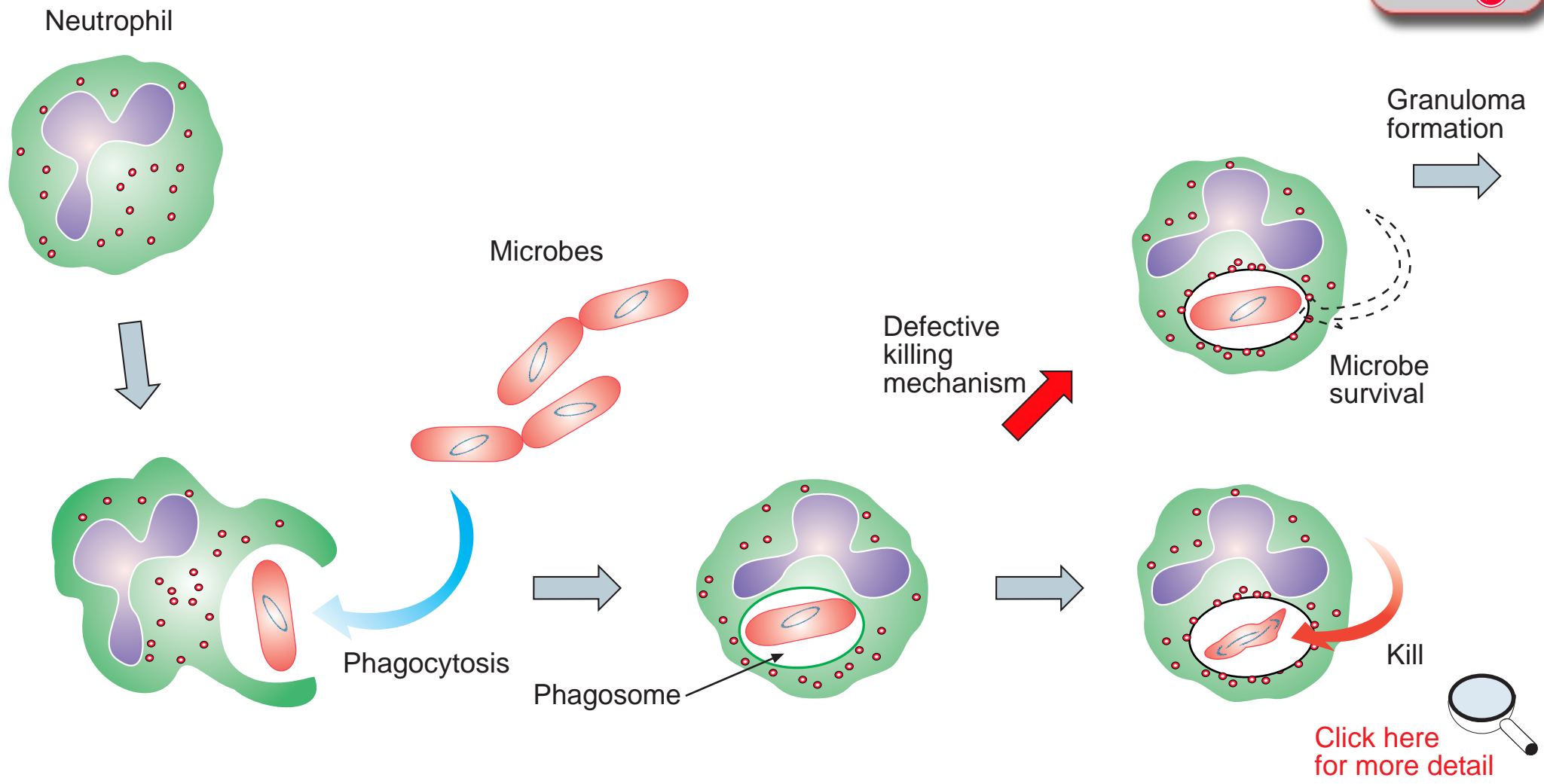


Chronic Granulomatous Disease

NEXT 

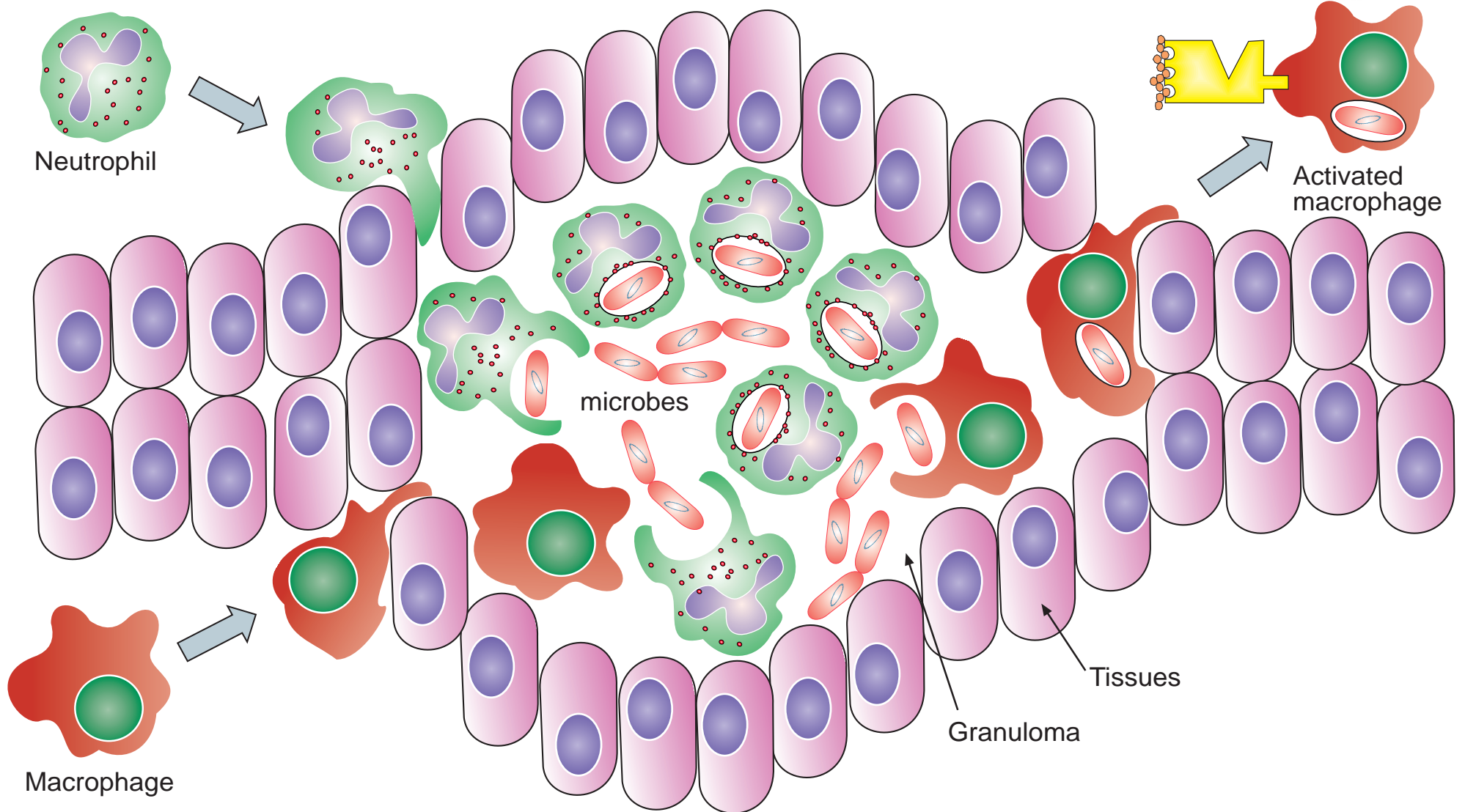


Under normal circumstances, neutrophils (and other phagocytes) detect and ingest microbes present in inflamed tissue. The microbes are killed by release of antimicrobial granules into the phagosome as well as the generation of reactive oxygen species (ROS) produced by the NADPH oxidase complex. A sudden increased uptake of oxygen during this process is known as the respiratory or oxidative burst. Defective NADPH oxidase function allows survival of the microbes and leads to the formation of a granuloma.

