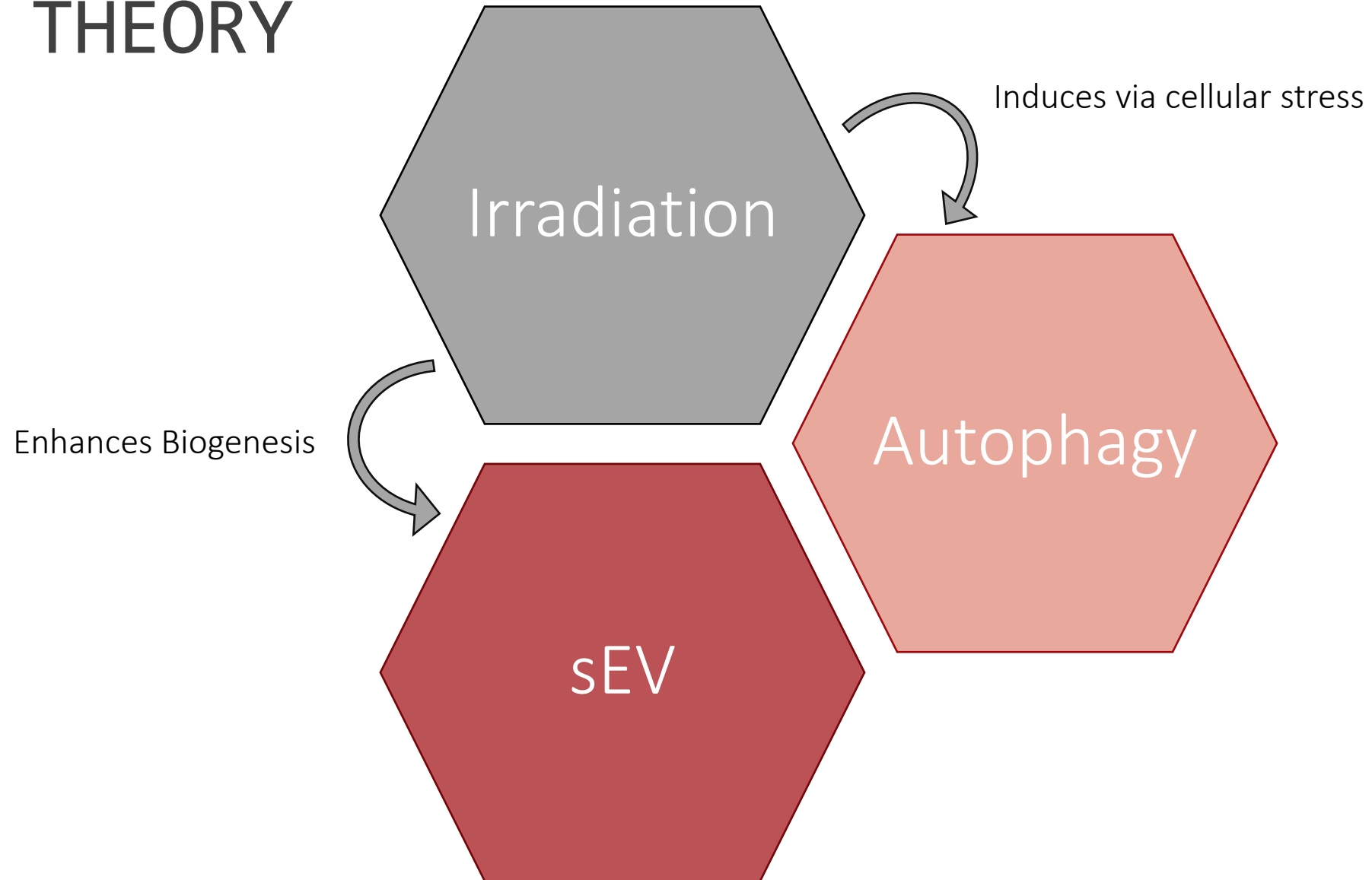
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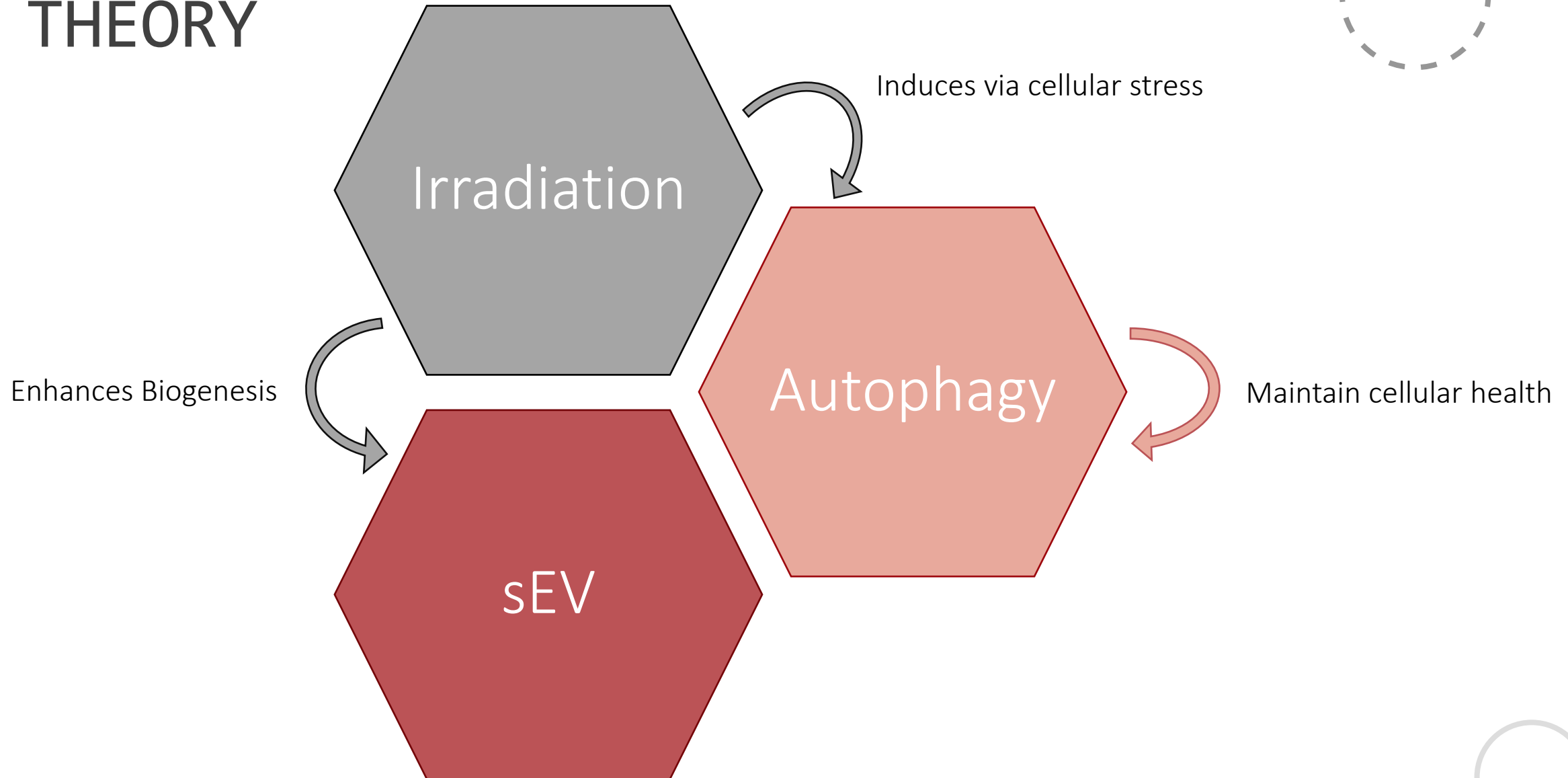
