

JoVE AI 全面解密 AI驅動的生科實驗與教學革新

亮點 1 : JoVE Visualize
視覺化研究網絡

亮點 2 : Chrome 擴充功能
無縫整合的即時影片推薦

亮點 3 : JoVE AI Co-Pilot
智慧搜尋加速知識理解

立即瀏覽全文 →

JoVE AI 全面解密：AI驅動的生科實驗與教學革新

人工智慧已成為推動科研轉型的核心引擎。隨著資料驅動(Data-driven)成為主流，研究人員同時面臨兩大挑戰：海量文獻的持續增長，以及實驗可重複性的嚴格要求。AI 的分析能力再強大，若底層數據無法被精準重現，結論的可信度則難以建立。


JoVE 透過以下三項 AI 功能，將文獻閱讀、實驗操作與教學準備緊密串聯，協助研究人員與教學者在提升效率的同時，強化對科學知識的理解與應用。

亮點①: JoVE Visualize — 視覺化研究網絡

★核心價值: 消除文字歧義, 讓研究操作細節「看見即所得」。

JoVE Visualize 由 AI 驅動, 將超過 4,000 萬篇 peer-reviewed 學術文獻與 25,000 支以上的實驗影片進行配對, 讓研究人員得以直接從抽象結果與文字難以傳遞的關鍵資訊, 快速跳轉至具體操作細節。研究者除了可減少花時間翻找補充資料, 或在 YouTube 上碰運氣的時間, 更能有效確認研究的「可重複性」, 是進行文獻探討、掌握新技術的利器。

立即體驗: <https://visualize.jove.com/>

 **VISUALIZE**
beta

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Mechanical expansion microscopy.

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Methods in Cell Biology | January 22, 2021

[View abstract on PubMed](#)

Summary

Two new mechanical expansion microscopy techniques reveal cellular mechanics and ultra-structures. These methods enable detailed imaging of bacterial cell walls and tissues, advancing super-resolution microscopy.

Area Of Science:

- Biophysics
- Microscopy
- Cell Biology

Background:

- Expansion microscopy (ExM) enables super-resolution imaging but can be limited by sample stability in various buffers.
- Understanding local mechanical properties of biological samples is crucial for cell biology and disease research.

Purpose Of The Study:

Related Experiment Videos



Author Spotlight: Universal Molecular Retention with 11-Fold...
Published on: October 6, 2023
👁 8.2K



Using Expansion Microscopy to Physically Enlarge Whole-Mount...
Published on: April 28, 2023
👁 2.2K



Visualizing Intracellular Sialylation with Click Chemistry and...
Published on: February 7, 2025
👁 755

[See all related videos](#)

亮點②: Chrome 擴充功能 — 無縫整合的即時影片推薦

★核心價值: 將資源嵌入日常檢索流程, 消除平台切換的摩擦力。

JoVE 的 Chrome 擴充功能「JoVE: Accelerate research with scientific videos」, 讓研究人員在 Google Scholar、PubMed等檢索網站搜尋文獻時, 擴充功能會自動在搜尋結果旁, 逐項推薦對應的 JoVE 實驗影片, 不必離開當前頁面就即時接軌JoVE的影片資源, 獲得可視化的操作支援。

馬上安裝Chrome外掛:

https://chromewebstore.google.com/detail/iajigdcceggbgokminibogbggedflg?utm_source=item-share-cb

The screenshot shows a PubMed search for "Expansion Microscopy" with 9,932 results. The search interface includes filters for "MY CUSTOM FILTERS", "RESULTS BY YEAR" (with a bar chart from 1954 to 2026), "PUBLICATION DATE" (1 year, 5 years, 10 years, Custom Range), and "TEXT AVAILABILITY" (Abstract, Free full text, Full text). The search results list three items:

