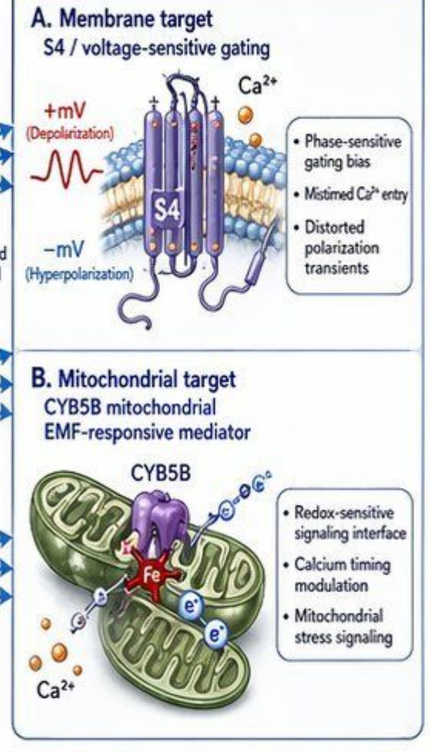
Proposed Bioelectric Dissonance Pathway to Autoimmunity

Non-native EMF exposure → S4/CYB5B timing disruption → immune mis-coding, sterile danger signaling, and breakdown of self-tolerance

Proposed mechanistic integration
Biologically grounded synthesis, not settled proof

