

# How cells use chemistry and physics to break the bones that power their movement

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Abstract:

The polymerization of the protein actin into helical filaments powers many eukaryotic cell movements and provides cells with mechanical strength and integrity. The actin regulatory protein, cofilin, promotes actin assembly dynamics by severing filaments and increasing the number of ends from which subunits add and dissociate. I will present results from biochemical and biophysical studies focused on defining in chemical and physical terms (thermodynamics, structure, mechanics and kinetics) how cofilin binds and fragments actin filaments. The experimental data are well described by a model in which discontinuities in filament topology and compliance promote fracture preferentially at junctions of bare and cofilin-decorated segments along filaments.

**Friday, May 16<sup>th</sup>, 2014, 13:00**

**Room PH 127**

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