



IARS[®]

International Anesthesia Research Society

**MENTORED
RESEARCH AWARD
RECIPIENTS**

**Stories from the Field:
From Mentored to Magnificent**

2013 – 2021

IARS Research & Education Grants Program by the Numbers

Individuals have received IARS Mentored Research Awards from 2013-2023, a maximum award of \$175,000 each, payable over two years to up to 4 researchers each year

Researchers from 4 different countries (US, Canada, Germany and Switzerland) have received the IARS Frontiers in Anesthesia Award (\$750,000 award), totaling \$7 million, from 1995 to 2021

Over \$23,000,000
in research grants awarded by IARS during its 102 years

Over 230
studies funded by IARS

\$950,000
in 2023 in anesthesia-related research funding

\$929,000
awarded to 7 investigators who received SmartTots grants to support their research on the effects of anesthetics on infants and children

48

12

62

7

24

46

1983
IARS began its support of research

BB Sankey Anesthesia Advancement awards were granted through 1993, totaling \$1,078,495

Anesthesiologists have received Teaching Recognition Awards, totaling \$238,000, from 1997 to 2014

Clinical Scholar Research Awards were presented, including researchers from 7 different nations (US, Canada, Germany, Israel, Netherlands, Switzerland, and the UK), totaling nearly \$5 million from 1994 to 2011

Scientists were awarded the Ben Covino Research Award (totaling nearly \$150,000), in honor of Dr. Covino's pioneering work in regional anesthesia, from 1993 to 2004



IARS[®]

International Anesthesia Research Society

IARS Mentored Research Award Recipients

The International Anesthesia Research Society (IARS) is a nonpolitical, not-for-profit medical society founded in 1922 to advance and support scientific research and education related to anesthesia, and to improve patient care through research in all areas of anesthesia practice, including perioperative medicine, critical care, and pain management.

The IARS mission is to generate and disseminate transformative breakthroughs in anesthesiology and perioperative medicine while growing and supporting scientists worldwide. As partial fulfillment of that mission, IARS has funded more than 200 research projects in 40+ years, totaling over \$23 million. Current IARS funding focuses on supporting the development of promising investigators' innovation and creativity through our primary award, the *IARS Mentored Research Award (IMRA)*, which is intended to help create future leaders and prepare applicants to apply for independent research funding.

IMRA applications may be in any area of investigation (clinical, translational, basic science), but must have ultimate relevance to the broad practice of anesthesiology and its subspecialties. A senior mentor and an appointment in a successful principal investigator's group are necessary components for successful candidates. Applications are accepted and reviewed annually on the basis of scientific merit, adequate preliminary data, career potential of the investigator, and the importance of the investigation to the specialty of anesthesiology. IARS is proud of our awardees, as IMRA has proven to enable international researchers to significantly advance their careers and the specialty!

The stories in this booklet were gathered from a sample of past IMRA recipients. The data is straightforward, while the nuanced stories help to illuminate the impact IARS funding has had on awardee careers. These stories provide sound assurance that the future of the anesthesiology specialty is in good hands.

Note: The interviews have been edited for length and clarity; the full interviews are available on the IARS website via the link.

SINZIANA AVRAMESCU, MD, PhD, FRCPC

Anesthesia Resident

University of Toronto, Toronto, Ontario, Canada

Do Anesthetics Exacerbate Memory Deficits Following Traumatic Brain Injury?

AWARD AMOUNT: \$150,000



Current academic title and institution: Assistant Professor, University of Toronto

Subsequent funding from NIH, CIHR, etc.:

CIHR	\$1,285,200	2020	Co-Investigator
CIHR	\$132,916	2013	PI

At the age of 17, Sinziana Avramescu, MD, PhD, FRCPC, was involved in a car crash as a pedestrian and was sent unconscious to the ICU. While recovering from a traumatic brain injury, she became fascinated that all the tests said her brain was normal but she was not functioning at her previous capacity. This was the moment she decided to become a “brain scientist” to unravel this disconnect and help others experiencing traumatic brain injury. Her passion and perseverance helped her to receive the IARS Mentored Research Award in 2013 for her research, “Do Anesthetics Exacerbate Memory Deficits Following Traumatic Brain Injury?” Dr. Avramescu’s overarching goal of her study was to gain a better understanding of the debilitating consequences of traumatic brain injury (TBI) and to develop a pharmacological strategy to prevent post-traumatic memory deficits. The findings from her research provided the first proof-of-concept evidence that $\alpha 5$ GABAARs are novel targets for pharmacologic treatment of persistent cognitive deficits induced by traumatic brain injury.

INTERVIEW HIGHLIGHTS

What was the goal of your initial research project? Was it met?

The overarching goal of our research program was to gain a better understanding of the debilitating consequences of traumatic brain injury (TBI) and to develop an informed pharmacological strategy to prevent post-traumatic memory deficits.

How did your findings impact patient care?

Our findings are very important because they provided the first proof-of-concept evidence that $\alpha 5$ GABAARs are novel targets for pharmacologic treatment of persistent cognitive deficits induced by traumatic brain injury. Moreover, these receptors can be detected using nuclear tags and MRI imaging and could serve in the future as an objective method to quantify memory loss associated with brain trauma.

How did your research impact the field of anesthesiology?

We realized very early on that a successful perioperative research program required a multidisciplinary approach. In 2017, together with my mentor, Dr. Beverley Orser, and with my collaborator and colleague, Dr. Stephen Choi, we co-founded the Perioperative Brain Health Centre at Sunnybrook Health Sciences Centre. This is the first center of its kind that focuses on bringing together patients, healthcare professionals and researchers to design and implement novel diagnostic and treatment strategies for perioperative brain dysfunction, such as delirium, post-operative memory and executive function impairment.

Did the IMRA award affect your research/professional trajectory?

Absolutely! It offered me reassurance that my research was on the right track and provided the much-needed financial support to start my own research program. The award gave me the greatest privilege—protected time to focus on my research, to plan experiments and build relationships with other research teams. I felt incredibly lucky to be able to build a research career at the same time as being a clinician and an educator, which would have been impossible without this award.

I continue to be heavily involved in research in my current position. In fact, I was able to create our first perioperative research unit at Humber River Hospital and now we partner with several academic centers across Canada, and we serve as a research site for multi-center clinical trials.

Click [here](#) to read full interview.

AEYAL RAZ, MD, PhD

Visiting Assistant Professor

Rambam Medical Center, Technion's Rappaport School of Medicine, Haifa, Israel

Pathway-Specific Mechanisms of Anesthesia in the Cortex

AWARD AMOUNT: \$150,000



Current academic title and institution: Chair, Department of Anesthesiology, Rambam, Israel

Subsequent funding from NIH, CIHR, etc.: Unknown

Prior to receiving an IARS Mentored Research Award in 2013 while a visiting scientist at Matt Banks' Lab at University of Wisconsin in Madison, Aeyal Raz, MD, PhD, was considering giving up on his research path in anesthesiology. The IMRA recognition significantly altered his path and launched him on an extremely successful journey as a researcher, ultimately landing him today as the Chair of the Anesthesia Department at the Rambam Medical Center in Israel and with his own lab. That initial award, and his first grant, for his research project on "Pathway Specific Mechanism of Anesthesia in the Cortex" allowed him to investigate a topic that had fascinated him since training, the effects of anesthesia on feed forward and feedback pathways in the brain. Through this study, Dr. Raz was able to demonstrate that anesthetics differentially affect different thalamocortical pathways. He did not stop at this initial conclusion but continues to investigate the fundamental mechanisms of anesthesia and consciousness.

INTERVIEW HIGHLIGHTS

What was the goal of your initial research project? Was it met?

We set up to study the effects of anesthesia on feed forward and feedback pathways in the brain. We were able to demonstrate that anesthetics differentially affect different thalamocortical pathways.

How did your findings impact the field of anesthesiology?

We are starting to understand the effects of anesthesia on the brain's network. This is critical to identify situations such as awareness without recall, and to identify loss and recovery of consciousness.

How did the award affect your research/professional trajectory?

The IMRA had a major impact on my career trajectory. This was my first significant grant, which was a significant breakthrough in my career. Once I had my own research funds, I was able to continue my research, and get a tenure-track position in Madison. Later, based on this, I was able to get a dual clinical-research position at Rambam. I am currently the Chair of my department, and my lab is active and supported by competitive grants.

Click [here](#) to read full interview.

MILES BERGER, MD, PhD

Faculty Fellow – Instructor

Duke University Medical Center, Durham, NC

The Trajectory and Significance of Perioperative Changes in AD Biomarkers

AWARD AMOUNT: \$150,000



Current academic title and institution: Associate Professor of Anesthesiology, Duke

Subsequent funding from NIH, CIHR, etc.:

5 K76 AG057022	\$1,410,299	2017	PI
1 R01 AG073598	\$3,920,915	2022	PI
1 R01 AG076903	\$4,052,175	2022	PI

When Miles Berger, MD, PhD, received the email to tell him he had been awarded the 2014 IARS Mentored Research Award, he initially thought it was a mistake. Newly on faculty at Duke University Medical Center, he had already applied for several awards and received rejections to all of them. He was beginning to feel discouraged and questioning whether he would find success as a researcher. The IMRA recognition gave him renewed confidence in his abilities as a scientist, and supported his research on “The Trajectory and Significance of Perioperative Changes in Alzheimer’s Disease Biomarkers,” taking his research and professional career into novel directions. After they published their results in 2017, their work has been replicated by multiple groups around the world including in Europe and Chile. Every study Dr. Berger has embarked on since has involved one or more aspects of what he investigated in that initial IMRA-funded study, setting him up with a strong toolbox to succeed as a physician-scientist.

