



March 2024

Wrapping up with a splash

NMIN's 2024 Research Conference gathers Canada's nanomedicine experts

NMIN's [2024 Research Conference](#) took place in Vancouver on 24-27 January 2024.

The event attracted over 240 participants from across sectors and across the country, with trainees and industry especially well represented. The [program](#) featured four keynote speakers; 41 presentations on network research and its outcomes; and a panel of opinion leaders discussing current and future research, commercialization, collaboration and innovation opportunities in the Canadian nanomedicine ecosystem.

Of the [49 posters](#) exhibited, 35 were entered into the adjudicated NMIN trainee poster competition. Nine trainees across three categories (MSc, PhD and Post-doctoral) received cash prizes for placing first, second or third, and four trainees received honourable mentions. Read about the competition winners [here](#).

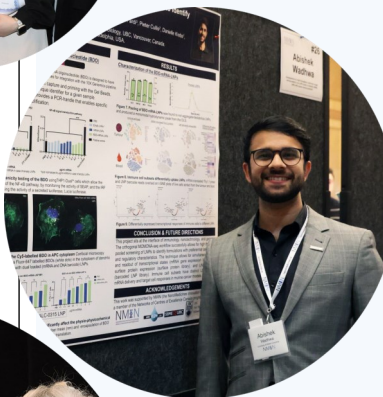
The 73 respondents to a post-event evaluation survey rated the conference's overall quality at 4.5/5 and identified scientific content and networking opportunities as event highlights.

A gallery of conference photos can be accessed on the [event webpage](#).

NMIN is grateful to the 15 generous [event sponsors](#) whose support was crucial to the conference's success.

While NMIN organized numerous previous research-focused [events](#), as a result of COVID restrictions this was NMIN's first Research Conference—and its last, given that NMIN operations conclude on 30 September 2024.

I believe we all share the sentiment expressed by one of our survey respondents that "I only wish we could meet again!"



MESSAGE FROM THE EXECUTIVE DIRECTOR

It was wonderful to see those of you who attended NMIN's 2024 Research Conference in Vancouver. As the Network's final research event, it was an occasion for both reflection and future planning. It was deeply gratifying to look back at our collective accomplishments since NMIN's launch in 2019, and to look ahead at the numerous future opportunities that the Network has enabled.

As our Scientific Director, Dr. Gilbert Walker, enumerated in his closing remarks at the event, since 2019 NMIN has engaged 109 researchers, 350 trainees and 133 partner organizations in 70 projects and three Core Facilities that have upheld the highest standards of scientific and translational excellence, resulting to date in six spin-off companies, 107 new jobs, 11 patents filed and 828 publications, including 86 peer-reviewed articles. Much of this tremendous productivity was on display at the conference, in the many outstanding presentations by Network researchers and trainees.

Dr. Walker also aptly observed that the Network's trainees, having benefited from involvement in world-class research with NMIN researchers and from the value-added opportunities afforded by NMIN's HQP programming, represent one of the Network's most immediately impactful legacies. This, too, was amply demonstrated by the performance of HQP at the conference in research presentations, panels—including those where HQP spoke as founders and leaders of new companies—in the poster competition, and in the many discussions held on the conference floor and during networking activities.

For those saddened by the prospect of the Network's conclusion, Dr. Walker reminded us that various elements of

NMIN's work, including its Core Facilities, are exploring or have found new support through integration into initiatives such as the gene-therapy focused CFREF at McGill and biomanufacturing hubs across Canada, through partnerships with industry, and through new funding programs such as the New Frontiers in Research Fund.

Continues on next page

Meanwhile, the Network continues to maximize remaining resources to support its participants and the Canadian nanomedicine community at large.

An HQP Networking Workshop will be held in Vancouver on 25-26 April 2024. Registration and applications for travel support to attend this event will open on the NMIN website on 1 April 2024. Until June 2024, NMIN will continue to issue *Travel Awards* to facilitate the participation of HQP in national and international nanomedicines-related events occurring before 1 December 2024, and its *NanoMedicines Translated Program* remains available to help HQP hone their science communication skills.

