

bi_model_1999_version01

1 “environment” component

This component has no equations.

2 “RAF” component

$$\frac{d(GTPRasRaf_star)}{d(t)} = (GTPRas * Raf_star * kf5 - GTPRasRaf_star * kb5)$$

$$\frac{d(GTPRas)}{d(t)} = -(GTPRas) * Raf_star * kf5 + GTPRasRaf_star * kb5$$

$$\frac{d(Raf)}{d(t)} = \left(\frac{-(PKC) * Raf * Vmax1}{(km1 + Raf)} + \frac{Raf_star * PP2A * Vmax3}{(km3 + Raf_star)} \right)$$

$$\frac{d(Raf_star)}{d(t)} = \left(\left(\left(\frac{PKC * Raf * Vmax1}{(km1 + Raf)} - \frac{Raf_star * PP2A * Vmax3}{(km3 + Raf_star)} \right) - \frac{Raf_star * MAPK_star * Vmax2}{(km2 + Raf_star)} \right) + \frac{Raf_star_star * PP2A * Vmax4}{(km4 + Raf_star_star)} \right)$$

$$\frac{d(Raf_star_star)}{d(t)} = \left(\frac{Raf_star * MAPK_star * Vmax2}{(km2 + Raf_star)} - \frac{Raf_star_star * PP2A * Vmax4}{(km4 + Raf_star_star)} \right)$$

3 “MAPKK” component

$$\frac{d(MAPKK)}{d(t)} = \left(\frac{-(MAPKK) * Vmax6 * GTPRasRaf_star}{(km6 + MAPKK)} + \frac{MAPKK_star * Vmax8 * PP2A}{(km8 + MAPKK_star)} \right)$$

$$\frac{d(MAPKK_star)}{d(t)} = \left(\left(\left(\frac{MAPKK * Vmax6 * GTPRasRaf_star}{(km6 + MAPKK)} - \frac{MAPKK_star * Vmax8 * PP2A}{(km8 + MAPKK_star)} \right) - \frac{MAPKK_star * Vmax7 * GTPRasRaf_star}{(km7 + MAPKK_star)} \right) + \frac{MAPKK_star_star * Vmax9 * PP2A}{(km9 + MAPKK_star_star)} \right)$$

$$\frac{d(MAPKK_star_star)}{d(t)} = \left(\frac{MAPKK_star * Vmax7 * GTPRasRaf_star}{(km7 + MAPKK_star)} - \frac{MAPKK_star_star * Vmax9 * PP2A}{(km9 + MAPKK_star_star)} \right)$$

4 “MAPK” component

$$\frac{d(MAPK)}{d(t)} = \left(\frac{-(MAPK) * Vmax10 * MAPKK_star_star}{(km10 + MAPK)} + \frac{MAPK_tyr * Vmax12 * MKP1}{(km12 + MAPK_tyr)} \right)$$

$$\frac{d(MAPK_tyr)}{d(t)} = \left(\left(\left(\frac{MAPK * Vmax10 * MAPKK_star_star}{(km10 + MAPK)} - \frac{MAPK_tyr * Vmax12 * MKP1}{(km12 + MAPK_tyr)} \right) - \frac{MAPK_tyr * Vmax11 * MAPKK_star_star}{(km11 + MAPK_tyr)} \right) + \frac{MAPK_star * Vmax13 * MKP1}{(km13 + MAPK_star)} \right)$$

$$\frac{d(MAPK_star)}{d(t)} = \left(\frac{MAPK_tyr * Vmax11 * MAPKK_star_star}{(km11 + MAPK_tyr)} - \frac{MAPK_star * Vmax13 * MKP1}{(km13 + MAPK_star)} \right)$$

5 “undefinedvariables” component

This component has no equations.