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The Role of Tuberin in DNA Damage Repair During Cell Proliferation

Kadila Adili

University of Windsor, adili@uwindsor.ca

Kim Nguyen

University of Windsor

Jackie Fong

University of Windsor

Elizabeth Fidalgo da Silva

University of Windsor

Lisa A. Porter

University of Windsor

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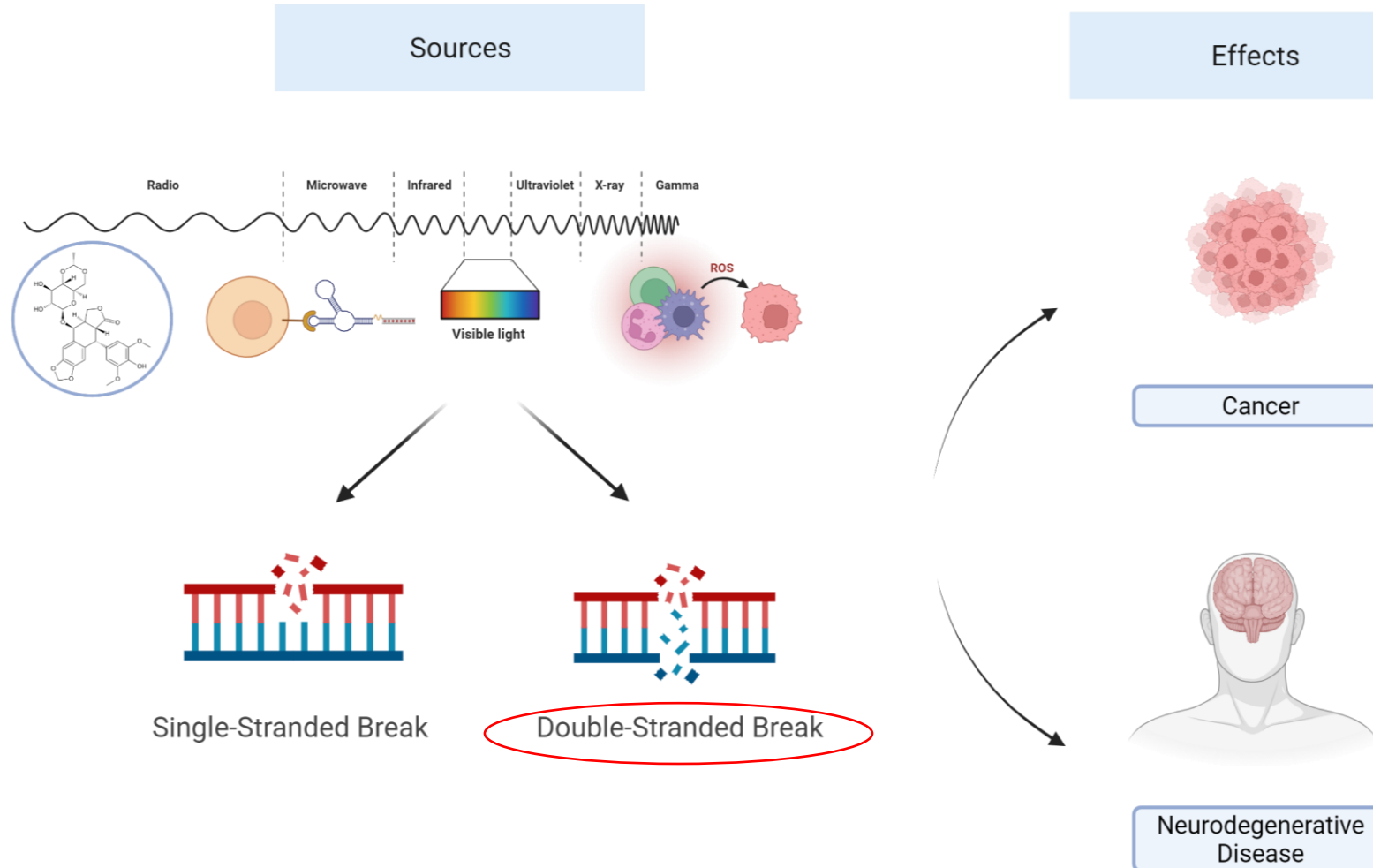
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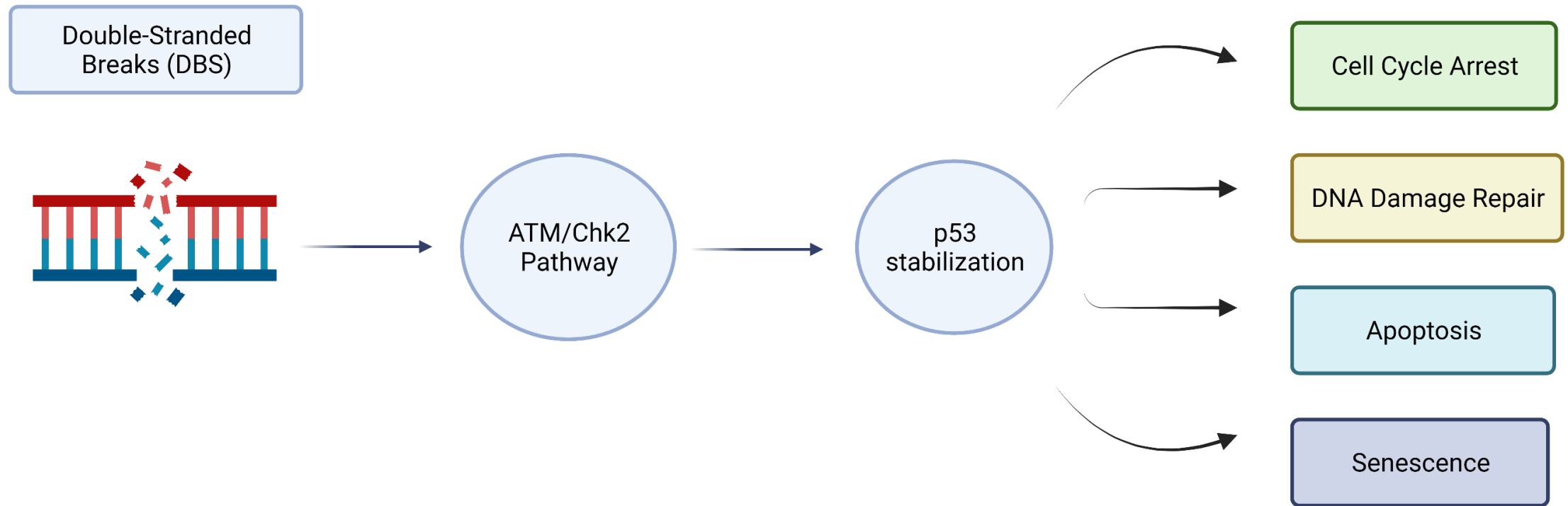
The Role of Tuberin in DNA Damage Repair During Cell Proliferation

