

## Community Update

Thank you to everyone who joined our first virtual meeting and took the time to respond to our member poll. Your engagement has been instrumental as we take the next steps for the network. Did you miss the meeting? You can find a recording of it [right here](#).

**Our next virtual meeting will take place on March 19, 2026 at 10am PST.**

**Direct Link to Meeting: [Join Zoom Meeting](#)**

**Add to Calendar Links (click your provider): [Google](#); [Outlook](#); [Office365](#); [Yahoo!](#)**

You may notice that we have updated our name to better reflect the cyclodextrin research community across the Americas. The Americas Cyclodextrin Consortium (ACDC) is dedicated to creating a welcoming platform that connects researchers and practitioners working with cyclodextrins worldwide, while strengthening collaboration throughout the Americas.

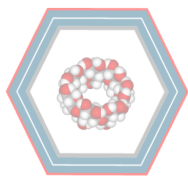
We are also actively forming ACDC as a nonprofit organization and have begun planning for a future in person Americas Cyclodextrin Conference in 2027, alongside continued virtual programming. Our goal is to build a durable, community-led organization that supports collaboration across academia, industry, and translational science.

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## Member poll highlights

Here are a few key takeaways from our last member poll:

- **Communication:** Email will remain our primary channel. There is interest in an optional Slack space for members who want more frequent discussion, while many prefer email-only updates.
- **Membership:** Responses support low, accessible annual dues, especially to keep participation feasible for academic groups. We are developing a tiered membership model (e.g. academic, industry, student) to keep participation broad while supporting ACDC activities and events.
- **Conference vibe:** Members favor moderately priced accommodations, functional venues, and practical logistics over luxury extras.



- **Conference location:** West Coast USA was most frequently preferred, followed by the Southwest and Northeast. Given the preference for a moderate pricepoint, we are leaning towards a venue in the Southwest.
- **Staying connected:** Most respondents are open to sharing email contact information to support coordination and announcements.

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## Research Highlights & Company Milestones

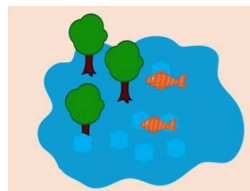
There are countless new CD papers and projects out there. This issue highlights just a slice of the breadth of CD research published in the Americas in the last few months. **If you think we've missed something important, let us know and we'll be sure to include it in the next edition.**

**Advanced Science;** [Dynamic Regulation of Granular Hydrogels Through Guest-Host Interactions to Spatiotemporally Guide Cellular Migration](#)

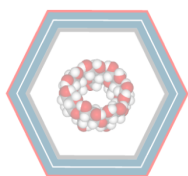


Researchers in Colorado use  $\beta$ -cyclodextrin to dynamically control cell migration in 3D hydrogels. By building granular hydrogels from hyaluronic acid crosslinked via reversible adamantane- $\beta$ CD interactions, they can turn cell migration on and off using a competitive guest molecule (adamantane carboxylic acid). When the guest is added, gels soften and pores open, but cells pause migration; when the guest is removed, migration resumes. The system even enables 4D bioprinting of patterned cell assemblies (lines, spirals, zigzags) with time-controlled cellular egress. A beautiful example of CDs enabling spatiotemporal control in tissue engineering.

**Carbohydrate Polymers;** [A review of the interactions between naphthenic acid fraction compounds \(NAFCs\) and polysaccharide-based adsorbents: Opportunities for remediation of tailing pond waters](#)



Tailing ponds are large, engineered basins used to store the waste slurry left over after mining operations. A review from Canadian researchers looks at how cyclodextrins, chitosan, and cellulose-based materials can be engineered to adsorb naphthenic acid fraction compounds (NAFCs) from water. These toxic components result from the extraction of bitumen from oil sands, and their adsorption depends strongly on material design, including crosslinking, surface chemistry, and composite structure. These changes alter the physical and chemical properties of the adsorbent, changing how NAFCs are bound. This review is a useful roadmap for designing more effective polysaccharide-based adsorbents (like CDs) for tailing pond remediation.

