

**Table 1. Model for molecular reactions and transport in the simulations including cellular growth and proliferation**

Row	Reaction/ transport	Description	ODE contribution (rate/flux)	Parameters
1	$0 \rightarrow A_i$	Auxin production	$c_A$	$c_A = 0.0$
2	$0 \rightarrow A_i$	Auxin prod. outside central zone.	$c_{A2}X_i$	$c_{A2} = 0.002$
3	$A_i \rightarrow 0$	Auxin degradation	$d_A A_i$	$d_A = 0.001$
4	$A_i \rightarrow A_j$	Passive auxin transport	$DA_i$	$D = 0.01$
5	$A_i \xrightarrow{P_{ij}^*} A_j$	Active PIN1 dep. auxin transport	$TP_{ij}^* \frac{A_i}{K_A + A_i}$	$T = 0.036, K_A = 1.0$
6	$0 \rightarrow X_i$	X production	$c_X \Theta(\sqrt{x_i^2 + y_i^2} - R_X)$	$c_X = 0.1, R_X = 1.5, 2.0$
7	$X_i \rightarrow 0$	X degradation	$-d_X X_i$	$d_X = 0.1$
8	$X_i \rightarrow X_j$	X diffusion	$D_X X_i$	$D_X = 0.01$

$X$  is only produced outside the apical region modeled using the step function  $\Theta(x)$  which equals 1 for  $x \geq 0$  and zero for  $x < 0$ . Ordinary differential equation (ODE).