

`$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 ∨ 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)**

---