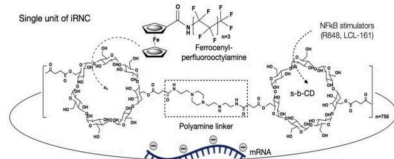


## **Food Research International;** [Microencapsulation of yerba mate extract by spray-drying technique: Impact of polysaccharide mixtures on powder characteristics](#)



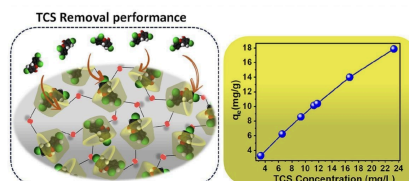
Yerba mate contains a high concentration of polyphenolic compounds, particularly chlorogenic acid and related derivatives, which are responsible for many of the beverage's reported antioxidant, cardioprotective, and metabolic health benefits. Researchers in Argentina and Colombia explored  $\beta$ CD as a wall material for spray-dried microcapsules of yerba mate extract, with the aim of protecting sensitive antioxidants while improving their handling and delivery in food systems. When combined with maltodextrin and gum arabic,  $\beta$ -CD improved encapsulation efficiency, thermal stability, and preservation of antioxidant activity in the resulting powders. The work highlights how CDs can help stabilize plant-derived bioactives for functional food ingredients and nutraceutical formulations.

## **Theranostics;** [A ribonucleotide carbohydrate system \(iRNC\) enhances antigen presentation and controls glioblastoma](#)

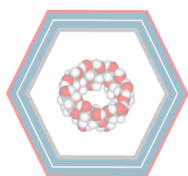


Researchers in Boston developed a cyclodextrin-based nanoparticle platform to tackle glioblastoma. Their fluorinated cyclodextrin “immuno-ribonucleocarbonyl” (iRNC) particles co-deliver tumor antigen mRNA and NF $\kappa$ B agonists, boosting antigen presentation by tumor-associated phagocytes while avoiding the toxicity issues often seen with standard lipid nanoparticles. After IV dosing in an orthotopic CT2A glioblastoma mouse model, the iRNCs produced both therapeutic and prophylactic anti-tumor effects in vivo, shrinking tumors and extending survival. This supports the idea that a single programmable CD-based nanostructure can combine mRNA vaccination and adjuvanting to reprogram the glioblastoma microenvironment and enhance anti-tumor immunity.

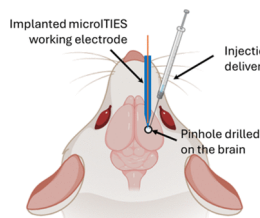
## **Separation and Purification Technology;** [Removal of pharmaceutical micropollutants from aqueous environment by electrospun polycyclodextrin nanofibrous membrane](#)



Researchers at Cornell have developed an electrospun poly-CD nanofibrous membrane that removes pharmaceutical micropollutants from water via host-guest inclusion. Because the material is a free-standing nanofibrous membrane rather than a powdered CD polymer, it offers improved handling and integration into filtration systems while maintaining the molecular recognition properties of CDs. The CD membrane is insoluble, reusable, and achieved effective removal of triclosan, ciprofloxacin, and oxybenzone from water. The study demonstrates that electrospun CD nanofiber membranes can act as effective, reusable filters for removing pollutants from water.



## **ACS Measurement Science Au;** [Selective Detection of Acetylcholine against Choline and In Vivo Measurement in the Mouse Brain Using the Micropipet-Supported Liquid/Liquid Interface Electrode](#)



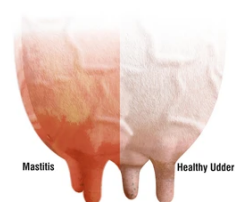
Researchers at the University of Illinois Urbana-Champaign developed a cyclodextrin-enabled electrochemical sensor that can selectively detect acetylcholine in the brain — even in the presence of choline and other interfering molecules. The system uses DM- $\beta$ -CD as a molecular recognition element at a water/oil interface, where host-guest interactions help facilitate acetylcholine transfer and generate a measurable current signal. Using this approach, the team was able to track changes in acetylcholine levels in real time in the cortex of live mice, highlighting a new way CDs can enable selective sensing of important biological molecules.