INTERVIEW HIGHLIGHTS

How did your findings impact patient care?

I view myself as a basic scientist who studies humans. I joke sometimes that I study humans as a model for the mice. I don’t think that there is a major change in patient care right now, however, there are several things that we can tell patients now based on our findings that we couldn’t have told them in 2014.

The fact that there’s a number of us working on this has raised awareness about the fact that delirium is the most common complication after surgery in older adults, and I’m not sure many people recognized that in 2014. Such that residents now know what delirium is. Nurses are talking about delirium. It’s good to see that there’s more awareness about it.

How did your findings impact the field of anesthesiology?

The fact that so many people are working on this and there’s so many smart people in the anesthesiology field, even basic neuroscientists with PhDs, studying delirium and studying these topics, it’s really raised awareness. That brings us a lot closer to an ability to care for patients better in the future. That’s not just my work. That’s the whole field.

How did the award affect your research/professional trajectory?

The IMRA was the first award that I received when I came on faculty as an instructor and is responsible in many ways for my research and professional trajectory since then. One of the challenges of science is there is no grading system. There’s no honors pass fail. There’s no A, B, C, D, E, F. You either get funded or you don’t. If you don’t get funded after a certain period of time, usually either a department can’t support the person anymore, or the person gets too frustrated and burned out. The IMRA gave me renewed confidence that maybe I am on the right track. Since then, we published a lot and we’ve been able to get a good amount of NIH funding, and so on. The IMRA really helps launch all of that.

At a more topical or research level, it’s heavily influenced the work I’ve done since then. Every study I’ve done since then has involved one or more aspects of what we did in my IMRA-funded study. That really set me up with a good toolbox going from molecular and cellular biomarkers up through systems neuroscience, functional MRI activation data to outcome data and with some EEG thrown in as well.

Click [here](#) to read full interview.

NADIA LUNARDI, MD, PhD

Assistant Professor

University of Virginia School of Medicine, Charlottesville, VA

Anesthesia-Induced Impairments of Developmental Synaptic Plasticity

AWARD AMOUNT: \$150,000

Current academic title and institution: Associate Professor, University of Virginia

Subsequent funding from NIH, CIHR, etc.: 5 K08GM123321



When Nadia Lunardi, MD, PhD, applied for an IARS Mentored Research Award in 2014 as an Assistant Professor of Anesthesiology at the University of Virginia School of Medicine, she was not an American citizen and did not hold a green card. IARS was one of the few organizations at the time that offered opportunities to non-US native investigators to apply for funding. Dr. Lunardi's 2014 IMRA was accepted and allowed her to pursue her research on "Anesthesia-Induced Impairments of Developmental Synaptic Plasticity." This initial protected research time and the preliminary data collected through the study helped Dr. Lunardi successfully compete for an NIH K08 award and to progress in her career as a scientist. Today she serves as the Neuro Anesthesia Division Chief and Associate Professor of Anesthesiology at UVA and continues to develop the skills built during her IMRA-funded study.

INTERVIEW HIGHLIGHTS

What was the goal of your initial research project?

The main goal of the project was to establish how early exposure to anesthesia affects the trafficking and organization of synaptic vesicles in the developing brain, with special emphasis on the actin cytoskeleton.

How did your findings impact patient care? How did your research impact the field of anesthesiology?

Although my findings did not translate directly into a patient's care, they called attention to the idea that anesthetics are potent modulators of synaptic function and that they can impair neurons' capacity to recover from changes in their homeostasis when administered during critical periods of vulnerability.

How did the award affect your research/professional trajectory?

The award was instrumental in providing me with protected time for my research and to obtain the preliminary data necessary to successfully compete for an NIH K08 award. The skills I learned during my IARS award were fundamental to evolve my research towards two novel scientific areas: 1) the study of the role of sleep in anesthesia-induced cognitive dysfunction in the young and aging brain, and 2) the mechanisms underlying postoperative delirium.

Click [here](#) to read full interview.

CHARLES BROWN, IV, MD

Assistant Professor

Johns Hopkins Medicine, Baltimore, MD

Prevention and Consequences of Postoperative Delirium

AWARD AMOUNT: \$150,000



Current academic title and institution: Associate Professor of Anesthesiology and Critical Care Medicine, Johns Hopkins Medicine

Subsequent funding from NIH, CIHR, etc.:

3 K76 AG057020	\$1,214,975	2017	PI
1 RF1AG072387	\$1,215,606	2021	PI

After completing anesthesiology training, Charles Brown, IV, MD, found himself behind in accumulating pilot data and successful research endpoints to prepare himself for larger funding from the NIH. The 2015 IARS Mentored Research Award, along with funding from his institution, provided him with the support and protected research time he needed to progress in his career as a clinician scientist. Dr. Brown was able to pursue a topic of great importance to him, "Prevention and Consequences of Postoperative Delirium." Following this initial funded study, Dr. Brown quickly transitioned to independent funding, finding a research home in the National Institute of Aging.

INTERVIEW HIGHLIGHTS

What was the goal of your initial research project? Was it met?

My project was to look at postoperative delirium, specifically looking at the association of delirium and cognitive change in a cohort study in aim 1 and in aim 2 was to conduct a trial on the depth of anesthesia to reduce delirium.

How did your findings impact patient care and impact the field of anesthesiology?

Both aims had papers in *Anesthesiology*. The first one showed an association with delirium with a change in cognition at one month. It further supports the notion that delirium is important and has longer term consequences, so furthering the notion of the importance of brain health.

The second one was a study that did not show a difference between intervention and control arm so that added to the accumulating evidence that modifying depth of anesthesia based on studied values was not effective at preventing delirium.

How did the award affect your research/professional trajectory?

It was a really, really important award at that time. Coming out of anesthesiology training, there's not a ton of time for research. Compared to other specialties where you have a couple years doing fellowship, we are behind in terms of getting the pilot data, the publications ready for a K. I pretty quickly transitioned from having the IARS award to having my K. I transitioned to independent funding. I got the K76 which is a National Institute of Aging super K. It's called the Beeson Award. In year 3, I got my R so I've been successful in getting mentored and then getting independent clinician-scientist funding.

Click [here](#) to read full interview.

LAURA CORNELISSEN, MSci, PhD

Postdoctoral Research Fellow

Children's Hospital Boston, Boston, MA

Cerebral Dynamics of General Anesthesia in Childhood

AWARD AMOUNT: \$150,000

Current academic title and institution: Assistant Professor of Anesthesia, Children's Hospital Boston

Subsequent funding from NIH, CIHR, etc.: Unknown



After receiving the IARS Mentored Research Award in 2015 for her research on "Cerebral Dynamics of General Anesthesia in Childhood," Laura Cornelissen, MSci, PhD, found her research career take off exponentially. A Post-Doctoral Research Fellow in Anaesthesia at Boston Children's Hospital at the time, she found receiving the IMRA, her first independent funding, opened new pathways that had previously been unavailable. Dr. Cornelissen gained the opportunity to interact with thought leaders in the specialty who in turn opened new opportunities to her, introduced her to new contacts and helped her to excel in her career as a researcher. It helped that her initial research studying the brain activity in children undergoing anesthesia, which proved very successful, and funding for this area of research spun out from there. Many groups reached out to collaborate and the research has since been replicated. All of this, led to many unbiased, high-quality studies, and the opportunity for Dr. Cornelissen to work on clinical trials, including one looking at neurogenes, disease, and neurodegenerative disease in children. After 12 years of doing academic research, in April of 2023, she chose a change in path and joined the clinical development team at Eisai, a medium-sized pharmaceutical company with a strong neuroscience department. Dr. Cornelissen was intrigued by what innovative outcomes might be reachable in research in the industry sphere. Below, Dr. Cornelissen shares her journey as an investigator, her research interests, and her hopes for the future of anesthesia and neuroscience research.

INTERVIEW HIGHLIGHTS

What was the goal of your initial research project? Was it met?

It was a clinical research project. I'm a PhD person so I don't have an MD. But I do clinical research and the goal was to study the brain activity in children while they were having general anesthesia. We wanted to find a way that would help us to learn a lot about anesthetic depth and the right anesthetics to give children. Anesthetics have such a wide effect on the body and the brain and kids are so vulnerable, we really wanted to understand more about what was going on in the brain.

Our pilot study was funded by IARS. Operating rooms are very light environments and our tool relies on lights, skin that's very transparent like baby skin, made the situation quite challenging. With EEG I can write things in the code to get rid of movement, flip off things, while staying clear of the surgeon. We had success with that aspect, but we didn't go further with it.

How did your findings impact patient care and the field of anesthesiology?

The research has been replicated. A lot of people contacted us to say, "can we join your group? We'll get experience with you." We've had a lot of collaborations as a result that I wouldn't have even thought about. There was a group in Germany that's an animal lab that looks at brain development in the animal totally unrelated to anesthesia. But they've done some anesthesia studies and asked if we could combine our results together to translate things from animal to human. It is machine learning. It was a cool and unexpected outcome.

More people wanted to join us and more collaborations became available. We've got another collaboration in the UK and one in Australia and then within the US, of course.

How did the award affect your research/professional trajectory?