Additional *NMIN Lectures* by Network researchers, and HQP research presentations are planned over the next two months. A final ceremony to celebrate the latest recipients of NMIN's *Advanced Training Certification* will be held on 18 June 2024.

On the research front, I'm happy to report that as of January 2024, 100% of NMIN's total research budget has been awarded. Of those awarded funds, 99.3% (\$14.5M of \$14.6M) has been released.

If NMIN PIs retain unspent NMIN funding beyond the end of NMIN's NCE mandate on 31 March 2024, their host institutions must report the subsequent use of those funds in 2024-2025 to The University of British Columbia (UBC). If any NMIN funding remains unspent at 31 March 2025, the PI's host institution must return it to UBC.

Speaking of reporting, NMIN's administrative team will be preparing the Network's final Statistical and Annual Progress Reports for submission to the NCE secretariat on 14 June 2024. NMIN PIs, please aim to respond as promptly as possible to the requests you will soon receive to provide final progress reports and SOAs by mid-April, to ensure NMIN's reporting accurately reflects your research achievements.

Please also note that although NMIN's NCE mandate will officially end at the conclusion of the 2024 Annual Meeting of Network Members in mid-July 2024, the Administrative Centre will support the corporate wind-down to 30 September 2024.

It has been an honour and a privilege to provide operational leadership to NMIN since February 2019. I am proud to be associated with the amazing scientists, entrepreneurs, trainees, partner organizations and Administrative Centre staff that have energized the Network, made Canada a leader in the field, and advanced revolutionary new approaches to improving human health.

Thank you to everyone who has helped to make this Network a success. I look forward to witnessing the future accomplishments certain to arise from the scientific foundation, commercial innovations, and the professional and personal relationships that we created together during this exhilarating five-year adventure.

Dr. Diana Royce, Ed.D.
Executive Director, NMIN



RESEARCHER NEWS

NMIN Researcher & former Scientific Director Dr. Christine Allen was named recipient of a [2024 Life Sciences Ontario Award](#) for Community Service, and [profiled](#) in *UofT News*.

NMIN Research Leader Dr. Christian Kastrup was [interviewed](#) about his breakthrough gene therapy approach to treating hemophilia, and his research in *Science Translational Medicine* was [profiled in BioWorld](#).

NMIN Researcher Dr. Shana Kelley was made a fellow of the [National Academy of Inventors](#) and her work at the CZ Biohub was [profiled](#) in *Chicago Magazine*.



[READ MORE](#)



[READ MORE](#)



[READ MORE](#)

Spun out

NMIN spin-off companies strut their stuff

The companies that have emerged out of NMIN-funded research are diverse in focus and at different stages of development, but all offer valuable new technologies and are rapidly increasing in profile.

To support their marketing efforts, NMIN staff co-developed one-page factsheets for each company. These factsheets have been distributed to key stakeholders, and were included in the 2024 Research Conference program.

In a conference session, NMIN spin-off company leaders also presented on the value proposition and progress of each of these six enterprises.

Liberum Biotech

Combining machine learning with cell-free biology, we make enzyme & antibody discovery easier, faster & less expensive

NorthMiRs

NorthMiRs uses nanotechnology-enabled gene therapies to address the underlying immune dysregulation of sepsis

Liberum
Liberum Biotech

Vision
To improve health of humans, animals, and the environment via sustainable synthetic biology solutions.

Products & Services
Liberum makes small-scale protein production 100-500x faster than conventional methods.
Our technology enables scale-up of cost-effective protein and cell systems for development of protein-based vaccines.
Our platform capabilities can support and accelerate the protein discovery efforts of your laboratory through commercial pharmaceutical categories or academic lab.

PROTEIN DISCOVERY >>> ACCELERATED
By combining machine learning with cell-free biology, we make enzyme and antibody discovery easier, faster and less expensive.