## **Pharmaceutics;** [\$\beta\$ -Cyclodextrin Inclusion Complexes of Cinnamomum camphora Essential Oil: A Comparative Study on Encapsulation Strategies, Physicochemical Stability, and Cytotoxic Profile](#)

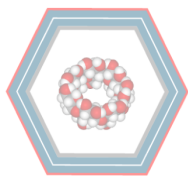


Researchers in Brazil and Chile developed  $\beta$ -cyclodextrin inclusion complexes of *Cinnamomum camphora* (Camphor) essential oil to overcome the volatility and poor water solubility that often limit essential oil applications. Using preparation methods such as ultrasonication and freeze-drying, the team produced stable host-guest complexes with improved thermal and physicochemical stability compared with simple physical mixtures. The encapsulated oil also showed low cytotoxicity in macrophage cells, suggesting good biocompatibility. Overall, the work highlights how  $\beta$ -CD encapsulation can stabilize volatile bioactive oils, protect them from degradation, and enable more controlled delivery in pharmaceutical, food, or cosmetic formulations.

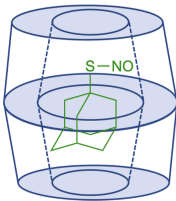
## **Nanoscale;** [Chitosan conjugated cyclodextrin nanocomposite loaded with antibiotic-adjuvant combinations remediates multi-drug resistant Staphylococcus aureus infection in CD-1 mice model of bovine mastitis](#)



Bovine mastitis is a major challenge in animal agriculture, increasingly complicated by antibiotic resistance. Researchers in the US and Canada developed a chitosan-cyclodextrin nanocomposite platform that co-delivers an antibiotic (ceftiofur) with adjuvant molecules, enabling a synergistic antibacterial effect against multidrug-resistant *Staphylococcus aureus*. The nanocomposite showed good stability and biocompatibility and significantly reduced bacterial load in a mouse mastitis model while lowering the effective doses of the antibiotics used. By overcoming resistance rather than replacing drugs, the approach points to a practical way to treat this stubborn disease.



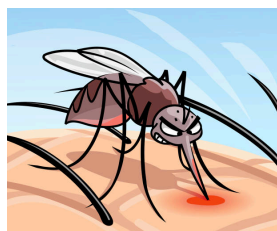
**Materials and Design;** [Novel stable “sandwich” cyclodextrin inclusion of a lipophilic S-nitrosothiol for controlled delivery of nitric oxide](#)



Nitric oxide (NO) is a powerful signaling molecule with antimicrobial, anticancer, and cardiovascular potential, but NO donors can be difficult to use in practice due to their hydrophobicity and instability. Researchers at the University of Michigan report that encapsulating NO donors in HP $\beta$ CD creates a remarkably stable “sandwich” inclusion complex, where two CDs host the donor and dramatically improve its aqueous solubility and stability.

The complex protects the donor from premature decomposition and enables controlled NO release triggered by biological molecules such as cysteine. The result is a more practical, biocompatible platform for delivering NO with promising applications across biomedical devices and therapeutics.

**British Journal of Pharmacology;** [Cyclodextrin-based delivery of Annexin A1 mimetic Ac2-26 enhances anti-inflammatory effect and prevents dengue-induced lethality combined with antiviral therapy](#)

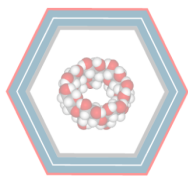


Despite the burden of dengue virus, no licensed antivirals or host-directed therapies are currently available. A collaboration in Brazil has developed a hydroxypropyl- $\beta$ -cyclodextrin formulation of the anti-inflammatory peptide Ac2-26, an Annexin A1 mimetic that promotes resolution of inflammation in severe dengue. The cyclodextrin complex improved delivery and efficacy, reversing thrombocytopenia and reducing inflammatory markers in infected mice. When combined with the antiviral sofosbuvir, the treatment fully prevented dengue-induced mortality. A promising example of cyclodextrins enabling host-directed therapies alongside antivirals.

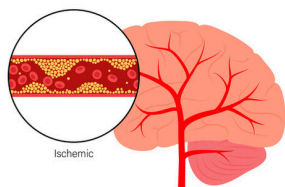
**NPJ Vaccines;** [An innovative nasal nanovaccine against SARS-CoV-2 induces systemic and upper airway immunity controlling viral replication](#)



Researchers in São Paulo developed an intranasal nanovaccine platform for SARS-CoV-2 using silica nanoparticles coated with a mucoadhesive cyclodextrin polymer. The CD coating helps the particles interact with and move through nasal mucus, improving delivery of the viral antigen to mucosal immune cells. In animal studies, the vaccine triggered both systemic immunity and strong mucosal IgA responses in the nose and mouth, significantly reducing viral replication in the upper and lower respiratory tract. The work highlights how CD-based materials can enhance mucosal vaccine delivery, a key step toward next-generation respiratory vaccines.