It's huge. I showed I could have independent funding. It gave me a promotion. I felt more valid applying for other grants because someone had endorsed me. It provided additional networking opportunities, which helped a lot; it was an exponential circle of positivity. It is something I'm very, very proud of, not just because we had good preliminary data to put into the project, but because of the funding, it just spun out a lot of studies that were very unbiased, high-quality studies that we had a real joy to write up and submit to journals. They were all very successful.

What prompted you to leave academic medicine?

It's very tough to have a successful career in clinical medicine if you're not an MD, from my perspective. It's really hard, because I'm not mixing with colleagues on the floor and not building the same trust they build with each other from that interaction. As a clinical researcher, it's really tough to rise through the ranks.

If you want to be an academic researcher, you have to promote yourself as often and wherever you can, either at conferences, or you have to network with people. That's really enjoyable and really fun. But now I have a young family. I was balancing family commitments, travel and the amount of time I can dedicate to succeeding at that. I just had to put my family forward. But that's not the case for everybody. It was just my decision.

Click [here](#) to read full interview.

ERICA P. LIN, MD

Assistant Professor

Cincinnati Children's Hospital Medical Center, Cincinnati, OH

Protective Anesthetic Strategies During Neonatal Brain Ischemia

AWARD AMOUNT: \$150,000



Current academic title and institution: Associate Professor, University of Cincinnati College of Medicine

Subsequent funding from NIH, CIHR, etc.: Unknown

In 2015, as an Assistant Professor in the Department of Anesthesiology at the Cincinnati Children's Hospital Medical Center, Erica P. Lin, MD, was recognized with an IARS Mentored Research Award for her research focused on "Protective Anesthetic Strategies during Neonatal Brain Ischemia." Unfortunately, the demanding clinical needs of her research team prevented Dr. Lin and her team from obtaining lab time and stood in the way of progress on this investigation and made it impossible to complete the study. In 2017, their lab closed and Dr. Lin decided to return a significant portion of her IMRA funding. While this challenging experience led Dr. Lin to abandon bench research, she still participates in clinical studies within the pediatric cardiac division group at her institution today. Thankfully, the IMRA study journey was not without some silver linings. The opportunity did help Dr. Lin to be promoted to Associate Professor of Clinical Anesthesia. Additionally, the obstacles she faced with clinical demands on her team during the IMRA-funded study spurred her to adjust her academic focus to address this issue, now focusing on developing resiliency tools to help clinicians flourish.

INTERVIEW HIGHLIGHTS

How did the award affect your research/professional trajectory?

The IMRA grant definitely helped me get promoted. I have a healthy appreciation for ALL researchers, having worked in a lab for many years. Grant cycles are brutal! Clinician-scientists have the added burden of trying to straddle the two worlds of research and clinical medicine. It was a great honor to receive the award.

Click [here](#) to read full interview.

MICHAEL W. MANNING, MD, PhD

Assistant Professor

Duke University Medical Center, Durham, NC

Mechanisms In the Development of Post Operative Atrial Fibrillation

AWARD AMOUNT: \$150,000



Current academic title and institution: Associate Professor of Anesthesiology, Duke University

Subsequent funding from NIH, CIHR, etc.: Unknown

In 2015, as a Medical Instructor and Research Fellow at Duke University Medical Center, Michael W. Manning, PhD, MD, began to revisit a research study he had investigated during his PhD training. With the help of an IARS Mentored Research Award that year, Dr. Manning was able to embark on a study focused on “Mechanisms in the Development of Post Operative Atrial Fibrillation.” Dr. Manning’s investigation focused on a rat model, which was the smallest animal for which they could miniaturize the heart-lung machine. Unfortunately, this model proved extremely challenging. The study required aged rats which were extremely expensive to obtain and complex and tedious to utilize with only one local lab member with the expertise to operate on the rat. Although they eventually completed the research and met the initial hypothesis, Dr. Manning wasn’t able to translate those outcomes into a bigger project with other funding entities. As a result, today as an Associate Professor of Anesthesia at Duke University, Dr. Manning has shifted his research focus away from basic science research to translational research.

INTERVIEW HIGHLIGHTS

What was the goal of your initial research project? Was it met?

We were interested in looking at research that I had done as part of my PhD work years before. The hypothesis was if you go on bypass, you’re going to set up an inflammatory response, being hooked up to the heart-lung machine is going to trigger a cascade of events that the body is going to mistake for acute hemorrhage and acute blood loss and the angiotensin II is then going to be up regulated and a side effect of that up regulation is going to be local fibrosis in the heart, because that’s being operated on. That’s where it’s going to be centered the most and that’s going to increase the risk of postoperative atrial fibrillation which occurs in 30-50% of patients after surgery.

We were able to establish the hypothesis and met the hypothesis from that standpoint, it was a success. We weren’t able to translate it into a bigger fundable project with other entities like we wanted to. I couldn’t turn it into an RO1, but, for the aspects of the IARS grant, yes, it was a success.

How did the award affect your research/professional trajectory?

An award like IMRA is an instant validation of your ideas. Because you submit a grant, and it’s peer-reviewed. Experts in the field will look at it and say, “Yeah, this is important to throw a dollar set at.” Anytime things get funded, their value obviously goes up. So, the personal trajectory, the professional trajectory, it helps launch you. People start taking you seriously and listening to you, and you’re engaged in the network around the university. That was good.

For me, it validated what I’m supposed to be doing. But outwardly, the philosophy was that nobody believes it until you get a grant. It helped launch my early career and get me to where I’m at today.

Click [here](#) to read full interview.

DANIEL I. McISAAC, MD, MPH, FRCPC

Associate Scientist

University of Ottawa, Ottawa, Ontario, Canada

A PSH for the Frail Elderly (Phase 3): Prehabilitation of Frail Elderly

AWARD AMOUNT: \$149,967



Current academic title and institution: Associate Professor of Anesthesiology and Pain Medicine, University of Ottawa

Subsequent funding from NIH, CIHR, etc. (These represent the largest 5 of the 19 reported):

CIHR	\$959,987	2022	Co-Investigator
CIHR	\$1,136,025	2018	PI
CIHR	\$2,481,124	2022	Co-Investigator
CIHR	\$1,388,474	2017	PI
CIHR	\$1,410,813	2021	PI

From the moment Daniel I. McIsaac, MD, MPH, FRCPC entered medicine, he knew his career would involve research. On joining faculty at the University of Ottawa, he was confident his research program would focus on health systems and observational research. However, after receiving a 2016 IARS Mentored Research Award for his study on “A PSH for the Frail Elderly (Phase 3): Prehabilitation of Frail Elderly,” and gaining valuable new knowledge from that experience, his path took an unexpected turn. Now, as an Associate Professor of Anesthesiology & Pain Medicine, Epidemiology & Public Health and Research Chair in Innovative Perioperative Care at University of Ottawa, Dr. McIsaac spends the majority of his research time running innovative randomized clinical trials. The success of his IMRA-led study helped his research group to receive national funding for a 11-center, 850-participant multicenter trial of an enhanced home-based exercise and nutritional prehabilitation trial for older patients with frailty. Currently one of the largest prehabilitation trials in the world, he is hopeful that it will eventually inform real world implementation of prehabilitation.

INTERVIEW HIGHLIGHTS

What was the goal of your initial research project? Was it met?

At a high level, we wanted to know if we could feasibly and effectively help older people with frailty prehabilitate before major cancer surgery. Our specific objective was to estimate whether enrollment of older individuals with frailty in a home-based exercise prehabilitation program prior to cancer surgery would result in improved functional recovery after surgery.

How did your findings impact patient care?

Our findings, along with related findings in the field, have made it clear that for prehabilitation to be effective in real world care, substantial focus is required in supporting patients to be able to fully participate in prescribed exercise and nutritional programming.

How did your research impact the field of anesthesiology?

We have advanced our knowledge of how to optimize some of our highest risk patients before surgery. We've also made novel inroads into collaborating with surgeons and geriatricians around prehabilitation of vulnerable older adults.

How did the award affect your research/professional trajectory?

The IMRA had a major impact on my career. Based on the success of our IMRA-funded trial, we received national funding for an 11-center, 850-participant multicenter trial of an enhanced home-based exercise and nutritional prehabilitation trial for older patients with frailty. This trial has a major focus on implementation and adherence. It is currently one of the largest prehab trials in the world and will complete enrollment in early 2024. We've also received funding to support a pragmatic, registry linked prehab trial – not focused only on people with frailty – that should directly inform real world implementation of prehabilitation.

In addition, by building a prehab-focused research program, we have brought together a multidisciplinary network of patients, scientists, clinicians and health system leaders (the Prehabilitation Knowledge Network), which is leading knowledge synthesis in the field of prehabilitation.

Click [here](#) to read full interview.

ANGELA MEIER, MD, PhD

Clinical Assistant Professor
University of California, San Diego, San Diego, CA

Anesthesia and Sex-Specific, Immune Dependent Impact on Cancer Progression

AWARD AMOUNT: \$150,000



Current academic title and institution: Associate Professor of Clinical Anesthesiology, UCSD

Subsequent funding from NIH, CIHR, etc.:

5 R01AI176554 \$1,027,000 2023 PI

Since she entered academic medicine, Angela Meier, MD, PhD, has been passionate to understand “how things work” and learn about the immune system through its interaction with microbes. In 2016, as an Assistant Clinical Professor of Anesthesiology at University of California, San Diego (UCSD), this fascination led her to pursue a research study investigating potential sex differences in the impact of Isoflurane on in vivo melanoma growth, “Anesthesia and Sex Specific, Immune Dependent Impact on Cancer Progression,” which was subsequently funded by an IARS Mentored Research Award (IMRA). The support of the 2016 IMRA was a pivotal step in her career as a junior faculty member, allowing her to pursue her research interests, safeguard lab time, and help her to transition and gain a promotion. Today, Dr. Meier is an Associate Professor of Clinical Anesthesiology at UCSD, a faculty series for clinician-investigators with leadership in academic medicine, and she continues her determination to find answers to the questions she first considered early in her career.

