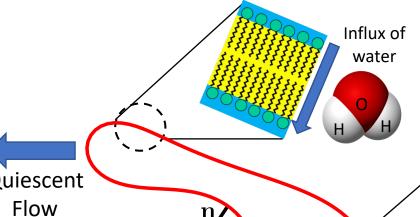


(b): A starfish vesicle at t=0 relaxes and swells to a circle.

 $\dot{\gamma} = 2 \times 10^{-3} \, \mathrm{m/s}$



Shear Flow

Quiescent

(a): A semi-permeable vesicle (permeable only to water) immersed in a viscous fluid.



Confinement in a contracting channel

 $\dot{\gamma} = 2 \times 10^{-4} \,\mathrm{m/s}$ $\dot{\gamma} = 2 \times 10^{-5} \,\mathrm{m/s}$



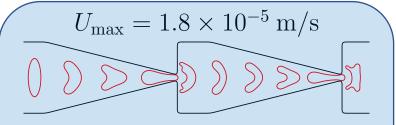
$$\dot{\gamma} = 2 \times 10^{-2} \,\mathrm{m/s}$$

(c): A vesicle in a shear flow tank treads with a final reduced area and inclination angle that depend on the flow rate.

Confinement in a closely fit channel

$$U_{\text{max}} = 1.0 \times 10^{-3} \,\text{m/s}$$

(d): A vesicle in a stenosed geometry loses 6% of its fluid volume.



(e): A vesicle passing repeatedly through a slit geometry loses close to 50% of its fluid volume.