

Self-organized entrainment in a model for endocrine system

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We developed simple mathematical model for the hormone secretion inspired by a biological feedback that physiological environment stimulates multiple organs, while organs cooperatively regulate the environments. The model describes that physiological variable modulates phases of rotators, and the rotators perturb the physiological variable through feedback coupling. We found '*self-organized entrainment*' that the feedback via environment could entrain rotators to have synchronous response under a certain condition. Furthermore, we demonstrate the proposed model by realizing an analog circuit.