

## 1 “environment” component

This component has no equations.

## 2 “G\_alpha\_GTP” component

**G\_alpha\_GTP\_diff.eq**

$$\frac{d(G\_alpha\_GTP)}{d(time)} = (delta\_G\_alpha\_GTP\_rxn\_1 + delta\_G\_alpha\_GTP\_rxn\_2 + delta\_G\_alpha\_GTP\_rxn\_3)$$

## 3 “G\_alpha\_GDP” component

**G\_alpha\_GDP\_diff.eq**

$$\frac{d(G\_alpha\_GDP)}{d(time)} = (delta\_G\_alpha\_GDP\_rxn\_1 + delta\_G\_alpha\_GDP\_rxn\_2 + delta\_G\_alpha\_GDP\_rxn\_4)$$

**G\_alpha\_GDP\_init.calculation**

$$G\_alpha\_GDP\_init = (Go - (G\_alpha\_GTP + PLC\_active * 4.0))$$

## 4 “PLC” component

**PLC\_diff.eq**

$$\frac{d(PLC)}{d(time)} = (delta\_PLC\_rxn\_3 + delta\_PLC\_rxn\_4)$$

**PLC\_init.calculation**

$$PLC\_init = (Po - PLC\_active)$$

## 5 “PLC\_active” component

PLC\_active\_diff\_eq

$$\frac{d(PLC\_active)}{d(time)} = (delta\_PLC\_active\_rxn\_3 + delta\_PLC\_active\_rxn\_4)$$

## 6 “DAG” component

DAG\_diff\_eq

$$\frac{d(DAG)}{d(time)} = ((kd * PLC\_active - hd * DAG) + ld)$$

kd\_calculation

$$kd = kd\_ * \frac{(DAG)^{2.0}}{\left( (K\_D)^{2.0} + (DAG)^{2.0} \right)}$$

## 7 “Ca\_i” component

Ca\_i\_diff\_eq

$$\frac{d(Ca\_i)}{d(time)} = \left( \left( rho\_kc * \frac{(IP3)^{3.0}}{\left( (K\_s)^{3.0} + (IP3)^{3.0} \right)} - rho\_hc * Ca\_i \right) + rho\_lc \right)$$

## 8 “reaction1” component

This component has no equations.

## 9 “reaction2” component

This component has no equations.

## 10 “reaction3” component

kp\_calculation

$$kp = kp\_ * \frac{(DAG)^{2.0}}{\left( (K\_D)^{2.0} + (DAG)^{2.0} \right)}$$

## 11 “reaction4” component

hp\_calculation

$$hp = hp_- * \frac{(DAG)^{2.0}}{\left( (K_D)^{2.0} + (DAG)^{2.0} \right)}$$