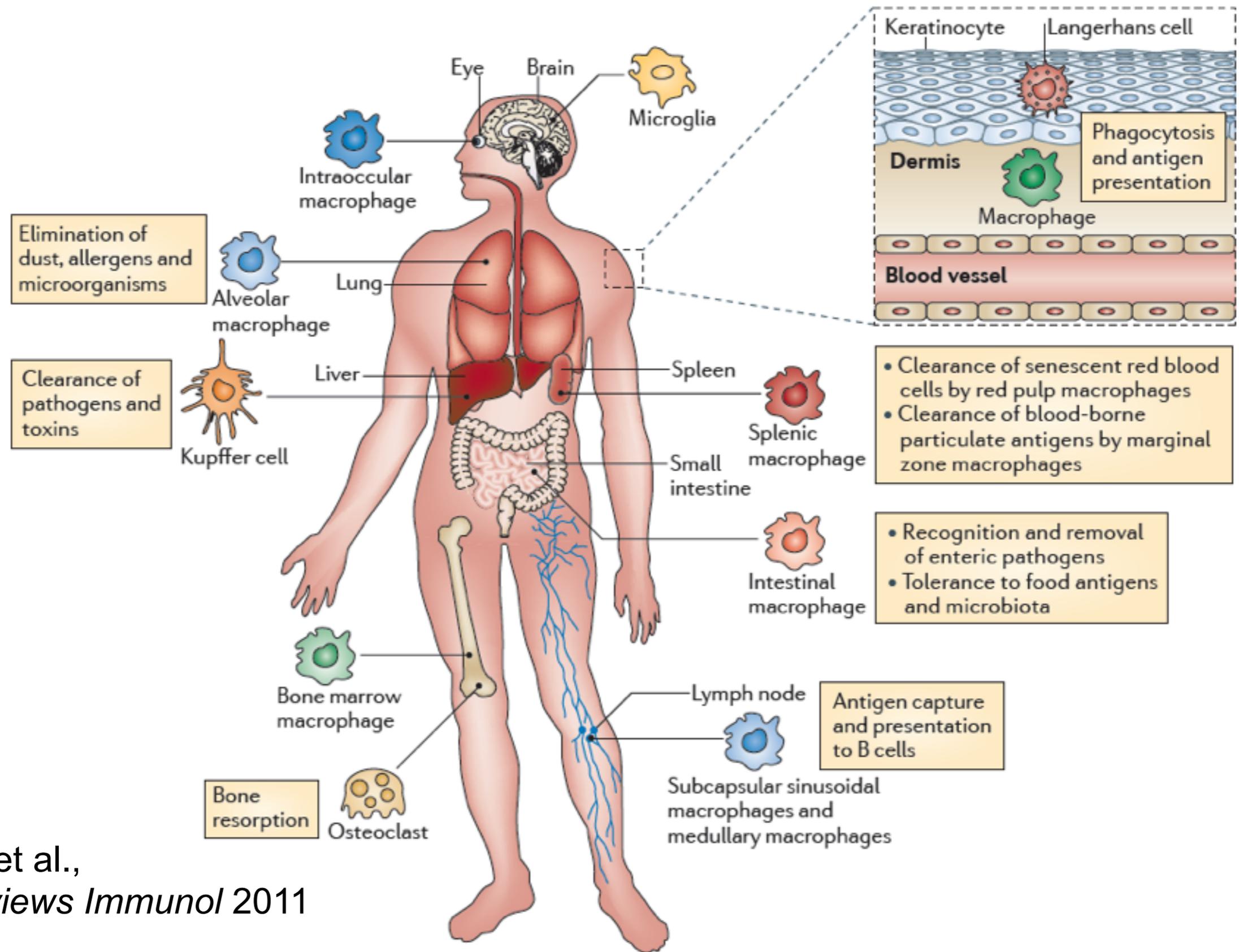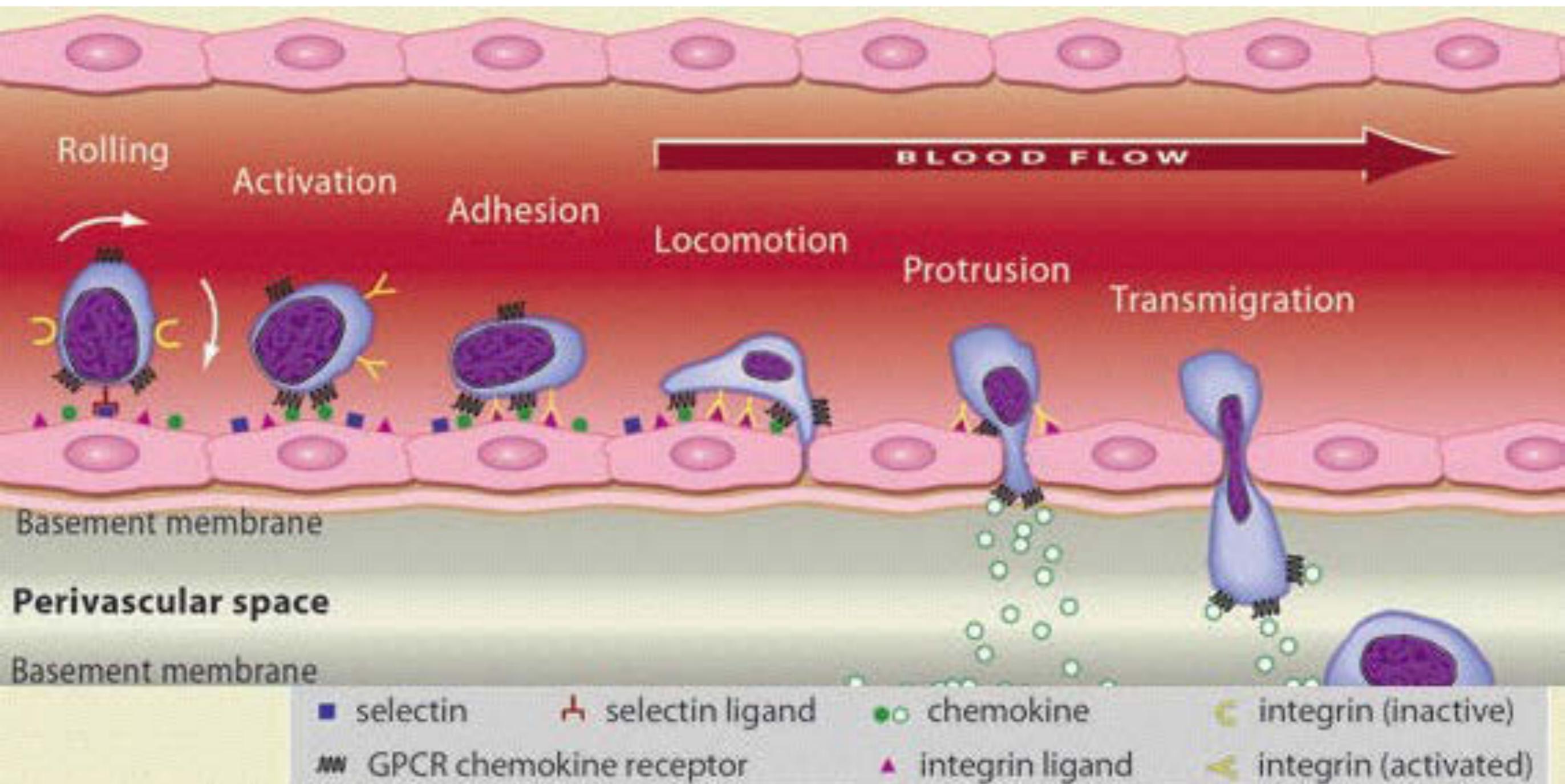