Kadila Adili

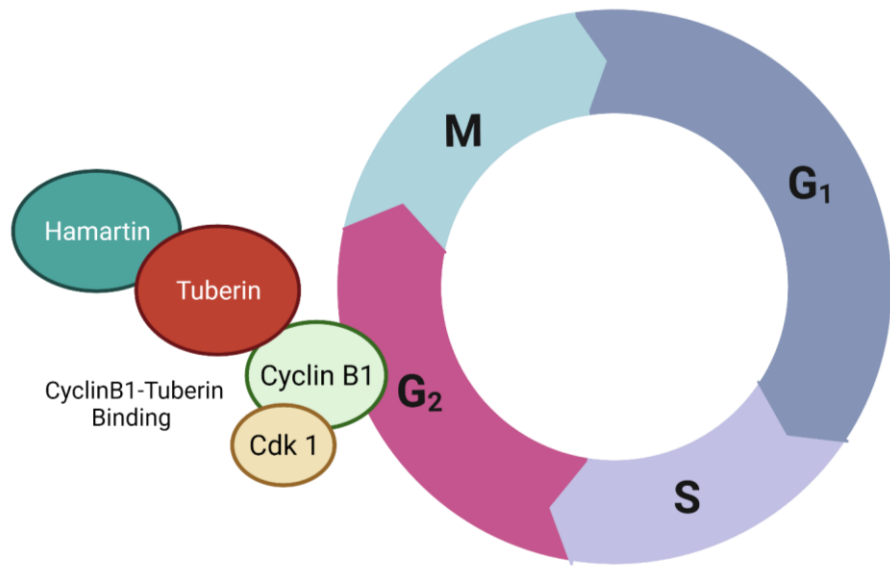
Why is DNA Damage Important?



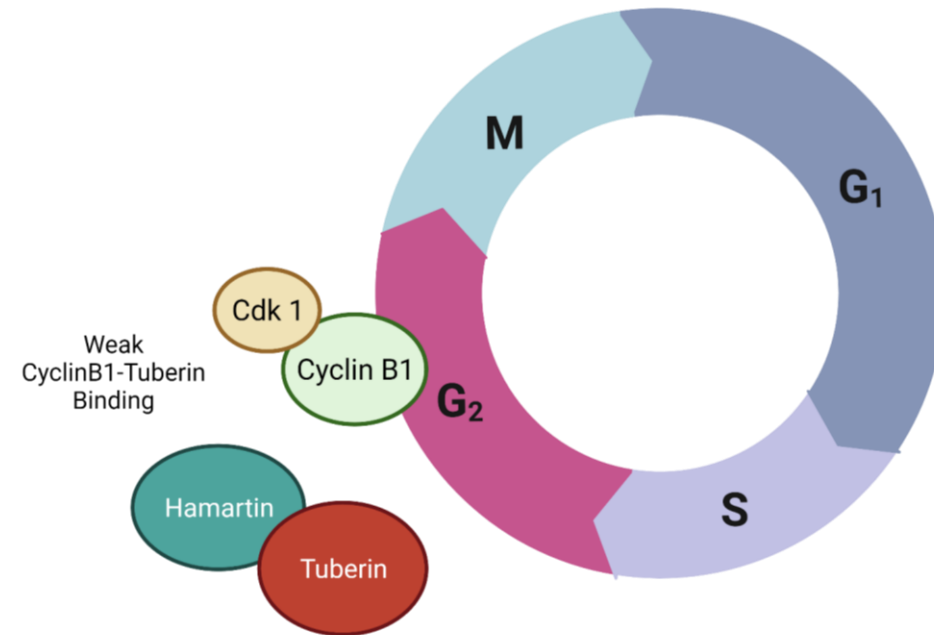
DNA Damage Response & p53



What Role Does Tuberin Play In The Cell Cycle?



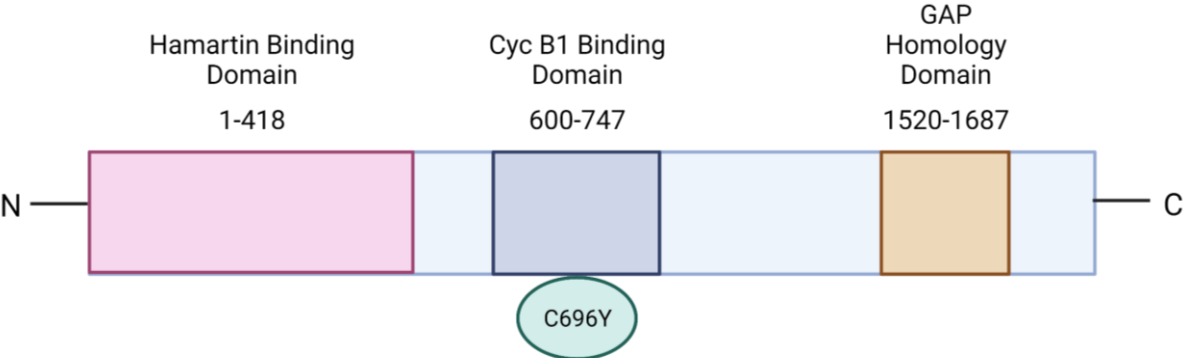
High Nutrient Conditions: Mitotic Delay & Increase in Cell Size



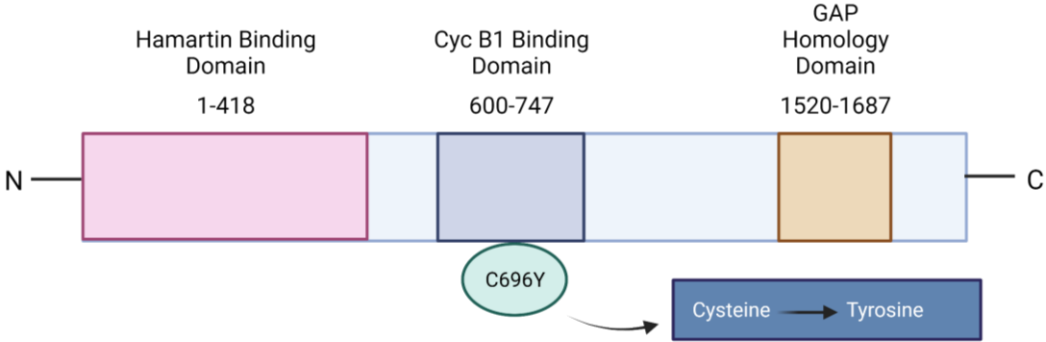
Low Nutrient Conditions: Progression into Mitosis

