

助力学校及师生高效科研 --LeapSpace

Elsevier 秦勇
东北区客户经理
2026年3月



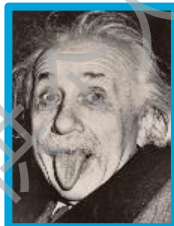
Advancing human progress together



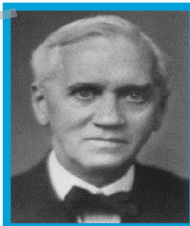
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Elsevier 发展简史

Albert Einstein



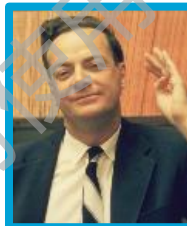
Alexander Fleming



Chen-Ning Yang



Richard Feynman



Paul Samuelso



John Nash



1638

1580 1620 1880 1930 1940 1947 1970 1991 1993 1997 2001 2004 2008 2012 2013 2015

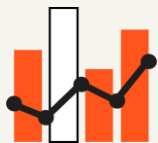
1997

LeapSpace



ScienceDirect

人工智能在科研中被大量使用：



AI 在科研中被应用的比例迅速提升

研究人员在科研中经常使用 AI 的比例，一年内从 2024 的 37% 迅速增长到 2025 的 58%。2026 年会用更多的研究人员在日常科研工作中高频度使用 AI。

形成极其危险的错位：

科研中使用 AI 越来越多，但对 AI 输出结果的信任度却低的可怜。



信任度远远没跟上

86% 的科研人员认为人工智能可能导致严重错误。

非科研级AI可能带来不可控的科研风险

JMIR期刊上的一篇文章研究显示：

- 由通用AI生成的科学综述中，高达19.9%的引用是伪造的。在100+个真实引用中，超过45%存在错误。
- 利用通用AI评估了217篇被撤稿的学术论文，总计产生6,510次分析报告。消费级AI没有任何一次指出撤稿或错误的风险，反而190次将这些论文评为“世界领先”或“国际卓越”。

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JMIR MENTAL HEALTH

Linardon et al

Original Paper

Influence of Topic Familiarity and Prompt Specificity on Citation Fabrication in Mental Health Research Using Large Language Models: Experimental Study

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Abstract

Background: Mental health researchers are increasingly using large language models (LLMs) to improve efficiency, yet these tools can generate fabricated but plausible-sounding content (hallucinations). A notable form of hallucination involves fabricated bibliographic citations that cannot be traced to real publications. Although previous studies have explored citation fabrication across disciplines, it remains unclear whether citation accuracy in LLM output systematically varies across topics within the same field that differ in public visibility, scientific maturity, and specialization.

Objective: This study aims to examine the frequency and nature of citation fabrication and bibliographic errors in GPT-4o (Gm) outputs when generating literature reviews on mental health topics that varied in public familiarity and scientific maturity. We also tested whether prompt specificity (general vs specialized) influenced fabrication or accuracy rates.

Methods: In June 2025, GPT-4o was prompted to generate 6 literature reviews (~2000 words; ≥20 citations) on 3 disorders representing different levels of public awareness and research coverage: major depressive disorder (high), binge eating disorder (moderate), and body dysmorphic disorder (low). Each disorder was reviewed at 2 levels of specificity: a general overview (symptoms, impacts, and treatments) and a specialized review (evidence for digital interventions). All citations were extracted (N=176) and systematically verified using Google Scholar, Scopus, PubMed, WorldCat, and publisher databases. Citations were classified as fabricated (no identifiable source), real with errors, or fully accurate. Fabrication and accuracy rates were compared by disorder and review type by using chi-square tests.

