



IMMUNOLOGY

Teaching Self Control

Central to the design of an effective immune system is the ability to avoid disastrous consequences of autoimmune reactions in which healthy cells of a host organism are targeted for destruction rather than damaged cells or invading pathogens. In natural killer (NK) cells of the innate immune system, signaling through an array of activating and inhibitory receptors “educates” cells to respond appropriately to self ligands and ligands that signal cell damage or infection. Guia *et al.* report that in mice, potentially self-reactive NK cells are kept in check through sequestration of signalling molecules within the plasma membrane. Spot variable fluorescence correlation spectroscopy to monitor the movement of receptors revealed that, in NK cells genetically engineered to not be properly educated, inhibitory and activating receptors were confined together in domains where they were associated with an actin network below the membrane. When these cells were educated to allow appropriate activation, inhibitory receptors became diffusely distributed, whereas activating receptors were present in nano-domains or “rafts” characteristic of active receptor signaling. This mechanism, as compared to transcriptional reprogramming, may allow the

NK cells greater flexibility to switch between an unresponsive state and a state in which they are competent to respond to stimuli. — LBR

Sci. Signal. **4**, ra21 (2011).

PSYCHOLOGY

Climate Change, Viscerally

Students were put outdoors and asked a series of questions about a number of topics, such as firearms, marijuana, and climate change. How they rated climate change—on a scale from unproven theory to proven fact—correlated with their political stance, with Republicans/conservatives tending toward the unproven end of the scale. Not very surprising, you might say. Yet their answers also correlated with the ambient temperature, with colder days favoring ratings at the unproven end. How did this occur? Risen and Critcher supply a sequence of experiments demonstrating that this effect is not due to participants using ambient temperature in an

evidentiary sense: Repeating the study indoors and explicitly calling participants’ attention to the over- or underheated interrogation room did not abolish the effect. Nor is this effect due to conceptual accessibility, meaning that implicitly priming the concept of heat failed to reproduce the correlation. What they did find is that participants who experienced warmth viscerally were more apt to form clear mental images of hot environments and that this simulative fluency was linked in turn to a greater belief in climate change as a fact. — GJC

J. Pers. Soc. Psychol. **100**, 10.1037/a0022460 (2011).

CHEMISTRY

Competitive Self-Assembly

Two-dimensional networks can form when polyvalent organic molecules interact with mobile metal atoms on a surface. Shi *et al.*, using scanning tunneling microscopy and low-energy electron diffraction, found that 1,3,5-tris(pyridyl)-benzene (TPyB) formed networks with copper and iron with unusually high thermal stability on the (111) surface of gold. Hexagonal copper networks formed through bidentate binding by TPyB molecules were stable up to 600 K, whereas trigonal iron networks formed through tridentate binding were stable up to ~680 K.

