

Abstract Submitted
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The role of advection and diffusion in waste disposal by sea urchin embryos AARON CLARK, NICHOLAS LICATA, Univ of Michigan - Dearborn — We determine the first passage probability for the absorption of waste molecules released from the microvilli of sea urchin embryos. We calculate a perturbative solution of the advection-diffusion equation for a linear shear profile similar to the fluid environment which the embryos inhabit. Rapid rotation of the embryo results in a concentration boundary layer of comparable thickness to the length of the microvilli. A comparison of the results to the regime of diffusion limited transport indicates that fluid flow is advantageous for efficient waste disposal.

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