Tuberin Structure and Mutants

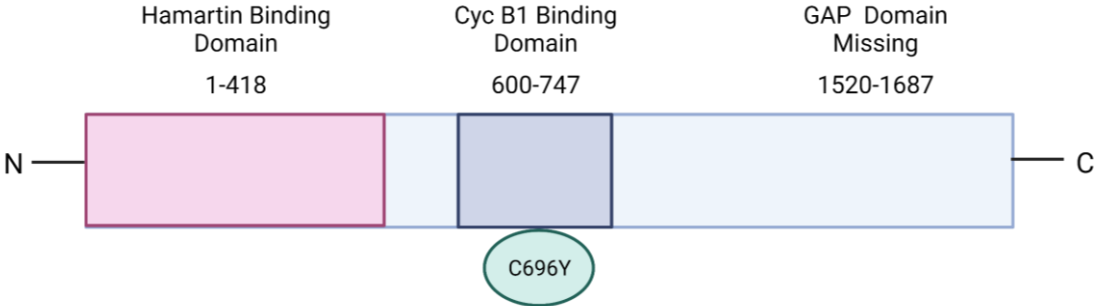
Tuberin (TSC2) Structure



TSC2-C696Y

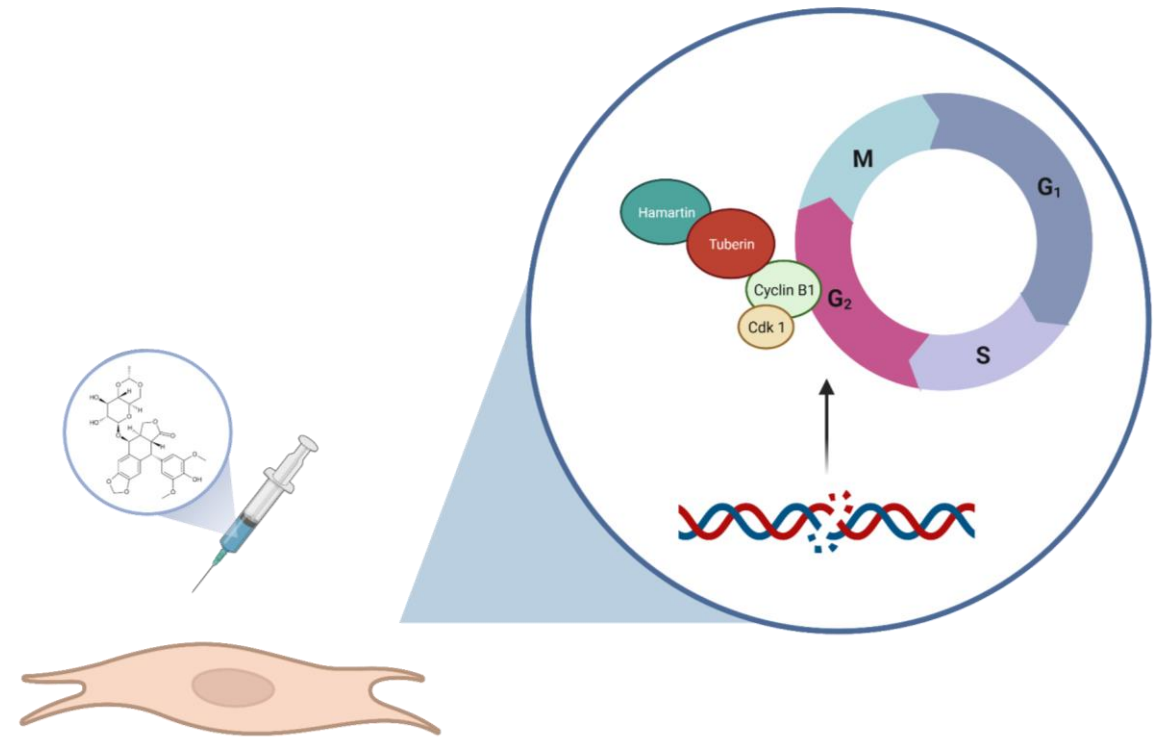


TSC2ΔGAP

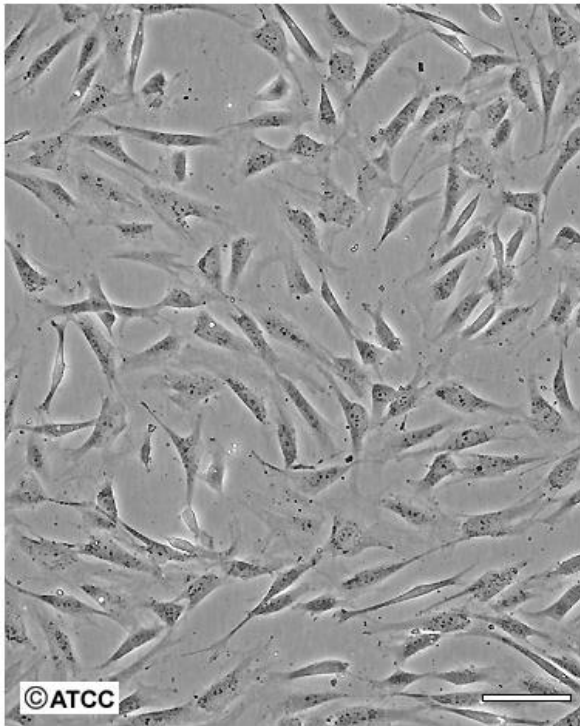


How does the Tuberin-Cyclin B1 complex play a role in DNA Repair?

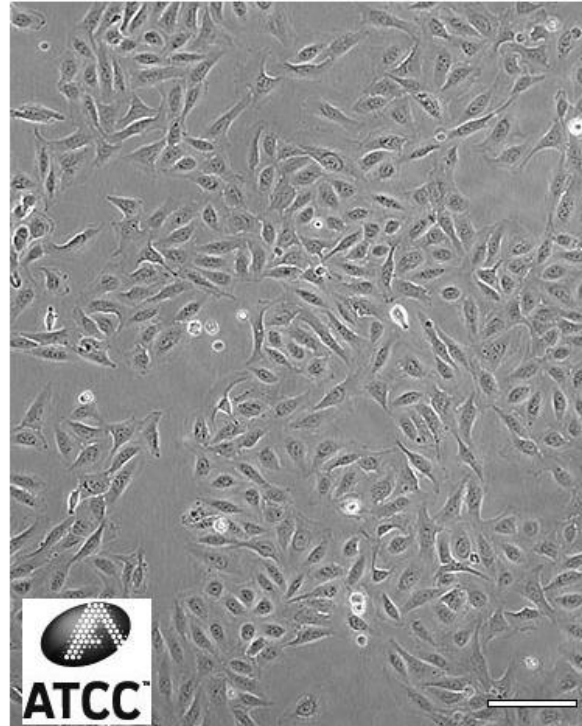
Hypothesis: The Tuberin-Cyclin B1 complex plays a role in DNA damage repair through G2/M arrest.