# "Protective and pathogenic functions of macrophage subsets"
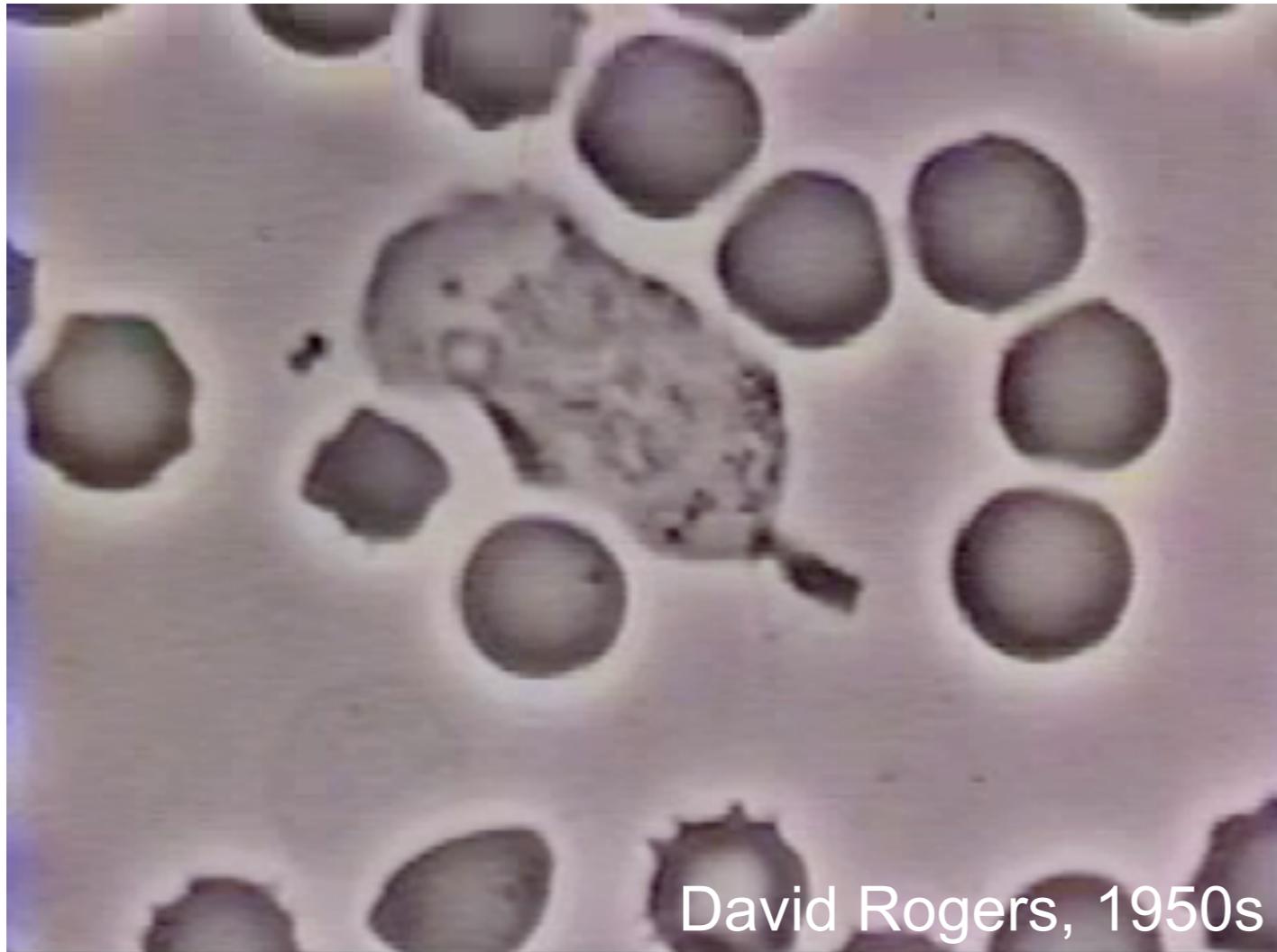

