

AQUAPORINS AND PEROXIPORINS:

KEY REGULATORS OF REDOX SIGNALING IN INFLAMMATION AND HUMAN DISEASE

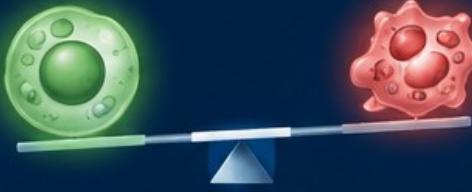
Exploring the role of aquaporin-mediated H_2O_2 transport in health and disease

BACKGROUND

Hydrogen peroxide (H_2O_2) is a double-edged molecule: a key signaling messenger at low concentrations, but a driver of oxidative stress at high concentrations.

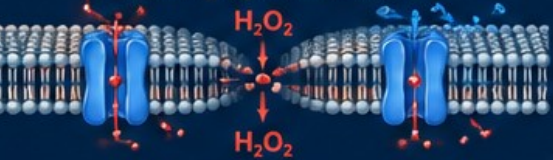
LOW H_2O_2
Physiological signaling

HIGH H_2O_2
Oxidative stress
Cytotoxicity

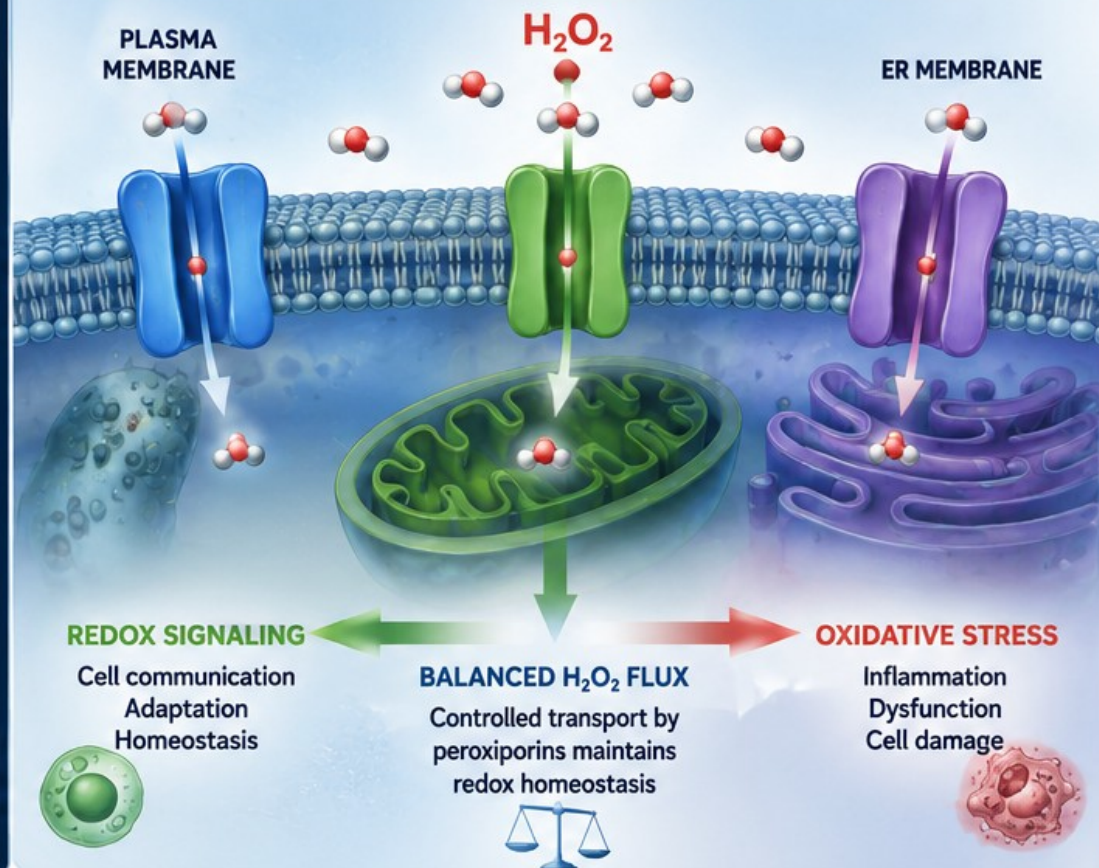


Aquaporins (AQPs) facilitate H_2O_2 diffusion across cellular membranes. AQPO, 1, 3, 5, 6, 8, 9 and 11 are peroxiporins.

They shape intracellular redox balance and represent an essential ROS scavenging mechanism.



PEROXIPORINS: GATEWAYS FOR H_2O_2



REDOX SIGNALING
Cell communication
Adaptation
Homeostasis

BALANCED H_2O_2 FLUX
Controlled transport by peroxiporins maintains redox homeostasis

OXIDATIVE STRESS
Inflammation
Dysfunction
Cell damage

INVESTIGATED PATHOPHYSIOLOGICAL CONTEXTS



**HAEMOPHILIC AND RHEUMATOID ARTHRITIS
HEMARTHROSIS**



INFLAMMATORY BOWEL DISEASE (IBD) AND CELIAC DISEASE



NEUROINFLAMMATION AND THE GLYMPHATIC SYSTEM



GOAL

To determine the role of specific aquaporins, and particularly peroxiporins in redox homeostasis and disease progression, opening new perspectives for targeted therapies.

OUR APPROACH



IMPACT



AQUAPORINS. PEROXIPORINS. REDOX BALANCE. HEALTH AND DISEASE.
Building knowledge for better therapies.