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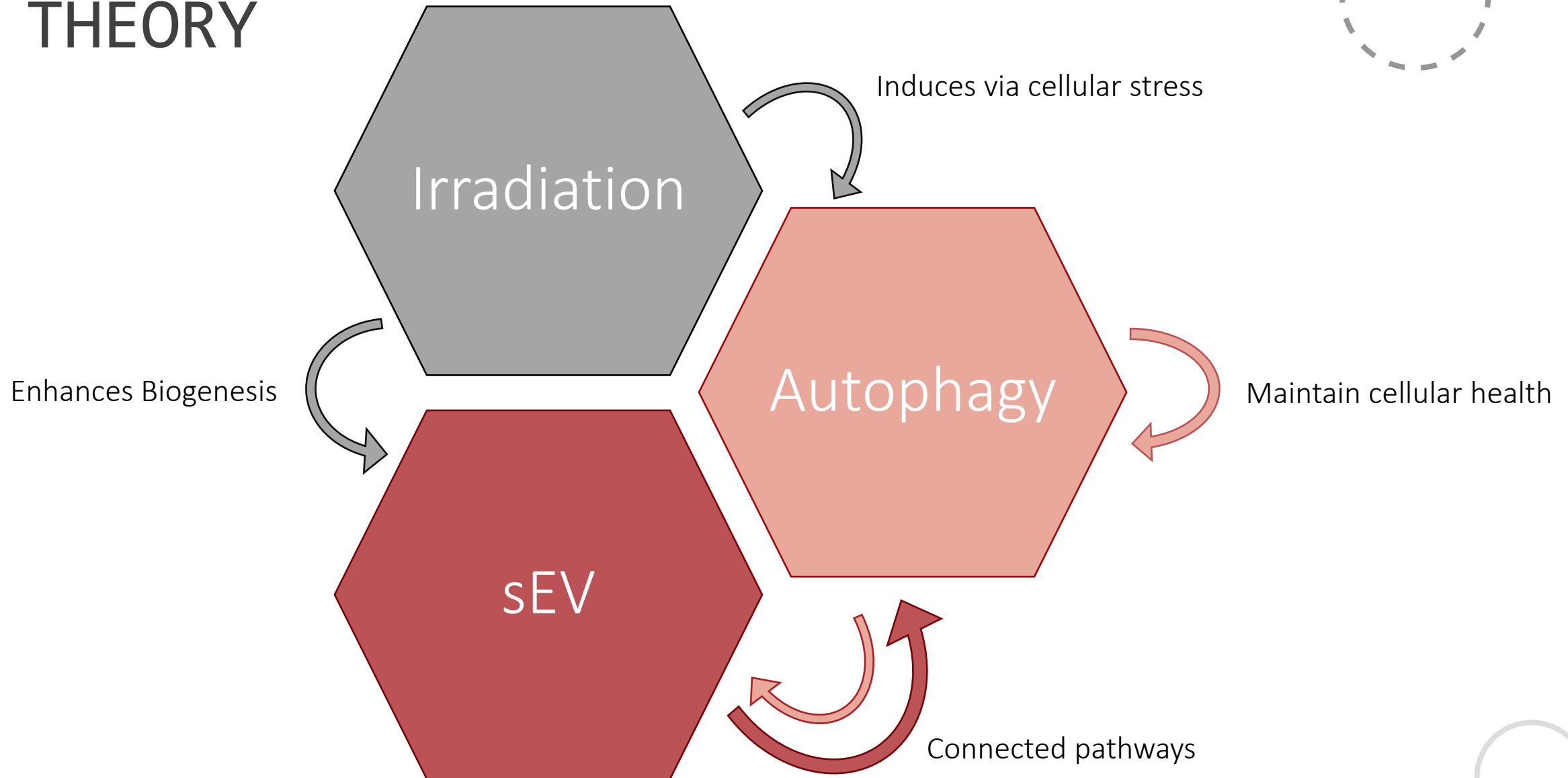
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