RESEARCH UPDATE

HANDS
Hydrocephalus Association Network for Discovery Science
Collaboration • Innovation • Impact

January 2026 Newsletter

Featuring...

Announcing Our 2025 Award Winners

ACCELERATOR AWARD

The Accelerator Award supports innovative research aimed at preventing hydrocephalus or advancing non-invasive therapeutic strategies across the bench-to-bedside spectrum. This mechanism is designed to help established investigators propel promising projects to their next phase of development.

Thomas Arnold, MD

Associate Professor,
University of California San Francisco

A Role for Choline in Congenital Hydrocephalus

Mutations in the choline transporter genes FLVCR1 and FLVCR2 are known to cause congenital hydrocephalus (CH), yet the mechanisms linking disrupted choline delivery to abnormal brain development remain poorly defined. Dr. Arnold's project will combine isotope-labeled and fluorescent choline derivatives, metabolomic profiling, and newly developed FLVCR1/2 mouse models to characterize choline transport from maternal circulation to the fetal brain. His team will also test whether maternal dietary choline supplementation can prevent CH-associated phenotypes in these models. This work aims to establish a mechanistic framework for FLVCR1/2-related CH and generate preclinical evidence supporting choline-based, non-invasive therapeutic strategies.

INNOVATOR AWARD

The Innovator Award provides seed funding for highly innovative research with the potential to transform the field of hydrocephalus. Projects supported by this award align with the hydrocephalus Community Research Priorities and aim to generate preliminary data that can lead to new insights, treatments, or future research directions. The award emphasizes significance, feasibility, and potential impact on both scientific understanding and patient care.

Nathaniel Fried, PhD

Professor, University of North Carolina at Charlotte

Image-Guided Laser Clearance of Occluded Ventricular Catheters for Treatment of Hydrocephalus

Dr. Fried is developing a minimally invasive approach to clear occluded ventricular catheters, the most common complication of shunt treatment for hydrocephalus. Using thulium fiber lasers delivered through ultra-small optical fibers and guided by miniature endoscopes, his work aims to provide a safe, precise, and effective method to restore catheter function and improve outcomes for patients.

June Goto, PhD

Assistant Professor,
Cincinnati Children's Hospital Medical Center

Choroid Plexus Targeted Treatment for Hydrocephalus

This award is supported by Team Hydro.

Dr. Goto is developing a novel biologic therapy to reduce cerebrospinal fluid production in neonatal hydrocephalus, offering a potential non-surgical treatment alternative. Using an adeno-associated virus (AAV)–based approach targeting the choroid plexus, her project aims to optimize viral production and enhance choroid plexus specificity, paving the way for a clinically scalable, high-efficiency therapy to improve long-term outcomes for infants with hydrocephalus.

Marwan Osman, PhD, MPH

Research Faculty, Yale School of Medicine

Addressing Paenibacillus-Associated Neonatal Sepsis and Post-Infectious Hydrocephalus in East Africa (PANS-PIH)

This award is supported by Team Hydro.

Dr. Marwan Osman is working to improve diagnosis and management of post-infectious hydrocephalus (PIH) caused by Paenibacillus species, a rising cause of neonatal sepsis. His project strengthens clinical microbiology capacity at Jinja Regional Referral Hospital in Uganda, evaluates a novel point-of-care diagnostic assay, and generates genomic data to better understand antimicrobial resistance and virulence. This integrated approach aims to enhance early detection, guide treatment, and improve neonatal outcomes in East Africa and beyond.

Stavros Taraviras, PhD

Professor,
School of Medicine of University of Patras

Investigating the Use of Focused Ultrasound as a Gene Delivery Approach Targeting Ependymal Cells

This award is supported by Team Hydro.

Dr. Taraviras is exploring a non-invasive gene therapy approach for hydrocephalus using focused ultrasound (FUS) to deliver therapeutic genes to cells lining the brain's ventricles. This innovative method aims to repair or regulate defective genes underlying hydrocephalus, potentially offering a targeted treatment that goes beyond symptom management and could transform care for patients with this condition.