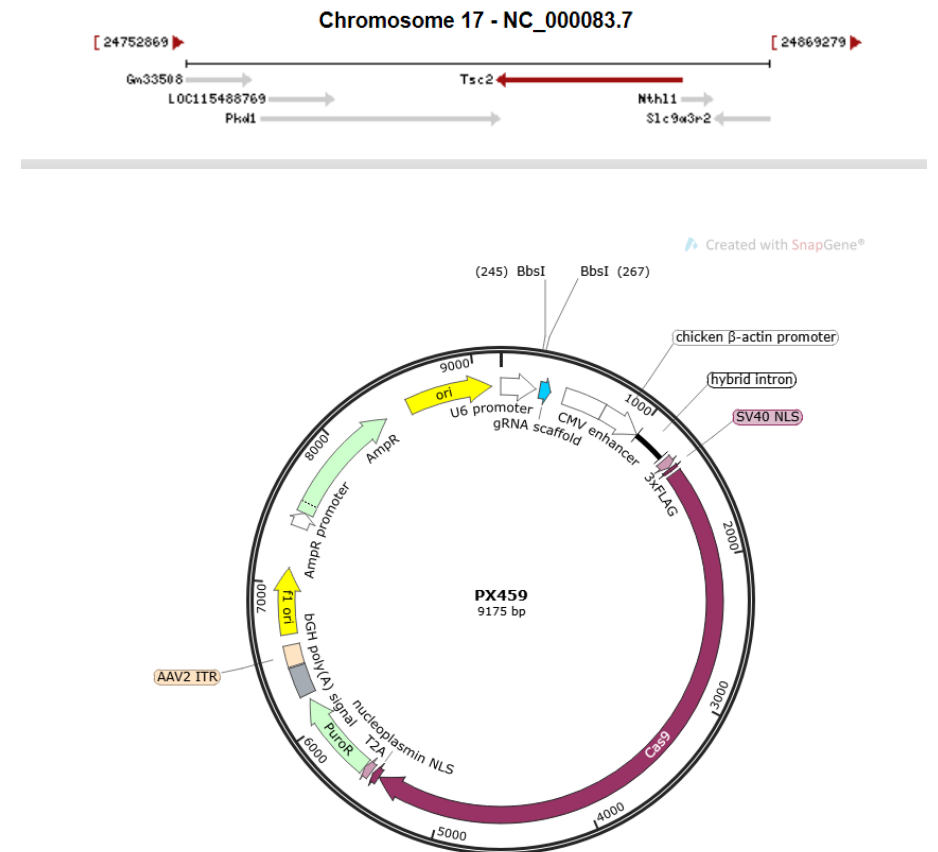
NIH/3T3 & U2OS Cell Line Rationale



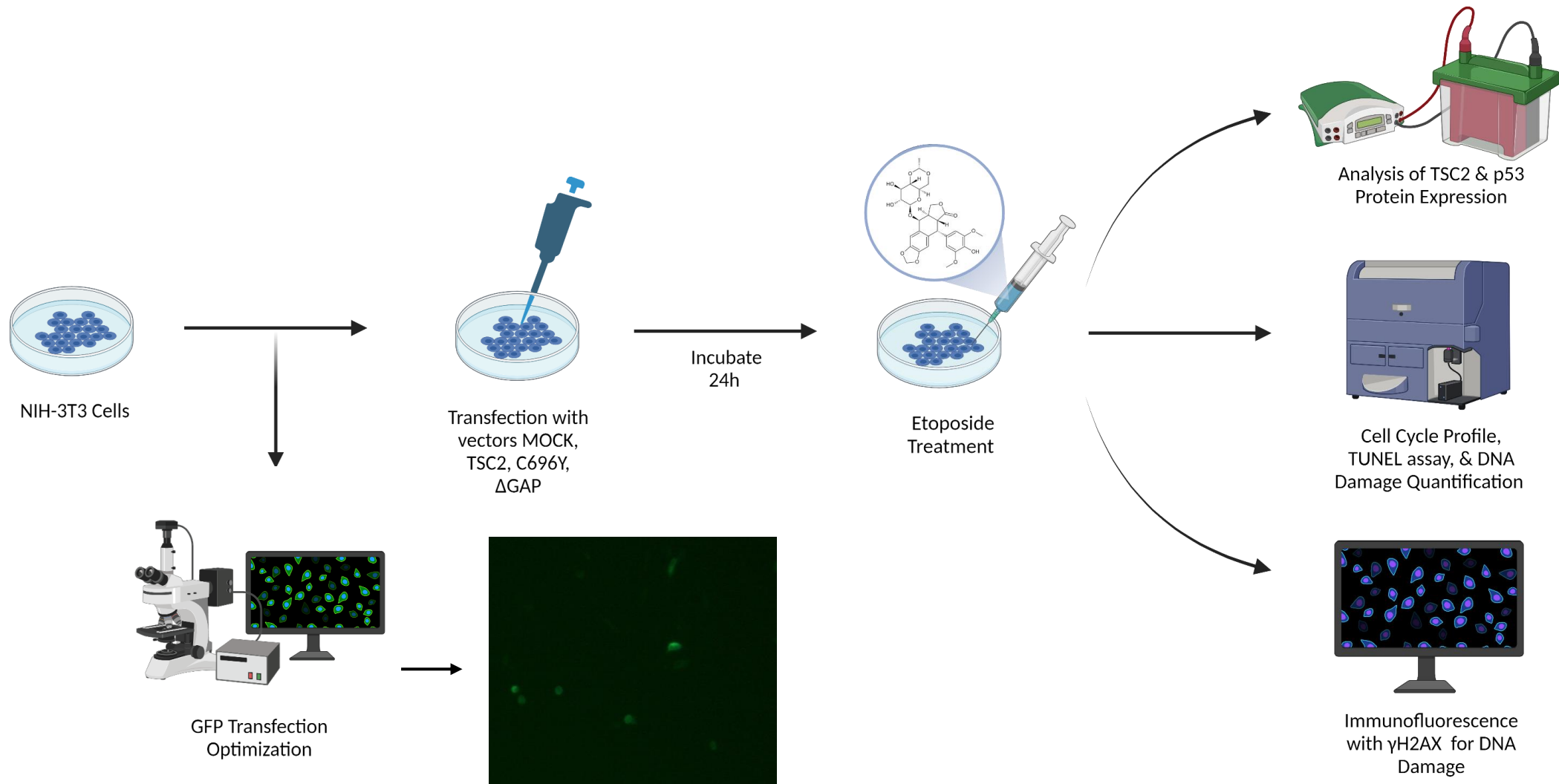
High Density
NIH-3T3 Cells



High Density
U2OS Cells