1. Non-native EMF / ELF Exposure

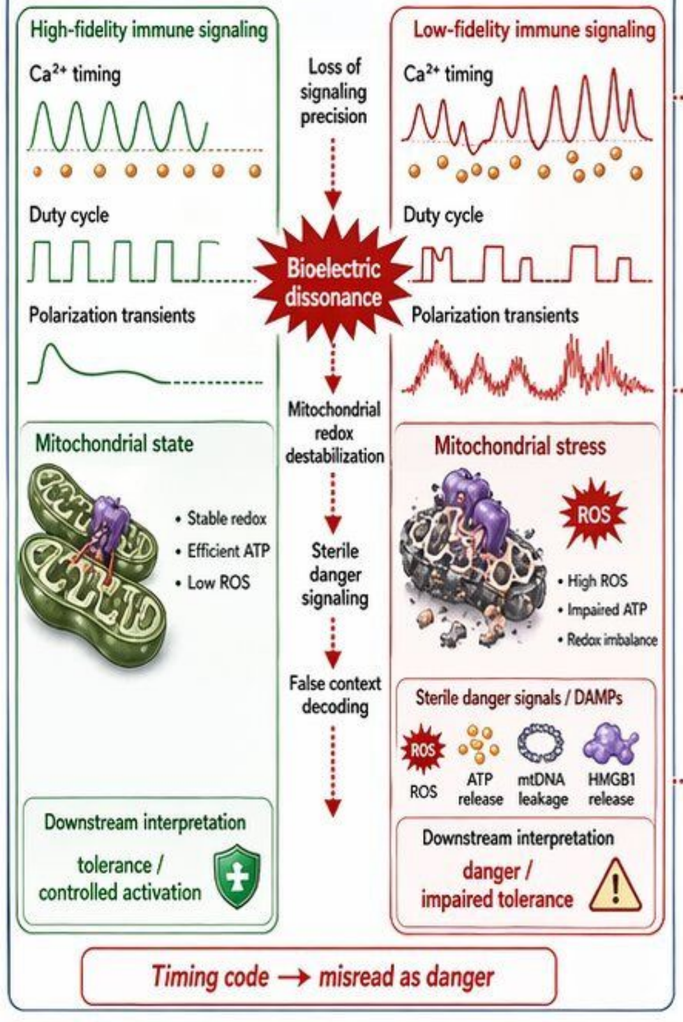
2. Immune decision hardware



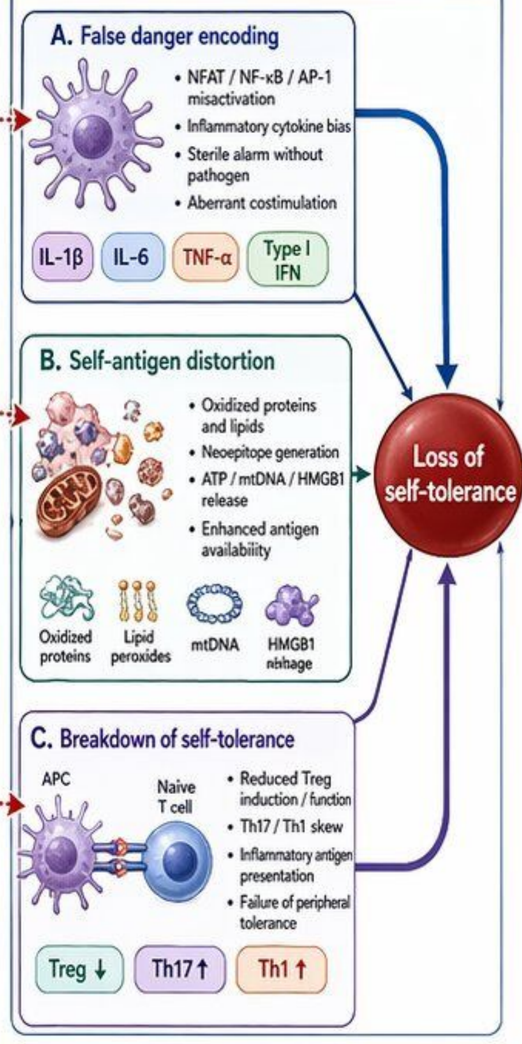
Immune cells decode timing: Ca^{2+} frequency, duty cycle, and membrane-potential transients help determine tolerance vs activation vs inflammation

3. Immune timing-code corruption

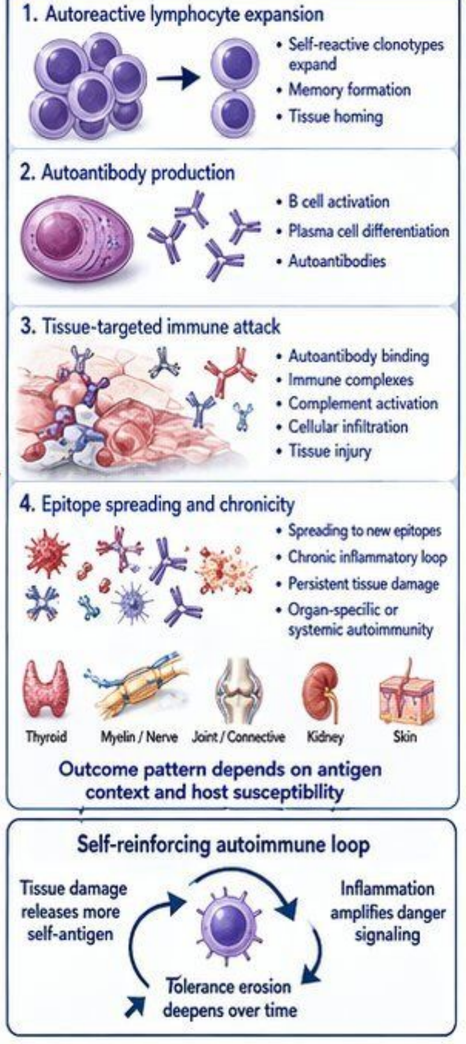
Small persistent timing errors may mimic distress or impair tolerance



4. Three converging autoimmune lanes



5. Autoimmune escalation



Legend (arrow coding)

- Solid = established biology
- Dashed = proposed bridge
- Dotted = downstream interpretation

Pathway summary

Non-native EMF → S4/CYB5B timing disruption → Ca^{2+}/ polarization mis-coding → *sterile danger signaling + self-antigen distortion + tolerance failure* → *autoreactive lymphocytes and autoantibodies* → *autoimmune tissue injury*

Evidence framing

Conceptual synthesis: immune cells interpret temporal signaling patterns; disturbed calcium/redox timing is shown here as a proposed upstream contributor to inflammatory misclassification and loss of tolerance.