Proposed Checkpoint Pathway

- **Mec1-dependent activation**
- **Mec1-independent activation**
Simulation Models

- **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

- **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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