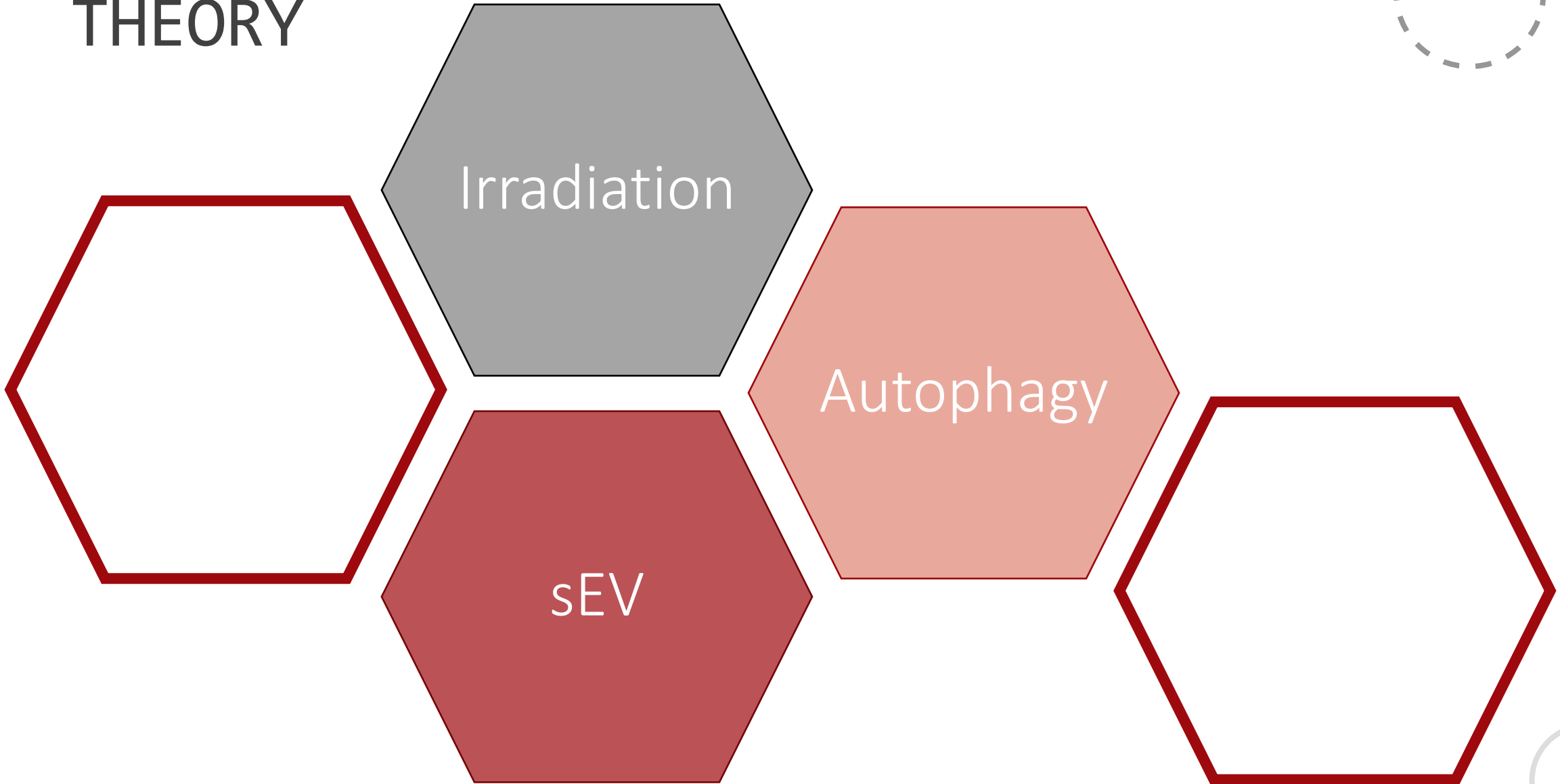
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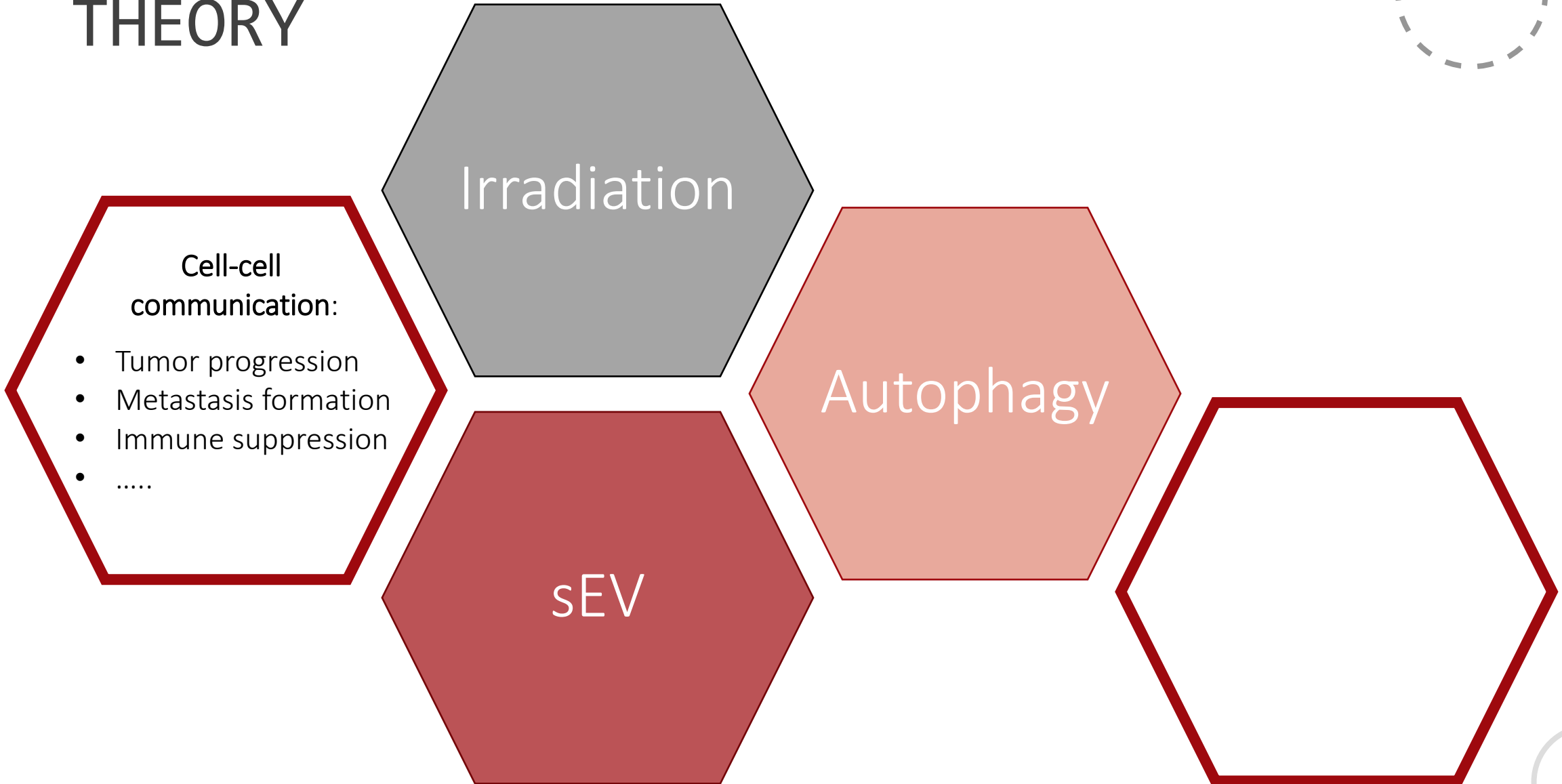
