

# Autodraft: Self-Organized Bioelectricity via Collective Pump Alignment Physical Origin of Chemiosmosis

Thread: regenesis

Digest slug: auto-self-organized-bioelectricity-via-collective-pump-alignment-physical-origin

Source: site/regenesis/digests/auto-self-organized-bioelectricity-via-collective-p

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## Structured draft body

Autodraft · Self-Organized Bioelectricity via Collective Pump Alignment Physical Origin of Chemiosmosis · Cohera Lab Cohera Lab Home Research Cosmos Regenesis Ethos Publications About Autodraft: Self-Organized Bioelectricity via Collective Pump Alignment Physical Origin of Chemiosmosis Date: 2026-02-23 · Thread: regenesis · Status: extracted-draft · Confidence: low-medium Source chatgpt/pdf/Self-Organized\_Bioelectricity\_via\_Collective\_Pump\_Alignment\_Physical\_O DOI: not detected automatically. Auto summary (preview-based) Self-Organized Bioelectricity via Collective Pump Alignment: Physical Origin of Chemiosmosis Ryosuke Nishide \* and Kunihiko Kaneko arXiv:2602.16171v1 [physics.bio-ph] 18 Feb 2026 Niels Bohr Institute, University of Copenhagen, Jagtvej 155 A, Copenhagen N, 2200, Denmark Chemiosmosis maintains life in nonequilibrium through ion transport across membranes, yet the origin of this order remains unclear. We develop a minimal model in which ion pump orientation and the intracellular electrochemical potential mutually reinforce each other. Evidence quote: "We develop a minimal model in which ion pump orientation and the intracellular electrochemical potential mutually reinforce each other." Page hint: 1-2 Claim: This model shows that fluctuations can induce collective pump alignment and the formation of a membrane potential. Evidence quote: "This model shows that fluctuations can induce collective pump alignment and the formation of a membrane potential." Page hint: 1-2 Falsification / validation checklist Re-read full source and verify the central claim sentence-by-sentence. Cross-check against at least one independent source before promotion. Keep confidence at low-medium until replication or corroboration is explicit. Next queries What is the smallest testable claim from this source?

## Validation checklist

- Verify all nontrivial claims against the original source.
- Add explicit citations/DOIs where available.
- Mark confidence for each key claim (low/medium/high).