INTERVIEW HIGHLIGHTS

What was the goal of your initial research project? Was it met?

The primary aim of my initial project was to investigate potential sex differences in the impact of Isoflurane on in vivo melanoma growth. The results from this project were published in the journal *Anesthesia & Analgesia*.

How did the award affect your research/professional trajectory?

The IARS research award provided me with protected time in the lab during the early stages of my career, leading to the generation of preliminary data that allowed me to successfully apply for an NIH mentored clinician scientist (KL-2) award. Building on that momentum, I am now the Co-Principal Investigator of a large NIH/NIAID R01 award (2023-28). In this program, I am investigating how novel nanotherapeutic drugs, including biomimetic macrophage membrane-coated nanoparticles, can potentially control pathological inflammation in ICU patients suffering ARDS or sepsis.

Click [here](#) to read full interview.

ERIC VU, MD

Research Fellow

Baylor College of Medicine, Houston, TX

Predictive Analytic Tool for Diagnosis of Coronary Allograft Vasculopathy

AWARD AMOUNT: \$150,000



Current academic title and institution: Associate Professor of Anesthesiology, Northwestern University, Feinberg School of Medicine

Subsequent funding from NIH, CIHR, etc.: Unknown

In 2016, Eric Vu, MD, had just completed a pediatric cardiac anesthesia fellowship at Texas Children's Hospital and was interested in pursuing an additional fellowship in pediatric anesthesia research at Baylor College of Medicine. Fortunately, he received an IARS Mentored Research Award that year for his research on "Predictive Analytic Tool for Diagnosis of Coronary Allograft Vasculopathy" which provided the support to make this opportunity possible.

With the help of the IMRA, Dr. Vu was able to secure dedicated research time and pursue a Masters Degree in clinical investigation to obtain additional skills in clinical design, biostatistics, and biomedical informatics, which helped him to advance in his career. Today, Dr. Vu is an Associate Professor of Anesthesiology (Pediatric Anesthesiology) at Northwestern University, Feinberg School of Medicine, and the Medical Director of Cardiac Anesthesia, and Chair of the Transfusion Medicine Committee at the Ann & Robert H. Lurie Children's Hospital.

INTERVIEW HIGHLIGHTS

What was the goal of your initial research project? Was it met?

The goal of the initial research project was to use signal processing of ECG signals to develop computational tools to predict cardiac arrest in single ventricle patients. The algorithms were expanded to pediatric patients after heart transplant. This algorithm was incorporated into a multivariate model for interstage patients undergoing testing as a multicenter study. This work has expanded, and we are now working on a real-time monitor of cerebral autoregulation for neonatal and pediatric cardiopulmonary bypass cases.

How did the award affect your research/professional trajectory?

Looking back, the award was instrumental in a very crucial part in my career. The transition from fellow to faculty is such an important few years (often times unrecognized!) that ultimately shapes the path and subsequently, bulk of one's future career. With the award, I was able to have dedicated research time and pursue a Masters in Clinical Investigation to obtain additional skills in clinical design, biostatistics, and biomedical informatics.

Click [here](#) to read full interview.

WEI ZHOU, MD, PhD

Assistant Professor

UCSF Medical Center/UCSF Children's Hospital, San Francisco, CA

The Roles and Applications of Orexin/Hypocretin System in Anesthesia

AWARD AMOUNT: \$150,000



Current academic title and institution: Associate Professor In Anesthesia, UCSF

Subsequent funding from NIH, CIHR, etc.:

5 K08GM138981 \$795,341 2020 PI

Naturally a curious person, Wei Zhou, MD, PhD, was drawn to the field of anesthesiology and its many unanswered questions, specifically questions related to consciousness. He was motivated to play a part in unraveling the mystery of the human brain and how consciousness can be reversibly suppressed by anesthetics. Following his curiosity, Dr. Zhou, Professor of Anesthesia at UCSF, narrowed his investigative focus on the interactions between anesthetics and neural networks. In 2016, he was recognized for his efforts in advancing this area of study with an IARS Mentored Research Award. Today, his current research is directly derived from the concept and findings of that 2016 study.

INTERVIEW HIGHLIGHTS

What is the potential impact of your research on the field of anesthesia and patient care?

The findings from my research will push the anesthesia field forward in understanding the fundamental mechanism of anesthesia and will guide us to develop new tools and techniques to optimize anesthesia management.

How did the 2016 IARS Mentored Research Award affect your research and professional trajectory?

The IMRA award provided my initial funding to start my project, validated my ideas, facilitated more research grant applications and promoted my work to a wider audience. I wouldn't be able to continue my career as a physician-scientist without this award.

My current research project is directly derived from the concept and findings of the 2016 project.

Click [here](#) to read full interview.

JESSICA BOWSER, PhD

Research Instructor

The University of Texas Health Science Center at Houston

Targeting Epithelial Regeneration for Perioperative Organ Protection

AWARD AMOUNT: \$175,000



Current academic title and institution: Assistant Professor, University of North Carolina

Subsequent funding from NIH, CIHR, etc.: Unknown

Jessica Bowser, PhD, chose academic anesthesiology as her career path for the opportunity to overcome clinical challenges that stem from devastating inflammatory conditions and tissue damage, and to collaborate with several anesthesiology thought leaders focused on solving this problem. That journey began with a 2017 IARS Mentored Research Award recognizing her research on "Targeting Epithelial Regeneration for Perioperative Organ Protection." An instructor at the University of Texas McGovern Medical School at the time, the IMRA was the launching pad for her research and her career as a scientist. Now a tenure-track Assistant Professor in the Department of Pathology and Laboratory Medicine at University of North Carolina School of Medicine, Dr. Bowser's studies have expanded to encompass the areas of genomics, computational biology, and metabolomics with the help of a tremendous group of collaborators.

INTERVIEW HIGHLIGHTS

What was the goal of your initial research project?

To identify molecular mechanisms that are therapeutically tractable for promoting epithelial regeneration following acute/chronic inflammation.

Manuscripts for this work are currently under review, and an NIH R01 application has been submitted. Two additional NIH R01 applications that developed from the evolution of this work and establishment of multidisciplinary collaborations are also currently under review. These are multi-PI applications.

How did the award affect your research/professional trajectory?

The IMRA opened doors professionally and provided upward career movement that would have not been possible without the support of the IARS. I secured a competitive tenure-track appointment with a start-up package to fully develop my research program at the University of North Carolina School of Medicine. Additionally, I have been able to establish essential national and international collaborations through invited talks and conferences that have pushed my research program forward and helped to develop competitive NIH R01 applications (individual applications and multi-PI applications).

Click [here](#) to read full interview.

WAYLAND CHENG, MD, PhD

Research Fellow

Washington University in St. Louis, St. Louis, MO

The Structural Basis of Neurosteroid Binding to the GABA(A) Receptor

AWARD AMOUNT: \$87,500 (rec'd subsequent NIH funding)



Current academic title and institution: Associate Professor of Anesthesiology, Washington University in St. Louis

Subsequent funding from NIH, CIHR, etc.:

5 R35GM137957	\$1,968,750	2020	PI
NIGMS	1,694,058	2020	PI
IARS Frontiers in Anesthesia Research Award	\$750,000	2021	PI

Since receiving the IARS Mentored Research Award in 2017 for his study on “The Structural Basis of Neurosteroid Binding to the GABA(A) Receptor,” Wayland Cheng, MD, PhD, has made major strides both in his career trajectory as well as with his research on ion channel structure and function. In 2021, he was recognized by IARS again with the IARS Frontiers in Anesthesia Award for his work on “Structural Pharmacology of the Nociceptive Ion Channel TRPM3.” Dr. Cheng has also received a K08 and other independent funding since then. In July 2023, he was promoted to Associate Professor of Anesthesiology at Washington University in St. Louis. The support of the IMRA paved the way for many of these opportunities.

INTERVIEW HIGHLIGHTS

What was the goal of your initial research project? Was it met?

The goal was to characterize neurosteroid binding sites in the GABA(A) receptor. Yes, this goal was met.

How did the award affect your research/professional trajectory?

The award was critical to obtaining a K08 and subsequent independent funding.

Click [here](#) to read full interview.

JAMIE PRIVRATSKY, MD, PhD

Critical Care Fellow

Duke University Medical Center, Durham, NC

The Role of Macrophage IL-1 Signaling in Acute Kidney Injury and Recovery

AWARD AMOUNT: \$175,000



Current academic title and institution: Associate Professor, Duke

Subsequent funding from NIH, CIHR, etc.:

5 R01DK131065	\$1,610,000	2021	PI
5 K08GM132689	\$927,006	2019	PI

When Jamie Privratsky, MD, PhD, first entered the medical field, he wasn't planning to do any research. Then, he was exposed to research as an undergraduate and he got the bug for investigation. This pursuit of research led him to win a 2017 Mentored Research Award for a study on "The Role of Macrophage IL-1 Signaling in Acute Kidney Injury and Recovery." With the protected time provided by IMRA, Dr. Privratsky was able to apply and successfully obtain a K08 award and then an R01. He strongly believes that the IMRA was instrumental in launching his career and supporting the expansion of his research career.