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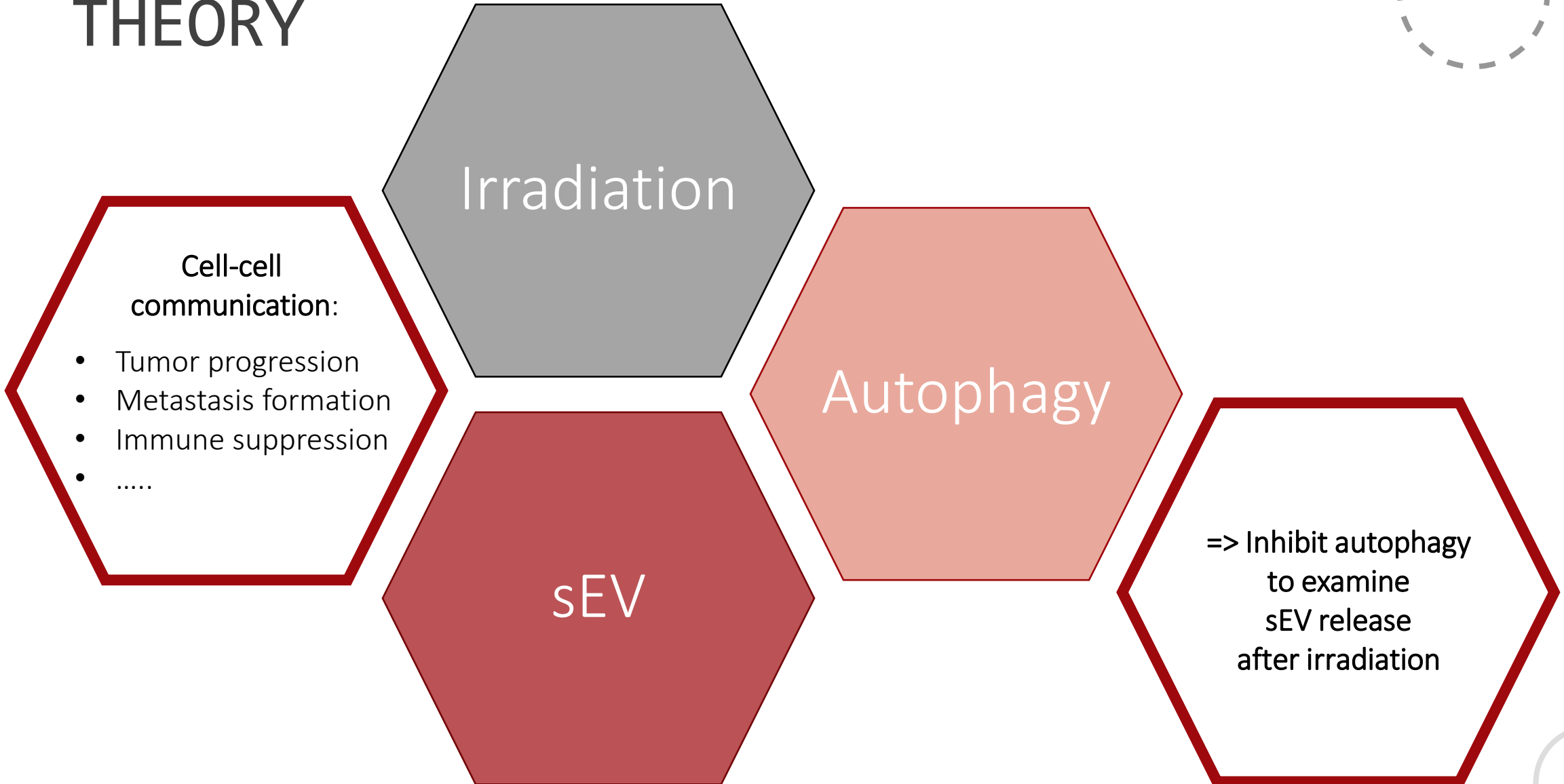
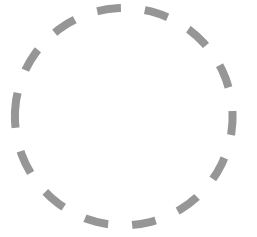
THEORY



