

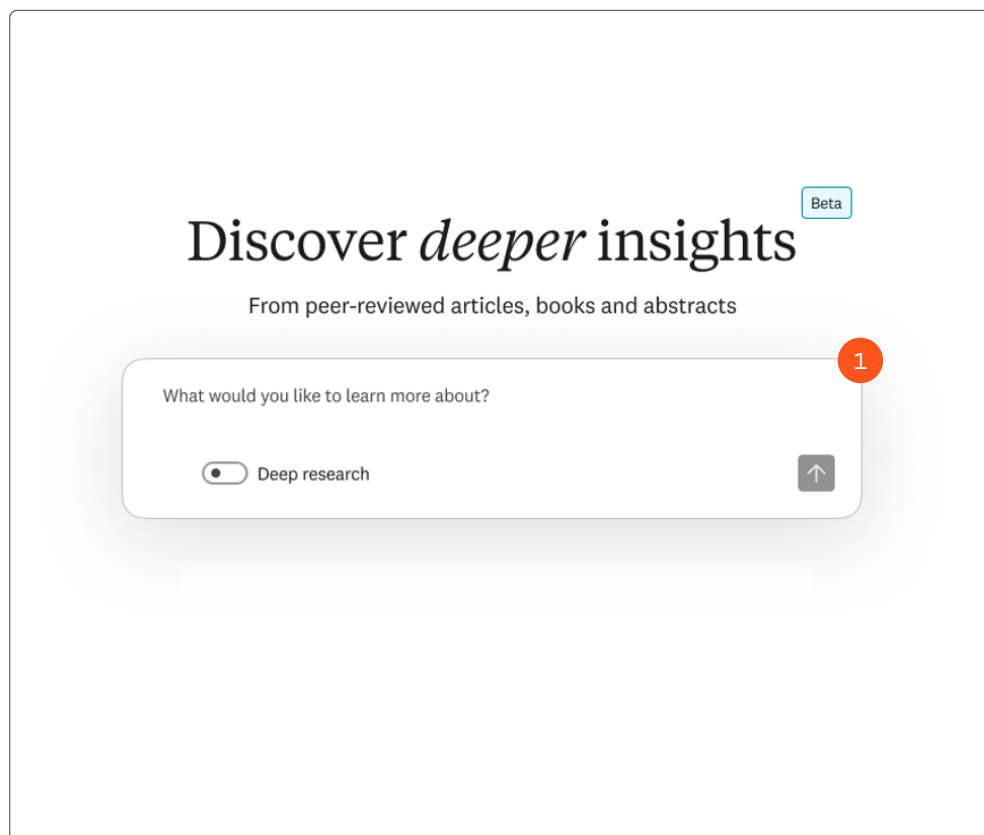
Quick Reference Guide



Table of contents

1. Begin your search	3
2. Analyzing search results and reliability	4
3. Funding	5
4. Beginning a Deep research report	6
5. Reviewing a Deep research report	7

1. Begin your search



Discover *deeper* insights Beta

From peer-reviewed articles, books and abstracts

What would you like to learn more about?

☐ Deep research ↑

- 1. Formulate your query:** Simply ask your question or describe your request in a natural, conversational manner. The tool supports complex research, including interdisciplinary fields.

2. Analyzing search results and reliability

The image displays three screenshots of the LeapSpace interface, illustrating the search and analysis process. The first screenshot (left) shows the initial query: "How can seaweed cultivation contribute to global protein supply while capturing carbon?" and the "Cognit steps" section, which lists the steps taken by the AI to process the query. The second screenshot (middle) shows the "Seaweed cultivation for protein and carbon capture" topic overview, which includes a summary of the topic and a list of key points. The third screenshot (right) shows the "Reference details" panel for a specific article, including the title, author, year, and a "Link to statement" section that highlights the relevant information from the source.

1. Review the answer steps: LeapSpace always displays the steps it takes to answer your question. This transparency builds trust and supports an essential skill in the age of AI—computational thinking or breaking a problem into parts and solving each step logically.

2. Examine the topic overview: Review the structured topic overview to see the main points quickly. The Summary synthesizes content from relevant documents.

3. Utilize References to "Dig In": Each LeapSpace response is grounded in peer-reviewed, curated content—drawing on the breadth of Elsevier’s publisher-neutral Scopus database and the depth of full-text research from Elsevier and other publishers. References let you explore the source material behind any statement, and clicking one opens a panel with bibliographic details and a “Link to statement” paragraph—known as a Trust Card—showing how closely the claim aligns with the cited source. This transparency builds trust and saves time when navigating dense research.

4. Ask a follow-up question: You can use the follow-up feature to elaborate on specific points from the report, refocus your query to explore new perspectives, or zoom in on a particular area of interest.

3. Funding

How can seaweed cultivation contribute to global protein supply while capturing carbon?

Copilot steps >

Seaweed cultivation for protein and carbon capture

Seaweed cultivation can contribute to the **global protein supply** while also **capturing carbon** through its dual role as a nutrient-rich food source and a blue carbon ecosystem. Recent research highlights both opportunities and limitations in achieving these goals.

