

Abstract Submitted  
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**Possible mechanisms for initiating macroscopic left-right asymmetry in developing organisms**<sup>1</sup> CHRISTOPHER L. HENLEY, RICKY CHACHRA, JIMMY X. SHEN, Cornell Univ. — Systematic left-right (L/R) asymmetry in development –i.e. body axes satisfying a “right-hand rule” – emerges at the organism level out of the microscopic handedness of biological molecules, not by the usual pattern-forming mechanisms of reactions (including regulation) plus diffusion, but rather (at the cell level) from the cytoskeleton and molecular motors – usually in collective two-dimensional states associated with the cell membrane <sup>2</sup>. I outline possible scenarios we are simulating for (i) snails and *C. elegans*, from a chiral shearing tendency in the actomyosin layer and/or (ii) for plant cells, from a precession of the nematic order direction in the microtubule array.

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<sup>2</sup>C. L. Henley, Landau 2008 conference (arxiv:0811.0055)

Christopher L. Henley  
LASSP, Cornell Univ.

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