## Fluids and Barriers of the CNS; [2-Hydroxypropyl- \$\beta\$ -cyclodextrin accesses acute and subacute infarcts in a mouse model of ischemic stroke](#)



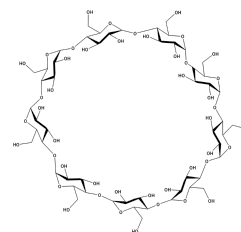
Researchers at the University of Arizona showed that HP $\beta$ CD can reach stroke lesions in the brain following ischemia. In a mouse model, fluorescently labeled HP $\beta$ CD systemically distributed within minutes but selectively accumulated in the infarcted hemisphere, where the blood–brain barrier remains disrupted even days after the stroke. The study found that HP $\beta$ CD was detectable in injured brain tissue 24 hours and even one week after ischemia, while the compound was otherwise rapidly cleared from the body through the kidneys. This work suggests that post-stroke BBB breakdown can be leveraged to deliver CDs to lipid- and immune-rich lesion sites, supporting their potential as therapeutic agents or delivery platforms in cerebrovascular disease.

## Molecules; [Chemical and Enantioselective Analysis of the Leaf Essential Oil from \*Varronia crenata\* Ruiz & Pav. Growing in Ecuador](#)



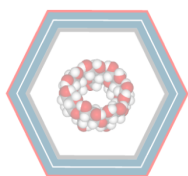
Researchers in Ecuador carried out the first detailed chemical analysis of the essential oil from *Varronia crenata*, a plant widely distributed in the Andes and traditionally used in herbal medicine for its anti-inflammatory, antimicrobial, and wound-healing properties. To determine the stereochemistry of its volatile components, the team used  $\beta$ CD-based chiral columns, enabling enantioselective separation of monoterpenes and sesquiterpenes. The study identified several enantiomerically pure compounds as well as scalemic mixtures. The work highlights how CD stationary phases remain important tools for resolving chiral natural products and better understanding the pharmacological potential of medicinal plants.

**$\delta$ -Cyclodextrin ( $\delta$ -CD or delta-CD)** is now [available](#) commercially at Biosynth!  $\delta$ -CD is a novel, nine-membered CD developed in Sophie Beeren's lab at the Technical University of Denmark.  $\delta$ -CD's larger cavity opens new possibilities for next-generation drug delivery, supramolecular chemistry, and molecular recognition applications. Find their 2023 JACS paper [here](#).



**Beren Therapeutics** just launched their [website](#) and announced FDA Acceptance of its New Drug Application for Adrabetadex (a proprietary mixture of 2-hydroxypropyl- $\beta$ -cyclodextrin isomers) in Infantile-Onset Niemann Pick Disease Type C (NPC). Data suggests that by re-establishing intracellular cholesterol trafficking, adrabetadex may directly address the underlying pathology of NPC.





**CycloPure** continues to demonstrate the scalability of cyclodextrin-based adsorption for PFAS removal. DEXSORB® [has been selected](#) by the Interstate Technology & Regulatory Council (ITRC) for evaluation as a CD-based PFAS removal technology. This significant milestone in CD-enabled environmental remediation will “educate engineers, municipalities, etc. on the suite of options available or in development for per- and polyfluoroalkyl substance (PFAS) remediation.”



**Ligand Pharmaceuticals** continues to demonstrate the real-world impact of cyclodextrin technologies, reporting a strong 2025 driven by nearly 50% revenue growth and sustained demand for its CD-based Captisol® excipient. Captisol® supports multiple approved therapies and remains a core contributor to Ligand’s outlook, with \$35–40M in expected 2026 sales. Notably, Captisol-enabled Remdesivir was deployed by Gilead Sciences for emergency use during Ethiopia’s first Marburg virus outbreak, underscoring how CD-based formulations can scale from commercial success to critical global health response



### Special Notes:

JoVE has launched a video-based Methods Collection for cyclodextrin chemistry, focused on improving reproducibility and technique sharing across synthesis, host–guest analysis, and CD-enabled applications. Guest editor: István Puskás. More information available [here](#).