1. Contribution to Global Protein Supply

- High protein content:** Protein levels vary by species and cultivation conditions. For example, *Ulva fenestrata* grown in nutrient-rich herring production waters reached **37.37% dry weight protein**, the highest reported among reviewed species [1].
- Nutritional quality:** Seaweed proteins contain essential amino acids, though digestibility can be low (<60%). Processing innovations, such as fermentation into **seaweed-derived mycoprotein**, can raise protein content (~33%) and digestibility (~100%), with PDCAAAS values approaching 0.89 [2].
- Cultivation methods:** Vegetative propagation in *Palmaria palmata* supports sustained growth and bioactive peptide production, enhancing both yield and functional food potential [3].
- Nutrient recycling:** Using nutrient-rich industrial effluents as cultivation media can boost protein biosynthesis while reducing waste [4].

2. Carbon Capture and Sequestration Potential

- Photosynthetic CO₂ uptake:** Seaweeds fix carbon during growth, with life-cycle sequestration for *Laminaria japonica* estimated at **97.73 g C m⁻² yr⁻¹**, most stored in biomass [5].
- Refractory carbon production:** *Porphyra* cultivation increases dissolved organic matter resistant to degradation, enhancing long-term carbon storage in coastal systems [6].
- Optimized cultivation:** Matching strain and depth in *Kappaphycus* spp. can improve biomass yield and carbon uptake efficiency [8].
- Sinking strategies:** Deliberate sinking of harvested seaweed can create additional sequestration, though ecological and governance risks remain [7] [8].

Which funding institutions are most likely to support this research?

LeapSpace is powered by Scopus. Expect variation in response quality. [Share feedback](#)

1

Key Funding institutions

Funder	Relevant Focus Area	Funding Type / Amount	Geographic Scope	Clarity
[redacted]	PhD scholarship in seaweed nature-based solutions, climate change mitigation, and adaptation [1]	Scholarship - \$20,000 USD	Australia	[1] [6]
[redacted]	Oceanic climate change mitigation opportunities, biodiversity conservation, innovative mitigation (JARC) [24] [25]	Cooperative research - up to \$20,100 USD	Türkiye + international partners	[1] [6]
[redacted]	Seaweed processing research in Iceland, biopolymer chemistry, sustainable product development [2] [3]	Research grant	USA-Iceland	[1] [6]
[redacted]	Aquaculture research: Interfacing, sustainable protein production [3] [6]	Training	USA	[1] [6]
[redacted]	Nature-based climate action, carbon farming, ecosystem restoration (C4i-nc-HS)	Research grant - up to \$10,000 USD	USA (domestic focus)	[1] [6]
[redacted]	Blue carbon ecosystems: resilience, scalability, carbon fluxes [26] [27]	Cooperative research - \$275,000 USD	International partners	[1] [6]
[redacted]	Bioprocessing lab fellowship, protein production technologies [28]	Fellowship	USA	[1] [6]

Ask a follow-up question

LeapSpace is powered by Scopus. Expect variation in response quality. [Share feedback](#)

2

Funding preview

Funding institutional

Funding opportunity

1. The impact of seaweed cultivation on carbon capture and protein production in coastal systems: A case study of the Pacific Northwest

Research of the seaweed business in the Pacific Northwest

AUS

[Apply for funding](#)

