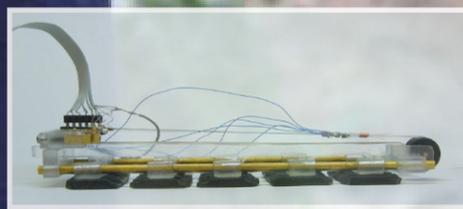# From Razor Clams to Robots:
The Mathematics Behind Biologically Inspired Design

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Anette (Peko) Hosoi, Professor of Mechanical Engineering at MIT, is the founder and director of STE@M (Sports Technology and Education @ MIT), which takes on challenges at the intersection of engineering and sports. Her research is in hydrodynamics of thin films, microfluidics, and bio-inspired design. Her work combines elements of engineering design and mathematical optimization and has been used to guide the engineering of robotic swimmers, crawlers, and burrowers. She is an award winning teacher and an an outstanding communicator of science.

MATH & SOCIETY
THURSDAY
NOVEMBER 13
4:40 P.M. - 5:40 P.M.
JOHN B. DAVIS
LECTURE HALL

Many natural systems have evolved to perform certain tasks—climbing, sensing, swimming—as perfectly as possible within the limits set by the laws of physics. This observation can be used both to guide engineering design and to gain insights into the form and function of biological systems. We will consider both of these themes in the context of crawling snails, diffing clams and swimming microorganisms. We will discover how an analysis of the physical principles exploited by snails and clams leads to the development of novel robotic diggers and crawlers, and explore the role of mathematics in the design, control, and assessment of unconventional robotic systems.