Special Issue of the 21st International Cyclodextrin Symposium in Carbohydrate Polymers is available [here](#).

Pharmaceutics has just opened a Special Issue entitled "New Insights into Cyclodextrin-Based Drug Delivery Systems". The submission deadline is 30 September 2026.

**Special Issue**  
New Insights into Cyclodextrin-Based Drug Delivery Systems

**Guest Editors**  
Dr. Ágnes Rusznyák  
Dr. Ferenc Fenyvesi

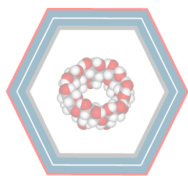
**Deadline**  
30 September 2026

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
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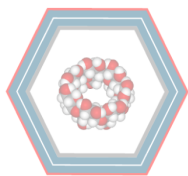
## Cyclodextrin Event Watcher

### Upcoming:

- 2nd World Summit and Expo on Nanoscience and Nanotechnology ([NANOSUMMIT2026](#))
  - March 11-13, 2026
  - Lisbon, Portugal
- 19th Edition of the International Conference and Expo on [Pharmaceutics and Novel Drug Delivery Systems](#)
  - March 26-27, 2026
  - Rome, Italy
- 3rd UNAM–Groningen University [Symposium and School on Nanomedicine and Nano-Biointerfaces](#)
  - April 6–10, 2026
  - **Mexico City, Mexico** 
  - The Universidad Nacional Autónoma de México (UNAM)
- 17th Global Drug Delivery and Formulation ([DDF](#)) [Summit](#)
  - May 18-20, 2026
  - Berlin, Germany
- 6th [Chemistry World Conference](#)
  - June 18-20, 2026
  - Barcelona, Spain
- International Symposium on Macrocyclic and Supramolecular Chemistry ([ISMSC2026](#))
  - July 5-10, 2026
  - Bordeaux, France
- 22nd International Cyclodextrin Symposium ([ICS-22](#)) in India
  - Moga Punjab, India
  - October 22-26, 2026
  - Theme: Transforming Cyclodextrin Research with Emerging AI-Enabled Technologies, Modeling and QbD: Bridging Innovation & Collaboration for Next-Gen Healthcare Scientific Excellence

### Past - Just Missed It!

- [12th Asian Cyclodextrin Conference \(ACC\)](#) in Conjunction with the 41st National Cyclodextrin Symposium
    - November 7-10, 2025
    - Tokyo, Japan
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## What's Next

### Lab Spotlight: [Dr. Chang-Chun Ling](#) from the University of Calgary

Our next virtual meeting turns the spotlight to Dr. Ling's lab. Over the years, Dr.



**UNIVERSITY OF  
CALGARY**

Ling has acquired extensive research experience in several areas including nucleosides, cyclodextrins, and modern carbohydrate chemistry. Currently, his research is focused on the development of carbohydrate-based vaccines and therapeutics to prevent or treat infectious disease, cancer and autoimmune conditions. He is also a principal investigator at the Alberta Glycomics Centre, where he leads a centre project towards the development of therapeutics to treat multi-drug resistant gastrointestinal diseases.

**You can ask your questions to the team ahead of time via [email](#), or live at our next Virtual Meeting on March 19, 2026 at 10am PST**

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## Additional Resources

Need *more* cyclodextrin content? We got you!

- [Cyclodextrin News](#)
- [Cyclodextrin Tales](#)
- [The Society of Cyclodextrins, Japan](#)
- [Cyclodextrin Masterclass](#)
- [CycloLab Newsletter](#)
- Italian Society of Cyclodextrin Chemistry and Technology ([CD.TE.C](#))
- Carbohydrate Chronicles Podcast - available on [Spotify](#) or [YouTube](#)

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## Get Involved

We are always looking for your feedback. Would you like your company or lab featured in a future spotlight? Do you have new research, questions, milestones, or surprising CD applications to share? Do you want to offer resources or opportunities (guest speakers, collaborative projects, internships, etc.) to the group?

What can **you** bring to the Americas Cyclodextrin Consortium? We would love to hear from you. Contact the ACDC team via [email](#) or [LinkedIn](#)!