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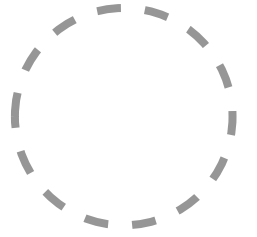


THEORY





PROJECT OUTLINE





PROJECT OUTLINE



Autophagy inhibition

Irradiation and sEV
collection

Spheroids

AUTOPHAGY

AUTOPHAGY INHIBITION



Cell viability assays:



AUTOPHAGY INHIBITION

Cell viability assays:

- Clonogenic assays

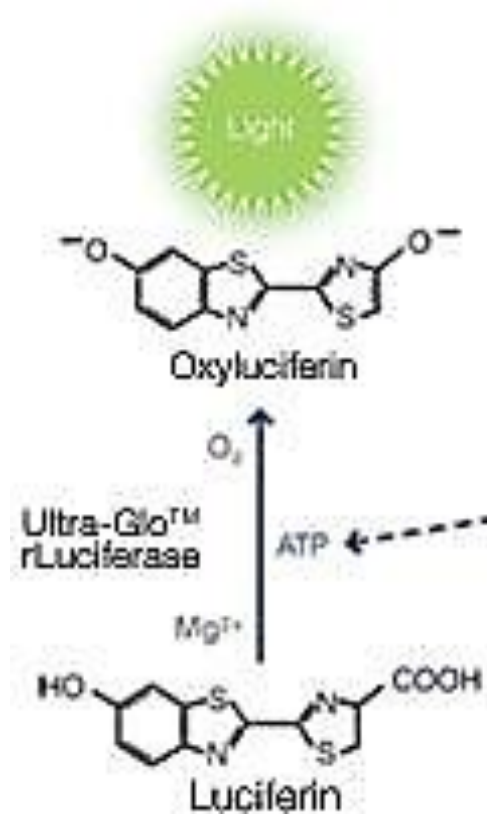


AUTOPHAGY INHIBITION



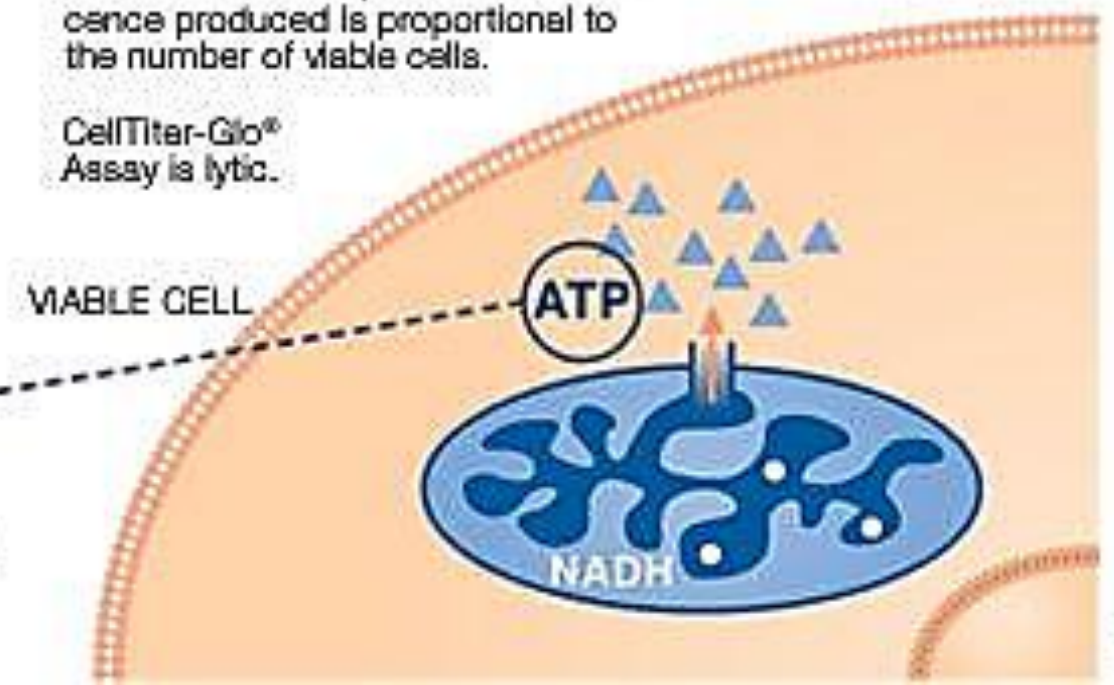
Cell viability assays:

- Clonogenic assays
- Cell Titer Glo®

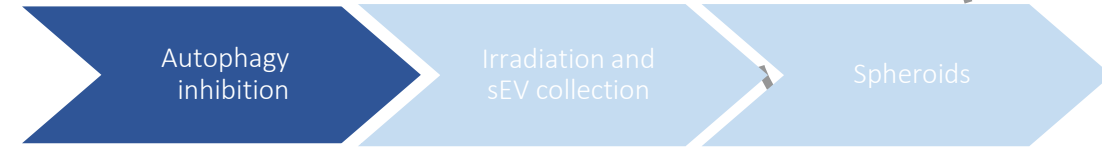


The cell is the source of ATP in the luciferase reaction, so the luminescence produced is proportional to the number of viable cells.

CellTiter-Glo® Assay is lytic.

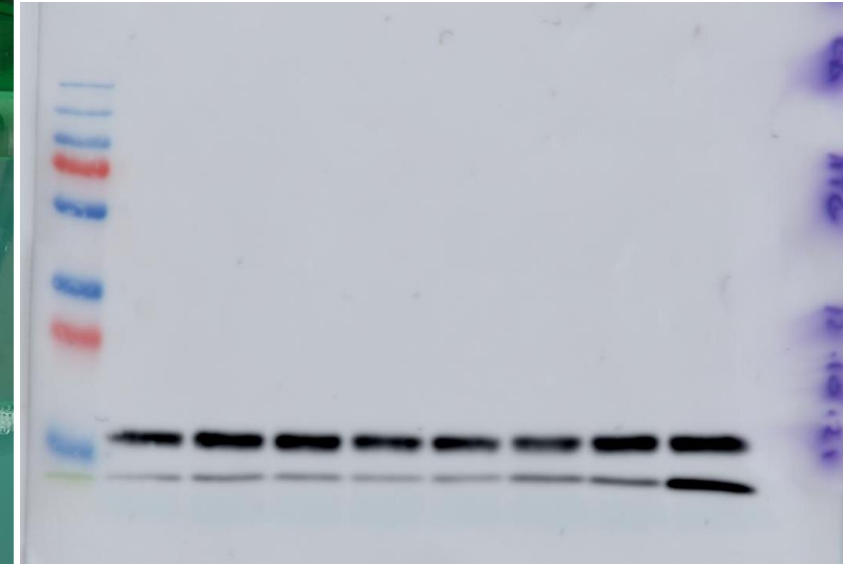
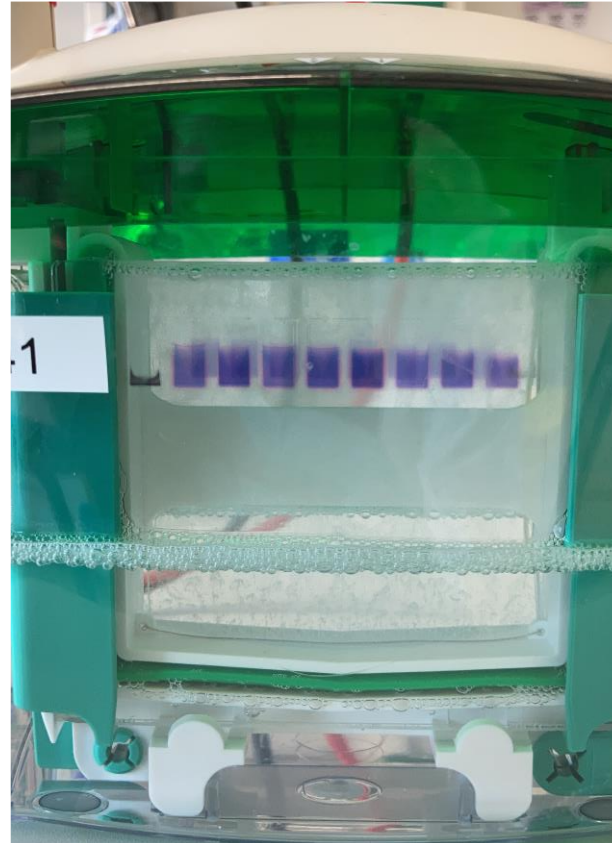


AUTOPHAGY INHIBITION



Cell viability assays:

- Clonogenic assays
- Cell Titer Glo®
- Protein extraction and Westernblots

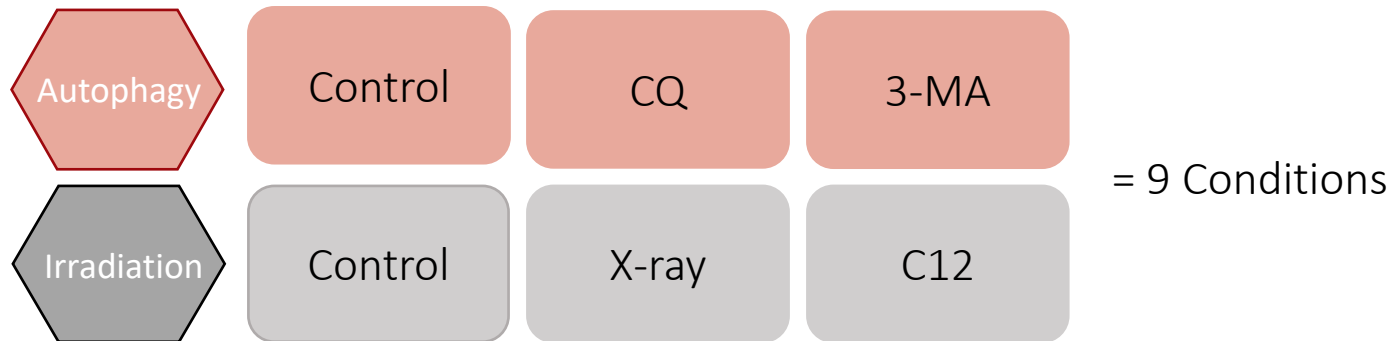


AUTOPHAGY INHIBITION

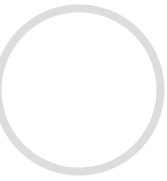
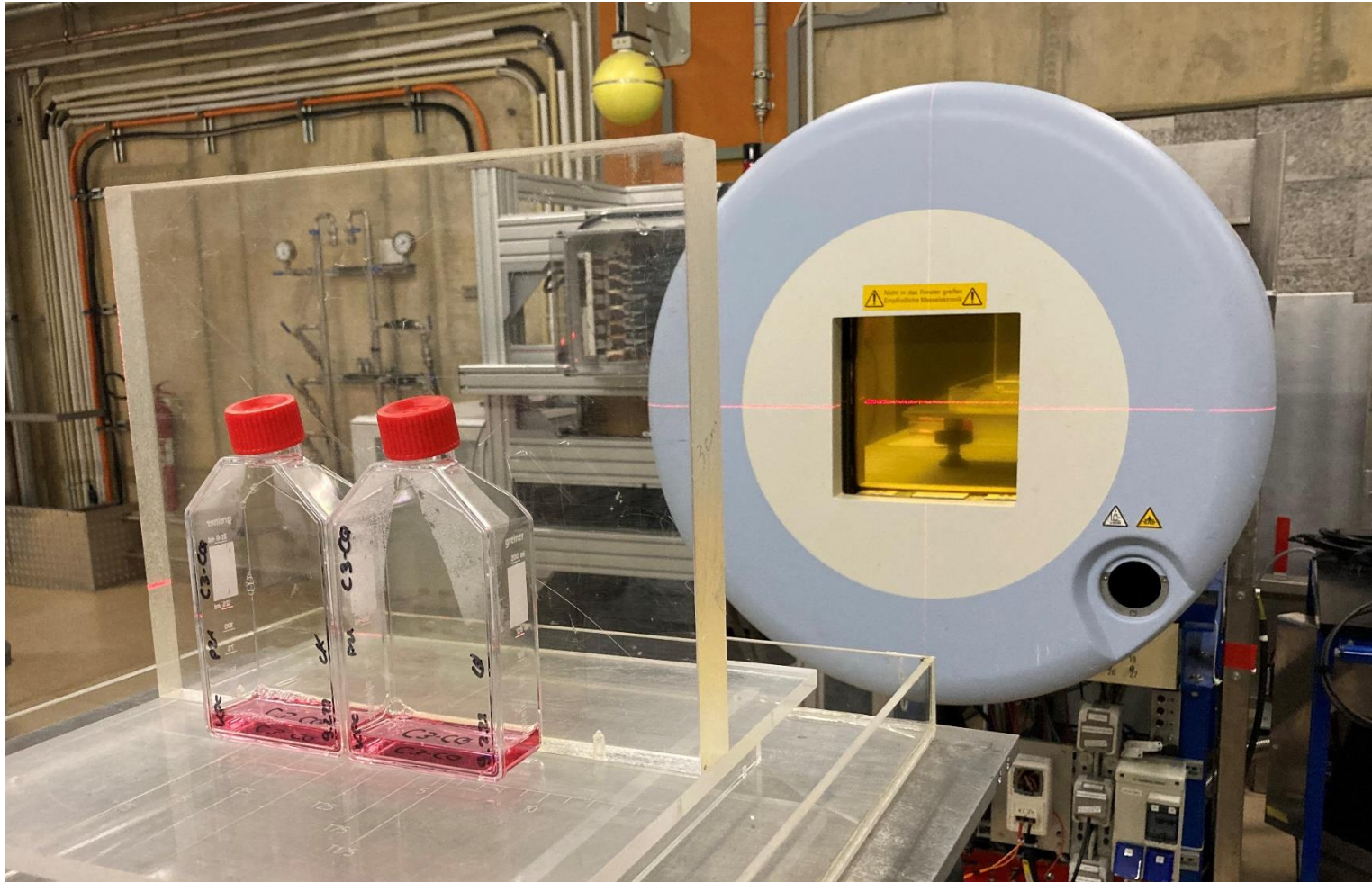


Cell viability assays:

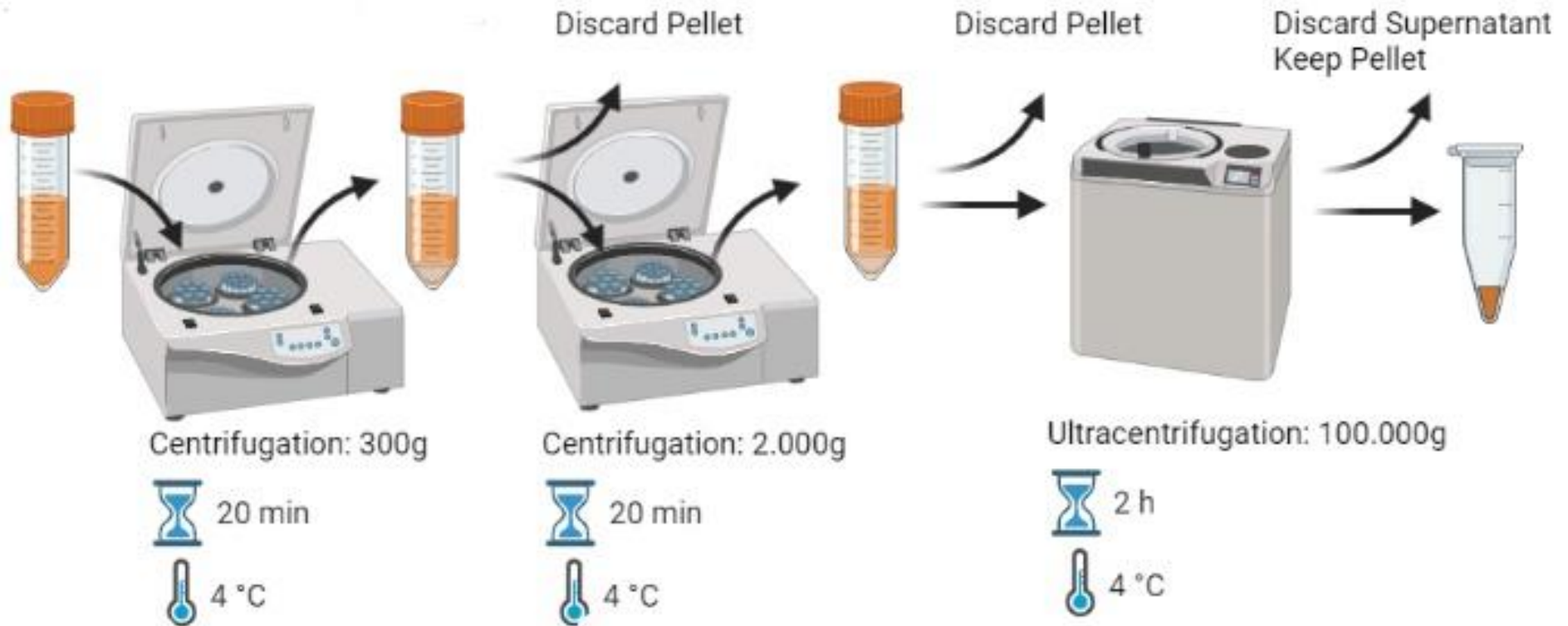
- Clonogenic assays
- Cell Titer Glo[®]
- Protein extraction and Westernblots



IRRADIATION AND SEV COLLECTION



IRRADIATION AND SEV COLLECTION



IRRADIATION AND SEV COLLECTION

Examine sEV characteristics:

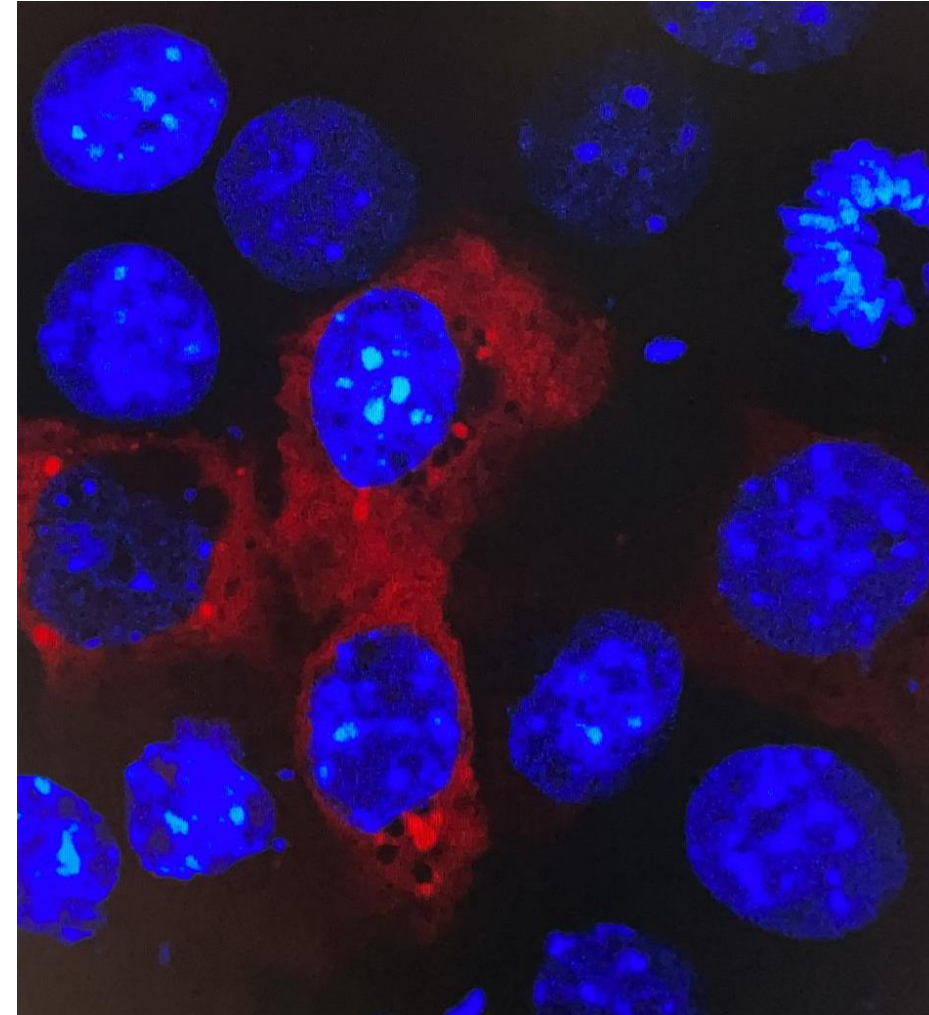
- Westernblots of cells and sEV



IRRADIATION AND SEV COLLECTION

Examine sEV characteristics:

- Westernblots of cells and sEV
- Confocal microscope

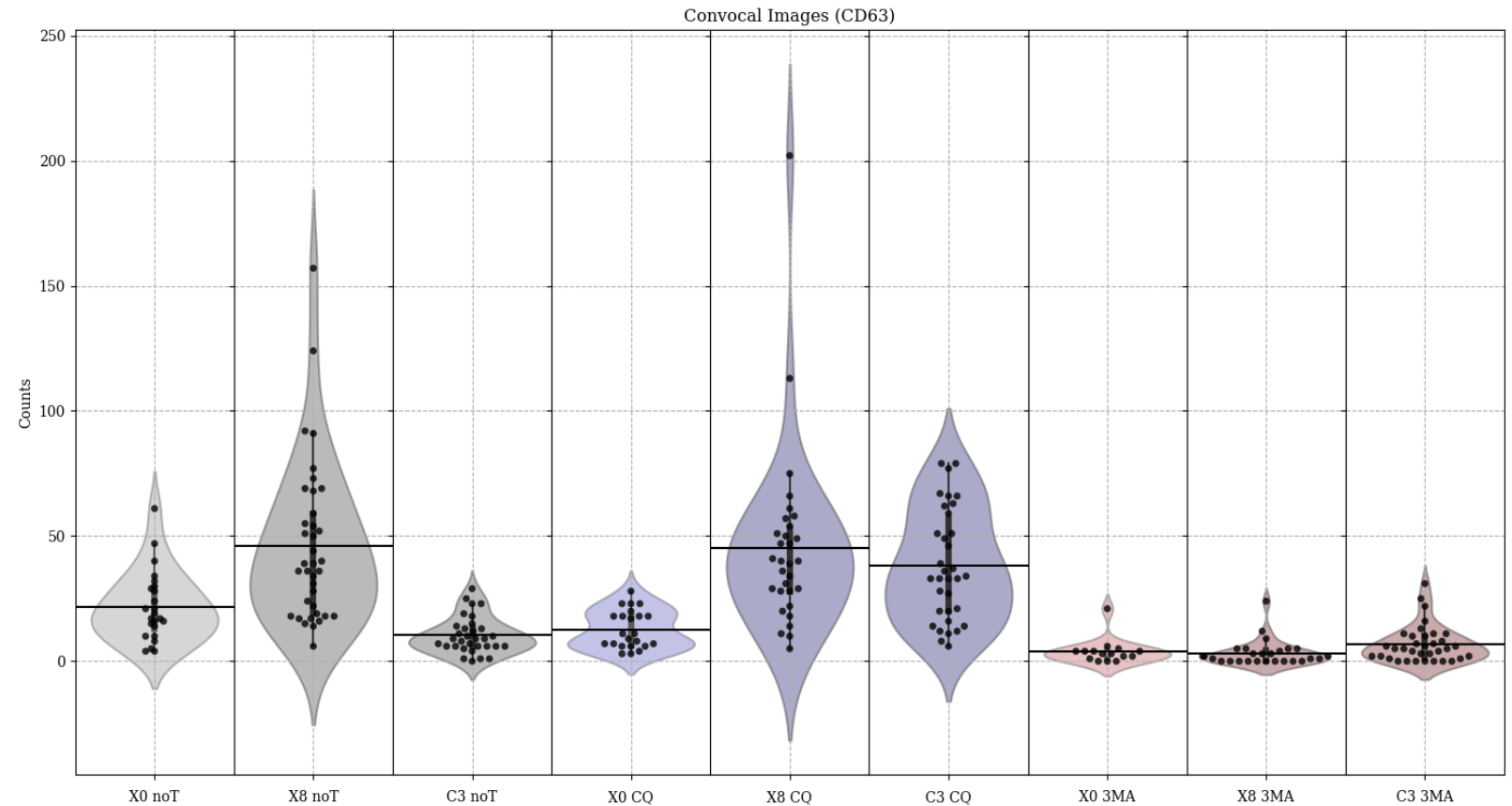


IRRADIATION AND SEV COLLECTION



Examine sEV characteristics:

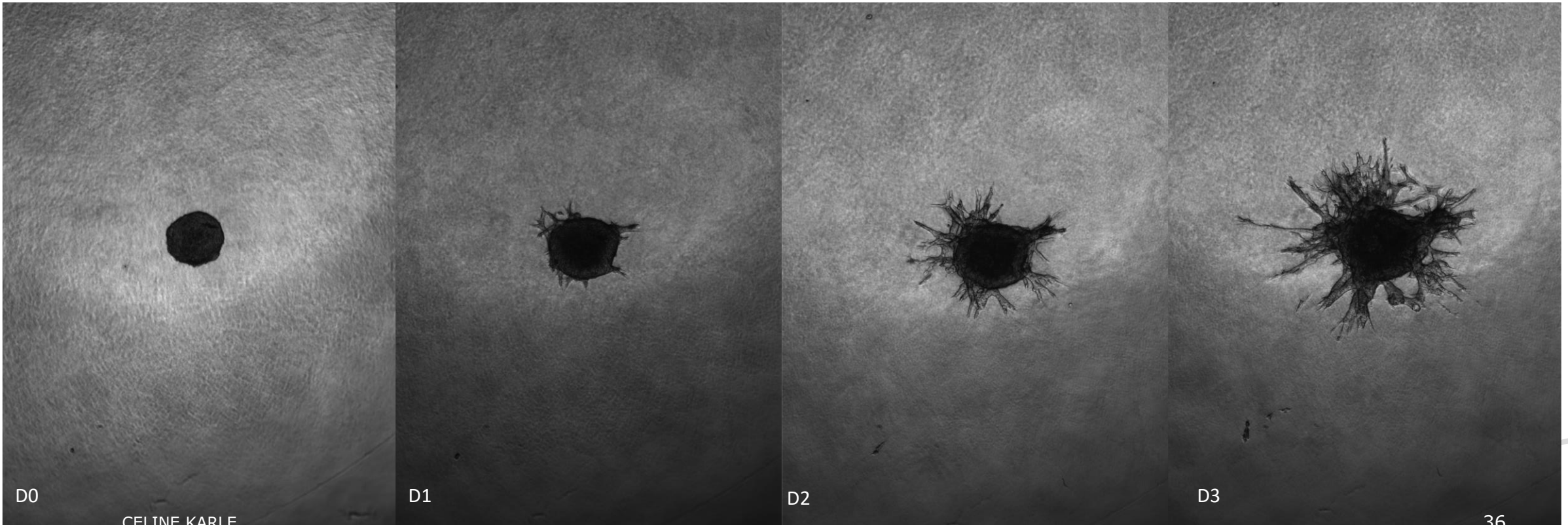
- Westernblots of cells and sEV
- Confocal microscope



SPHEROIDS



Indirect effect of sEV from different condition on 3D culture



GOAL

- Difference in radiation modalities on sEV
- Reveal connection of sEV and autophagy

