

Abstract Submitted  
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**Physics of phagocytosis of foreign versus self-tolerance** RICHARD TSAI, PIA RODRIGUEZ, DENNIS DISCHER, University of Pennsylvania — The first cells to ‘attack’ an implanted or injected foreign material or microbe are phagocytic cells of the innate immune system. These cells actively and rapidly phagocytose foreign cells, surfaces, or particles, but the process that is inefficient when faced with “self” cells. We have examined the biochemistry and some of the physics of this decision to eat or not eat. One particular protein on all animal cell membranes, called CD47, seems to engage phagocytic cell counter-receptors, and deactivate the force-generating myosin machinery that otherwise makes phagocytosis efficient. We will map the phagocytic synapse between phagocytes and particles or cells and describe the physicochemical dynamics that mediate this key decision in compatibility.

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