Chapter 17
Web Text Box 3

Spearing Eggs: The acrosome and actin polymerization

Upon contacting an egg the sperm of the marine organism *Thyone* suddenly extends a needle-like process called an acrosome from its front end. This 90µm long needle helps the sperm to penetrate the egg. Prior to activation, a vesicle at the sperm front end contains G-actin at concentrations way above that which would normally result in spontaneous polymerization into F-actin filaments. The reason it does not do so is that all the actin is bound to profilin (book page 288). Upon contact with the egg, salts from sea water flow into the vacuole and cause dissociation of the profilin:actin dimers. The actin then immediately polymerizes to form the long microfilaments of the acrosome.