NEUROPSYCHOLOGY AND COGNITION AWARD

The Hydrocephalus Association is proud to continue the Neuropsychology & Cognition Award, which supports innovative research on the cognitive and psychological aspects of hydrocephalus. Projects may focus on developing and applying assessment tools to understand hydrocephalus across the lifespan, evaluate surgical outcomes, explore preclinical models, and inform interventions that improve patient care and life-course transitions. This award aims to advance understanding and improve quality of life for individuals living with hydrocephalus.

Gwendolyn Gerner, PsyD and Joanna Burton, MD, PhD

Developmental Neuropsychologist and Developmental Neurologist, Kennedy Krieger Institute

Posthemorrhagic Hydrocephalus of Prematurity (PHHP): Elucidating Neurocognitive and Neurobehavioral Phenotypes with Robust Longitudinal Assessment

Drs. Gerner and Burton are studying neurodevelopmental and neurobehavioral patterns in infants and toddlers with PHHP. Using existing clinical and neuropsychological data from a high-risk neonatal follow-up clinic, their project aims to identify early markers of neurodevelopmental disability and evaluate tools for monitoring intervention outcomes, helping guide evidence-based care for the youngest patients with PHHP.

Catherine Stephan, PhD

Clinical Psychologist, Kennedy Krieger Institute

Developing a Brief, Repeatable, and Web-Based Assessment of Cognitive Status for Patients with Obstructive Hydrocephalus

Dr. Stephan is developing a brief, telemedicine-based neuropsychological assessment to monitor cognitive function and detect shunt malfunction in individuals with hydrocephalus. Her project will evaluate the feasibility, acceptability, and reliability of a repeatable battery targeting processing speed, memory, executive function, and fine motor skills, using a combination of online tasks, traditional tests, and household-based activities. This work aims to create a scalable, convenient tool for early detection of cognitive changes and improved patient outcomes.

ENGINEERING IN HYDROCEPHALUS PRIZE

The Hydrocephalus Association is proud to announce the recipients of the 2025 Engineering in Hydrocephalus Prize, recognizing exceptional student-led engineering projects that advance hydrocephalus research. These innovative projects were selected for their scientific merit, creativity, and potential to make meaningful contributions to the field, highlighting the next generation of engineers and researchers working to improve understanding, treatment, and quality of life for individuals living with hydrocephalus. Awardees were given the opportunity to present a poster at the 2025 Engineering in Hydrocephalus Research Workshop.

Ahmad Alhayek, Shou En (Neal) Tsai, Jess Goldberg, and Nicholas Demetriou *(pictured in order)*

Northwestern University

NeuraVita

The NeuraVita team is developing a small, non-invasive device that attaches to existing hydrocephalus shunts and uses gentle vibrations to prevent blockages from forming. Designed for safe, at-home use, the portable device aims to reduce emergency hospital visits and improve daily life for individuals with hydrocephalus, particularly in communities with limited access to neurosurgical care.

Yihan Wu

PhD student in Biomedical Engineering, Johns Hopkins University

Non-Invasive Mapping of Cerebrospinal Fluid Flow in Perivascular Subarachnoid Space and Ventricles Using Velocity Selective Spin Labeling MRI

Yihan is developing a non-invasive MRI technique called velocity-selective spin labeling (VSSL) to map cerebrospinal fluid (CSF) flow in the brain, including along narrow channels in the perivascular subarachnoid space. This approach helps researchers better understand CSF dynamics, offering a promising tool for studying hydrocephalus and guiding diagnosis, monitoring, and treatment development.

Fabian Flürenbrock, PhD

PhD Student (Graduated Summer 2025), ETH Zürich

Engineering a Smart Shunt System for Hydrocephalus

Fabian is developing a smart shunt research platform to improve CSF management in hydrocephalus. The project combines advanced mechatronic shunts, multi-modal sensors for real-time monitoring, and an open-source simulation framework to enhance control of intracranial pressure, track CSF dynamics, and guide the development of next-generation shunt therapies.