- Ultrastructure expansion microscopy (U-ExM).**
1 Gambarotto D, Hamel V, Guichard P.
Cite Methods Cell Biol. 2021;161:57-81. doi: 10.1016/bs.mcb.2020.05.006. Epub 2020 Jul 1. PMID: 33478697
Expansion microscopy (ExM) physically magnifies specimens, allowing to obtain super-resolution images using a conventional diffraction-limited microscope such as confocal microscopy. ...As a result, we called this method ultrastructure expansion mic ...
- Expansion microscopy of apicomplexans.**
2 Liffner B, Absalon S.
Cite Mol Microbiol. 2024 Apr;121(4):619-635. doi: 10.1111/mmi.15600. PMID: 37571814. Free article. Review.
Recently, a technique called expansion microscopy (ExM) has been used to increase instrument resolution like most imaging techniques. In only a few years since its development, ExM has become a widely used technique for imaging biological samples.
- Imaging cellular ultrastructures using expansion microscopy.**
3 Gambarotto D, Zwettler FU, Le Guennec M, Schloetel JG, Reuss M, Unser M, Boyden ES, et al.
Cite Nat Methods. 2019 Jan;16(1):71-74. doi: 10.1038/s41592-018-0288-2. PMID: 30559430. Free PMC article.

A "Showing Related Videos (10)" overlay is visible, displaying three video thumbnails with titles: "Expansion Microscopy in Drosophila Embryos | JoVE Journal", "Expansion Microscopy for Protein | JoVE Journal", and "Cryo-ExM Protocol for High-Resolution Imaging | JoVE Journal".

亮點③: JoVE AI Co-Pilot與智慧搜尋 — 加速知識理解

★核心價值: 從關鍵字過渡到「概念理解」, 提供互動式的實驗輔助。

面對複雜的實驗步驟、抽象而較難理解的科學概念時, 即便觀看影片後仍可能產生技術疑問。JoVE AI Co-Pilot 是資料庫的AI導覽助理, 是「輔助查找」與「加速學習理解」的好幫手。

目前除了出現在影片旁邊, 能提供重點摘要與步驟問答之外, JoVE 搜尋欄現在也支援「Ask AI」的智慧搜尋功能。使用者可以直接使用「自然語言」(例如:「我該如何進行 DNA 萃取?」)提問, 透過生成式AI技術解析提問, 並進行說明以及影片內容配對。

延伸閱讀:

《What Artificial Intelligence Means for the Way We Do》

[Research-https://blog.jove.com/ai-data-driven-discovery-2025](https://blog.jove.com/ai-data-driven-discovery-2025)

The screenshot displays the 'Ask JoVE' interface. On the left, under 'Key takeaways:', there is a list of biological concepts: Cell division, Stem cell potency, Stem cell niche, Cell cycle analysis, and Micro-scale engineering. Below this is a link to explore the 'Stem Cell Biology And Renewal in Epithelial Tissue' chapter. A chat input field at the bottom is labeled 'Ask anything'. On the right, a list of video recommendations is shown, including 'Invasion of Human Cells by a Bacterial Pathogen', 'Studying Proteolysis of Cyclin B at the Single Cell Level in Whole Cell...', 'Live-Cell Fluorescence Microscopy to Investigate Subcellular Protein...', 'IP3/DAG Signaling Pathway', and 'Examining BCL-2 Family Function with...'. Each video entry includes a thumbnail, a duration, a category (Research or Education), and a view count.

加碼分享：我是訂戶，如何在校園內外使用JoVE？

為了獲得最佳的使用體驗與個人化服務功能，建議使用者建立個人帳號：

- 1 馬上進入 JoVE: <https://app.jove.com/> (歡迎收藏為書籤 📖)
- 2 身份識別與使用權限：
 - 校園內：透過校內/院內 IP(含Wi-Fi或遠端認證)，連線即可使用。
 - 校園外：使用校內/院內 Email 註冊帳號，系統會自動辨識 Email Domain 並賦予對應的資料庫權限。
- 3 登入帳號後，除了觀看影片，歡迎多加利用「建立播放清單」等個人化管理功能，期待陪伴各位在科學研究的漫長旅途中，增添專屬自己的學習秩序與從容～
(註：可觀看內容，視機構實際訂閱之權限而定。)

加碼分享：JoVE 全能助教：教學與研究 | 實戰解謎賽

JoVE 不只是生科主題的科學期刊，更是全球領先的影音實驗室，透過高畫質影像，完整還原紀錄實驗過程。本次活動旨在透過實戰體驗，引導讀者探索 JoVE 的核心價值。

- 📍 活動時間：即日起～2026/05/31 (日)
- 📍 活動對象：全國大專院校師生與教職員皆可參加
- 📍 活動方式：進入有獎徵答頁面回答問題，全數答對者即可參加抽獎。每個關卡皆可參加，答越多、中獎機率再+1！
- 📍 立即前往挑戰：<https://flysheet.my.canva.site/2026jove>