Leadership
Alan Tsai, CEO | Alexander Brown, Co-Founder & CTO | Keith Ludlow, CTO



Liberum co-founder
Keith Pardee

NorthMiRs
NorthMiRs Inc.

Vision
To address the underlying immune dysregulation of sepsis using nanotechnology-enabled gene therapies.

Problem
Sepsis is an unanticipated systemic immune response to an infection that often leads to multiple organ failure. Patients with sepsis have high mortality rates, require intensive care and ventilation treatments.
Sepsis is the most common cause of death in the United States and the most expensive current medical care for sepsis is antibiotics. NorthMiRs aims to change this landscape.

Solution
From prior work in research and then our therapy for sepsis, we have developed NorthMiRs as an mRNA-based gene therapy that acts on the immune system to regulate the immune response of the host.
From prior work in research and then our therapy for sepsis, we have developed NorthMiRs as an mRNA-based gene therapy that acts on the immune system to regulate the immune response of the host.
NorthMiRs' lead candidate, NMI-001, is using miRNA to hold the hearts of septic patients at risk of multi-organ failure.

TREATING SEPSIS >>> SAVING LIVES

Founding Team
Foundational experts | Preclinical research experts



NorthMiRs CEO
Samantha McWhirter

NanoStar Pharmaceuticals

We excel in LNP technologies & have developed multiple proprietary platforms to address unmet formulation needs

SeraGene Therapeutics

SeraGene harnesses nanomedicine technologies to develop the next generation of hematological therapeutics

NanoStar
Pharmaceutical

ENABLING NOVEL THERAPIES THROUGH DRUG DELIVERY

WE OFFER:
NanoStar creates innovative polymer platforms and drug delivery systems to enable the development of novel therapeutic solutions.
We are currently in drug delivery development for novel cancer immunotherapies, oncology, and other therapeutic solutions.

CONTACT US
info@nanostarpharma.com
2305 Woodson Hall
Carrollton, GA 30133
NanoStar - Start to Cure.

LNPs FOR NUCLEIC ACIDS
• Clinically approved LNP formulations & in-house proprietary formulations
• Increased stability & release
• In-house RISC reagents & siRNA/CRISPR

LNPs FOR SMALL MOLECULES
• Development & optimization of liposomal formulation & viral loading
• Micelles, emulsions, & self-assembling drug delivery systems
• Increased solubility, enhanced stability, efficacy, & prolonged pharmacokinetics

NEEDLE-FREE DELIVERY OF BIOLOGICS
• Protein, enzymes, hormones, peptides, polynucleotides, & monoclonal antibodies
• Local, subcutaneous, intramuscular, & ophthalmic delivery



NanoStar co-founder
Shyh-Dar (Star) Li

SeraGene
Therapeutics Inc.

Vision
A world where cancer and all bleeding or thrombotic disorders are cured by the most effective and comprehensive solution: a single, simple, and safe gene therapy.

Mission
To create precision RNA therapies that provide long-term protection for all patients with bleeding disorders and thrombotic disorders, resulting from heritable or acquired causes.

Core Technology
RNA agents that modulate the level of specific messenger RNAs (mRNAs) to prevent or treat bleeding and thrombotic disorders.

RNA THERAPIES >>> TO TREAT BLEEDING DISORDERS & THROMBOTIC DISORDERS
SeraGene's RNA agents are targeted to correct coagulation disorders long-term.

Leadership



SeraGene CEO
Erika Siren

NanoVation Therapeutics

NanoVation Therapeutics provides a one-stop IP portfolio to empower the development of genetic medicines

Vega Bioimaging

Vega Bioimaging provides reliable & sensitive companion diagnostic tests for cancer

NANOVIATION
therapeutics.

Vision
To empower patient outcomes by improving the safety, cost-effectiveness and capability of gene and cell gene therapies.