Murray et al.,
Nat Reviews Immunol 2011

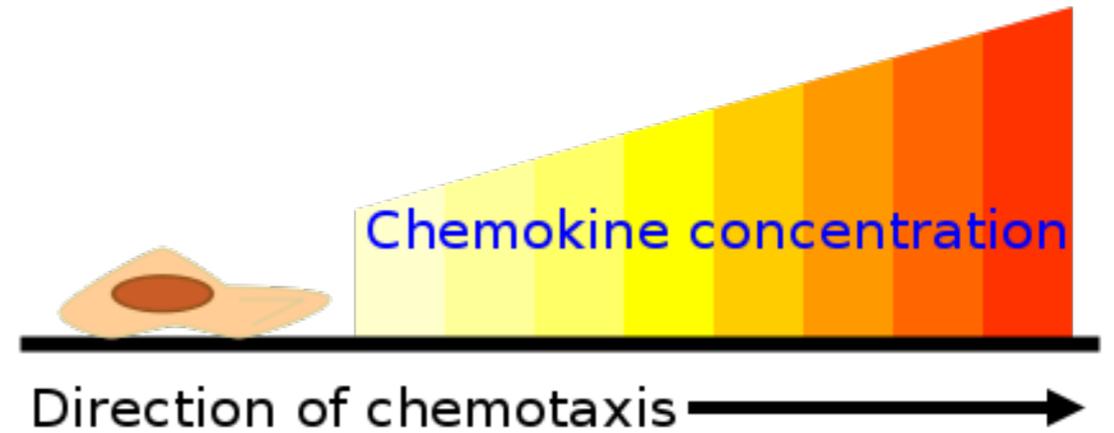# White blood cell (e.g., neutrophil) scavenging: rolling, adhesion, and extravasation

Source: Man, Shumei, Eroboghene E. Ubogu, and Richard M. Ransohoff. "Inflammatory cell migration into the central nervous system: a few new twists on an old tale." Brain Pathology 17, no. 2 (2007): 243-250.
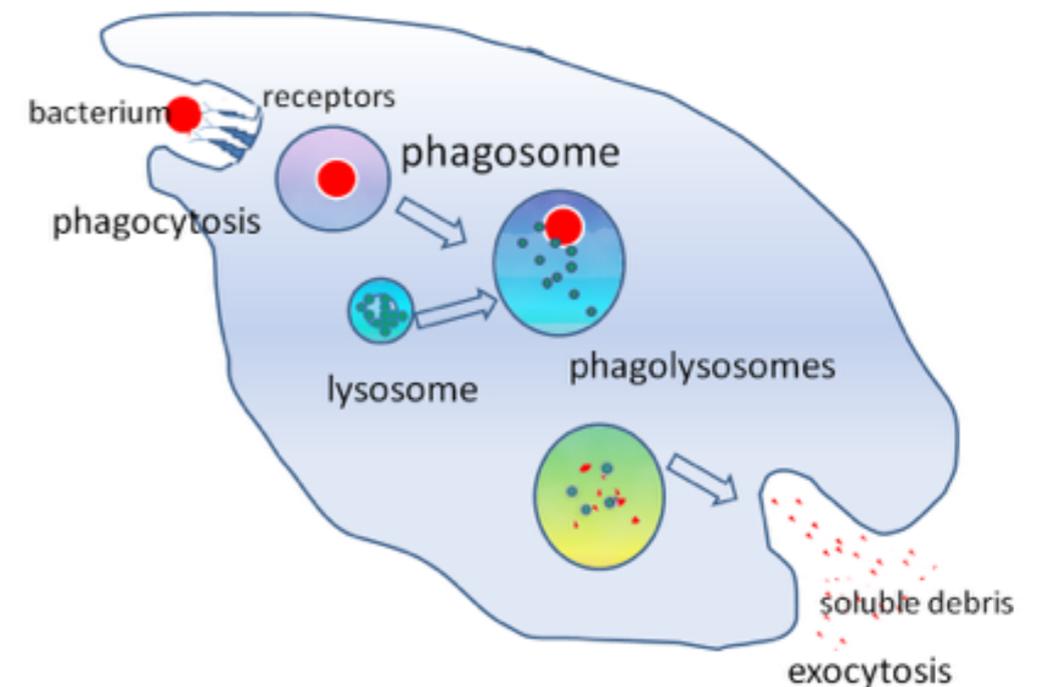
Chemotaxis: Macrophages hunt and destroy bacteria

David Rogers, 1950s

Chemokine concentration

Direction of chemotaxis

bacterium — receptors
phagocytosis
phagosome
lysosome
phagolysosomes
soluble debris
exocytosis

