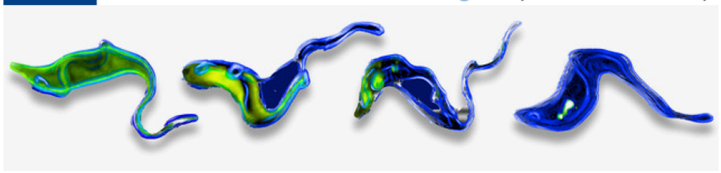

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P. sineare in confinement: breaking free through narrow escapes

The microbial ecosystem is full of narrow constrictions that microorganisms need to learn to navigate in order to survive. Here, we study a Nature example of a “microorganism billiard”: a system composed of a population of microorganisms packed in a closed space, with only a few narrow apertures to escape from. This situation occurs when the marine parasite Parvilucifera sinerae infects and replicates inside a dinoflagellate host, and the newly born parasites find themselves in the closed and extremely packed space represented by the dead host body (the “sporangium”). In order to start a new successful infection cycle, the parasite’s zoospores must find their way out of this closed structure. Which strategies are deployed by the parasites to manage a successful escape? A particular interaction with the boundaries might help them navigate this structure, and collective behaviours between individual parasites might be key in “finding the way out”. Here, we present the preliminary results of an experiment aimed at reconstructing the 3D orientation of the zoospores inside the sporangium during the emptying process, to investigate the possible emergence of an ordered phase.

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