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Title: A Mathematical Approach Towards Pattern Formation in Passion Flower

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Keywords: Chemistry
Mathematics
Fluid dynamics
Passion Flower

Issue Date: 2-Jul-2015

Publisher: IISER M

Abstract: The evolution and development of spatial patterns in both living and non-living objects has been the subject of study for many evolutionary and developmental biologists. Alan Turing's "The Chemical Basis of Morphogenesis" in 1952 was a major breakthrough in which he theorized a system of two different interacting molecules, called morphogens, which could establish chemical gradients through a reaction-diffusion system. Here we give a concise description of some of the interesting mathematical aspects of Turing's Reaction-Diffusion (RD) mechanism and give an overview of some popular reaction models incorporated into it. We tried to assimilate the idea of Turing's RD mechanism and utilize it to study the pattern formation in *Passiflora Incarnata* (Passion Flower), which has non-uniform alternate bands of violet and white coloured pattern on each of its brils. We study the pattern using "Gierer-Meinhardt" model.


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