**Introduction**

This document contains information that led to the highest-performing prompt. We tell GPT-3 to find all the elements contained within a biological strategy, but don’t find the strategy yet. We did this at the time because we wanted to try to break up the prompting. First accurately find each biological element, then later create a strategy.

We noticed GPT-3 does well when the word “Find” is used, compared to other words.

**Structure of Prompt**

* Get the elements that make up a biological strategy (not getting the strategy yet)

**Prompt**

Find the function of the organism.

Also Find how the mechanism, as in how does the organism do the function?

Also Find the context, for which it completes the function. This could be a place, or situation.

Also Find the organism.

Also Find the part of the organism that is used to complete the function.

Text: {}

Function:

**Structure of Content**

* Each entry has
  + Paper Id
  + Summary generated from GPT-3 Da Vinci
    - Biological Strategy
    - Organism
    - Part of
    - Function
    - Mechanisms
    - Context
  + My notes and analysis

**Content**

* W2103410568
  + Sample: "title": "Building a home from foam\u2014t\u00fangara frog foam nest architecture and three-phase construction process", "abstract": "frogs that build foam nests floating on water face the problems of over-dispersion of the secretions used and eggs being dangerously exposed at the foam : air interface. nest construction behaviour of tungara frogs, engystomops pustulosus, has features that may circumvent these problems. pairs build nests in periodic bursts of foam production and egg deposition, three discrete phases being discernible. the first is characterized by a bubble raft without egg deposition and an approximately linear increase in duration of mixing events with time. this phase may reduce initial over-dispersion of foam precursor materials until a critical concentration is achieved. the main building phase is marked by mixing events and start-to-start intervals being nearly constant in duration. during the final phase, mixing events do not change in duration but intervals between them increase in an exponential-like fashion. pairs joining a colonial nesting abbreviate their initial phase, presumably by exploiting a pioneer pair's bubble raft, thereby reducing energy and material expenditure, and time exposed to predators. finally, eggs are deposited only in the centre of nests with a continuously produced, approximately 1 cm deep egg-free cortex that protectively encloses hatched larvae in stranded nests."
    - Function: The function of the túngara frog is to build a home from foam.
    - Mechanisms: The túngara frog builds a home from foam by secretions used and eggs being dangerously exposed at the foam : air interface.
    - Context: The túngara frog builds a home from foam in a periodic burst of foam production and egg deposition.
    - Organism: The túngara frog is the organism that builds a home from foam.
    - Part of: The part of the túngara frog that is used to build a home from foam is the secretions used and eggs being dangerously exposed at the foam : air interface.
* W2138292607
  + Sample: A nocturnal mammal, the greater mouse-eared bat, calibrates a magnetic compass by the sun. recent evidence suggests that bats can detect the geomagnetic field, but the way in which this is used by them for navigation to a home roost remains unresolved. the geomagnetic field may be used by animals both to indicate direction and to locate position. in birds, directional information appears to be derived from an interaction of the magnetic field with either the sun or the stars, with some evidence suggesting that sunset/sunrise provides the primary directional reference by which a magnetic compass is calibrated daily. we demonstrate that homing greater mouse-eared bats (myotis myotis) calibrate a magnetic compass with sunset cues by testing their homing response after exposure to an altered magnetic field at and after sunset. magnetic manipulation at sunset resulted in a counterclockwise shift in orientation compared with controls, consistent with sunset calibration of the magnetic field, whereas magnetic manipulation after sunset resulted in no change in orientation. unlike in birds, however, the pattern of polarization was not necessary for the calibration. for animals that occupy ecological niches where the sunset is rarely observed, this is a surprising finding. yet it may indicate the primacy of the sun as an absolute geographical reference not only for birds but also within other vertebrate taxa.
  + Strategy:
    - Function: The function of the greater mouse-eared bat is to calibrate a magnetic compass by the sun.
    - Mechanisms: The mechanism by which the greater mouse-eared bat completes this function is by detecting the geomagnetic field.
    - Context: The context in which the greater mouse-eared bat completes this function is at sunset.
    - Organism: The greater mouse-eared bat is the organism completing this function.
    - Part of: The part of the greater mouse-eared bat used to complete this function is its ability to detect the geomagnetic field.
* W2005539166