Mission
To develop next generation platform technologies that will empower us to help our patients and their families to live longer and better lives.

Portfolio
• Novel proprietary, economical (cost to manufacture) and scalable delivery systems
• Lipid-based delivery systems (liposomes, LNPs, etc.)
• Novel proprietary mRNA delivery systems that increase the efficiency of mRNA translation
• Cancer

Toolbox
Our toolbox has two components:
• Deep expertise in mRNA modifications and delivery systems, composition and surface modifications
• Deep expertise in mRNA modifications and delivery systems, composition and surface modifications

WE INNOVATE WE DELIVER
NTx is delivering tomorrow's genetic medicines, TODAY

Leadership



NTx co-founder & CEO
Dominik Witzmann

VEGA
BIOIMAGING

Vision
To create precise medicine for cancer through precision biology characterization.

Mission
To provide most immediate therapy that allows quantitative and dynamic protein detection for personalized cancer diagnosis.

Core Technology
Multiplexed nanoparticle-based protein sensing (MNP) that allows for unprecedent sensitivity and precise quantitation.
Compatible with standard FFPE samples and H&E routine.

Pharmaceutical firms utilize reliable and sensitive companion diagnostic tests for cancer
Pathologic requires more accurate protein tests more quickly.
Patients receive the treatment most appropriate for their profile.

PROTEIN QUANTITATION >>> FOR MORE ACCURATE DIAGNOSTICS
Providing precise results quickly, to empower researchers & clinicians

Leadership



Vega Co-founder & CEO
Cecile Daviot

NMIN's Highly Qualified Personnel (HQP) Program



Top L to R: Ramya Kannan, Vanessa Chan & Jiamin Wu (far right); Michelle Gandelman & Emma Durocher; Nashmia Zia (with Diana Royce)
Bottom L to R: Sarah Thomson & Pardis Kazemian (with Blair Leavitt); Madelaine Robertson; Amandine Courtemanche (centre). Inset: Katrina Besler

HQP Research Excellence

Congratulations to the poster competition winners at NMIN's 2024 Research Conference

Nine HQP won top prizes across three categories in NMIN's adjudicated 2024 HQP Poster Competition, and four earned honorable mentions, as follows:

Post-doctoral level:

1. Sarah Thomson (UBC)
2. Ramya Kannan (UBC)
3. Nashmia Zia (UofT)

Doctoral level:

1. Madelaine Robertson (UBC)
2. Katrina Besler (UBC)
3. Pardis Kazemian (UBC)

Honourable mentions: Amélie Baron (Polytechnique Montréal) & Jiamin Wu (UBC)

Master's level:

1. Emma Durocher (UOttawa)
2. Vanessa Chan (UBC)
3. Michelle Gandelman (UOttawa)

Honourable mention: Yao Zhang (UBC)

Undergraduate level:

Honourable mention: Amandine Courtemanche (UOttawa)

More photos of the winners and links to their poster abstracts are available on [NMIN's website](#).

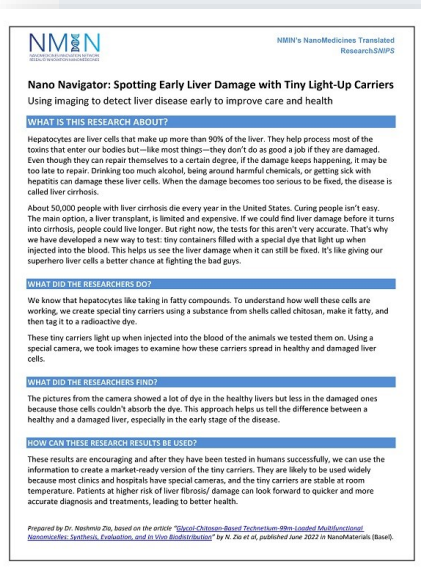


Amélie Baron

NMIN's first *ResearchSNIPS* describes research to improve liver disease diagnosis

NMIN announces the first NMIN *ResearchSNIPS*, [Nano Navigator: Spotting Early Liver Damage with Tiny Light-Up Carriers](#), completed by Dr. Nashmia Zia. *ResearchSNIPS* are an output of NMIN's science communication program, *NanoMedicines Translated*.

