

Homework 5

1

A: True.

B: False. Ig bind to integrin, but cadherins can bind to intermediate filaments. Actin and intermediate are made up of cytoskeleton, which is responsible for cell mechanism. It is helpful to hold cells together.

2

A: Because they express same kind of cadherin which can hold cell together, they would not segregate into two separate balls. Then high cadherin cell have more probability to junction with high cadherin cell, which means high cadherin cell favor to increase contact surface to form stronger junction. In other words, low cadherin cells are weak to compete high cadherin cells, which means low cadherin cells have low contact surface in outside. B: No sure. It is mainly dependent on the ratio of the junction of intensity of 3 cadherins. Maybe form the Turing pattern.

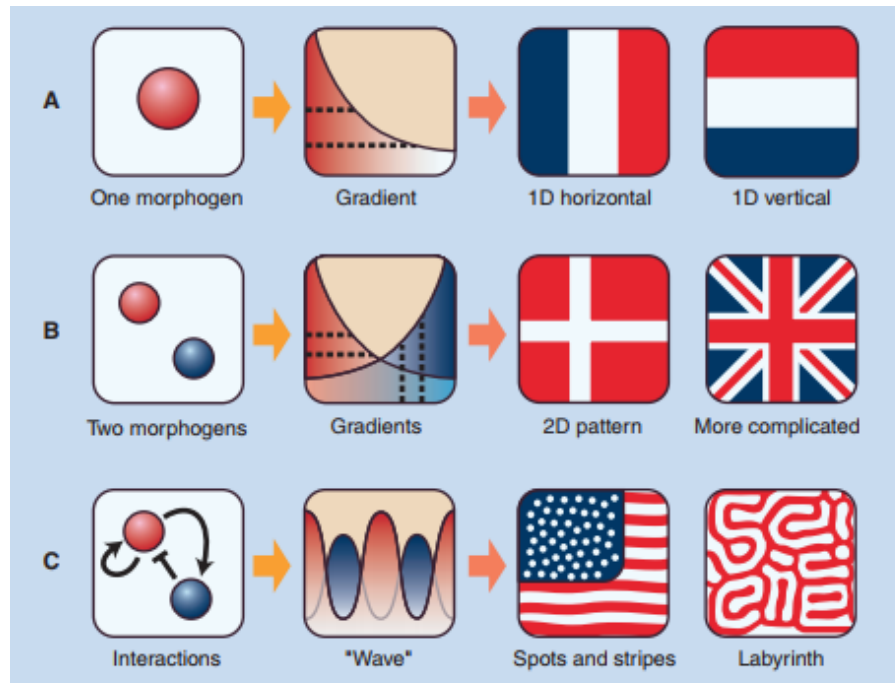


Fig. 1. Schematic drawing showing the difference between the morphogen gradient model and Turing model. **(A)** A morphogen molecule produced at one end of an embryo forms a gradient by diffusion. Cells “know” their position from the concentration of the molecule. The gradient is totally dependent on the prepattern of the morphogen source (boundary condition). **(B)** Adding a second morphogen produces a relatively complex pattern; but with no interactions between the morphogens, the system is not self-regulating. **(C)** With addition of the interactions between the morphogens, the system becomes self-regulating and can form a variety of patterns independent of the prepattern. [Art work by S. Miyazawa]

(Kondo, S., & Miura, T. (2010). Reaction-Diffusion Model as a Framework for Understanding Biological Pattern Formation. *Science*, 329(5999), 1616–1620. <https://doi.org/10.1126/science.1179047>) set

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A-proto-oncogene; B-transformation; C-; D- E-; F-tumor suppressor gene; ## 8