

Supplementary Information: Influence of survival, promotion,  
and growth on pattern formation in zebrafish skin

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## Supplementary Figures

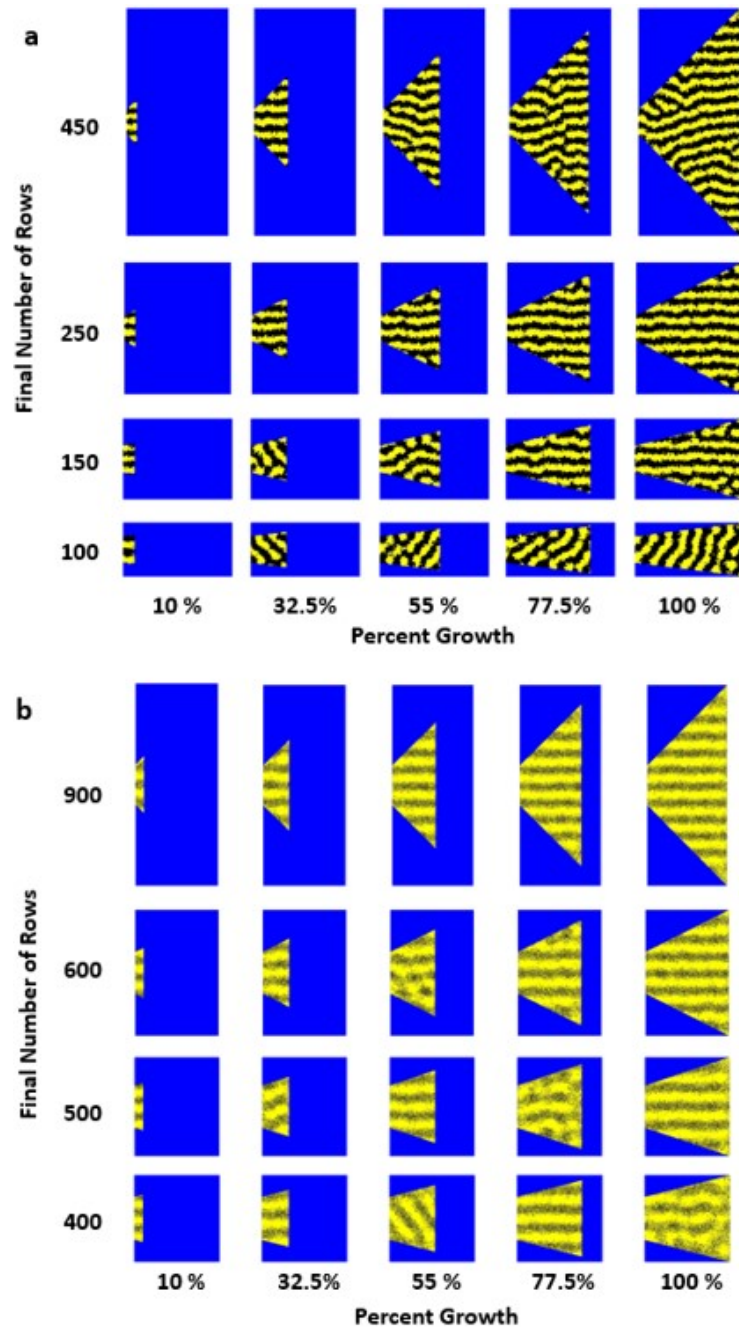


Figure S1: Turing pattern development during domain growth on a trapezoidal geometry. In each simulation (rows), images are shown of the developing pattern at 10%, 32.5%, 55%, 77.5%, and 100% of growth. All simulations are performed with periodic boundary conditions for the same simulation length. a) Stochastic Monte Carlo simulations of the Promotion model on a trapezoidal growing domain. Each simulation begins as a  $50 \times 1$  lattice, and grows to be a size of 200 columns, with the number of rows given by the value on the left of the simulation. Each simulation is performed with  $h = 14$ ,  $b_X = 1$ ,  $s = 1$ ,  $l_X = 2.5$ ,  $b_M = d_X = d_M = 0$ . b) Stochastic Monte Carlo simulations of the Survival model on a trapezoidal growing domain. Each simulation begins as a  $200 \times 1$  lattice, and grows to be a size of 400 columns, with the number of rows given by the value on the left of the simulation. Each simulation is performed with  $h = 50$ ,  $b_X = 1$ ,  $s = 1$ ,  $b_M = 7$ ,  $d_M = 9$ ,  $d_X = d_{MX} = 0$ .

