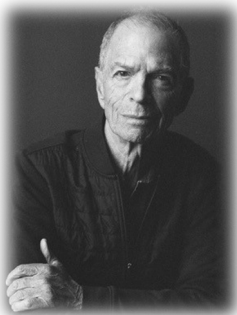


DANDRITE Lecture

Thursday 9 June 2023

13:00 – 14:00

Building 1874, room 132



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USA

What is Health? allostasis and the evolution of human design

Human design is constrained by natural selection to maximize performance for a given energy cost. The brain predicts what will be needed and controls metabolism, physiology, and behavior to deliver just enough, just in time. Preventing errors (*allostasis*), rather than correcting them (*homeostasis*), saves energy.

Our ancestors survived in challenging environments by learning across the lifespan. Our brain guides learning with an optimal rule that rewards each positive surprise with a pulse of dopamine, which we experience as a pulse of satisfaction. But we now obtain food and comfort without surprise and are thus deprived of frequent dopamine pulses. Lacking them, we grow restless and are driven to seek new sources. One route is through consumption: *more* food and drugs that produce great surges of dopamine. But the surprise that follows *more* can only be *still more*. Moreover, our systems adapt to *more* by reducing their sensitivities, which drives them into damaging spirals.

Standard medicine promotes drugs to treat addictions by blocking the reward circuit. But strategies, to *prevent* satisfaction, cannot work. Standard economics promotes “growth” for more “jobs”. But “jobs” devoid of long-term challenge are what now drive us to despair. To restore mental and bodily health, we must re-expand opportunities for small satisfactions via challenging activities and thereby rescue the reward system from its pathological regime.

Host: Sadeqh Nabavi