Results: Across the 6 reviews, GPT-4o generated 176 citations; 35 (19.9%) were fabricated. Among the 141 real citations, 64 (45.4%) contained errors, most frequently incorrect or invalid digital object identifiers. Fabrication rates differed significantly by disorder ($\chi^2=13.7$; $P<.001$), with higher rates for binge eating disorder (17/60, 28%) and body dysmorphic disorder (14/48, 29%) than for major depressive disorder (4/68, 6%). While fabrication did not differ overall by review type, stratified analyses showed higher fabrication for specialized versus general reviews of binge eating disorder (11/24, 46% vs 6/36, 17%; $P=.01$). Accuracy rates also varied by disorder ($\chi^2=11.6$; $P<.003$), being lowest for body dysmorphic disorder (20/34, 59%) and highest for major depressive disorder (41/64, 64%). Accuracy rates differed by review type within some disorders, including higher accuracy for general reviews of major depressive disorder (26/34, 77% vs 15/30, 50%; $P=.03$).

Conclusions: Citation fabrication and bibliographic errors remain common in GPT-4o outputs, with nearly two-thirds of citations being fabricated or inaccurate. Reliability systematically varied by disorder familiarity and prompt specificity, with greater risks in less visible or specialized mental health topics. These findings highlight the need for careful prompt design, rigorous human verification of all model-generated references, and stronger journal and institutional safeguards to protect research integrity as LLMs are integrated into academic practice.

<https://mental.jmir.org/2025/1/e60071>

JMIR Ment Health 2025 | vol. 12 | e60071 | p. 1
(page number not for citation purposes)

为什么非科研级AI工具不适合用于研究

➤ 因为它们从始至终都不是为科研而设计的。



错误引用

- 撰写文献综述时，超过50%的引用为幻觉或存在错误²



腐蚀科研思维

- 无论是否有足够证据，制造权威幻觉¹
- 顺从用户观点¹，侵蚀批判性思维



隐私与安全 问题

- 58%的研究人员将其用于日常工作。泄密不可避免。
- 客户机密信息被用于训练模型

SD AI 荣获CODiE"最佳生成式人工智能解决方案"奖

➤ 科迪奖 (CODiE Awards) 是美国软件与信息产业协会 (SIIA) 唯一核心大奖, 被誉为"软件界奥斯卡"



ScienceDirect AI

Best Generative
AI Solution



2025
// **CODiE** //
WINNER

科学
问答

阅读
助手

实验
对比

文献
管理

科研级AI工作空间--LeapSpace



高质量数据/领域相关性



信任与透明度



支撑科研全流程



高隐私和安全标准



LeapSpace

科研级AI工作空间将全面且值得信赖的同行评审内容与负责的AI结合在单一安全环境中

只基于超高质量的同行评审内容

➤ 海量高质量同行评审内容，拒绝“数据沼泽”



高质量内容与数据



信任与透明度



支撑科研全流程



高隐私和安全标准

全面的广度：
Scopus摘要与元数据

扩展深度：
同行评审全文

摘要

- 1亿+ 条记录
- 7,000+ 出版商
- 29,000+ 本活跃期刊
- 2500万+ 开放获取条目

元数据与分析

- 2320万 + 作者简介
- 94,000个组织档案

爱思唯尔全文：

- 1,800万篇经同行评审的文章与图书

非爱思唯尔全文：

- Emerald Publishing, IOP Publishing, NEJM Group以及Sage的付费订阅全文文献。
(未来数月将有更多出版商付费内容加入)
- OA全文文献

内容覆盖的**深度**：1/3学科的TOP1期刊在这里！



77/254 排名第一
32.77%

数据来源：2024年发布的《JCR期刊引证报告》

科研级的可信度

➤ LeapSpace不是黑匣子，是你可以复盘和深度校验的AI，是引导批判性思考的AI。



高质量内容与数据



可信度与透明度



支撑科研全流程



高隐私和安全标准

每个回应都包含一张“可信度卡”——解释为何引用这篇文章、揭示答案可能存在的矛盾/学术分歧，并帮助研究人员校准证据强度。

Key findings table			
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 Verify	1 2 3
Palmaria palmata	28	High yield with enrichment, effective post-harvest processing Verify	4

Claim verification ✕

Verification steps ▾

We found 20 more documents discussing this statement.

