**Supporting Table S1.** Term-by-term description of the model differential equations.

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| Time rate of change of the amount of Dl in the nucleus of the compartment h | Transport of Dl from the cytoplasm to the nucleus | | Transport of Dl from the nucleus to the cytoplasm | |  |
|  |  |  |  |  |  |
| Time rate of change of the amount of Dl in the cytoplasm of the compartment h | Transport of Dl between the cytoplasm of the compartment h and the adjacent compartments | Dissociation of the Dl-Cact complex | Association of Dl and Cactus to form the Dl-Cact complex | Transport of Dl from the cytoplasm to the nucleus | Transport of Dl from the nucleus to the cytoplasm |
|  |  | | |  |  |
| Time rate of change of the amount of Dl-Cact complex in the cytoplasm of the compartment h | Transport of Dl-Cact complex between the cytoplasm of the compartment h and the adjacent compartments | | | Dissociation of the Dl-Cact complex | Association of Dl and Cactus to form the Dl-Cact complex |
|  |  |  |  |  |  |
| Time rate of change of the amount of free Cactus in the cytoplasm of the compartment h | Transport of free Cactus between the cytoplasm of the compartment h and the adjacent compartments | Dissociation of the Dl-Cact complex | Association of Dl and Cactus to form the Dl-Cact complex | Production of Cactus | Degradation of Cactus |
| *kD =* | *R / (S + xξ)* | | |  |  |
| Space-dependent reaction rate constant for dissociation of the Dl-Cactus complex, representing the Toll signaling gradient | R and S determine the maximum value of *kD*, i.e., the amplitude of the Toll signaling gradient, while ξ represents the rate of decay of *kD* with an increase in x (the distance from the ventral midline along the DV axis). | | |  |  |