Granuloma Formation

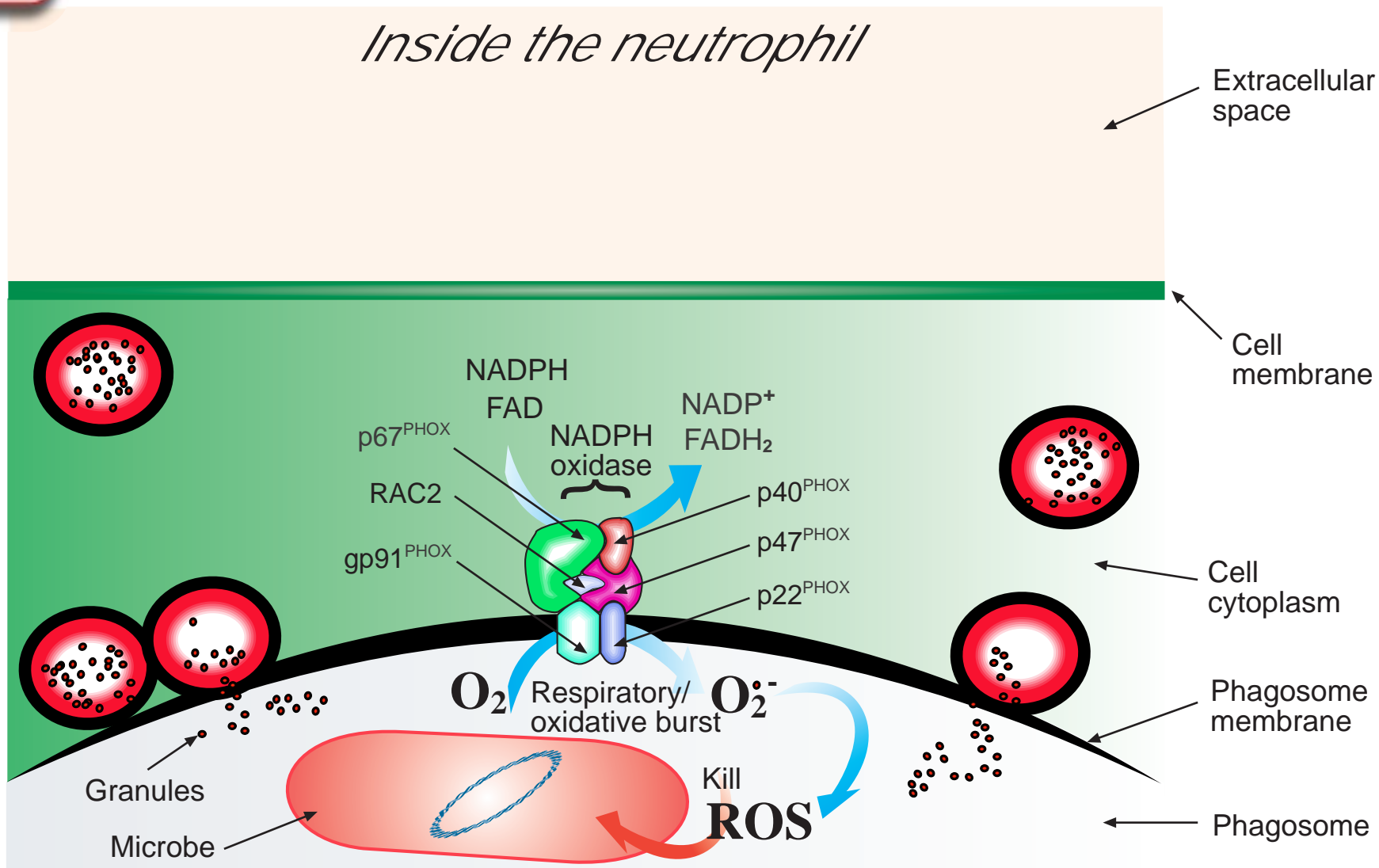
PREVIOUS

BACK TO START



Excessive inflammation due to failure to degrade chemoattractants and antigens, leading to persistent neutrophil accumulation. Impaired killing of the intracellular microorganisms by macrophages leads to persistent cell-mediated immune activation and granuloma formation.





The NADPH oxidase also known as the phagocyte oxidase (PHOX) is a multi-subunit enzyme complex that assembles at the phagosome membrane and converts free oxygen to reactive oxygen species (ROS) in a process known as the respiratory or oxidative burst. Defects in any of the protein subunits impairs or abolishes the ability to produce ROS and allows survival of the microbes ingested by phagocytosis. The most common defect is an X-linked recessive form of the gene encoding the gp91^{PHOX} protein. Other mutations have been found in p22^{PHOX}, p47^{PHOX}, p67^{PHOX} and RAC2.