Support ▬ 15

Neutral ▬ 0

Contradict ▬ 5

- Microalgae are very good at absorbing nitrate and ammonium, often turning 60-90% of nitrogen into protein-rich biomass.
- Studies use both lab setups and wastewater systems, with pH and alkaline methods often recovering over 80% of proteins.
- Results depend on the algae species, energy use for nitrate reduction, and conditions like pH, temperature, and pretreatment.

15 support 0 neutral 5 contradict

Life cycle assessment of seaweed-based proteins – review of status, gaps, and recommendations
[Fernández, J.A.](#) [Quinn, E.](#)
Microalgae Science 2011

Seaweeds: A Traditional and an Alternative Source of Proteins for Human and Animal Nutrition
[Fernández, J.A.](#) [Quinn, E.](#)

科研级的透明度

- 没有隐藏的逻辑，透明展示AI思考过程，并支持导出。
- 可帮助你思考、学习科研思路。



高质量内容与数据



可信度与透明度



支撑科研全流程



高隐私和安全标准

LeapSpace 会显示回答你问题所需的步骤。

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

Copilot steps ^ Processing for 5 seconds

- Creating a plan to respond to your query
- Performing keyword search on Scopus
(seaweed OR macroalgae OR kelp) AND (cultivation OR farming OR aquaculture) AND (protein OR nutrition OR food supply) AND (carbon capture OR carbon sequestration OR climate mitigation)
- Performing natural language search on Scopus
In what ways does seaweed cultivation help increase global protein supply and contribute to carbon capture?
- Performing keyword search on ScienceDirect
(seaweed OR macroalgae OR kelp) AND (cultivation OR farming OR aquaculture) AND (protein OR nutritional value OR food source) AND (carbon capture OR sequestration OR climate mitigation) AND (method* OR technique* OR protocol OR results OR discussion)
- Performing keyword search on ScienceDirect
How does seaweed cultivation contribute to both global protein supply and carbon capture, including technical approaches and results?

Done

科研级的透明度

➤ 深度研究模式举例

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
Hydrocoleum	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

- 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. 查阅深度研究步骤：报告将完整展示生成过程中所采取的各项步骤，以确保研究过程透明可信。

2. 分析报告详细包含以下内容：

- 关键研究发现与引用概览
- 对您问题的直接解答
- 研究范围
- 前提假设与研究局限
- 延伸阅读建议
- 引言与综合论述
- 讨论与未来研究方向
- 结论与建议

满足整个科研工作流程中的不同需求



研究人员同时执行
多项任务。

LeapSpace是一款
专为多个科研场景
而设计的AI平台。

了解
新课题

发现
知识洞见

深度探究
复杂问题

制定
研究计划

对比
论文

寻找
资助机会

寻找
合作伙伴

对于陪伴科研全流程的AI伙伴

- 需要的是一个能碰撞出思维火花的思想伙伴？还是“谄媚”的啦啦队？



高质量内容与数据



可信度与透明度



支撑科研全流程



高隐私和安全标准

- 非科研级AI会顺从客户的观点，寻找或编造支持用户观点的论据。这在科研中**非常危险**。

- LeapSpace则旨在**鼓励批判性思维**，在有证据支持时揭示对立观点。



极高的隐私及数据安全标准--保护您的隐私安全

➤ 您的数据不会被用来训练任何大型语言模型。



高质量内容与数据



可信度与透明度



支撑科研全流程



高隐私和安全标准



严格遵循高标准隐私法规
《欧洲通用数据保护条例》(GDPR)
和《加州消费者隐私法》(CCPA)



数据AES-256加密存储
云服务提供商高级别保密协议
不得利用Elsevier内容数据及客户数据



爱思唯尔私有AI模型 (私有协议)
客户文档永远不会被存储或用于训练任何
大型语言模型 (LLM)



爱思唯尔学术信誉及
负责任的人工智能原则

保护您的知识产权，最大限度地减少数据隐私泄露的风险。

功能1: LeapSpace 科学问答: 助力快速掌握相关科研信息

科学问答

Discover *deeper* insights
Powered by Scopus data and ScienceDirect full-text

What would you like to learn more about?