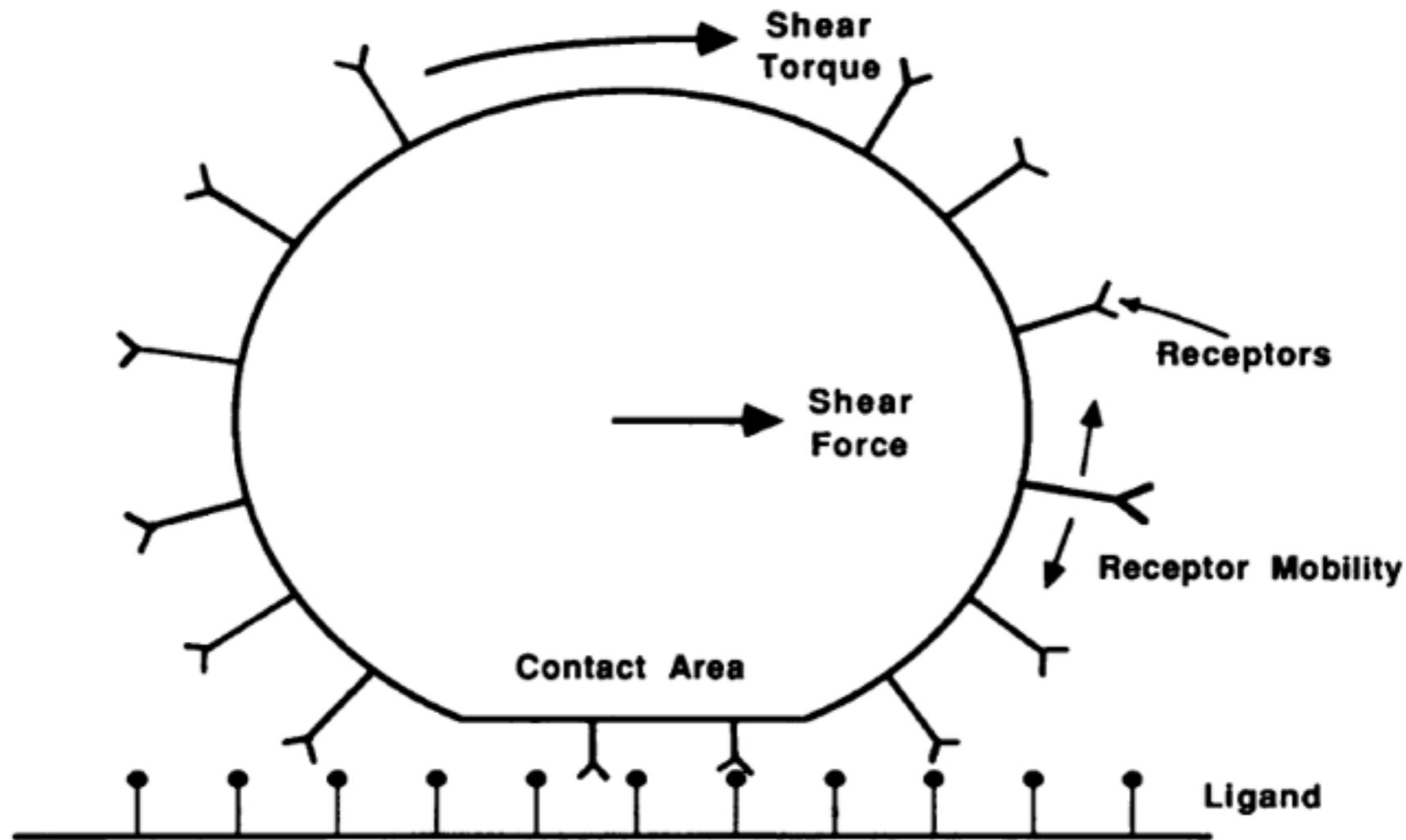# Modeling leukocyte adhesion and rolling: What are the forces?

FIGURE 1   Quantities expected to influence the receptor-mediated cell adhesion to a surface include receptor number, the density of complementary surface ligands, the force and torque transmitted to the cell by the passing fluid, the mobility of receptors in the plane of the membrane, and the contact area in which cell to surface bonds may form.

Hammer & Lauffenburger, *Biophys J* 1987

http://web.mit.edu/hml/ncfmf.html 5:39–7:40

http://www.youtube.com/watch?v=51-6QCJTAjU&list=PL0EC6527BE871ABA3&index=7&feature=plpp_video

7. Low-Reynolds-Number Flows

20.430J / 2.795J / 6.561J / 10.539J Fields, Forces, and Flows in Biological Systems
Fall 2015