

\$Version (*Mathematica version used to generate this file on April 14 2023.*)

Out[78]= 12.0.0 for Microsoft Windows (64-bit) (April 6, 2019)

1. Distinct Mechanisms of PA

In[70]:= baseparams = {KA → 10, Kdim → 0.1, RAF → 0.04, f → 0.01, g → 100};
(*units: μM \forall params but KA*)

Section 1.1. Dimer Potentiation (DP) Model

In[]:= Quit[]

- 1.1.1. Analytic Solution to the model
- 1.1.2. Baseline Signaling (drug-free)
- 1.1.3. Conditions on parameter regions for activation in response to the drug
- 1.1.4. Monotonic relationship between unbound (d) and total (DTOT) drug concentrations
- 1.1.5. Analytic Expressions for maximum Fold Change (FC)

Section 1.2. Negative Cooperativity (NC) Model

In[]:= Quit[]

- 1.2.1. Analytic Solution to the model
- 1.2.2. Baseline Signaling (drug-free)
- 1.2.3. Conditions on parameter regions for activation in response to the drug
- 1.2.5. Analytic Expressions for maximum Fold Change (FC)

Section 1.3. Conformal Autoinhibition (CA/base) Model

In[]:= Quit[]

- 1.3.1. Analytic Solution to the model
- 1.3.2. Baseline Signaling (drug-free)
- 1.3.3. Conditions on parameter regions for activation in response to the drug
- 1.3.4. Monotonic relationship between unbound (d) and total (DTOT) drug concentrations
- 1.3.5. Analytic Expressions for maximum Fold Change (FC)

Section 1.4. Unified Model

In[]:= Quit[]

- 1.4.1. Analytic Solution to the model
- 1.4.2. Baseline Signaling (drug-free)
- 1.4.3. Conditions on parameter regions for activation in response to the drug

- 1.4.4. Monotonic relationship between unbound (d) and total (DTOT) drug concentrations
- 1.4.5. Analytic Expressions for maximum Fold Change (FC)
- 1.4.6. **Convert to Python**
- **Section 1.5. Unified Model: fully-analytic solution to special case where $f=g$**

In[]:= **Quit[]**

- 1.5.1. Analytic Solution to the model
- 1.5.3. Conditions on parameter regions for activation in response to the drug
- 1.5.4. Monotonic relationship between unbound (d) and total (DTOT) drug concentrations
- 1.5.5. Analytic Expressions for maximum Fold Change (FC)

Descriptive, example Plots (supp text section 3)