Research Photo Competition

The Hydrocephalus Association is calling all researchers to submit photos for our 2026 Research Photo Competition! We want to see the research, people, labs, models, etc. that are behind all of the incredible work you do and showcase them in our communications.
Prize winner(s) will win a $50 gift card!!

What does a researcher look like? What does your lab look like? What is your day like as a researcher? What type or research do you work on? What images showcase your work? Share any and all photos you can think of that capture science, engineering, clinical and lab settings, research, and more!

Steps to Enter:

1. **Complete the Photo/Audio/Video Release Form.**
    1. By submitting photos, you agree that the Hydrocephalus Association may use these on our website, social media platforms, and in other communications.
2. **Submit your photos by June 5, 2026**.
    1. Name each photo with a general description (Ex: Jane Doe Lab; mouse model; lab space photo).
    2. If there are people in your photo, please ask their permission before submitting.
    3. We encourage you to submit multiple photos!

Competition: The submission deadline is June 5, 2026. The submissions will first be reviewed and voted on by HA's Research Programs Manager and Director of Research. The top 5-10 submissions will advance and be voted on by all of the HA staff. The winning photo(s) will be showcased on our website, shared on social media, and shared at our HA CONNECT conference.

Email samantha@hydroassoc.org with any questions.

Highlights from the 2025 Engineering in Hydrocephalus Research Workshop

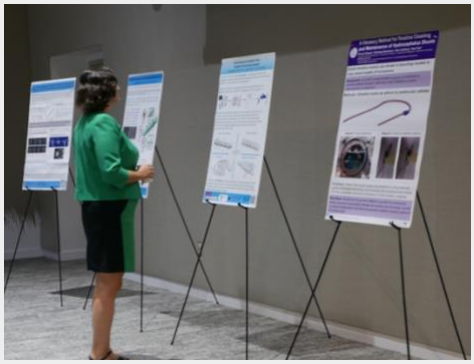
The Hydrocephalus Association and Rudi Schulte Research Institute hosted the **Engineering in Hydrocephalus Research Workshop** at Nationwide Children's Hospital in Columbus, OH, on August 4–5, 2025. Over 90 participants--including engineers, neurosurgeons, researchers, industry leaders, and patients--gathered to develop innovative, cross-disciplinary strategies addressing the pressing challenges of shunt failure and device monitoring. This forward-thinking approach reflects the hydrocephalus community's top priorities: creating non-invasive monitoring systems and designing shunts that resist blockage and mechanical failure.

Key Topics Included:

- Shunt Occlusion and Overdrainage
- Engineering tools to model hydrocephalus mechanisms
- Diagnostics: Monitoring & Imaging
- Patient Perspectives
- Industry Panel
- Funding Opportunities

Read the full summary: hydroassoc.org/hydrocephalus-engineering-workshop-impact

Photos link: Check out (the many!) photos from the workshop.



NEW Engineering in Hydrocephalus Synergy Circle

To continue progress from the workshop, HA has launched a bi-monthly Engineering & Hydrocephalus Synergy Circle, which is a collaborative space where:

- Engineers and clinicians share ongoing work
- Individuals with hydrocephalus provide lived-experience insight
- Teams receive feedback on prototypes, models, and tools
- New partnerships form across institutions and disciplines

The Synergy Circle is open to anyone developing engineering or computational solutions for hydrocephalus. **Please email research@hydroassoc.org for more information.**

NEW Residents Roundtable

Are you a resident passionate about advancing hydrocephalus research and care? The Hydrocephalus Association invites you to join our Residents Roundtable, a dynamic community designed to connect, inspire, and empower the next generation of physician-scientists.

Through 3-4 meetings each year, participants will:

- Receive mentorship and career guidance from leading attending physicians
- Explore opportunities for collaborative research projects
- Exchange insights and build meaningful connections with peers across institutions

HA has also created a Resident's Portal on our HANDS website for easy access to information on treating hydrocephalus, clinical management education, and more. This is your chance to expand your network and contribute to the future of hydrocephalus research and treatment.