Dr. Zia is a postdoctoral fellow in Chemistry supervised by NMIN Scientific Director Dr. Gilbert Walker. Her research focuses on identifying the role of immune regulation in miRNA-LNP-mediated therapy of infectious and inflammatory diseases. Her *ResearchSNIPS* describes her efforts to use imaging to detect liver disease early for more accurate diagnosis and treatment.



The [NanoMedicines Translated Program](#) aims to make NMIN-supported research findings more accessible to a broad audience and to hone the plain-language writing skills of NMIN HQP.

This program is available to all NMIN HQP. Upon completion, trainees receive a \$500 Travel Award and four [ATC](#) credits.

The last date to apply for this program is Monday, 22 April 2024.

[More information](#)

Meet the 2023 Graduate NMIN Award Winners



Top L to R: Irafasha Credo Casmil (PhD), Sunny Peiwei Chen (PhD), Pablo Crespo (MSc), Sadie Graves (MSc), Shagun Kothari (MSc). **Centre L to R:** Tessa Morin (PhD), Lindsay Pallo (PhD), Victoria Palmgren (PhD), Petya Georgieva Popova (PhD), Nicholas C. Solek (PhD). **Bottom L to R:** XuXin Sun (PhD), Tyler Thomson (MSc), Abishek Wadhwa (PhD), Yao Zhang (PhD).

NMIN is pleased to announce the 14 recipients of the its 2023 Masters- and Doctoral-level Graduate Awards.

NMIN Graduate Awards aim to enable exceptional students to pursue academic nanomedicine research training with Canadian experts. Doctoral awards

provide a stipend of \$30,000 a year for up to two years; Master's awards provide a one-year stipend of up to \$17,500.

Read more about the 2023 Graduate Award winners and their projects [here](#).

NMIN Travel Awards

are available to NMIN Highly Qualified Personnel (HQP) to support their participation in events aligned with NMIN's mission and scope of research

Don't miss that conference!

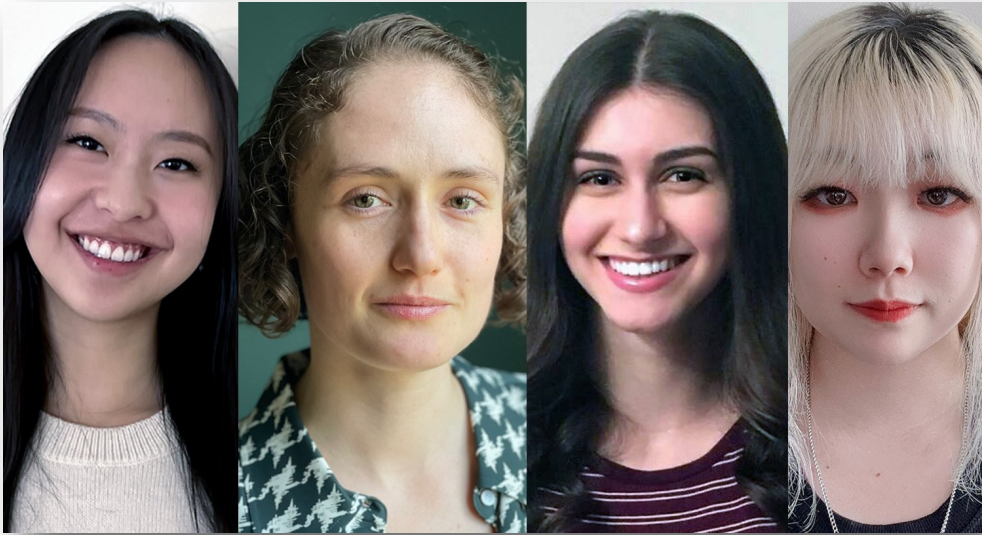


NMIN Travel Awards are available to NMIN HQP to support their participation in events taking place between now and 1 December 2024.