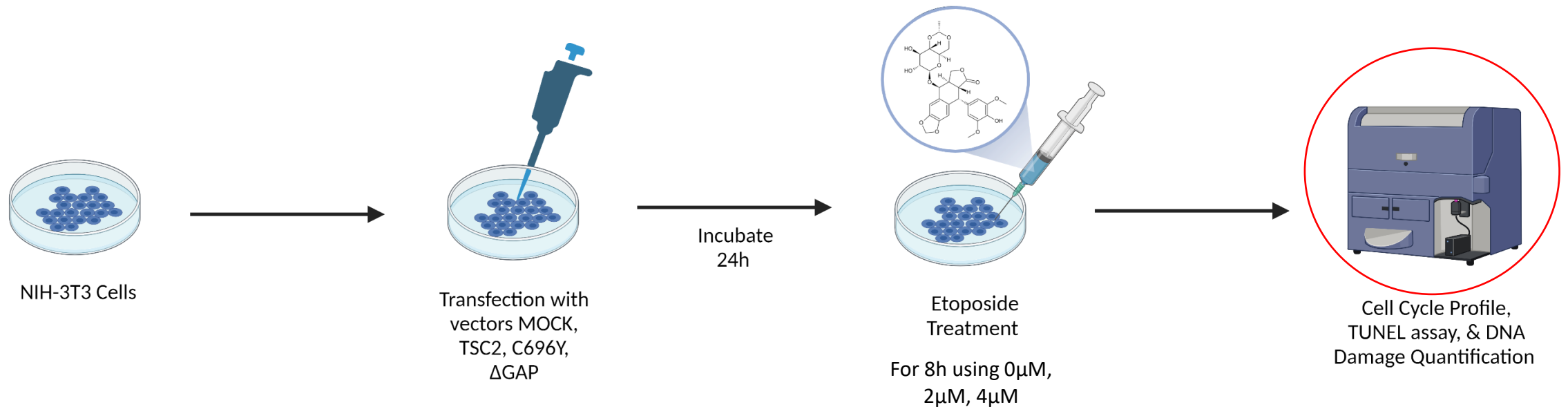


Experimental Design



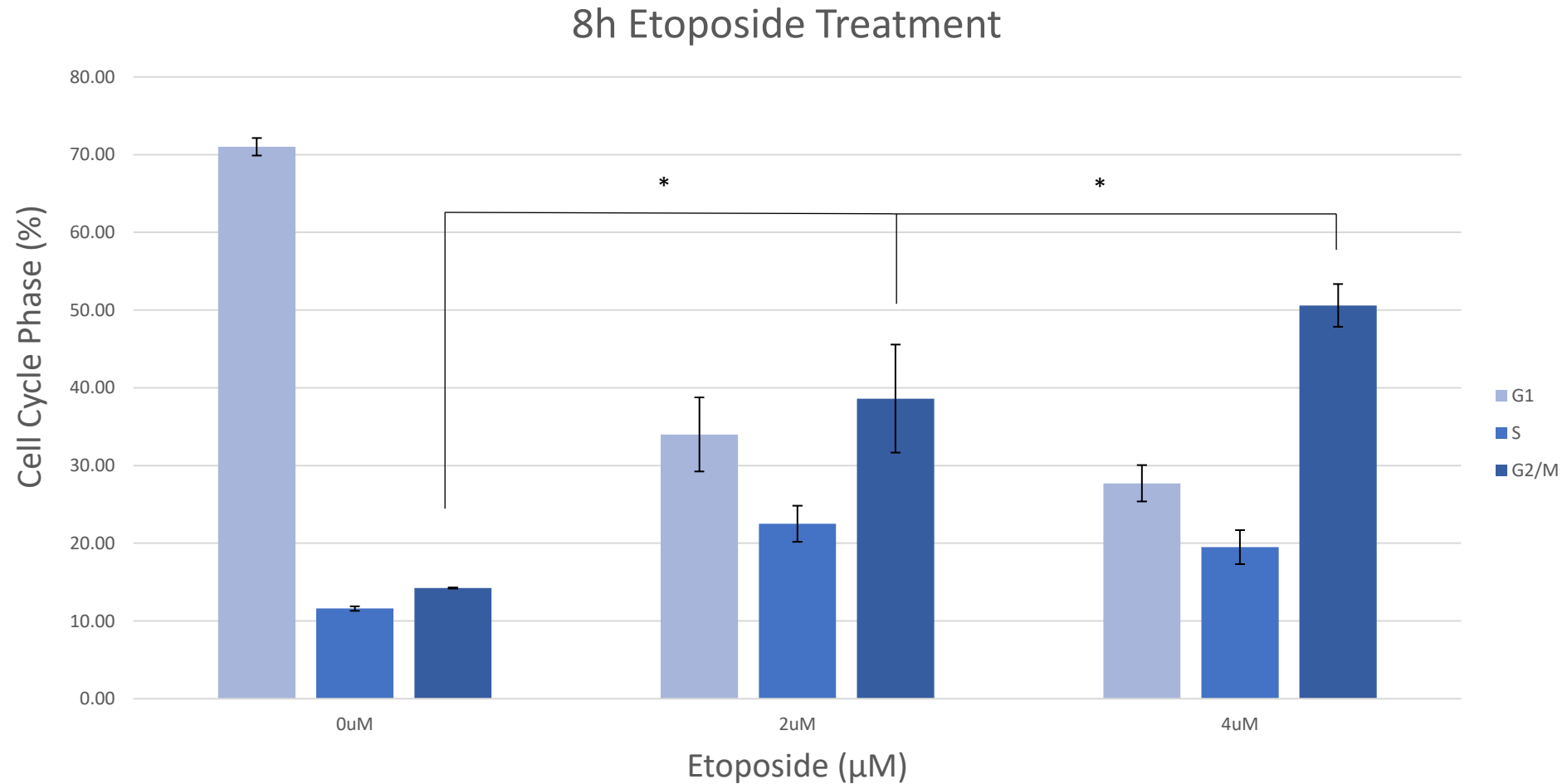
What Etoposide concentration arrests most cells in G2/M?

