

Table S2: Corpus-specific parameters

Parameter name	Eq.	Symbol	Hex grid	Square grid <sup>a</sup>	Dimension <sup>b</sup>
<i>Change in cellular auxin concentration</i> Rate of auxin biosynthesis Rate of auxin turnover	1	$H_i$ $\mu$	0.05 0	0.04	$M T^{-1}$ $T^{-1}$
<i>Outflux/Influx through a cell membrane</i> Transport rate of PIN1a Transport rate of PIN1b Transport rate of SoPIN1 Basal transport	3	$T_{PIN1a}$ $T_{PIN1b}$ $T_{SoPIN1}$ $T$	0.085 0.08 0.2 0.4		$M^{-1}T^{-1}$ $M^{-1}T^{-1}$ $M^{-1}T^{-1}$ $T^{-1}$
<i>Change in the concentration of PIN1b on a cell membrane</i> Maximum concentration Basal allocation rate Outflux-based allocation rate Influx-based deallocation rate Basal deallocation rate	4	$PIN1b_{max}$ $\sigma_{1b}$ $\alpha_{1b}$ $\beta_{1b}$ $\nu_{1b}$	30 0 1.05 6.0 0.125	5.25	$M$ $T^{-1}$ $M^{-1}T^{-1}$ $M^{-1}T^{-1}$ $T^{-1}$
<i>Change in the concentration of PIN1a on a cell membrane</i> Maximum concentration Basal allocation rate Net-flux-based allocation rate Influx-based deallocation rate Basal deallocation rate Saturation rate of net-flux based allocation Saturation rate of outflux-based deallocation with respect to auxin Saturation rate of outflux-based deallocation with respect to net-flux	5	$PIN1a_{max}$ $\sigma_{1a}$ $\gamma_{1a}$ $\beta_{1a}$ $\nu_{1a}$ $\kappa_{1a}$ $\kappa_{IAA1a}$ $\kappa_{\Phi}$	500 0 0.00072 0.00075 0.02 0.00001 0.1 0.001		$M$ $T^{-1}$ $M^{-1}T^{-1}$ $M^{-1}T^{-1}$ $T^{-1}$ $M^{-1}$ $M^{-1}$ $M^{-1}$
<i>Change in the concentration of PIN1b in the ER</i> Basal production Rate of auxin-based upregulation Production saturation rate Turnover rate	7	$\rho_{1b}$ $\rho_{IAA1b}$ $\kappa_{PIN1b}$ $\mu_{1b}$	2.5 16 0.0125 0.225		$M T^{-1}$ $T^{-1}$ $M^{-1}$ $T^{-1}$
<i>Change in the concentration of PIN1a in the ER</i> Basal production Rate of auxin based upregulation Production saturation rate Turnover rate	8	$\rho_{1a}$ $\rho_{IAA1a}$ $\kappa_{PIN1a}$ $\mu_{1a}$	0.208 30 0.00025 0.15625		$M T^{-1}$ $T^{-1}$ $M^{-1}$ $T^{-1}$
<i>Concentration of SoPIN1 on a cell membrane</i> Maximum concentration Exponential base of allocation weight function	9	$SoPIN1_{max}$ $B$	60 4.263		$M$
<i>Change in the cellular concentration of SoPIN1</i> Basal production Rate of auxin based upregulation Production saturation rate Turnover rate	10	$\rho_{So1}$ $\rho_{IAASo1}$ $\kappa_{SoPIN1}$ $\mu_{So1}$	0.025 0.15 0.075 0.1		$M T^{-1}$ $T^{-1}$ $M^{-1}$ $T^{-1}$

<sup>a</sup> Parameters for the simulation using a square grid (Fig. S12, Video S4) are the same as those used in the simulation on a hexagonal grid (Fig. 5, 6 and Videos S2, S3) except where shown otherwise.

<sup>b</sup> Dimensions are specified using  $M$  for mass and  $T$  for time (spatial dimensions are assumed to be unit and are thus omitted).