Opportunity to apply closes Friday, 31 May 2024.

For inquiries, please contact divyarao@nanomedicines.ca

Meet the 2023 Undergraduate NMIN Award Winners



L to R:

Janell Ko, University of British Columbia, supervisor: Dr. Shyh-Dar Li

Nadine Ramsden, University of British Columbia, supervisor: Dr. Colin Ross

Alexa Smith, University of British Columbia, supervisor: Dr. Sabrina Leslie

Sijie (Cat) Zhang, University of British Columbia, supervisor: Dr. Marcel Bally.

NMIN is pleased to announce the four recipients of its 2024 Undergraduate Studentships. Recipients receive a stipend of \$1,500 a month for a maximum of four months, to work on a nanomedicines-related research project under the supervision of an NMIN investigator. Read more about the 2023 Undergraduate Award winners and their projects [here](#).



NMIN HQP **Nashmia Zia** presented in the PRiME (Precision Medicine Initiative) Research Rounds at the University of Toronto on 15 March 2024.



"Exploring the Impact of MicroRNA Modulation on Macrophage-mediated Immune Regulation of Acute Respiratory Distress Syndrome (ARDS), Development of 2D-Culture model"

NASHMIA ZIA, Ph.D Candidate
2023 PRIME Clinical Catalyst Fellow
Unity Health Toronto
Co-supervised by Dr. Gilbert Walker
and Dr. Claudia Dos Santos

NMIN HQP wins 1st place in CARO-COMP JSM oral presentation competition

Congratulations to NMIN HQP **Nolan Jackson**, a graduate student at the University of Victoria supervised by NMIN researcher Dr. Devika Chithrani, who won first place for his oral presentation at the 2023 Canadian Association of Radiation Oncology and Canadian Organization of Medical Physicists Joint Scientific Meeting (CARO-COMP JSM) in Montreal, Quebec, in September 2023.



Not only did Nolan attend the event with the support of an [NMIN travel award](#), he attributes his success in part to the advantage he gained in having participated in NMIN's [HQP Research Presentation Series](#). He says the experience "allowed me to

hone my skills at creating an effective slide deck and at public speaking. The feedback [from my NMIN talk] resulted in my delivering a much more professional and informative presentation."

Mitacs

FUNDING SUPPORT REMINDER

Mitacs Internships and Fellowships are available, earmarked for NMIN HQP to work with non-academic partner organizations on nanomedicine research.

See the FAQs & application information on the [NMIN website](#).

Opportunity to apply closes **6 May 2024**.



Report highlights life sciences opportunities in BC

On 13 February 2024, Life Sciences BC issued the report "[Fostering a Globally Competitive Life Sciences Ecosystem in BC](#)," highlighting the urgent need for a tenfold increase in skilled talent within the sector and identifying the specific skills sought by BC employers.

The report includes an up-to-date workforce profile, labour supply and demand forecasts, a list of critical skill gaps (in business acumen, leadership and management skills, knowledge of quality and regulatory affairs, clinical trials, biomanufacturing, and commercialization expertise), and recommendations for sector-led strategies to bridge these gaps.

Life Sciences BC offers services and information relevant to NMIN trainees seeking employment in the bioscience innovation ecosystem, including [industry updates](#), [job postings](#), and announcements about [events](#) and [professional development opportunities](#).

Subscribe to Life Sciences BC weekly newsletters [here](#).



NMIN HQP on the Move

NMIN Travel Awards support HQP in their efforts to attend and contribute to important events in the nanomedicines field, within Canada and internationally. Recent award recipients and their events of interest are listed below.