INTERVIEW HIGHLIGHTS

What was the goal of your initial research project? Was it met?

The initial research project goal was to determine the role of myeloid cell interleukin-1 receptor signaling in AKI and its transition to chronic kidney disease. It was met but not how I originally hypothesized.

How did your research impact the field of anesthesiology?

The IMRA has allowed me to further the anesthesiology presence in critical care research and specifically, critical care nephrology. It gave me protected time to gather preliminary data for a K08 award, which I received. I now also have an R01 award, so the IMRA was instrumental in launching my career. Anesthesiology has a vital role to play in critical care research and needs to have more investigators at the forefront of the research.

Click [here](#) to read full interview.

BROC BURKE, MD, PhD

Clinical Fellow

Washington University in St. Louis, St. Louis, MO

Development of a Real-Time, Bedside, Brain Functional Connectivity Monitor

AWARD AMOUNT: \$175,000

Current academic title and institution: Assistant Professor, University of Colorado

Subsequent funding from NIH, CIHR, etc.: Unknown



As an instructor and cardiothoracic anesthesiology fellow at Washington University and Barnes Jewish Hospital in 2018, Broc Burke, MD, PhD, had developed a long-term goal to become an independent investigator in perioperative and critical care bedside neurological monitoring. He was able to apply practical experience as a Senior Staff Engineer/Scientist in real-time controls and signal processing, and with the backing of a mentoring committee, he obtained a 2018 IARS Mentored Research Award for his investigation focused on “Development of a Real-Time, Bedside, Brain Functional Connectivity Monitor.” The outcomes from this study propelled Dr. Burke forward in his career and helped him to obtain a competitive position in the academic anesthesia department at the University of Colorado Anschutz Medical Center, where today he serves as an Assistant Professor in Anesthesiology.

INTERVIEW HIGHLIGHTS

What was the goal of your initial research project?

The initial goal was to develop a non-invasive quantitative measurement that correlates with the NIH stroke scale. My findings made it possible for me to obtain a competitive position at an academic anesthesia department.

How did the award affect your research/professional trajectory?

The award allowed me to develop relationships with the research community in anesthesia, which have been a critical resource during my career.

Click [here](#) to read full interview.

NEIL GOLDENBERG, MD, PhD

Staff Anesthesiologist

The Hospital for Sick Children, The University of Toronto, Toronto, Ontario, Canada

The Role of HMGB1 in Pulmonary Hypertension

AWARD AMOUNT: \$166,300



Current academic title and institution: Assistant Professor, University of Toronto

Subsequent funding from NIH, CIHR, etc.:

CIHR \$830,025 2021 Co-Investigator

Since early in his career, Neil Goldenberg, MD, PhD, has been fascinated by the vast possibilities for scientific inquiry in academic anesthesiology and the opportunity to formulate unique and interesting research questions. One of his first inquiries began with his study on “The Role of HMGB1 in Pulmonary Hypertension” and was recognized with a 2018 IARS Mentored Research Award. Today, as an Assistant Professor in Anesthesia and Pain Medicine at University of Toronto, the study of HMGB1 continues to be an important area of investigation for his work. Dr. Goldenberg credits much of his forward motion in research and his career to the early credibility in the specialty that the IMRA gave him. He remains inquisitive and eager to look outside the traditional definition of “anesthesia research” to discover novel insights for anesthesiology and patient care.

INTERVIEW HIGHLIGHTS

What was the goal of your initial research project? Was it met?

My initial research project sought to delineate the role of HMGB1 in the pathogenesis of pulmonary hypertension. We have largely met this goal, although of course every answer brings forward another ten questions. We were able to publish several papers detailing our work in HMGB1 antagonism in PAH models, as well as basic mechanisms of HMGB1 secretion from macrophages. HMGB1 release continues to be an important area of our work.

How did your findings impact patient care?

My work is basic/translational, working upstream of clinical care. By disseminating my work (talks, papers, etc.), we can show clinicians the future that lies ahead, and increase awareness of mechanisms of disease, perhaps spawning even more important work in the field. Every impactful research project carried out by an anesthesiologist brings important focus to the work done in our field.

How did the award affect your research/professional trajectory?

The award provided me early credibility in my field. Given the prestige and size of the award, I believe strongly that this award helped me gain further awards in the subsequent years. Furthermore, the award provided me with critically important funding during the earliest stage of my lab, when it was needed most.

Click [here](#) to read full interview.

KARIM LADHA, MD

Assistant Professor

University of Toronto, St. Michael's Hospital, Toronto, Ontario, Canada

Peri-Operative Wearables in Elder Recovery after Surgery (POWERS) Trial

AWARD AMOUNT: \$170,400



Current academic title and institution: Associate Professor, University of Toronto

Subsequent funding from NIH, CIHR, etc.:

CIHR	\$2,750,148	2022	Co-Investigator, trial award
CIHR	\$1,410,813	2021	Co-Investigator
CIHR	\$1,285,200	2020	Co-Investigator

When Karim Ladha, MD, received the IARS Mentored Research Award in 2018 for his research on “Peri-Operative Wearables in Elder Recovery after Surgery (POWERS) Trial,” he was just starting his career as a staff anesthesiologist and independent PI at University of Toronto. With no separate funding designated for junior or early-career investigators in Canada, he was finding it difficult to establish himself as an early-career investigator and progress to the next step in his research career. With the IMRA, he found the validation and mentorship he desired and the opportunity to investigate the framework of outcome assessment after surgery, an area that first piqued his interest after watching a family member undergo surgery and not be able to return to the same quality-of-life post-procedure. Today, Dr. Ladha, in conjunction with his initial mentor for the award-funded study, co-lead a research program with 7 research staff and are undertaking an impressive 11 prospective studies. Filling a much-needed gap that he first recognized on receiving the IMRA, they have established a large research program for trainee and junior faculty members to help guide them to the next step.

INTERVIEW HIGHLIGHTS

What was the goal of your initial research project? Was it met?

The project that was funded by IMRA was called the POWERS Study. We worked with elderly patients who were undergoing major cardiac surgery, and we placed a device called an ActiGraph on them. An ActiGraph is like a Fitbit, but it is considered medical grade.

Unlike a Fitbit, it doesn't look very nice. It's not very fashionable, but it allows us to keep track of data and track how much patients move before their surgical procedure, and then, following their procedure for 3 months postop as well. We look at that data to see how well it correlates to other measures of postoperative recovery and function, using standardized questionnaires. This study is part of a larger movement to make anesthesia research more patient-centered, focusing on what matters to patients and why and how do we, as researchers and clinicians, adjust our care to make sure that we keep the patient first and foremost.

How did the award affect your research/professional trajectory?

The IMRA affected my professional trajectory immensely. Even all of these years later, I'm very, very grateful for the support that it provided. As a resident doing research, and even as a fellow, you don't have a lot of support from mentors and PIs to do research without your own independent funding, and I think the hard part is when you transition to becoming staff. The expectation is you're going to be an independent scientist. There's sort of a plot there in the middle. And oftentimes those mentoring relationships aren't necessarily formalized. Everybody's very busy, and you're sort of left alone, and it's a hard place to start.

One of the things I tell people is, it's always hard to get your first grant. It means a lot to get your first one, because it is a bit of a risk. No one's really seen what you can do. And if they have a choice between giving it to someone who's never had funding before and someone who has an established lab, they're going to choose someone with a more established lab, especially in a place like Canada. Our funding strategy is a little different than it is in the US; there's no separate funding for junior or early-career investigators. It's a very difficult place to establish yourself as an early-career investigator. And I think the award, because it focuses on mentorship, is key because it's focused on early career. It helps you establish that career and gives you a platform to say, “Hey, look, I've gotten this big grant. I've gotten my first one!” It establishes you on a different plane. And to reiterate, it's just immensely important.

Click [here](#) to read full interview.

BENEDICT ALTER, MD, PhD

Clinical Assistant Professor
University of Pittsburgh, Pittsburgh, PA

Mechanisms and Translational Application of Endogenous Analgesia

AWARD AMOUNT: \$175,000



Current academic title and institution: Assistant Professor, University of Pittsburgh

Subsequent funding from NIH, CIHR, etc.:

1 K23NS123429	\$563,719	2022	PI
1 U24NS115708	\$1,011,588	2019	Co-Investigator

Since his experience in graduate school working with Robert Gereau, PhD, in the Department of Anesthesiology at Washington University in St. Louis, Benedict Alter, MD, PhD, has been fascinated with the neuroscience of pain and has sought to investigate fundamental processes related to pain management through scientific discovery as his main career path as a physician-scientist. In 2019, his determination to reach this goal paid off when he was recognized with the IARS Mentored Research Award for his research on “Mechanisms and Translational Application of Endogenous Analgesia.” A Clinical Assistant Professor in the Department of Anesthesiology and Perioperative Medicine at University of Pittsburgh at the time, immediately after receiving the IMRA, Dr. Alter was promoted to Assistant Professor and Director of Translational Pain Research in the Department of Anesthesiology and Perioperative Medicine. The IMRA also helped him to obtain a highly competitive NIH K23 to continue this vital work.

