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Title:	Role of active stress and linear turnover in biological systems
Authors:	<a href="#">Anand, Shubham</a>
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Abstract:	We show the pattern formation in living systems by incorporating the simplest models. Mechanochemical patterning was the main aim of consideration to describe the morphogenesis process. Firstly, we showed the pattern formation for single chemical species in one - dimension with the help of active stress and linear turnover. The chemical species was active stress up regulator. Active stress leads to the non-homogeneous concentration profile with the help of hydrodynamic flows generated and having spontaneous stationary patterns. Then we had a linear turnover in the advection-diffusion system for the single diffusing chemical species which showed travelling and oscillatory patterns as well as stabilization of multiple peaks in the concentration profiles. We then showed pattern formation for two chemical species in one-dimension. Here, one was active stress up-regulator diffusing fastly, and other was active stress down-regulator diffusing slow. This system showed pulsatory patterns. Afterwards, we incorporated linear turn over into the advection-diffusion system where we observe patterns only if active stress up regulator turns over fast as compared to active stress down regulator, for which turnover is slow. The whole work is motivated by the two PRL papers cited in the reference.
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