提问框, 可用中文

Deep research

Explore topics Find experts Find funding

脑机接口 (BCI) 最新研究进展综述 (基于 2020-2026 年文献)

下文综合当前检索到的大量综述、竞赛总结、技术论文及临床应用研究, 对 脑机接口的技术发展、应用突破、核心趋势与挑战 做系统化归纳。所有论述均基于本轮检索结果。

1. BCI 技术总体发展趋势

方向	最新进展	主要来源
发表量快速增长	全球 BCI 论文数量自 2019 年后显著上升, 中国增速最快	1
从实验室向临床与实际应用	2023-2024 出现多项医学 BCI 突破, 推进临床应用标准化	2
多领域扩展	从康复扩展到娱乐、教育、智能控制、航天等领域	1 3
AI 深度融合	深度学习显著提升 EEG 任务性能 (运动想象、癫痫、注意力等)	4

2. 关键技术方向的进展

2.1 信号采集与硬件 (非侵入式 & 侵入式)

Ask a follow-up question

Reference details

Full text

Status of deep learning for EEG-based brain-computer interface applications

Hossain, Khondoker Murad; Islam, Md. Ariful; Hossain, Shahera; Nijholt, Anton; Ahad, Md Atiqur Rahman
Frontiers in Computational Neuroscience - 2022

Citations

View full text >

Link to statement

The reference describes how the availability of large, high-quality EEG datasets has shifted research towards deep learning, noting significant improvements and promising applications in EEG-based BCI, which aligns with the claim that such data have dramatically enhanced models like CNN, RNN, and Transformer.

Is this link to statement useful? Yes No

二、脑机接口研究进展路线图 (美人鱼时间线)

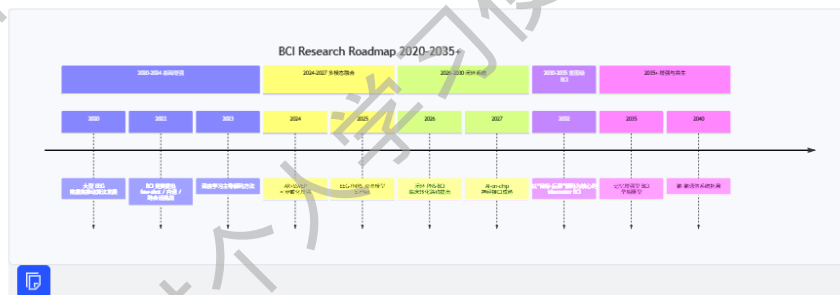


图1: 2020-2035+ 脑机接口发展路线图 4 14 16 28 29 36 37 39 40 41

研究领域总结

研究空白介绍

研究方法汇总

ELSEVIER

CASE 1: 快速定位研究方向, 查新

• 场景重现

一位博士生的课题是：正十二烷的超临界燃烧特性，但应该如何开始研究？

• Ask LeapSpace

文献综述

“在过去五年的研究中，关于正十二烷的超临界燃烧，有哪些未解决的问题？”通过LeapSpace，帮助进行文献检索。

总览：尚未解决的关键科学问题

未解决问题类别	具体未解决点	支持来源
(1) 超临界相变与界面物理机制不清	超临界转变的确切时刻、界面消失过程、分子团簇结构演化仍未可定量预测；界面应力是否完全消失存在争议；不同方法给出不同的温度/压力边界	1, 2, 3, 4
(2) 超临界蒸发与扩散主导机制缺乏统一模型	蒸发模式（经典蒸发→扩散模式）转变条件不明确；对多组分燃料尤其不清晰；动力数 $T_{0,D}$ 等指标虽提出但未能推广至工程尺度	3, 5, 4, 6
(3) 超临界喷雾结构、破碎与混合机理仍未统一	表面张力在跨临界条件下是否应视为非零仍未统一；次级破碎机制不明；密/稀喷相区域的超临界转变路径不同但原因未明	7, 8, 9, 10
(4) 超临界条件下真实流体 EOS（方程状态）在 LES/CFD 中的亚网格模型尚未闭合	EOS 滤波引入的亚网格项巨大（可达 60%），但缺乏成熟模型；不同混合规则导致显著温度预测差异	11, 10, 12
(5) 超临界燃烧动力学：低温、中温与高温氧化路径缺乏实证数据	低温/中温（cool/warm flame）机理仍缺关键中间产物数据；不同模型对第一阶段点火延迟预测差异大；NO _x /NO ₂ 对低温链分支作用仍不明确	13, 14, 15, 16, 17, 18



