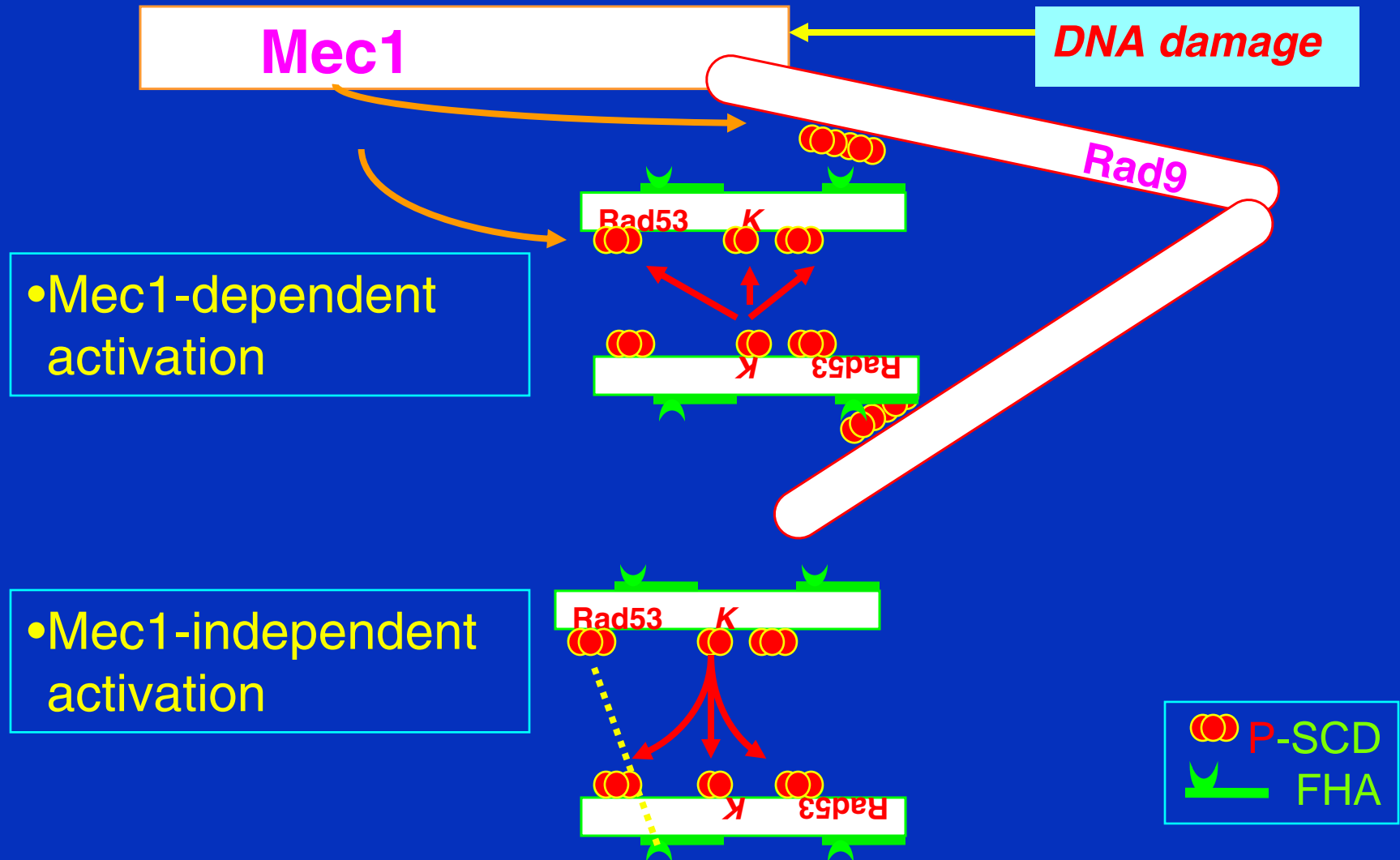


# Proposed Checkpoint Pathway



# Simulation Models

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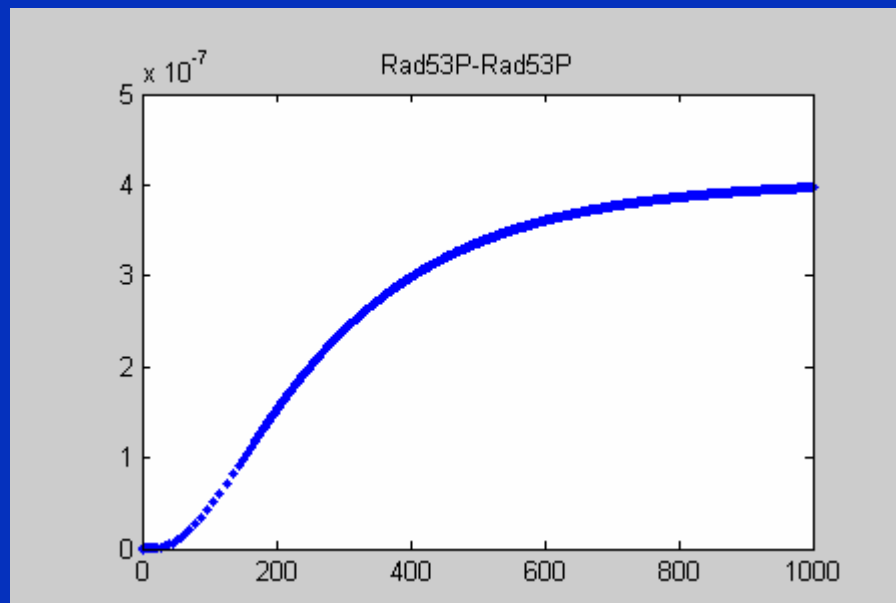
- **Deterministic model**

- A set of 30 differential equations
- Runge-Kutta 4, Euler's, Rosenbrock Methods
- Reaction rate constants and concentrations from experiments, literature and estimation

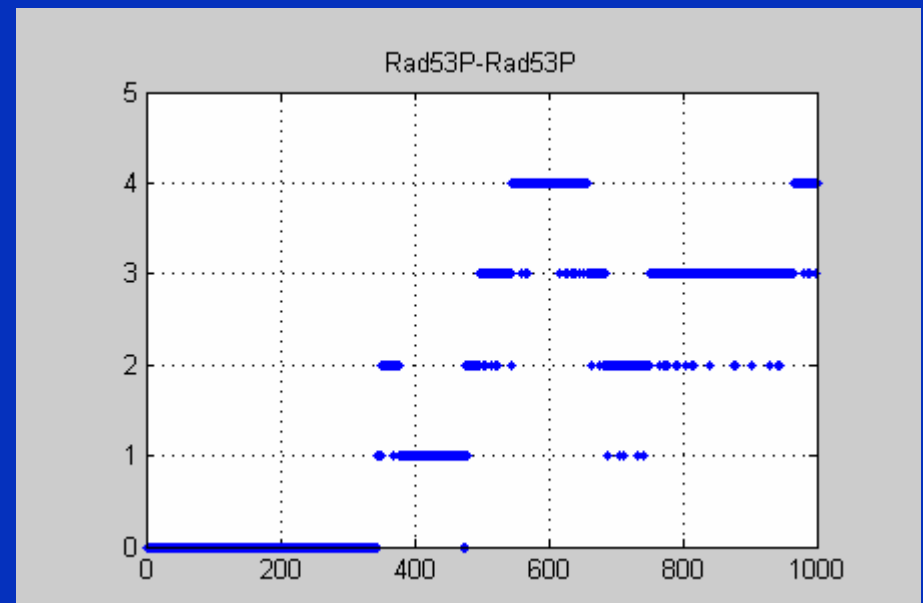
- **Stochastic model**

- 15 reactants and 30 reactions
- Gillespie's stochastic simulation Algorithm
- Stochastic reaction constants and number of molecular species are derived deterministic approach.

## Deterministic Model



## Stochastic Model



Rad53-P Dimer

# Simulation Models

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- **Future Work**
  - Combine with Petri network
  - Binding constants and concentrations
  - Phosphorylation states of key regulators
  - Size of checkpoint kinase n-mers?

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