INTERVIEW HIGHLIGHTS

What was the goal of your initial research project? Was it met?

The initial project was to take a lab-based, experimental pain paradigm and see whether it could be applied as a non-opioid therapy. COVID created delays, but the work is ongoing.

How did your research impact the field of anesthesiology?

IMRA has allowed me to develop tools to examine pain physiology in humans. Translating these tools into tests that help clinicians identify the best treatment for a given patient based on their pain pathophysiology is a major goal for me. Moving in this direction will have a tremendous impact since currently patients are treated in a trial-and-error approach, leading to a lot of unsuccessful treatments, prolonged suffering, and potentially an over-reliance on opioids.

How did the award affect your research/professional trajectory?

The IMRA was tremendously helpful, leading to an immediate promotion and protected research time. I was able to apply for and receive a highly competitive training grant from the NIH (K23) and am moving towards full research independence in the next few years.

Click [here](#) to read full interview.

LARA WILEY CROCK, MD, PhD, MSCl

Instructor

Washington University School of Medicine, St. Louis, MO

Role of the Microbiome in the Persistence of Complex Regional Pain Syndrome

AWARD AMOUNT: \$175,000



Current academic title and institution: Assistant Professor of Anesthesiology, Washington University School of Medicine

Subsequent funding from NIH, CIHR, etc.: Unknown

A car accident during medical school profoundly affected Dr. Lara Wiley Crock, MD, PhD, MSCl's life. Fortunate to recover, she became more aware of the many patients in the clinical settings who did not fully recover and set out to understand why. This propelled Dr. Crock down a path to better understand pain and how research may be able to influence patient outcomes related to it. With the help of a 2019 IARS Mentored Research Award, she began to unravel those unknowns with a study, "Role of the Microbiome in the Persistence of Complex Regional Pain Syndrome." Dr. Crock and her research collaborators continue to pursue answers to this question, making progress towards early identification of patients at high risk for the development of chronic pain and preventing its development.

INTERVIEW HIGHLIGHTS

What was the goal of your initial research project?

The goals of my initial project were to identify gut microbiota differences in acute and chronic pain due to specific pain condition and determine if we could predict who would develop chronic pain after an acute injury by their microbiota differences.

How did the award affect your research/professional trajectory?

This award gave me the confidence to apply for additional grants, and obtain preliminary data to start my research career. I have not yet obtained external funding, but am actively involved in research.

Click [here](#) to read full interview.

BENJAMIN STEINBERG, MD, PhD, FRCPC

Assistant Professor

The Hospital for Sick Children, Toronto, Ontario, Canada

The Role of Pyroptosis in Neuropathic Pain

AWARD AMOUNT: \$168,350



Current academic title and institution: Assistant Professor, University of Toronto

Subsequent funding from NIH, CIHR, etc.:

CIHR \$879,750 2022 PI

With a village of mentors and collaborators behind him, the support of The Scientist Track Investigator program at The Hospital for Sick Children and the 2019 IARS Mentored Research Award, Benjamin Steinberg, MD, PhD, FRCPC, was able to build a robust and successful research career in basic science, specifically focused on cell biology. This endpoint truly was jumpstarted when he was awarded the IMRA for his research on “The Role of Pyroptosis in Neuropathic Pain,” which allowed him to conduct the science that most intrigued him, cellular and molecular mechanisms of pain.

INTERVIEW HIGHLIGHTS

What was the goal of your initial research project? Was it met?

Effectively, it was trying to understand how specific immune modulators and immune pathways impact neuropathic pain. The basic foundation in terms of the method was really around cell biology and understanding how cells are responding.

How did your findings impact patient care?

This is one step in a long journey from basic biomedical research towards the bedside.

The basic scientists in academic medicine, there really aren't that many of us, and anesthesiology has actually a pretty strong history of that. But as a larger pool of people, some of whom have also been awarded the IMRA, we are helping to cement that reputation as a specialty of bonafide, successful, important or impactful scientists.

How did the award affect your research/professional trajectory?

The IMRA affected me hugely, in both ways. In terms of my research, it really enabled me to conduct the research I wanted to do. I had some institutional startup funds, but science is expensive. Research is expensive; basic science is certainly. The award allowed me to build my wet lab. It allowed me to hire highly qualified personnel to help support me in the science I was doing. For all of us in this award are presumably clinician scientists of some form or another, and therefore we have sometimes dueling roles. While I was also managing my clinical time, having someone able to keep pushing the science forward was really paramount to the success of it. The award was foundational. It was my first award, and it really is a very generous one at that, too. So, it really made it happen for me.

And then, in conjunction with the fact that I was in a mentored program, the expectation there was that this takes time. You have to mature and evolve, and eventually grow wings and fly off on your own. Everyone was on board – from my funding source, which is, of course, your organization – and then the people here.

I was quite lucky the science was and has been successful. And my mentors have been great, both from a scientific and career development perspective. They feed into each other, obviously, but both sides allowed me to still do what I want to do, which is clinical medicine and science.

Click [here](#) to read full interview.

JOHN WHITTLE, MD

Assistant Professor

Duke University Medical Center, Durham, NC

Preoperative Exercise to Improve Vagal Tone (PREVENT) Study

AWARD AMOUNT: \$175,000



Current academic title and institution: Honorary Associate Professor, University College London, London, England

Subsequent funding from NIH, CIHR, etc.: Unknown

With the support of a 2019 IARS Mentored Research Award, John Whittle, MD, was able to combine his undergraduate training in applied physiology with anesthesia research to explore strategies to prevent patient complications after surgery, expanding knowledge and the understanding of the benefits of prehabilitation. His IMRA-funded project, "Preoperative Exercise to Improve Vagal Tone (PREVENT) Study," initially sought to determine if a high intensity interval training program could improve vagal tone and laboratory markers of inflammation and mitochondrial capacity. Now an Associate Professor in Perioperative Medicine at University College London, Dr. Whittle has set up a nutritional and physical prehabilitation program at the university, which links to other national programs. He hopes this program will just be the start of developing patient-centered treatment strategies to reduce the risk of undergoing surgery.

INTERVIEW HIGHLIGHTS

What was the goal of your initial research project?

My initial research project looked to extend work I had previously been involved with, looking at parasympathetic autonomic dysfunction (PAD) as a candidate mechanism for the development of postoperative morbidity.

How did your findings impact patient care?

We have set up a nutritional and physical prehabilitation program at UCL which is linked to other national programs. We have been able to apply some of the learning from my IARS project alongside other studies to improve preparation of patients for surgery and develop new pathways for exploration.

How did your research impact the field of anesthesiology?

Through engagement with this kind of research, the concept of prehabilitation (preventative rehabilitation) before surgery has gained increasing traction around the world. National guidance has been issued in the UK recommending this approach and consensus guidelines for specific surgical specialties are under development.

How did the award affect your research/professional trajectory?

As a result of this award, I have been able to progress towards independence in research. I moved to UCL in the UK from the USA during the duration of the award where I have been able to set up my own laboratory within the wider Centre for Perioperative Medicine. I am now an Associate Professor and have received funding from the UCL UK National Institute of Health Research Biomedical Research Centre in Critical Care/Perioperative Medicine theme.

Click [here](#) to read full interview.

MICHAEL BOKOCH, MD, PhD

Assistant Professor of Clinical Anesthesia & Perioperative Care
University of California, San Francisco, San Francisco, CA

Endothelial Activation by Liver Reperfusion Injury in Transplantation

AWARD AMOUNT: \$175,000

Current academic title and institution: Associate Professor of Anesthesia, UCSF

Subsequent funding from NIH, CIHR, etc.: Unknown



During his fellowship, Michael Bokoch, MD, PhD, became intrigued by the high incidence of acute kidney injury after liver transplantation and the impact it has on a patient's recovery. Motivated to discover the answer to this puzzle, he was given an opportunity to start a clinical trial in this area by one of his mentors. In 2020, he was recognized for his work on this important topic with an IARS Mentored Research Award for his project, "Endothelial Activation by Liver Reperfusion Injury in Transplantation." Now an Associate Professor of Anesthesia at UCSF, Dr. Bokoch has continued to make progress towards an answer since receiving the award. Most recently he presented results from his latest research with two posters at the IARS 2023 Annual Meeting.

INTERVIEW HIGHLIGHTS *(Interview Resulting from his Abstract Presentation at AM23)*

What are the goals you most want to accomplish in your work with this research project (or projects)?

I would like to understand the mechanisms by which liver ischemia-reperfusion leads to injury or failure of other nonhepatic organs and the role of the vascular endothelium in this process. I believe my work could help advance personalized vasopressor therapy and other organ protection strategies. Precision medicine requires us not only to develop the tools, but also to obtain a better understanding of which patient subsets will benefit the most.

How did the 2020 IARS Mentored Research Award affect your research and professional trajectory?

The IMRA has been key for my development! Along with generous support from my Department and Chair, the IMRA has allowed me ample protected time for research efforts – including three clinical trials for which I've been fortunate to serve as PI or Co-PI. I've learned to direct a translational research team, including research coordinators and laboratory staff. Finally, thanks to the IMRA, I've been able to complete coursework in statistics and computational methods to make me a better all-around physician-scientist.

Click [here](#) to read full interview.