CASE 2 : 设计实验方案

• 场景重现

观察到一个现象，如何设计实验？

• Ask LeapSpace

黄金金条表面有时候会产生红褐色的锈痕，**想要对锈痕部分的化学成分进行检测，同时对于黄金本体不造成破坏，有什么无损检测手段？**



可用于黄金表面锈斑的“组合式无损分析方案”

基于文献显示常用于金属文物的组合方式 [3], [12], 推荐如下顺序:

1. pXRF 扫描锈斑区域

判断是否含 Fe、Cu、Cl (判断是不是“铁锈”或铜/氧引起的变色)。

2. 便携式微拉曼测定锈斑物相

可识别是否为“铁氧化物”(铁锈)、“硫化铜”、“氯化铜”、“有机污染物”等。

3. ATR-FTIR (可选)

用于确认是否有有机污染或特殊腐蚀膜。

这一组合在文献中对青铜器、金属文物的腐蚀成分分析已被反复验证有效 [1], [3], [12]。

基于不推荐的技术 (因为需要破坏或条件苛刻)

- SEM/EDS (需喷金或真空、可能微损) [17]
- XPS (需真空、可能改变样品表面) [17], [18]
- EIS/CV (需电解液接触) [19], [20]

这些并不适合贵金属成品如金条。

建议的实际可行操作

- 找具备 **便携式 XRF + 便携式拉曼** 的检测机构
文物保护、珠宝检测机构常具备类似设备。
- 如果锈斑非常微小, 可使用 **显微拉曼 (micro-Raman)** 定位测量。

信心等级

高: 多份文献一致支持 XRF、Raman、FTIR 在金属腐蚀、金制品、文物表面的无损分析中的有效性和可行性, 未见冲突证据。

如果你需要, 我还能进一步提供:

- 针对黄金表面的“红褐色锈斑”可能来源分析
- 推荐具体设备参数 (激光波长、XRF 功率等)

CASE 3 : 设计教学方案--兼顾全面性与前沿性的教学内容设计

教学

① 教学大纲生成

我准备给本科生上课，内容是分子育种技术在农作物中的应用，请用中文生成一个教学大纲

- **课程目标:** 掌握分子育种的基本原理与技术，理解其在不同作物中的应用，分析技术优势与挑战，探讨未来发展方向与多学科融合。
- **模块内容:**
 1. 绪论：分子育种背景、意义与发展
 2. 基本原理与方法：分子标记、MAS、GS、高通量分型、基因编辑
 3. 应用案例：主粮作物、牧草豆类、抗逆与品质改良
 4. 技术优势与挑战：技术创新、社会挑战、成本趋势、发展中国家推广
 5. 未来方向与教学重点：AI与机器学习、快速育种、多学科融合
- **教学方法:** 讲授与讨论结合，案例分析，虚拟实验室与AI辅助工具，项目制与小组研讨，邀请专家讲座
- **考核方式:** 作业与项目报告、案例分析、期中/期末考试、实验操作与口头汇报
- **参考资料:** 最新综述、案例报告、开放课程与数据库等[见详细大纲]-2,4-6,4-13]

