

Abstract Submitted  
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**Corner Formation in the Wombat's Cubic Feces** ALEXANDER LEE, PATRICIA YANG, MILES CHAN, MICHAEL KOWALSKI, KELLY QIU, CANDACE KAMINSKI, Georgia Institute of Technology, SCOTT CARVER, University of Tasmania, DAVID HU, Georgia Institute of Technology — Wombat feces begins as a wet yogurt-like slurry in the stomach and ends as a soft solid with six flat sides and eight distinct corners. The formation of corners and other singularities are rare in the world of fluid mechanics, yet the wombat possesses adaptations to encourage their formation. Our preliminary work has found that the wombat has periodic circumferential stiffness in their colon, but tests with intestine mimics made of pantyhose were unable to generate distinct corners. In this study, we consider the role of gut contractions in generating fluid flows that can generate corners. We present fabric intestinal mimics with which we can generate circumferential stresses, and simulations that combine intestinal material properties, the shape memory of the feces, and the gut contractions. This understanding of the resulting feces geometry could provide a simple and non-invasive health metric for wombats in captivity.

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