

A lipid's role in cell division

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Credit: AI-generated image ([disclaimer](#))

Proper cell division is a basic process critical to cell survival. A ring composed of actin filaments and myosin motor proteins pinches the cell apart, producing two daughter cells with equal amounts of cellular components.

Reporting in the *Journal of Cell Biology*, Kathleen Gould, Ph.D., and colleagues characterized how this powerful [contractile ring](#) remains

anchored to the [plasma membrane](#) allowing symmetric division.

Decreased amounts of the lipid family of phosphoinositides (PIPs) in the plasma membrane have been shown to cause cytokinesis defects. Despite this, how lipid levels could affect contractile ring function was unknown.

PIP levels are regulated by a known set of proteins including Efr3 in *Schizosaccharomyces pombe*. When *efr3* was knocked out in *S. pombe*, PIP levels were reduced in the plasma membrane. Interestingly, the cytokinetic ring slid away from the cell center, leading to asymmetrical division.

The work suggests that contractile ring anchoring may be dependent on a plasma membrane localized complex regulating PIP levels.

More information: Chloe E. Snider et al. Phosphoinositide-mediated ring anchoring resists perpendicular forces to promote medial cytokinesis, *The Journal of Cell Biology* (2017). [DOI: 10.1083/jcb.201705070](#)

Provided by Vanderbilt University

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