② 课后习题推荐

我准备给本科生上课，内容是分子育种技术在农作物中的应用，请用中文生成三个课后的案例分析题目

1. **传统育种与分子育种的比较分析——以水稻改良为例**
题目要求：请结合传统育种方法与现代分子育种技术（如基因编辑和分子标记辅助选择）在水稻育种中的应用案例，讨论两者在育种速度、精准度及抗逆性改良方面的优劣和互补作用，并提出可能存在的改进策略。
2. **CRISPR-Cas9在作物改良中的应用与挑战——以水稻和小麦为例**
题目要求：通过具体案例（如水稻中利用CRISPR-Cas9实现抗病性或耐盐性的改良），分析CRISPR-Cas9技术在实际应用中所遇到的技术挑战（如基因插入效率低、脱靶效应等）及社会伦理问题，并讨论如何在教学中引入实验设计以验证这些技术的有效性。
3. **高通量基因分型平台（如KASP和NGS）在玉米抗逆育种中的应用**
题目要求：以玉米为例，探讨高通量基因分型平台在检测和选育抗旱、抗病等性状中的具体应用，分析这些技术如何提高育种效率和准确性，讨论当前技术局限性及未来优化方向。

③ 新型教学模式方案构建

我准备给本科生上课，内容是分子育种技术在农作物中的应用，请用中文生成一个翻转课堂的教学方案

- **课程名称:** 分子育种技术在农作物中的应用
- **适用对象:** 生物科学及相关专业本科生
- **教学目标:**
 1. 理解分子育种的基本理论与关键技术（如QTL定位、GWAS、MAS、GS及CRISPR-Cas9基因编辑等）；
 2. 掌握分子育种在不同作物改良中的具体案例及其应用成效；
 3. 培养学生批判性思维、团队协作及解决实际问题的能力。
- **教学模式:** 翻转课堂
- **教学环节及实施步骤:**
 1. 课前准备（在线自主学习）：提供精心制作的教学视频和MOOC资源，内容涵盖分子育种原理、方法及典型案例；建立在线讨论平台，布置阅读任务或小型预测验，确保学生预先掌握基本概念 [11] [20] [21]。
 2. 课堂活动（面对面互动）：开场小测验检验预习效果；分组讨论分子育种技术在具体作物（如水稻、玉米或牧草）的应用案例，分析技术优势及局限性；案例分析与多媒体展示，邀请部分学生汇报讨论结果，促进全班互动；实战演示（如模拟数据分析或基因编辑流程实操），使学生直观体验分子育种操作 [22] [23] [24]。
 3. 课后延伸（反思巩固）：布置反思日志或课程小论文，总结所学知识、课程中未解决的问题及未来应用思考；建立同伴互评机制，通过在线平台提交作业并进行互评，提升协作学习效果 [25] [26]。
 4. 评价方式：形成性评价（基于课堂小测、讨论参与和作业完成情况）与总结性评价（期末小组项目汇报与个人理论考试）相结合。
- **资源与技术支持:** 利用学校在线学习管理系统（LMS）上传视频和测验，确保计算机教室和虚拟实验平台技术支持，教师提前培训和试运行，保障翻转课堂顺利实施 [15] [27]。
- **预期效果:** 学生能主动掌握前沿育种技术理论，并结合实例进行应用分析，培养团队协作、自主学习与创新思维，为未来科研和生产实践打下坚实基础。

功能2: Compare Experiments 实验对比: 助力高效的实验设计与分析

实验对比

What is known about how microRNAs are involved in neural plasticity?



Other actions:

[Compare experiments](#)

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Research article Full text access **可对比10篇文献**

1 **MicroRNA regulation of neural plasticity and memory**
Neurobiology of Learning and Memory, July 2011
Timothy W. Bredy, Quan Lin, ... John S. Mattick