HQP	Institution	Event	Location	Date
Hadeel Mohammad	University of Toronto	IEEE International Conference on Communications	Rome, Italy	May - Jun 2023
Po-Han Chao	UBC	Gordon Research Conference,	Boston, USA	Jul 2023
Madelaine Robertson	UBC	International Society on Thrombosis and Hemostasis Meeting	Montréal, Canada	Jul 2023
Yulin Mo	University of Toronto	CRS 2023 Annual Meeting	Las Vegas, USA	Jul 2023
Liza Silverman	University of Victoria	CRS 2023 Annual Meeting	Las Vegas, USA	Jul 2023
Nolan Jackson	University of Victoria	2023 CARO-COMP Joint Scientific Meeting	Montréal, Canada	Sep 2023
Norman Chow	BC Cancer, UBC	Biomolecular Imaging and Informatics 2023 Conference	Boston, USA	Oct - Nov 2023
Cécile Darvot	Polytechnique Montreal	2023 Canadian Cancer Research Conference	Halifax, Canada	Nov 2023
Madelaine Robertson	UBC	2024 Liposomes Research Days	Glasgow, Scotland	Jun 2024
Suiyang Liao	UBC	CRS 2024 Annual Meeting and Expo	Bologna, Italy	Jul 2024

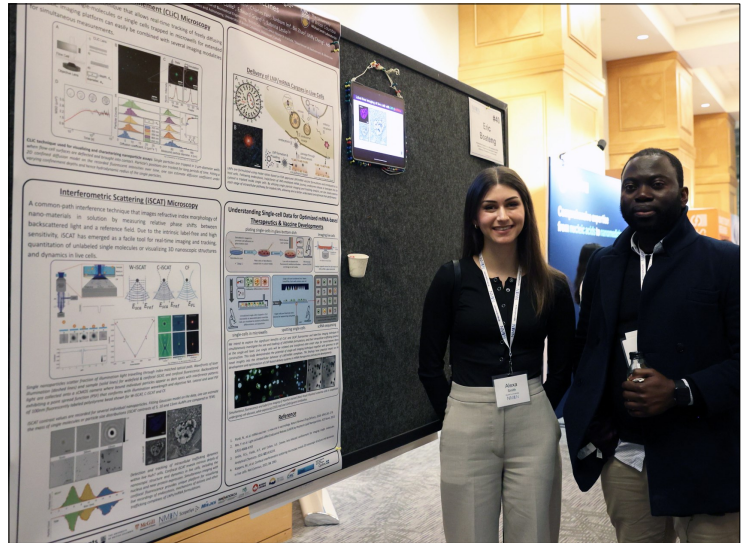
NMIN Travel Awards are available to NMIN HQP to support their participation in events taking place between now and 1 December 2024. **Applications must be submitted by 31 May 2024.**

For inquiries, please contact : divyarao@nanomedicines.ca



NMIN
 NANOMEDICINES INNOVATION NETWORK
 RÉSEAU D'INNOVATION NANOMÉDECINES

Visit the gallery of photos from NMIN's 2024 Research Conference on the [event webpage](#).



Events

26th Annual Symposium

JUNE
10-13

2024
Edmonton

Innovations in Drug Discovery and Development
Exploring New Horizons in Pharmaceutical Excellence

cspscanada.org



18th LIPOSOME RESEARCH DAYS 2024
University of Strathclyde, Glasgow, Scotland
June 26 to 29, 2024

LIPOSOME
RESEARCH
DAYS 2024



CONTROLLED RELEASE SOCIETY
CRS 2024
Annual Meeting
AND Exposition

Bologna Congressi

BOLOGNA, ITALY
JULY 8-12, 2024

Upcoming Online NMIN Lectures



Dr. Nicolas Bertrand

26 March 2024
10 am PT | 1 pm ET

[Register](#)



Dr. Gang Zheng

30 April 2024
9 am PT | 12 pm ET

[Register](#)

Enquiries or comments | [Dr. Diana Royce](#) | NMIN Executive Director | dianaroyce@nanomedicines.ca