



سمینار هفتگی ماده چگال نرم

Journal club:

A Comparative Mechanical Analysis of Plant and Animal Cells Reveals Convergence across Kingdoms

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Abstract

In plants, microtubules largely determine the direction of cell expansion and the orientation of cell division planes. However, what processes orient the microtubules has remained debated. Here, we used microfabricated wells to confine and deform wallless plant cells in a controlled way to analyze the response of microtubules to cell geometry and surface tension. We demonstrate that microtubules align with cell geometry by default, whereas when surface tension increases (e.g. when turgor pressure increases), they align with the direction of maximal tension. Not only does this explain many observations in plant tissues, but it also provides a simple mechanism at the core of plant morphogenesis, in which microtubules can spontaneously align with tension, in a typical self-organized system.

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مکان: کلاس مجازی دکتر اجتهادی

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