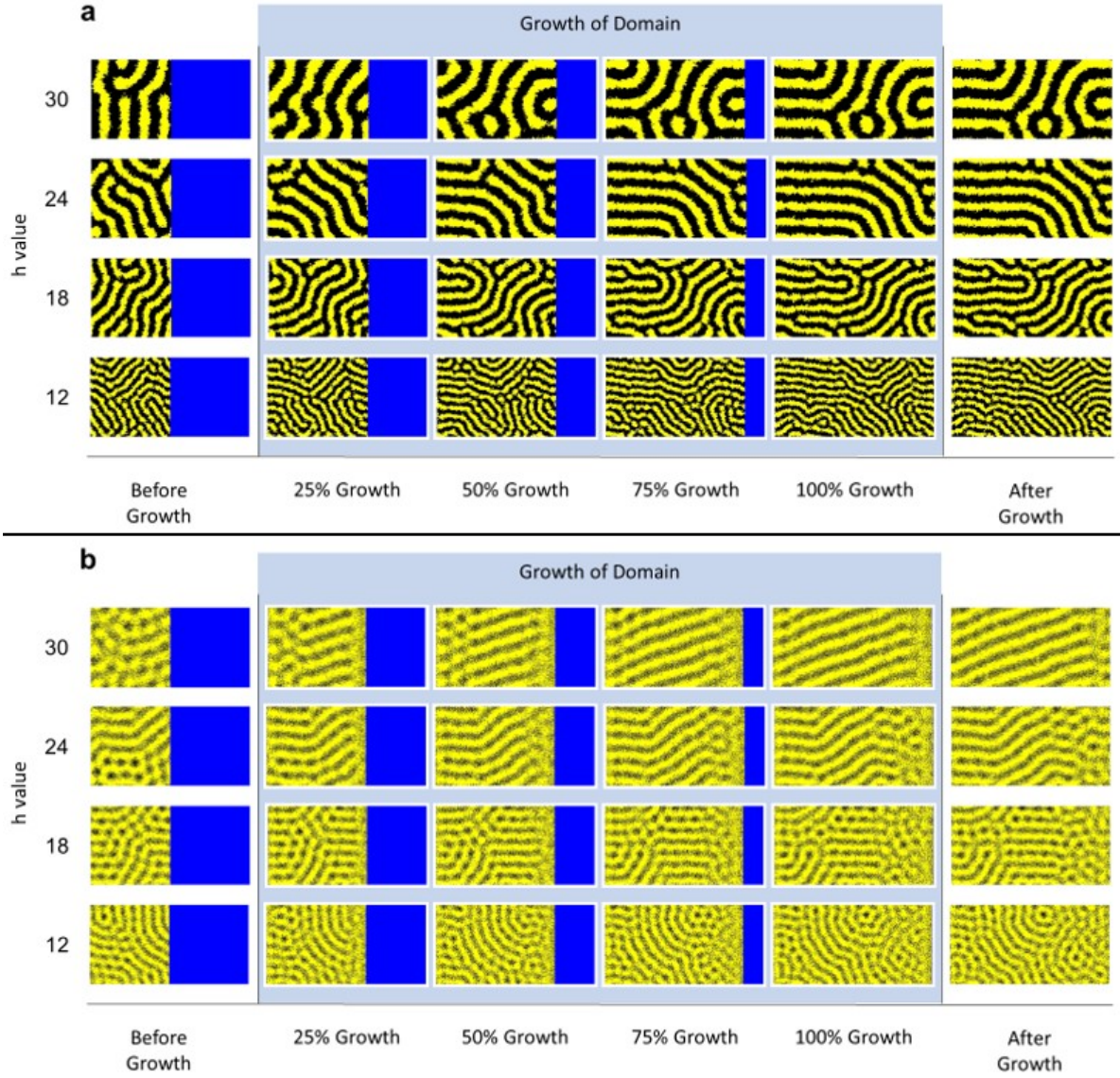


Figure S2: Development of Turing patterns with growth from an originally static, randomly patterned domain. The pattern developed for 25% of the total time (Before Growth), grew to twice its size (Growth of Domain), and then continued forming on the final domain for an additional 25% of the total time (After Growth). A) Simulations of the Promotion model. Each simulation started on a static  $200 \times 200$  lattice and then grew to a final domain size of  $200 \times 400$ . The simulations were performed with rate constants  $b_X = s_X = s_M = 1$ ,  $l_X = 2.5$ , and  $b_M = d_X = d_M = 0$ . B) Simulations of the Survival model. Each simulation started on a static  $400 \times 400$  lattice and then grew to a final domain size of  $400 \times 800$ . The simulations were performed with rate constants  $b_X = s_X = s_M = 1$ ,  $b_M = 7$ ,  $d_M = 9$ , and  $d_X = d_{MX} = 0$ .

## Supplementary Videos

### Growth animations

- Supplementary Video S1: Promotion model Turing pattern formation on a growing domain with  $h = 10$ .
- Supplementary Video S2: Promotion model Turing pattern formation on a growing domain with  $h = 16$ .
- Supplementary Video S3: Survival model Turing pattern formation on a growing domain with  $h = 20$ .
- Supplementary Video S4: Survival model Turing pattern formation on a growing domain with  $h = 50$ .

### Ablation animations

- Supplementary Video S5: Ablation of Turing pattern formed via the Promotion model at 50% of the growth completed.
- Supplementary Video S6: Ablation of Turing pattern formed via the Survival model at 50% of the growth completed.