CATHARINA CONRAD, MD, PhD

Postdoctoral Fellow

University of California, San Francisco, San Francisco, CA

Protease Profiling for Rapid Phenotyping and Monitoring of ARDS

AWARD AMOUNT: \$175,000

Current academic title and institution: Postdoctoral Fellow, UCSF

Subsequent funding from NIH, CIHR, etc.: Unknown



During her ICU rotation, Catharina Conrad, MD, PhD, first became fascinated with pulmonary complications and respiratory failure and how to prevent these complications. This initial interest spurred her to narrow her lens to focus on one specific condition, ARDS. With the help of a 2020 IARS Mentored Research Award, Dr. Conrad, a postdoctoral researcher at University of California, San Francisco, was able to dedicate her research on “Protease Profiling for Rapid Phenotyping and Monitoring of ARDS” to make inroads in this area. Dr. Conrad hopes this study will provide the foundation to advance monitoring of pulmonary complications and personalized treatments in the future.

INTERVIEW HIGHLIGHTS

What was the goal of your initial research project?

The goal of our research project was to profile disease-related proteolytic activities in the lung fluids of ARDS patients to predict disease onset and severity.

How did your research impact the field of anesthesiology?

We hope that our studies provide the foundation to advance monitoring of pulmonary complications and personalized treatments.

How did the award affect your research/professional trajectory?

The IARS Mentored Research Award significantly helped me to pursue my scientific goals by providing protected research time.

Click [here](#) to read full interview.

KAMROUZ GHADIMI, MD

Associate Professor of Anesthesiology & Critical Care
Duke University Medical Center, Durham, NC

Right Ventricular Metabolic Dysregulation after Surgery for Heart Failure

AWARD AMOUNT: \$175,000



Current academic title and institution: Associate Professor of Anesthesiology,
Duke University

Subsequent funding from NIH, CIHR, etc.: Unknown

Kamrouz Ghadimi, MD, MHSc, FAHA, credits his IARS Mentored Research Award in 2020, and the formal training he received through the Duke Clinical Research Institute, and Duke School of Medicine's Clinical Research Training Program with propelling his career and research forward. Now an Associate Professor of Anesthesiology and Critical Care and Director of the Clinical Research Unit for the Department for the Duke University Health System, Dr. Ghadimi oversees a multitude of prospective clinical and translational research protocols, helps shape research policy and operations within his department, and contributes to shaping the research environment within Duke University School of Medicine and Duke Health at large. Additionally, he provides oversight of the biospecimen repository for his department, which now houses more than 120,000 samples, contributed by patients from multiple clinical trials over the years, and actively participates in their health system-wide precision health initiative, called OneDukeGen.

INTERVIEW HIGHLIGHTS

What was the goal of your initial research project? Was it met?

The initial goal of my proposal was to determine the role of dysregulated fatty acid oxidation (FAO) in cardiometabolic pathways that underlie right ventricular dysfunction and failure after operations that surgically treat left heart failure with reduced ejection fraction.

How did your findings impact patient care?

The overall parent trial had a direct impact on patient care by providing new actionable knowledge in support of the use of inhaled epoprostenol (arginine analogue) as a cost-effective alternative to nitric oxide in major cardiac surgery (LVAD implant and Heart Transplant) and in noncardiac surgery (lung transplantation), (clinicaltrial.gov identifier NCT03081052).

How did the award affect your research/professional trajectory?

The IMRA was pivotal to propelling my career and my research in parallel, which is essentially how the career development plan was composed: each research aim had a corresponding CDP aim. My ability to serve as the PI on the parent trial and to become a trialist and clinical research operations leader was predicated on my ability to obtain formal training through the Duke Clinical Research Institute and Duke SOM's Clinical Research Training Program, which culminated in a Master in Health Sciences in Clinical Research. I learned a tremendous amount from mentors and advisors; ultimately leading a research program that includes biostatisticians that aide in trial design and bioinformaticians that systematically process multi-level omics data to generate meaningful results, providing molecular explanations for what we might observe clinically in our trial work. Combining biospecimens with clinical trials may provide some insight into why otherwise negative results (no differences) between interventional groups in large trials may actually have subpopulations that benefit from study interventions.

Click [here](#) to read full interview.

YUSUKE SUGASAWA, MD, PhD

Clinical Associate Professor

Juntendo University School of Medicine, Tokyo, Japan

Structural Basis of Lipid and Anesthetic Action on TMEM16 Scramblases

AWARD AMOUNT: \$175,000

Current academic title and institution: Associate Professor, Juntendo University

Subsequent funding from NIH, CIHR, etc.: Unknown



In 2020, as a Clinical Associate Professor in Anesthesiology at Juntendo University School of Medicine, Yusuke Sugawara, MD, PhD, became the first investigator from a Japanese university to be recognized with an IARS Mentored Research Award for his research on "Structural Basis of Lipid and Anesthetic Action on TMEM16 Scramblases." Now an Associate Professor in Anesthesiology at the same institution, Dr. Sugawara and his research team are preparing a manuscript to share their study outcomes.

INTERVIEW HIGHLIGHTS

What was the goal of your initial research project? Was it met?

The goal of my initial research project was to characterize cholesterol binding sites on TMEM16 scramblases and determine how cholesterol occupancy of these sites modulates scramblase activity. I believe it has been met and we are preparing for a paper submission.

Has your research subject area evolved since the award?

Recently, a great number of articles were published in this research field. I expect that our findings will become an important piece of evidence to elucidate the mechanism of lipid scrambling.

How did the award affect your research/professional trajectory?

The award was highly valued by the department, and allowed me time for research activities protected from clinical duty.

Click [here](#) to read full interview.

LAURA DOWNEY, MD

Assistant Professor
Emory University, Atlanta, GA

Characterizing Platelet Function in Neonates Undergoing Cardiac Surgery

AWARD AMOUNT: \$175,000

Current academic title and institution: Associate Professor, Emory University

Subsequent funding from NIH, CIHR, etc.: Unknown



Dr. Downey is passionate about platelet function and uncovering the differing needs between adults and neonates when it comes to making cardiac surgery safer. Her goal with the IMRA is to improve coagulation and hemostasis for neonates, give insights into future investigations, while also advancing her career path.

INTERVIEW HIGHLIGHTS

What is the goal of your initial research project?

Neonates undergoing cardiac surgery are at risk for bleeding and multiple transfusions due to the effects of cardiopulmonary bypass (CPB), hemodilution, and an immature coagulation system that contribute to platelet deficiency and impaired platelet function. While many platelet function tests allow clinicians to guide hemostatic therapy in adult cardiac surgery, these tests were designed for adults and report conflicting data in neonates. Using several modalities to assess platelet function, we hope the results of this study will allow us to understand important differences between adult and neonatal platelets and elucidate important platelet interactions after CPB or transfusions.

How will this award affect your research/professional trajectory?

This award will increase opportunities for collaborative and innovative research endeavors that may lead to a paradigm shift in managing hemostasis with the safest and most effective strategies in reducing bleeding and blood transfusions in pediatric cardiac patients. Going forward, I am excited about the potential for multi-institutional research and inspiring the current generation of researchers to pursue an academic career so that they too may further the knowledge and excellence of pediatric anesthesia.

Click [here](#) to read full interview.

CATHERINE DUCLOS, PhD

Postdoctoral Fellow

McGill University Health Centre, Montreal, Québec, Canada

Using Anesthesia to Predict Recovery from Disorders of Consciousness

AWARD AMOUNT: \$175,000

Current academic title and institution: Assistant Professor, Université de Montréal

Subsequent funding from NIH, CIHR, etc.:

CIHR \$1,101,600 2022 PI



Catherine Duclos, PhD, Postdoctoral Fellow at The Research Institute of the McGill University Health Centre Assistant, Professor in the Department of Anesthesiology and Pain Medicine at the University of Montréal, and Researcher at Hôpital du Sacré-Coeur de Montréal, is setting out to uncover some of the intricacies of consciousness in hopes of improving patient prognostication and recovery with her 2021 IMRA.

INTERVIEW HIGHLIGHTS

What is the goal of your research?

The current study aims to test the accuracy of an entirely new metric for the prognostication of consciousness recovery in coma and disorders of consciousness (DOC) – the Adaptive Reconfiguration Index (ARI), which quantifies brain network reconfiguration in response to propofol anesthesia, using high-density (128-channel) electroencephalography (EEG) – and to translate the ARI to a clinical-grade EEG system. Our team has developed a novel within-subject paradigm that assesses brain networks and responses of patients with DOC using themselves as their own controls.

How will this award affect your research/professional trajectory?

This is my very first grant and it will have a tremendous impact on the start of my career. The IARS Mentored Research Award will enable me to hire my first graduate student, and to improve my chances of obtaining my first salary award. Most importantly, it will propel our study forward as we will now be able to pursue patient recruitment and testing for 2 additional years. Importantly, I feel like this award is legitimizing my place in anesthesia research and confirming the clinical relevance of my research interests.

Once you complete this mentored research award, what's next for you? What's your vision for the future?

Once I complete this Mentored Research Award, I will be less than two years into my faculty position at the University of Montréal. This award will therefore be the stepping stone to building my lab and my research program in anesthesiology and critical care research. If I picture myself 10 years from now, I aim to be leading an internationally recognized lab that conducts clinically-relevant research that has made an impact on anesthesiology and critical care. I hope to have shown preliminary evidence that we can use network neuroscience to individualize anesthesia and continuous sedation, optimizing patient care and cognitive recovery.

Click [here](#) to read full interview.

