

For **Lymph** teachers  
**12-13**

- Flow rate (10mm/s)
- Lymph flow responds to sympathetic stimulation
- An  $\alpha$ -adrenergic and purinergic (ATP) excitatory mechanism exist
- A  $\beta$ -adrenergic inhibitory mechanism exists
- Inflammatory cytokines stimulate the lymphatic pump system (stroke volume)
  - Benoit and Zawieja, 1992
  - Olszewski et al., 2001

Lymphatics carry cytokines away from the site of inflammation

- Proinflammatory cytokines
  - Interleukin-1
  - Interleukin-6
  - Tumor necrosis factor- $\alpha$  (TNF  $\alpha$ )

Anti-inflammatory cytokines

- Interleukin-4
- Interleukin-10