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**Sculpting of a dissolvable body by flowing water** JINZI MAC HUANG, Courant Institute of Mathematical Sciences, M. NICHOLAS J. MOORE, Florida State University, LEIF RISTROPH, Courant Institute of Mathematical Sciences — Fluid flows strongly influence the dissolution of materials in geological contexts and in chemical and pharmaceutical applications. We approach flow-driven dissolution as a moving boundary problem and conduct experiments on hard candy bodies immersed within fast flowing water. We discover that different initial shapes are sculpted into a similar final form before ultimately vanishing, suggesting convergence to a stable shape-flow state. A model linking the flow and solute concentration suggests an explanation for this state and offers scaling laws for quantities such as the volume decay rate in time. As a whimsical application, we also show how this model can be used to address the long-standing question, “How many licks does it take to get to the center of lollipop?”

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