KENDALL SMITH, MD, PhD

Assistant Professor

Washington University in St. Louis, St. Louis, MO

Role of Transcriptomic Circadian Rhythms in Postoperative Delirium

AWARD AMOUNT: \$175,000

Current academic title and institution: Assistant Professor, Washington University in St. Louis

Subsequent funding from NIH, CIHR, etc.: Unknown



Kendall Smith, MD, PhD, is Assistant Program Director for Residency Affairs and Associate Program Director for the Anesthesiology Critical Care Medicine Fellowship at Washington University in St. Louis. Her current and future goals include uncovering the mysteries behind circadian rhythms in perioperative medicine and to better understand their role in delirium.

INTERVIEW HIGHLIGHTS

What was the goal of your research?

We don't know much about the pathophysiology of postoperative delirium or whether molecular circadian dysfunction is a contributing factor. This project will be an important first step in addressing these knowledge gaps and will allow us a first glimpse into molecular circadian rhythms across the perioperative continuum.

How will this award affect your research/professional trajectory?

There is no doubt that this IARS award will positively affect my research trajectory not only by providing funding for these early experiments, but also by allowing me additional protected time to pursue important scientific questions.

Once you complete this mentored research award, what's next for you? What's your vision for the future?

This IARS award will help me generate the preliminary data needed to support larger studies aimed at understanding molecular circadian rhythms in relation to perioperative outcomes such as delirium. These studies will undoubtedly lead to more intriguing scientific questions that I look forward to tackling. With the right team and environment, we will continue to move the needle forward for our perioperative and ICU patients.

Click [here](#) to read full interview.

JESSICA SPENCE, MD, PhD, FRCPC

Clinical Assistant Professor
McMaster University, Hamilton, Ontario, Canada



Genetic Risk Prediction of New Atrial Fibrillation After Cardiac Surgery

AWARD AMOUNT: \$175,000

Current academic title and institution: Assistant Professor, McMaster University

Subsequent funding from NIH, CIHR, etc.:

CIHR \$3,479,320 2022 (Co-PI)

Jessica Spence, MD, PhD, FRCPC, received an IMRA award to support her research on perioperative outcomes after cardiac surgery. An anesthesiologist and intensivist at McMaster University, Dr. Spence's aim is that this research will be a stepping stone to ultimately developing trials to prevent and mitigate postoperative cognitive and functional decline, while also springboarding her to obtaining future national and international peer-reviewed funding.

INTERVIEW HIGHLIGHTS

What is the goal of your research?

The project being supported by my IARS Mentored Research Award will genotype the VISION Cardiac Surgery Biobank to enable the creation of a polygenic risk score for the development of new postoperative atrial fibrillation (POAF) after cardiac surgery.

A side benefit of this study is that it will fully genotype every participant in the VISION Cardiac Surgery Biobank, creating a new and complete database that will help us answer emerging questions about the genetic risks of cardiac surgery patients.

How will this award affect your research/professional trajectory?

The IARS Mentored Research Award represents a key stepping stone that I believe will enrich my capabilities as an independent researcher, and act as a springboard to obtaining national and international peer-reviewed funding to support my research endeavors.

Once you complete this mentored research award, what's next for you? What's your vision for the future?

Once complete, I intend to build on the work supported by the IARS Mentored Research Award to develop genetic risk scores for other adverse perioperative outcomes, including neurocognitive and functional decline. I will also complete and publish the multi-centre cluster crossover trial that I am leading, which examines the impact of benzodiazepine-free cardiac anesthesia on the incidence of postoperative delirium. This work, in combination, will provide the foundation for trials of interventions seeking to prevent and mitigate postoperative cognitive and functional decline.

Click [here](#) to read full interview.

EEG for Anesthesia

Take this free CME activity with MOCA Patient Safety Today!



This course is composed of three modules, developed to introduce you to the basics of using EEG to recognize the altered states of arousal caused by commonly used anesthetic drugs. Each module is composed of a series of practice questions with immediate feedback. This feedback provides explanations to allow you to become familiar with a specific topic. The course also offers *AMA PRA Category 1 Credit™* and ABA MOCA points, including Patient Safety.

MODULES

- 1 Basics of Clinical EEG for General Anesthesia and Sedation
- 2 Anesthesia EEG Case Studies
- 3 Clinical EEG for Anesthesia Management of Elderly Patients

...It will be practice-changing to use what I have learned in this course, and I am looking forward to teaching every information that I have acquired with all materials provided. I will for sure deliver better anesthetics to my patients.

All modules are extremely user friendly, informative and teach very complex topics very well. I very much enjoyed going through the exercises and am motivated to continue my learning on these topics.

I truly enjoyed reading the modules as well as the review questions. These concepts were totally new to me. The topic has been succinctly presented and very well explained.

Excellent, free CPD and massively increased my understanding of the EEG for anesthesia, thank you for the effort involved.

Brilliantly composed. Simple explanation of a complex topic I haven't seen done better anywhere else!

This is truly an amazing learning tool with a huge background of technical knowledge that is of extreme value to the clinical practice.

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IARS Mentored Research Award

C R E A T I N G F U T U R E L E A D E R S



AWARD
AMOUNT

\$175,000



SUBMISSION
DEADLINE

April 30

The IARS Mentored Research Awards support the development of promising investigators in anesthesiology and related sciences.

Applications may be in any area of investigation (clinical, translational, basic science), but must have ultimate relevance to the broad practice of anesthesiology and its subspecialties. 45% protected, non-clinical time is required.



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An Insider's Guide to a Successful IARS Grant Submission

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Thursday
Jan 23, 2025
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Want to be next on the list of recipients? Be sure to attend this webinar to learn the tips for a successful submission.

Join this interactive webinar to hear from the current IARS IMRA Study Section Chair and past recipients who share their tips and personal stories from their journey through the application process to the career-changing impact of their award-winning research. This session will offer insightful content and plenty of time to address your pressing questions.

MODERATOR

Julie K. Freed, MD, PhD
Medical College of Wisconsin
Milwaukee, WI
Chair, IMRA Study Section



Julie Freed



Jessica Spence

SPEAKERS

Jessica Spence, MD, PhD, FRCP
McMaster University
Faculty of Health Sciences
Hamilton, Ontario, Canada
2021 IMRA Recipient



Benjamin Steinberg



John Whittle

Benjamin Steinberg, MD, PhD, FRCP
The Hospital for Sick Children
Toronto, Ontario, Canada
2019 IMRA Recipient

John Whittle, FRCA, FFICM, MD
University College London
London, England
2019 IMRA Recipient

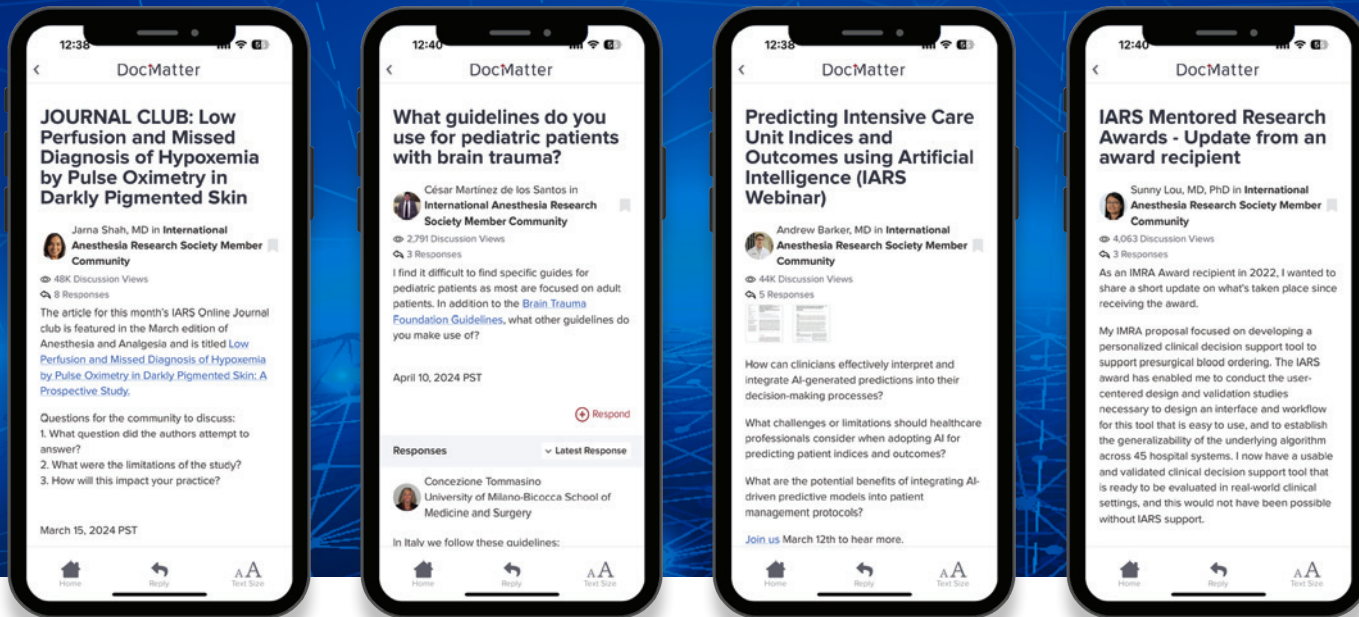


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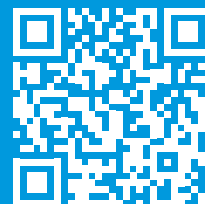
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