- **Objective 1:** Etoposide dose curve to obtain G2/M arrest in cell cycle



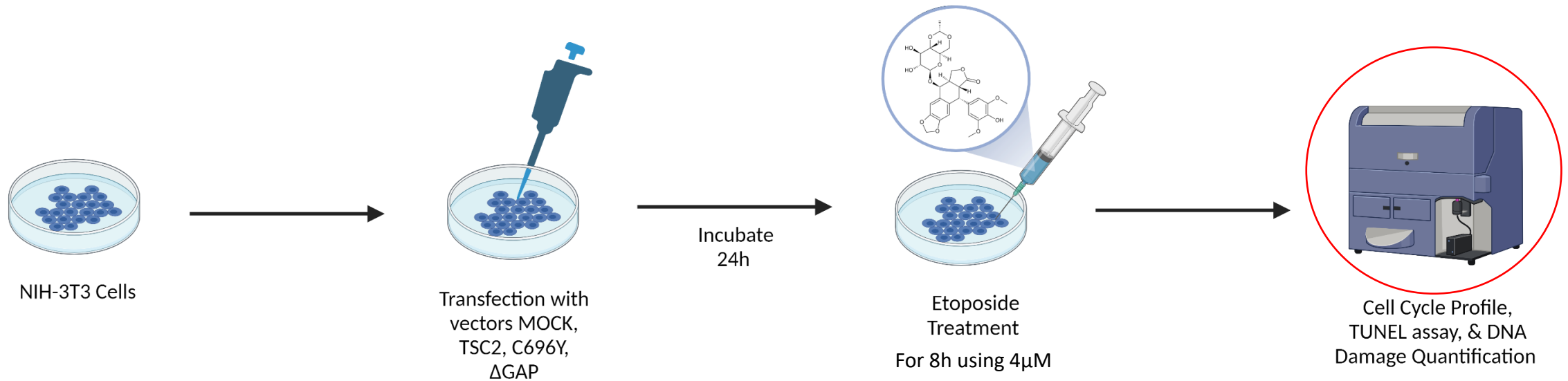
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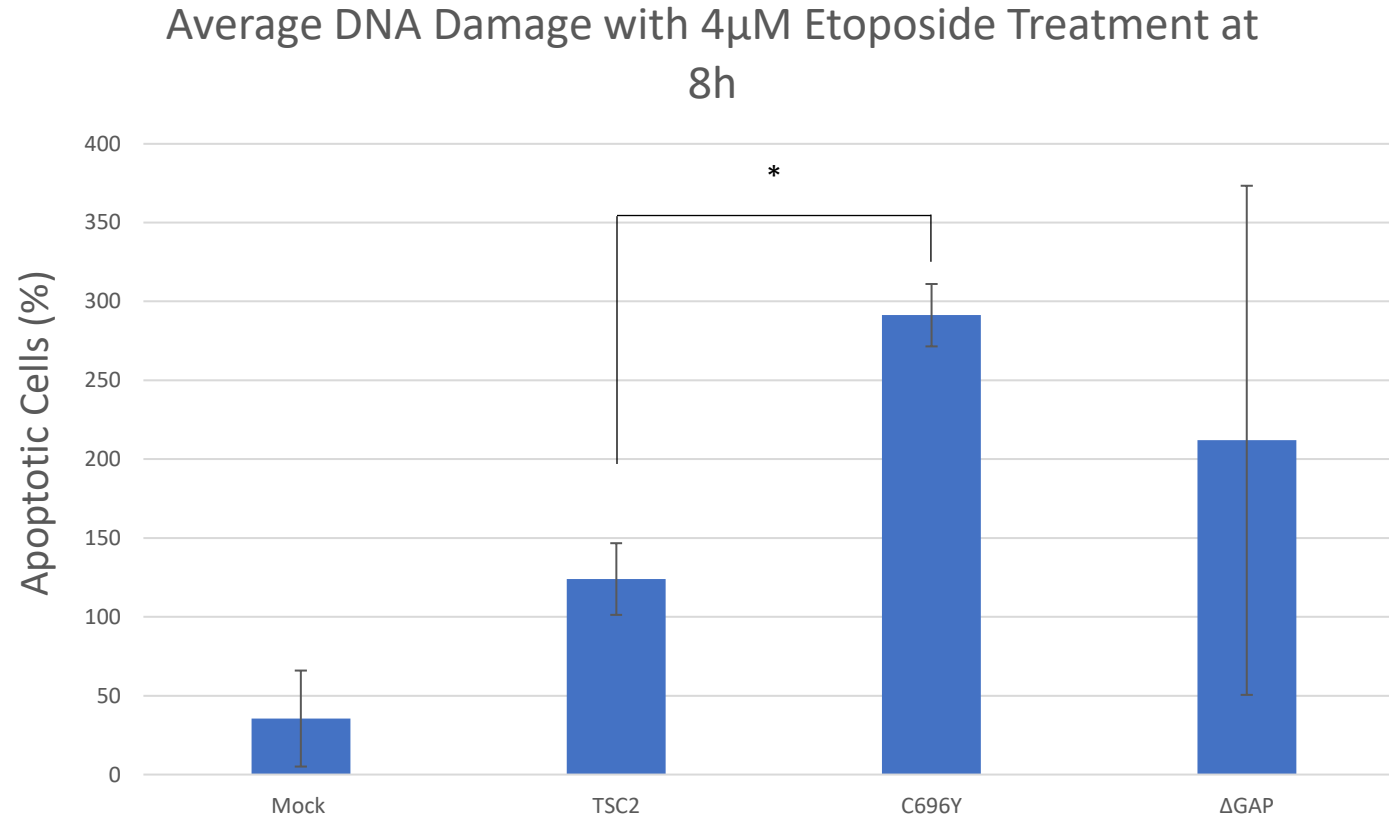
Percentage of Apoptotic Cells Significantly Greater In TSC2-C696Y Mutant

