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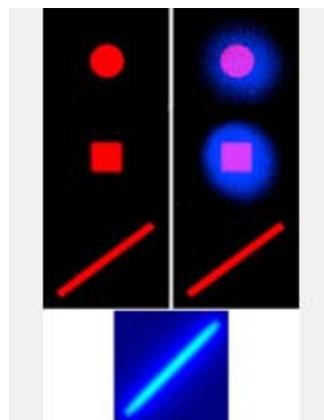
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Multimedia Gallery - Image



Blood Clotting In this figure, clotting (blue) occurs on a circle and square shaped patch of a clotting stimulus (red), but not on a thin rectangle. Numerical simulations (bottom image) show that diffusion of clotting activities off of the thin rectangle was fast, and the concentration of activators necessary to initiate clotting was not reached. *Explanation of Caption:* At what level of simplicity is emergent behavior possible? Work by Rustem Ismagilov and colleagues at the University of Chicago have shown that an emergent property can arise at the level of a biochemical reaction network. Hemostasis, which regulates blood clotting, can respond to the shape of a patch of surface stimulus. This response can be understood from chemical principles, as demonstrated with numerical simulations and a simplified non-biological, chemical system. In this figure, clotting (blue) occurred on a circle and square-shaped patch of a clotting stimulus (red), but not on a thin rectangle. Numerical simulations (bottom image) show that diffusion of clotting activities off of the thin rectangle was fast, and the concentration of activators necessary to initiate clotting was not reached. This research was supported by National Science Foundation grant CHE 03-49034. (Date of Image: April 2007)

Credit: *Ismagilov Lab, The University of Chicago*

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