Summary

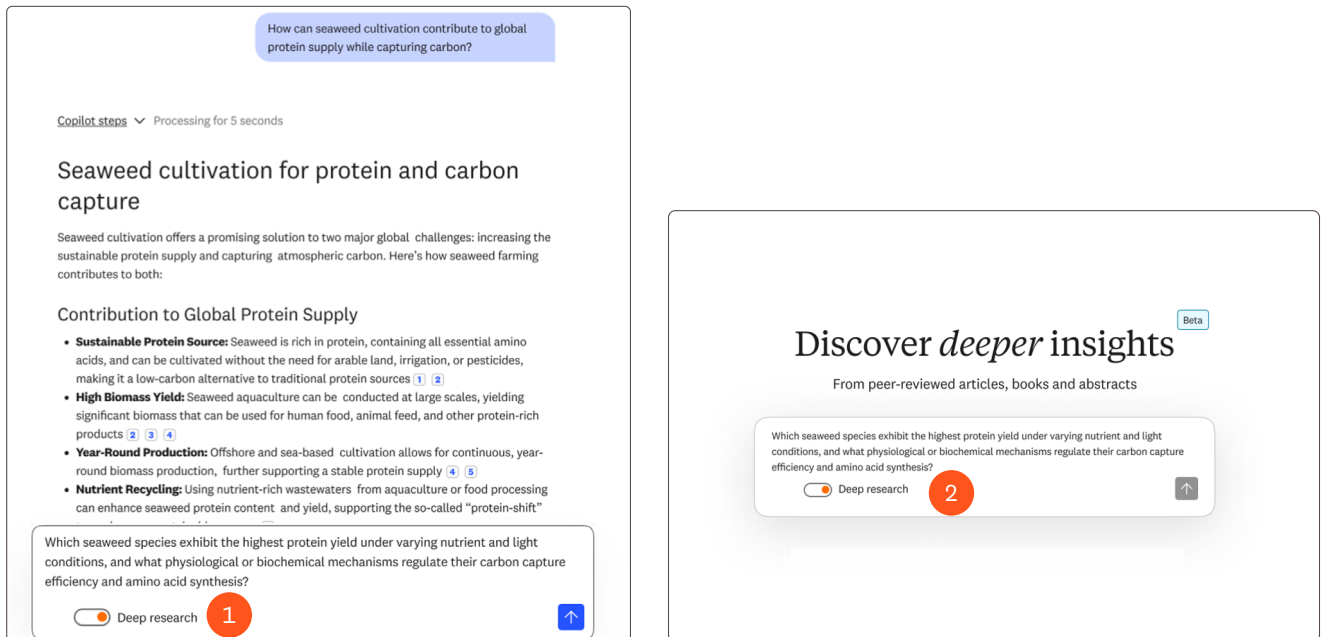
Eligibility details

This PhD scholarship will sit within a broader project funded by the CRC Canada on "Transforming women's seaweed businesses into nature-based solutions for Fiji, Samoa, and Kiribati". As background, seaweed farming is widely recognized as a potential key industry for climate change mitigation and adaptation activities. In the Pacific, the seaweed business is women's business, especially women in rural and regional areas who are usually involved in farming and agriculture activities. The broader project will evaluate technical solutions for scaling seaweed production, integrate the environmental potential of seaweed production (the specific objective within which the PhD scholarship sits), create new business opportunities for seaweed enterprises, and generate lessons learned to inform replication and scaling up across the Pacific and Asia. The broader project will begin by mapping the existing seaweed supply chains in Fiji, Samoa, and Kiribati. Through environmental and biodiversity monitoring of production sites, the project will evaluate production and processing interventions for the key species and their natural capital.

3

1. **Inquire about funding:** To find out who is funding research in this topic, use the ‘Ask a follow-up question’ feature.
2. **Review funding sources:** You can see a list of the key funding institutions and major funding sources for this area of research.
3. **Identify specific funding opportunities:** You can drill down into specific funding opportunities that are behind each funder, which may be a source of funding for you.

4. Beginning a Deep research report



- 1. Generate a Deep research report:** Deep research takes your exploration a step further—producing comprehensive, well-reasoned reports in minutes. When you pose a question, Deep research goes beyond summarizing existing information—it develops a detailed research plan, conducts extensive searches across the curated literature in LeapSpace, and refines its approach as new insights emerge.
- 2. Start a Deep research query:** Begin by using “Ask a follow-up question” (see figure 1) or from the LeapSpace home screen. In both cases, ensure the Deep research toggle is switched on

5. Reviewing a Deep research report

Deep research report

View as PDF

This deep research report may contain inaccuracies. Please verify the information independently.

Optimizing Protein Yield and Biochemical Mechanisms in Seaweed Species Under Variable Nutrient and Light Conditions

Quick Reference

Species	Protein Content (% DW)	Key Mechanisms/Notes	References
Psychiatric disorders	20-25 (extract)	Efficient N assimilation (nitrate/ammonium), high protein recovery with pH-shift extraction	1 2 3
Palmaria palmata	28	High yield with enrichment, effective post-harvest processing	4
Macrocystis pyrifera	22.5	Cooler temps, balanced photoperiod optimize protein and amino acid synthesis	5 6
Hypnea cervicornis	21	Accumulates protein/ phycobiliproteins under balanced high nutrients	7
Porphyra umbilicalis	22.6 (extract)	High growth/protein at moderate temp, high light; pH-	8 9

Ask a follow-up question

☐ Deep research

Researcher AI beta, is powered by Scopus and ScienceDirect. Expect variation in response quality. [Share feedback](#)

Deep Research steps

1

- Analyzing the research topic to identify seaweed species with top protein yield under different nutrients and light levels. Evaluating physiological and biochemical factors governing carbon capture and amino acid production.
- Analyzing the research plan to identify seaweed species with the highest protein yield under different nutrient and light conditions, while examining underlying physiological mechanisms.
- Breaking down the research topic into specific questions and directions, while identifying targeted areas to investigate further.
- Analyzing the research prompt to identify key questions. Evaluating seaweed species for protein yield under different nutrient and light conditions. Formulating a primary query focused on optimizing protein output.
- Starting the initial research process and outlining objectives. Gathering relevant sources and identifying key topics for further analysis. Organizing findings for a coherent overview. Preparing for deeper investigation next steps.
- Analyzing the topic of seaweed protein yield, exploring two levels of depth and two questions per level, to gather initial insights.
- Searching for semantically relevant information about Which seaweed species exhibit the highest protein yield when subjected to varying nutrient

1. Review Deep research steps: The report displays exactly what steps have been taken to generate the report, aiding transparency.

2. Analyze the report overview: The report details the following:

- Referenced overview of key findings
- Direct answer to query
- Study scope
- Assumptions & limitations
- Suggested further reading
- Introduction and synthesis paragraph
- Discussion and future research directions
- Conclusions and recommendations

