

The Eightfold Signal

Octopus Communication Project Brief

Pre-Failure Research Group LLC

Purpose

Pre-Failure Research Group is developing an exploratory, non-invasive research framework for studying whether recurring octopus visual and behavioral patterns can support cautious two-way interaction.

The project does not begin by claiming that octopus body patterns constitute a decoded language. It begins with observation: record the animal on its own terms, identify repeatable structure, and test only what the data can support.

Why this question is worth testing

- Cephalopods use rapid chromatophore-driven body patterns in both camouflage and signaling.
- Octopuses possess polarization-sensitive vision, creating a visual variable that human observers do not naturally perceive.
- Octopus skin and arms show forms of extraocular light sensitivity, suggesting that light is biologically relevant beyond ordinary image formation.
- Modern computer vision makes it possible to time-align subtle skin, posture, arm, and environmental changes at a scale difficult to code manually.

Proposed starting sequence

1. Passive multi-angle video and environmental observation.
2. Synchronized coding of chromatophore patterns, skin texture, posture, arm movement, and context.
3. Optional polarization-sensitive imaging and hydrophone recording as additional observational channels.
4. Pattern analysis that identifies repetition without assigning meaning prematurely.
5. Only after a stable baseline: controlled visual feedback using carefully bounded light/display stimuli with sham conditions and welfare stop criteria.

No shortcut to meaning

A repeated pattern is not automatically a word. A response to light is not automatically communication. The project is designed to distinguish correlation, sensory response, learned association, and genuine communicative function rather than collapse them into one claim.

Expert collaboration sought

PFRG is interested in guidance or collaboration from cephalopod researchers, marine biologists, animal-behavior specialists, sensory ecologists, veterinarians/animal-care experts, computer-vision researchers, and experimental-design specialists.

- Review of low-disturbance observational protocols and animal-welfare boundaries.
- Advice on species selection, housing context, and behavioral confounds.
- Polarization-imaging and lighting design.
- Behavioral coding, stimulus randomization, and control design.
- Computer-vision approaches for chromatophore, texture, posture, and movement tracking.
- Identification of relevant datasets, publications, and prior communication studies.
- Independent criticism of assumptions before live testing begins.

What PFRG brings

The recovered project architecture was designed around long-term provenance: synchronized capture, preserved conditions, explicit evidence states, repeatable trials, and retention of negative results. The objective is not to force a dramatic conclusion; it is to build a record strong enough that another researcher can understand what was observed, what was inferred, and what remains unknown.

Current status

The project is in research-design and literature-grounding stage. No claim of successful octopus-human translation or two-way language decoding is being made.

Contact

Project information and PFRG's public research library are available at pfrg.org.

Working project identity: "The Eightfold Signal" - "Between the currents, patterns speak."

Sources and provenance

Historical basis: recovered 2025 Octopus Communication Project records and the original outreach draft.

Scientific grounding references are listed in the companion document: The Eightfold Signal - Octopus Communication Research Framework.

Public project brief prepared August 2026.