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ARTICLE	EXPERIMENT / STUDY	GOAL	MATERIALS	METHODS	RESULTS	CONCLUSION	FEEDBACK
Article Morphine-induced hyperalgesia impacts small extracellular vesicle microRNA composition and function Deepa Reddy, Zhucheng Lin, ... Seena K. Ajit <i>The Journal of Pharmacology and Experimental Therapeutics</i> • Volume 392 • 2025 Export data (CSV)	Characterization of serum-derived sEVs In vitro validation of miRNA-mRNA interactions In vivo assessment of sEV effects on pain behavior In vivo assessment of sEV effects on opioid-related behaviors	实验目标 To confirm miRNA binding to the 3' UTR of Creb1 and investigate the transcriptional regulation of Creb1 by these miRNAs	实验条件 Human embryonic kidney 293 cells, RAW 264.7 mouse macrophage cells, luciferase reporter plasmid containing Creb1 3' UTR fragments, precursor miRNA for miR-155 and miR-10a, scrambled control miRNA, Lipofectamine 2000 and RNAiMax transfection reagents	实验方法 Luciferase reporter assay to test miR-155 and miR-10a binding to Creb1 3' UTR, overexpression of miR-155 and miR-10a in RAW 264.7 cells, qPCR to measure Creb1 mRNA levels, western blot to measure CREB protein levels	实验结果 miR-155 and miR-10a were confirmed to bind to the 3' UTR of Creb1 and downregulate its mRNA and protein expression in vitro.	讨论总结 miR-155 and miR-10a, which are upregulated in sEVs from morphine-treated mice, can directly target and repress the expression of the Creb1 gene.	How would you rate this summary? ☆☆☆
Preliminary comparison of plasma notch-associated microRNA-34b and -34c levels in drug naive, first episode depressed patients and healthy controls							
Brain microRNAs differentially expressed in age-related cerebral pathologies							
The role of circulating blood microRNA-374 and microRNA-10 levels in the pathogenesis and therapeutic mechanisms of major depressive disorder							

功能3: Reading Assistant 阅读助手: 快速精读全文与关键信息提取

阅读助手

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Journal of Molecular Biology
Volume 426, Issue 20, 9 October 2014, Pages 3454-3466

The Gene Silencing Transcription Factor REST Represses miR-132 Expression in Hippocampal Neurons Destined to Die

Jee-Yeon Hwang, Naoki Kaneko, Kyung-Min Noh, Fabrizio Pontarelli, R. Suzanne Zukin

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What is known about how microRNAs are involved in neural plasticity?

miRNAs play a pivotal role in synaptic plasticity and structural remodeling in the nervous system **1 2**

Some key points:

- miRNAs, including **microRNAs (miRNAs)** are small, **noncoding RNAs** that serve to negatively regulate **protein expression** through mRNA degradation and translational repression [14], [15]. miRNAs are particularly enriched in the **nervous system**, where they play a pivotal role in synaptic plasticity and structural remodeling [16]. Emerging evidence points to a widespread role for miRNAs as key modulators of target gene expression in neurons. **microRNAs play a pivotal role in synapse formation** and maturation and dendritogenesis in early stages of brain development [4], [14], [15]. A key feature of neuronal miRNAs is their ability to regulate entire networks of nonneuronal genes in an activity-dependent or an experience-dependent manner [15]. Moreover, neuron-specific miRNAs can regulate **mRNA translation locally in dendrites**, where they are thought to play an important role in activity-dependent synaptic plasticity [4], [14], [15].
- Dysregulation of n implicated in the f epilepsy, Alzheimer
- miRNAs can direct epigenetic modifications by regulating of the epigenetic machinery, forming "miRNA regulatory circuits" **3**

How do miRNAs interact with the epigenetic machinery to regulate gene expression in neurons?

Follow-up questions

What are some other examples of miRNAs that are important for neural plasticity and their mechanisms of action?

Ask about this article

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功能4： 获得科研资助信息和潜在合作者

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

Collot 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 PDCAAS 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 [4].
- Refractory carbon production:** *Porphyra* cultivation increases dissolved organic matter resistant to degradation, enhancing long-term carbon storage in coastal systems [5].
- Optimized cultivation:** Matching strain and depth in *Kappaphycus* spp. can improve biomass yield and carbon uptake efficiency [6].
- Sinking strategies:** Deliberate sinking of harvested seaweed can create additional sequestration, though ecological and governance risks remain [7].

Which funding institutions are most likely to support this research?

