

The hagfish: the slimiest fish in the sea

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catching hagfish



hagfish feeding



sliming and knotting



slime and predators



hagfish slime in the lab



studying hagfish slime: rheology

What is *rheology*?

It is the study of how matter *flows*.

Water and air have very simple rheology (*Newtonian*). Their motion is characterized by two numbers: density and viscosity.

Honey is also Newtonian.

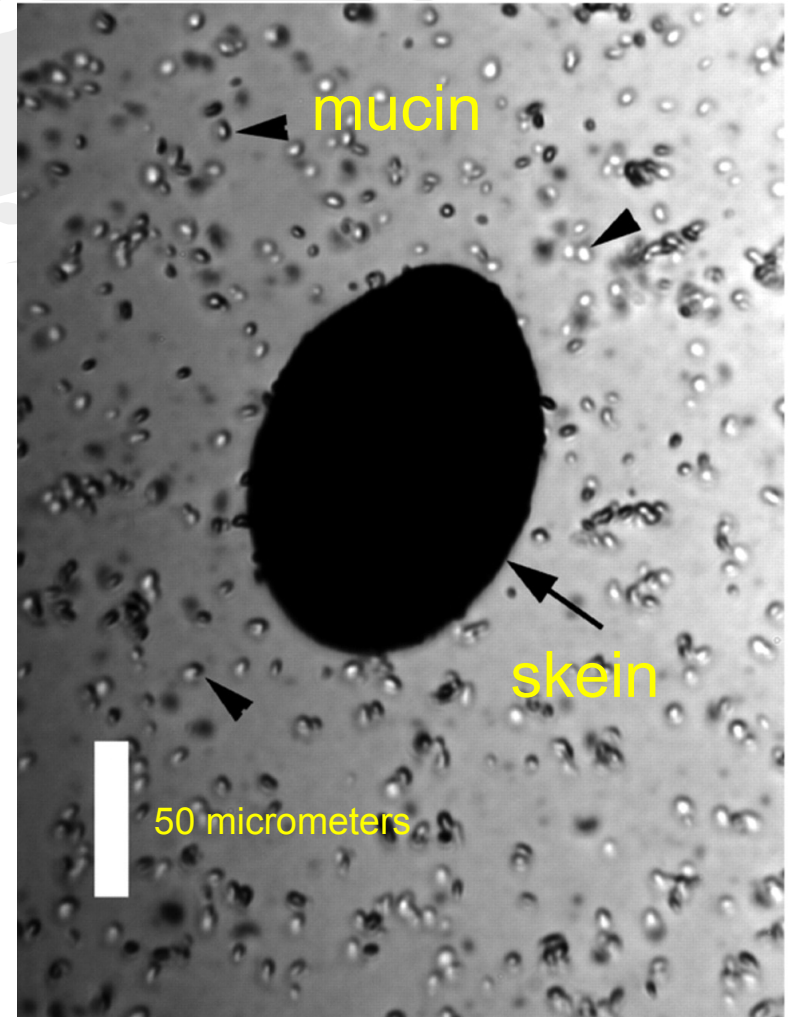
non-Newtonian fluids

Complex fluids are, well... complex. They include most gooey things:

- shampoo, saliva (*visco-elastic fluids*)
- blood
- toothpaste (*yield-stress fluid*)
- micellar fluids, corn starch
- hagfish slime!

so what's inside the slime?

- 99.996% seawater!!
- .0015% mucin
- .002% thread skein

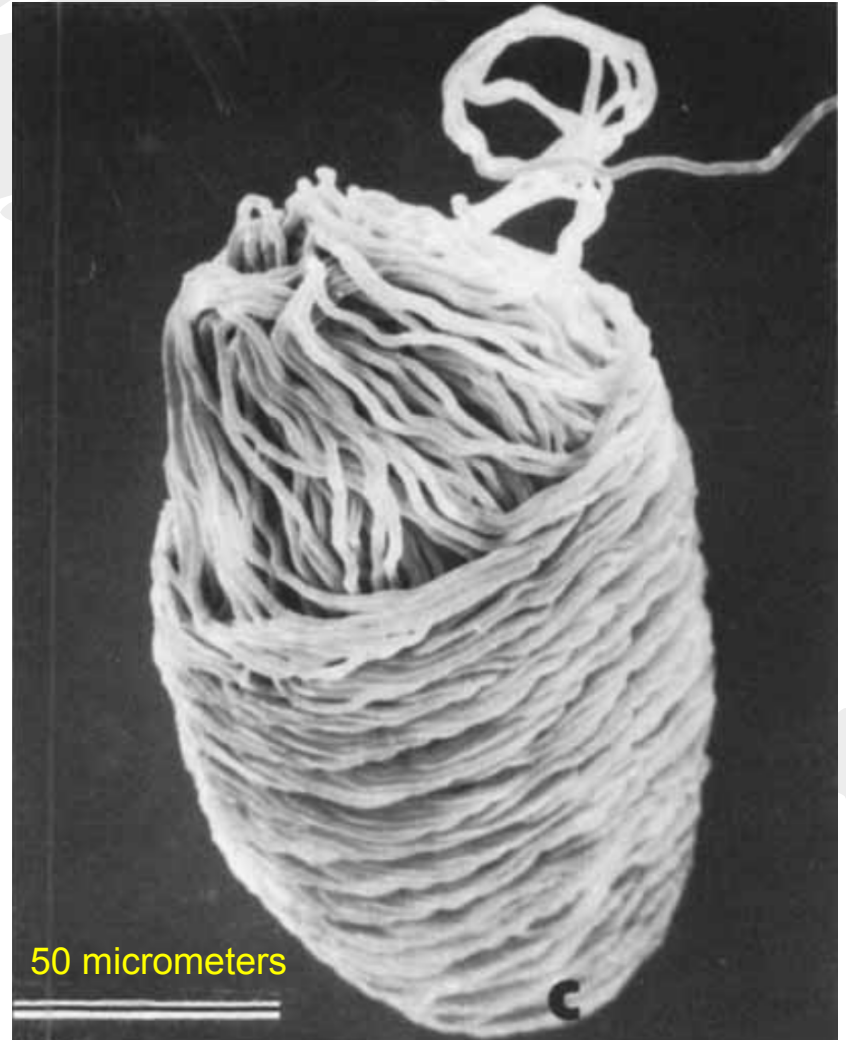


what's a skein?

A 'skein' consists of thread rolled into a ball.

The skein is about 0.1 millimeter in size!
(~ human hair)

How long is the thread?
15 cm!



what happens when the skeins unravel?

The threads form a *network*, which gives the slime its properties.

The thread network determines the *rheology* of the slime.

