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Simulated fly segmentation

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   Flies define the front and back of their segments before cellularization using segment polarity genes. In the 13 July Nature von Dassow *et al*. use a computer simulation to show that the simplest working model of fly segment polarity determination is a robust module insensitive to variation in parameters and initial conditions (*Nature* 2000, **406**:188-192). Their first model fails and requires the addition of some interactions for which only sketchy evidence exists. The revised model, encompassing 136 coupled equations and nearly 50 free parameters such as half-lives, diffusion constants and binding coefficients, is extraordinarily robust. On average a random choice of a given parameter value (within biological norms) has an approximately 90% chance of producing the correct pattern. Furthermore, even a vague pre-pattern suffices to start things off - perhaps not surprising for a network that can also function after cellularization (in beetles) and without the help of pair-rule genes (in locusts).

References

1. Nature magazine, [http://www.nature.com/nature/]

2. Robustness in simple biochemical networks.