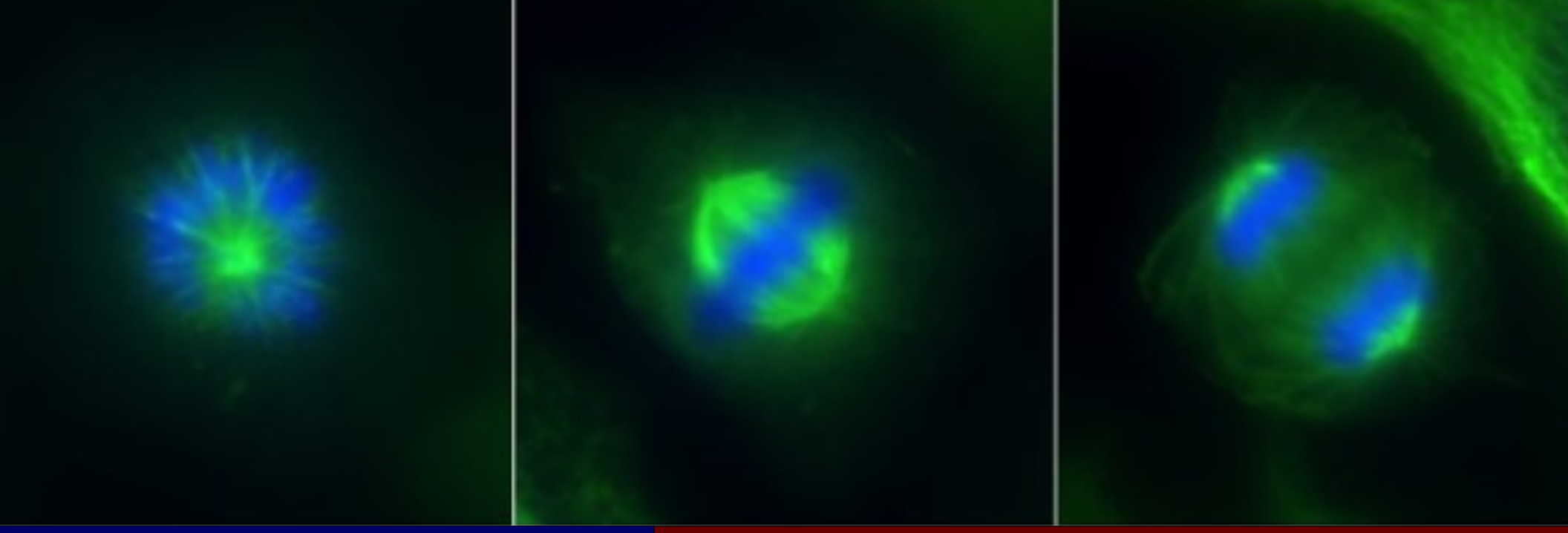

PHYSICS COLLOQUIUM SERIES

Near-field optics for investigating biomolecular self-assembly below the diffraction limit of light

Wednesday, November 8

2:00 p.m. in RNS 210

Cookies and Apple Cider Served!

Self-assembly is a phenomenon where disordered components spontaneously form an ordered structure without external intervention. Self-assembly is ubiquitous in nature especially in biological systems. A striking example in biology is the self-assembly of the mitotic spindle, a macromolecular machine that segregates chromosomes in a dividing cell. One of the major challenges in understanding the self-assembly of the mitotic spindle is the small dimensions of its constituent proteins. Because the constituent proteins are few nanometers in dimensions, the diffraction limit of light prevents us from resolving the interactions of such small proteins under the standard optical microscopes. In this talk, I will present near-field optical approaches for investigating mitotic spindle assembly below the diffraction limit of light.

Keisuke Hasegawa

Keisuke Hasegawa earned his B.A. in Physics from Reed College, and Ph.D. in Physics from the University of Oregon. He is currently an assistant professor of physics at Grinnell College. He is an experimental biophysicist whose research interests lie in understanding dynamic processes that occur inside cells on a scale too small to be visualized directly with visible light using novel optical spectroscopy and microscopy techniques. More specifically, he investigates the self-assembly of mitotic spindle, a macromolecular machine that segregates chromosomes in a dividing cell using Förster resonance energy transfer microscopy and surface plasmon resonance spectroscopy.