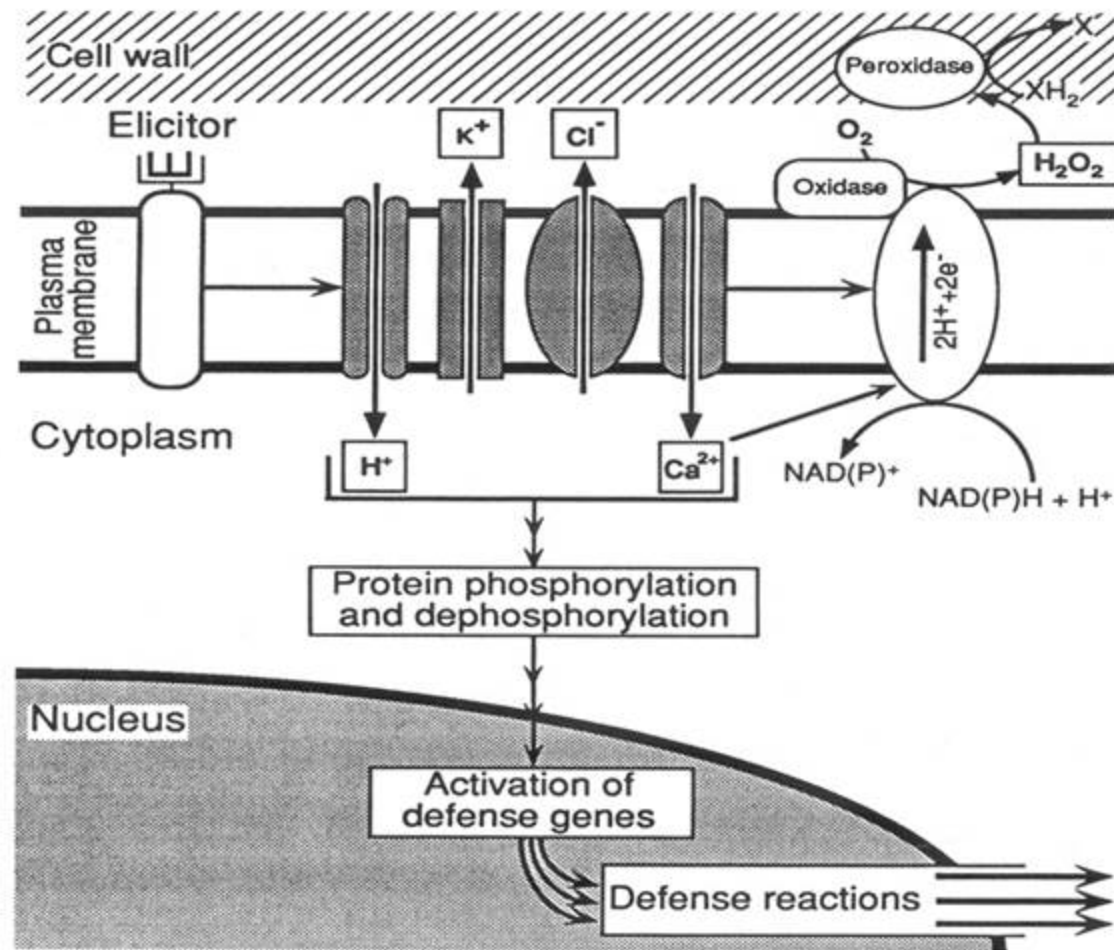


# Signaling Cascade for Defense Responses

Model derived most from studies in cell culture using specific elicitors.

However, there is evidence for induction in intact plants by R genes. Some aspects are also constitutive and help block most microbes (non-host resistance).



Schematic illustration of major, partly hypothetical components of the signaling cascade from elicitor recognition to defense gene activation.

# Secondary Signals

## 2. H<sub>2</sub>O<sub>2</sub> (HYDROGEN PEROXIDE)

- Plays multiple roles:
  - induces defense-related genes
  - induces apoptosis
  - causes cross-linking of cell wall proteins (more resistant to wall-degrading enzymes)
  - may directly kill pathogens

# Secondary Signals

## 3. SALICYLIC ACID

- required for SAR
- levels increase locally and at distance from infection
- Systemic Signal? Probably not. Still unknown