If you are a resident interested in joining or a physician interested in mentoring / presenting at a roundtable meeting, please contact samantha@hydroassoc.org.

Our next roundtable is on March 20 at 4pm ET, where we will learn from Dr. Ryan Lee:

Abstract Submissions Now Open for HA CONNECT 2026

Present your research at our brand-new *Flow Hydrocephalus Research Symposium* at HA CONNECT.

July 23-25, 2026 | Indianapolis, IN

Join this exclusive opportunity for scientists, engineers, physicians, and other research professionals to present at the Flow Hydrocephalus Research Symposium or Next Generation Trainee sessions at HA CONNECT. This dedicated track for researchers consists of multiple sessions where you can share your latest advancements in hydrocephalus research. Check out the Research Program here.

Abstracts are due March 13, 2026. Submit here.
>> Next Generation Travel Awards are available for trainees.

Why Attend HA CONNECT?

- Exclusive Research Presentations: Present your latest findings at the Research Symposium or Next Generation Session
- Discover What's Next in Hydrocephalus Research: Attend cutting-edge hydrocephalus research presentations
- Networking Opportunities: Join exclusive Engineering and Trainee Socials
- Connect and Collaborate: Network with leading experts and emerging innovators
- Connecting Science with Lived Experience: Engage directly with patients and families for real-world insights

Learn more: hands.hydroassoc.org/about-ha-connect.

Upcoming Hydrocephalus Conferences

Hydrocephalus 2026 World Congress will be held on 31 July – 3 August 2026 in São Paulo, Brazil.

It is with immense pride and excitement that the Hydrocephalus Society warmly welcome you to the Hydrocephalus 2026 World Congress, taking place in the dynamic city of São Paulo, Brazil!

We are truly honored to host the largest global gathering dedicated to hydrocephalus and cerebral hydrodynamics disorders, where leading experts, dedicated practitioners, and passionate advocates will unite to exchange vital knowledge, explore innovative treatments, and forge lasting connections.

Learn more: hydrocephalus-meeting.com

The Scientific Committee welcomes the submission of original contributions from hydrocephalus and CSF disorders related professionals, discussing developments, controversies and arguments, new practices and technologies in regard to Hydrocephalus treatment. **Abstracts must be submitted by 16 March 2026.**

Apply here: hydrocephalus-meeting.com/abstract-submission

SRHSB
Society for Research into Hydrocephalus and Spina Bifida

SRHSB Annual Conference Meeting 2026

Amsterdam, The Netherlands at the Amsterdam University Medical Centre

Wednesday September 16th – Friday September 18th 2026; save the dates!

On behalf of the local Organising Committee, we are pleased to announce that the next SRHSB Annual Conference Meeting is to be held at the Amsterdam University Medical Centre (UMC), The Netherlands, on September 16th-18th 2026.

We are developing an exciting provisional program, with national and international keynote speakers presenting talks covering a wide range of topics, including those related to hydrocephalus and spina bifida, together with their clinical care. Learn more here: srhsb.com/amsterdam-2026.

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50 ans years
Spina-bifida hydrocéphalie Québec
TOUT EST POSSIBLE
IFSBH INTERNATIONAL FEDERATION FOR SPINA BIFIDA AND HYDROCEPHALUS

The 31st International Conference on Spina Bifida and Hydrocephalus will be held on October 15th-17th, 2026 in Montréal, Québec, Canada. This event will coincide with the 50th anniversary of Spina-bifida hydrocéphalie Québec.

This global meeting brings together individuals living with Spina Bifida and Hydrocephalus, families, clinicians, researchers, and advocates to share new scientific findings, explore clinical best practices, and strengthen international collaboration. It offers a unique opportunity to explore the latest medical advances, scientific findings, and best practices in the field.

Abstract submissions for oral and poster presentations are now open, with a deadline of 31 March 2026. Learn more and submit abstracts here: sbhconference2026.com/en/call-for-abstracts.

Hydrocephalus Association

Our mission is to find a cure for hydrocephalus and improve the lives of those impacted by the condition.

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