- **Objective 2:** Analyze apoptotic cell population using TUNEL Assay



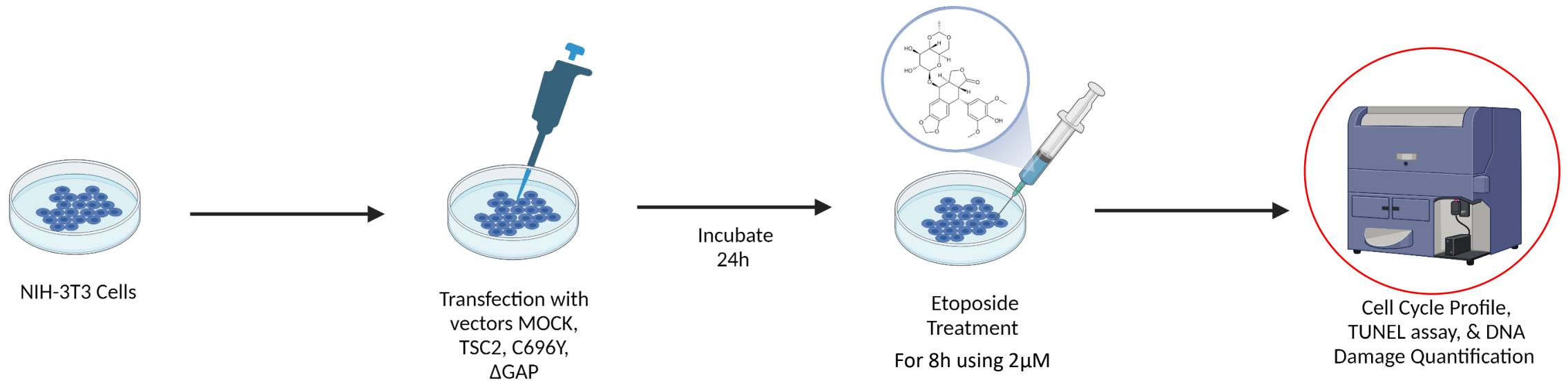
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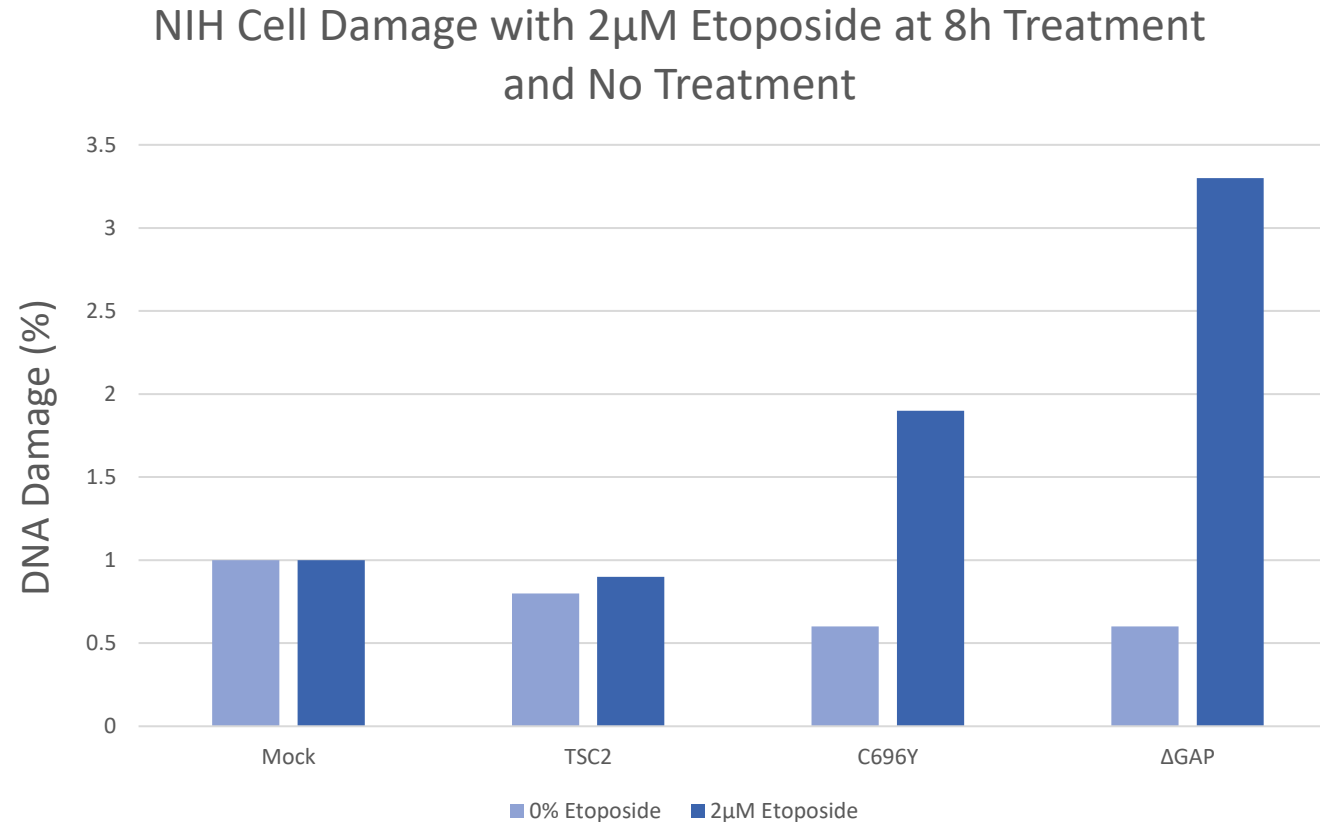
DNA Damage Quantification With γ H2AX & Flow Cytometry