  + Sample: "title": "Polarization sensitivity in two species of cuttlefish - Sepia plangon (Gray 1849) and Sepia mestus (Gray 1849) - demonstrated with polarized optomotor stimuli.", "abstract": "the existence of polarization sensitivity (ps), most likely resulting from the orthogonal arrangement of microvilli in photoreceptors, has been proposed in cephalopods for some time, although it has rarely been examined behaviourally. here, we tested the mourning cuttlefish, sepia plangon, and the reaper cuttlefish, sepia mestus, for polarization sensitivity using a large-field optomotor stimulus containing polarization contrast. polaroid filter drums with stripes producing alternating e-vectors were rotated around free-moving animals. polarized optomotor responses were displayed, and these responses were similar to those performed in response to a black-and-white, vertically-striped drum, whereas no responses were displayed to a plain polarizing control drum producing just a vertical e-vector. this indicates that the animals are able to see the contrast between adjacent stripes in the polarizing drum. to our knowledge, this is the first demonstration of functional polarization sensitivity in cuttlefish."
  + Strategy:
    - Function: The function of the organism is to be able to see the contrast between adjacent stripes in the polarizing drum.
    - Mechanisms: The mechanism by which the organism does this is by the orthogonal arrangement of microvilli in photoreceptors.
    - Context: The context in which this function is completed is when the polaroid filter drums with stripes producing alternating e-vectors are rotated around free-moving animals.
    - Organism: The organism is a cuttlefish.
    - Part of: The part of the organism that is used to complete the function is the photoreceptors.
* W2151557512
  + Sample: "title": "Identification and characterization of a multidomain hyperthermophilic cellulase from an archaeal enrichment.", "abstract": "archaea are microorganisms that use a wide range of carbon and energy sources. graham et al. describe an archaeal consortium that can grow at temperatures above 90 \u00b0c using crystalline cellulose as a carbon source, with potential applications in enzymatic degradation under extreme conditions."
  + Strategy:
    - Function: The function of the organism is to identify and characterize a multidomain hyperthermophilic cellulase from an archaeal enrichment.
    - Mechanisms: The mechanism by which the organism does this function is by using a wide range of carbon and energy sources.
    - Context: The context in which this function is completed is in an archaeal consortium that can grow at temperatures above 90 °c.
    - Organism: The organism is an archaea.
    - Part of: The part of the organism that is used to complete the function is the cellulase.
* W2160542693
  + Sample: "title": "DIFFERENCES IN POLYSACCHARIDE STRUCTURE BETWEEN CALCIFIED AND UNCALCIFIED SEGMENTS IN THE CORALLINE CALLIARTHRON CHEILOSPORIOIDES (CORALLINALES, RHODOPHYTA) 1", "abstract": "the articulated coralline calliarthron cheilosporioides manza produces segmented fronds composed of calcified segments (intergenicula) separated by uncalcified joints (genicula), which allow fronds to bend and reorient under breaking waves in the wave-swept intertidal zone. genicula are formed when calcified cells decalcify and restructure to create flexible tissue. the present study has identified important differences in the main agaran disaccharidic repeating units [\u21923)-\u03b2-d-galp (1\u2192 4)-\u03b1-l-galp(1\u2192] synthesized by genicular and intergenicular segments. based on chemical and spectroscopical analyses, we report that genicular cells from c. cheilosporioides biosynthesize a highly methoxylated galactan at c-6 position with low levels of branching with xylose side stubs on c-6 of the [\u21923)-\u03b2-d-galp (1\u2192] units, whereas intergenicular segments produce xylogalactans with high levels of xylose and low levels of 6-o-methyl \u03b2-d-gal units. these data suggest that, during genicular development, xylosyl branched, 3-linked \u03b2-d-galp units present in the xylogalactan backbones from intergenicular walls are mostly replaced by 6-o-methyl-d-galactose units. we speculate that this structural shift is a consequence of a putative and specific methoxyl transferase that blocks the xylosylation on c-6 of the 3-linked \u03b2-d-galp units. changes in galactan substitutions may contribute to the distinct mechanical properties of genicula and may lend insight into the calcification process in coralline algae."
  + Strategy:
    - Function: The function of this organism is to produce segmented fronds composed of calcified segments (intergenicula) separated by uncalcified joints (genicula).
    - Mechanisms: The mechanism by which this organism produces segmented fronds is by calcifying cells decalcifying and restructuring to create flexible tissue.
    - Context: This organism produces segmented fronds in the intertidal zone.
    - Organism: The organism is the articulated coralline calliarthron cheilosporioides manza.
    - Part of: The part of the organism used to produce segmented fronds is the calcifying cells.

**Conclusion**

* The results are not great.
* The “part of” element is almost always incorrect, as it mostly copies information from the function and mechanism element.
* Moreover, the actual elements output from GPT-3 are too long.