

The physics of ulcers: motility of bacteria in mucin gels of the stomach

Most ulcers in the stomach are caused by the bacterium, *H. pylori*. This bacterium has to not only survive in the highly acidic environment of the stomach, it needs to be able to get across the protective mucus layer which form a soft gel (i.e. jelly like elastic material) on the inner surface of the stomach.

In this lecture I will introduce some basic ideas about gelation and present some experimental results on the structure of mucus and the gelation of mucin (a glycoprotein in mucus) at low pH. In the second part of the talk I will show movies of the rotational and translational motions of bacteria and discuss how mechanical parameters can be measured from these movies.