- **Objective 3:** Quantify DNA damage using γ H2AX and flow cytometry



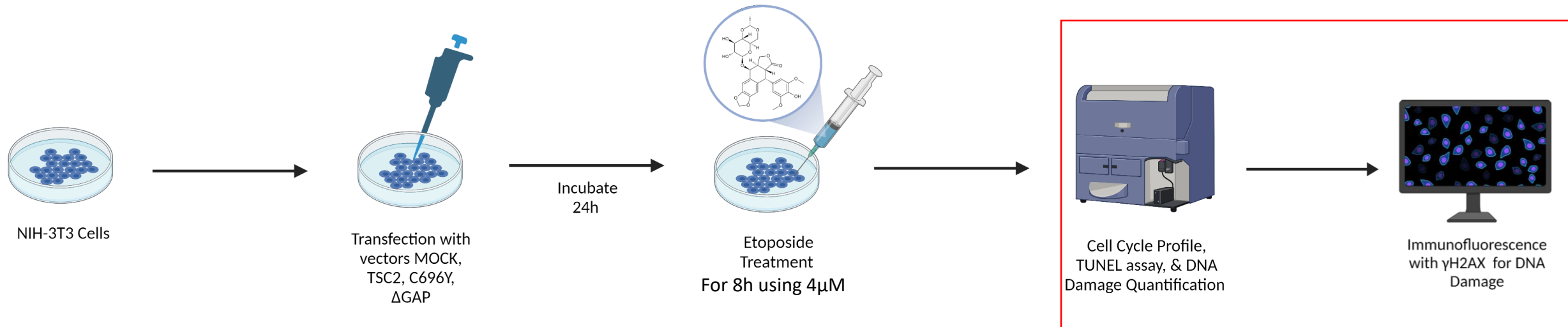
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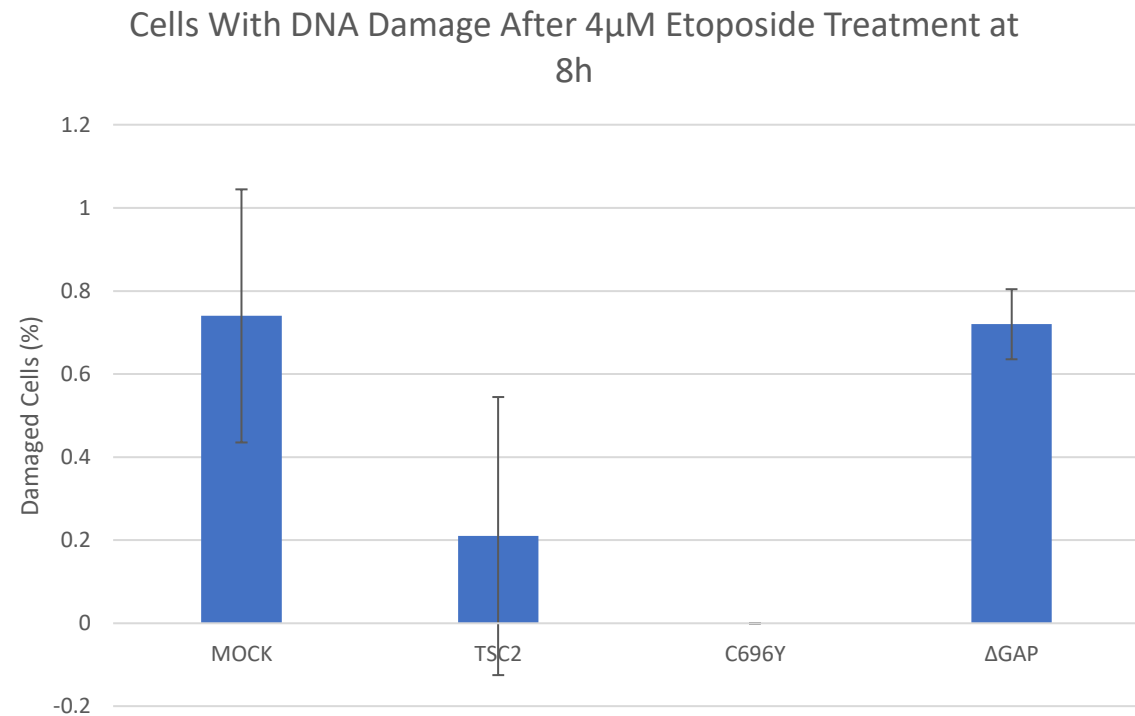
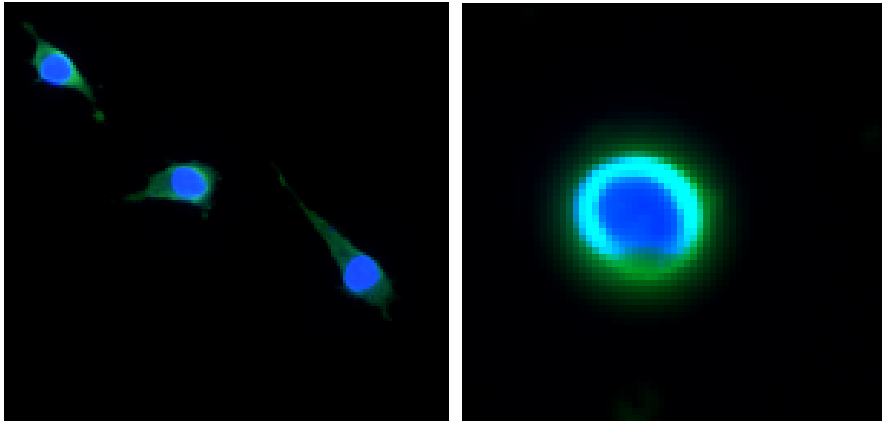
DNA Damage Quantification With γ H2AX Immunofluorescence

- Objective 3: Quantify DNA damage using γ H2AX and Immunofluorescence

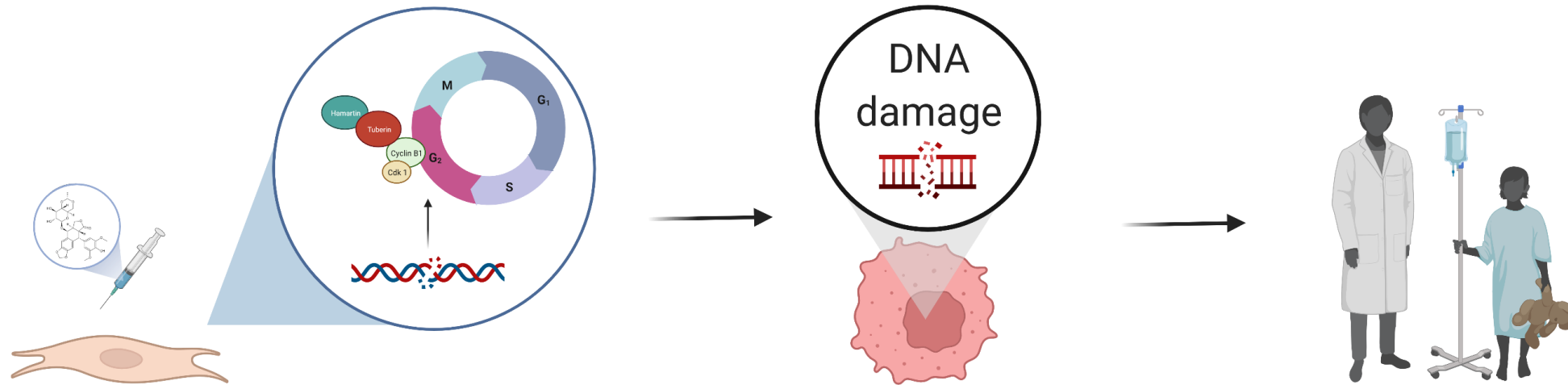


DNA Damage Quantification With γ H2AX Immunofluorescence

- Objective 3: Quantify DNA damage using γ H2AX and Immunofluorescence



The Importance of Tuberin and DNA Damage



DNA Damage Research

Understanding DNA Damage induced carcinogenesis

Providing better outcomes for patients



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Acknowledgements

- Supervisors: Dr. Lisa Porter and Dr. Elizabeth Fidalgo da Silva
- Porter Lab Team Members
- Thank you for your support!



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