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Key Funding Institutions

Funder	Relevant Focus Areas	Funding Type / Amount	Geographic Scope	Option
[Funder]	Protein research in seaweed, marine-based solutions, climate change mitigation, and adaptation [1]	Open Access, £20,000 USD	America	[X]
[Funder]	Oceans climate change mitigation adaptation, bioeconomy, innovation, innovation, infrastructure (LIFE)	Cooperative research + innovation, 18.525M USD	EU + International partners	[X] [2]
[Funder]	Advanced processing research in biotech, biopolymer, secondary, specialty products [3]	Research grants	USA + Ireland	[7] [8]
[Funder]	Aquaculture research, technology, sustainable protein production [9]	Training	USA	[7] [8]
[Funder]	Nature-based climate action, carbon farming, ecosystem restoration [10, 11, 12, 13]	Research grants + grants, 650,000 USD	USA (Illinois + France)	[7] [8]
[Funder]	Blue carbon ecosystems, resilience, stability, carbon finance [14, 15, 16]	Cooperative research, 8376,068 USD	Ireland + International partners	[7] [8]
[Funder]	Bioeconomy, lab, fellowship, protein production technologies	Fellowship	USA	[8]

Ask a follow-up question

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Funding preview

Funding institutional Funding opportunity

Apply for funding [7]

Summary [Eligibility details](#)

This PhD scholarship will sit within a broader project funded by the ICR Canada on "Transforming women's seaweed business 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 this PhD scholarship sits), create new business opportunities for seaweed enterprises, and synthesize 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.

1. 查询科研资助信息：如需了解某一研究主题的主要资助方，可使用“追问”功能进一步提问。

2. 查阅资助来源清单：您可以查看该研究领域的主要资助方及核心资助来源列表。

3. 定位具体资助机会：您可以深入查看每个资助方所提供的具体资助项目，这或许能成为您获取科研经费的来源。

功能5：开启深度研究报告

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

Copilot steps ▾ Processing for 5 seconds


Seaweed cultivation for protein and carbon capture

Seaweed cultivation offers a promising solution to two major global challenges: increasing the sustainable protein supply and capturing atmospheric carbon. Here's how seaweed farming contributes to both:

Contribution to Global Protein Supply

- **Sustainable Protein Source:** Seaweed is rich in protein, containing all essential amino acids, and can be cultivated without the need for arable land, irrigation, or pesticides, making it a low-carbon alternative to traditional protein sources [1](#) [2](#)
- **High Biomass Yield:** Seaweed aquaculture can be conducted at large scales, yielding significant biomass that can be used for human food, animal feed, and other protein-rich products [3](#) [4](#) [5](#)
- **Year-Round Production:** Offshore and sea-based cultivation allows for continuous, year-round biomass production, further supporting a stable protein supply [6](#) [7](#)
- **Nutrient Recycling:** Using nutrient-rich wastewaters from aquaculture or food processing can enhance seaweed protein content and yield, supporting the so-called "protein-shift"

Which seaweed species exhibit the highest protein yield under varying nutrient and light conditions, and what physiological or biochemical mechanisms regulate their carbon capture efficiency and amino acid synthesis?

Deep research **1** 

Discover *deeper* insights

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What would you like to learn more about?

Deep Research

2 

1. **生成深度研究报告：“深度研究”功能将您的科研探索向前推进一步**——它能在几分钟内生成全面且论证严谨的报告。当您提出问题后，深度研究不仅仅是对现有信息进行总结，它还会制定详细的研究计划，在LeapSpace精选文献库中进行广泛检索，并在获得新洞见时持续优化研究路径。

2. **开启深度研究查询：您可通过点击“追问”功能（图1）或从LeapSpace主界面（图2）启动此功能。**

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Correlating opportunities
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- LeapSpace**
Searching research corpus
LeapSpace: “信任卡”标识提示证据可信度



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Thank You!

Advancing human progress together

何时使用深度研究模式



标准摘要（生成式人工智能）适合：

- 快速学习新主题
- “俯瞰”领域
- 启动文献综述
- 提出问题
- 高效运行自然语言搜索



深度研究模式（Agentic AI）适合：

- 复杂、多步骤的任务需要跨多份文档进行综合处理
- 指导科研构思与规划
- 识别领域空白并激发新方向
- 通过国家、时间、文档类型等筛选条件细化范围