

FERRING

PHARMACEUTICALS

Meet the 2017 Ferring Innovation Grants recipients

In 2017 Ferring's [Innovation Grants Program](#), an initiative of the Ferring Research Institute (FRI), provided grants to early-stage researchers working in Gastroenterology & Hepatology, Reproductive Medicine & Women's Health, Urology, and Endocrinology. We caught up with the latest grant recipients to learn more about their fascinating research projects, their diverse passions - from coin collecting and a parrot named Melvin, to being a sportsman and starting medical school at age 19 - and their shared desire to improve the lives of patients all over the world.

Visit www.ferring-research.com/ferring-grants to learn more about the **Ferring Innovation Grants Program**.



Name: Stéphane Bolduc, MD, FRCSC

University: CHU de Québec-Université Laval Research Center, Canada

Research Project: *Identify protein(s) secreted by urothelial cell carcinoma (UCC) involved in modification of tumor-associated stroma by activation of Cancer-Associated Fibroblasts (CAF).*

How would you summarize your research project in simple terms, to a non-scientific audience?

This project will extend the modeling of bladder cancer beyond static cell culture. Our 3D model made with human cells has near-native biological and functional features. Our innovative human 3D bladder cancer model will allow unique research on mechanisms supporting advancement and optimization of treatments.

What motivated you to research this area?

I am a urologist and expert in tissue engineering. I think that our unique model can be used to investigate particular diseases, not only for reconstruction purposes. I have the opportunity to work with uro-oncologists and this model allows scientific exchange between different research teams.

What do you hope to achieve through the Ferring Innovation Grants program?

Identify potential new targets to treat bladder cancer and also to prevent its recurrence or progression. Our long-term goal is for the 3D Bladder Cancer (BCa) model to serve as a versatile platform for mechanistic studies, as well as for the high throughput screening of new potential therapies with personalized-medicine potential. In the future, we hope to reduce tumor recurrence and local progression rates amongst patients, improve their quality of life and decrease the economic burden of BCa on the health care system.

Most exciting thing about your research project?

We have a very unique model of bladder mucosa, made with human cells. This will allow research in vitro and decrease the use of animals in research.

Most challenging part of your research project?

Identify the targets with accuracy in the 12-month period of the grant.

How would you describe yourself in 3 words?

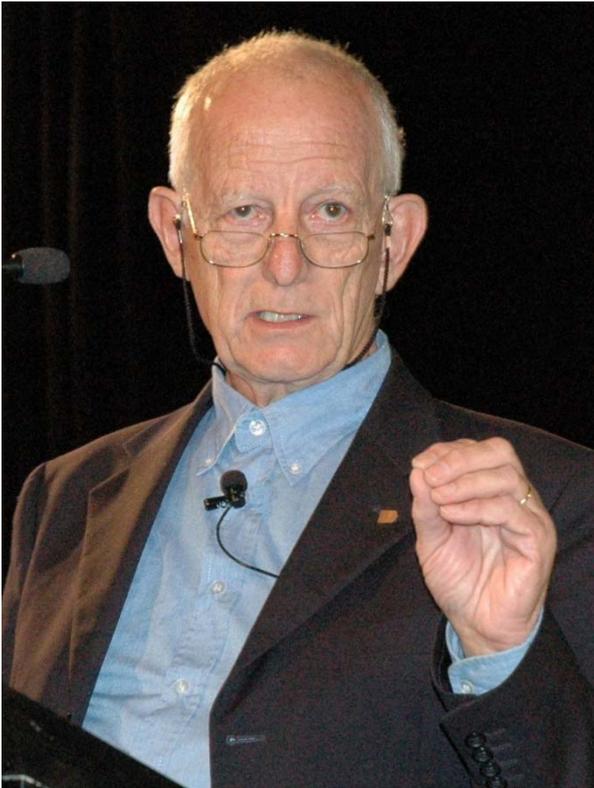
Energetic, organized and motivated.

Interesting fact about yourself?

I am a young pediatric urologist who established himself as the Canadian expert in urological tissue engineering. I am surrounded by experts in tissue engineering and oncology and I will ensure the collaboration between those two areas.

Anything else you'd like to add?

I make things happen!



Name: Marcello Costa, FAA

University: Flinders University, Australia

Research Project: *Enteric neuropeptides modulation of colonic motility in health and disease.*

How would you summarize your research project in simple terms, to a non-scientific audience?

How small molecules present in nerves in the gut control colonic motility to affect wellbeing.

What motivated you to research this area?

I have discovered the presence and potential role of many of these small molecules in gut nerves and now can finally investigate them properly.

What do you hope to achieve through the Ferring Innovation Grants program?

I hope to identify which ones of these several small molecules in gut nerves is involved in normal gut motility and thus which ones may be involved in diseases.

Most exciting thing about your research project?

This is a culmination of pioneering work done decades ago and only now questions raised at the time, can be answered. The actual role of the several neuropeptides in the nerves of the gut has remained largely a big mystery and now we can begin to throw some light.

Most challenging part of your research project?

To set sensitive experiments that can detect the subtle, but important roles of neuropeptides in the colonic motility.

How would you describe yourself in 3 words?

Curious, rigorous, determined.

Interesting fact about yourself?

I have a lifelong curiosity with passion to unravel the structure and function of the nervous system of the gut. This led me to migrate far from family and friends to a new life in a new continent in search of better science. I now call Australia, my new home with family and friends. I retain love for mountains in Europe and South America.

Anything else you'd like to add?

The Ferring innovation grant has given me the chance of a lifetime to fulfill a long term deep curiosity which is likely to lead to a better understanding of colon motility in health and thus open the possibility to treat effectively diseases. I congratulate the Company for its courage to address novel paths and for giving me the chance to be part of it.



Name: Andrew Horne, PhD, FRCOG

University: University of Edinburgh, United Kingdom

Research Project: *Targeting TGF β -1 with an extracellular peptide inhibitor to treat women with peritoneal endometriosis.*

How would you summarize your research project in simple terms, to a non-scientific audience?

We plan to develop a new treatment for the pain experienced by millions of women with endometriosis using novel laboratory models of the condition.

What motivated you to research this area?

Endometriosis is a chronic, incurable, debilitating chronic pain condition that affects ~176 million women worldwide. Current medical treatment options are hormonal, often ineffective and have many side effects. There is an unmet need for an effective non-hormonal treatment for endometriosis-associated pain.

What do you hope to achieve through the Ferring Innovation Grants program?

We hope to generate sufficient laboratory data to translate a new treatment for endometriosis-associated pain into early-phase clinical trials in women.

Most exciting thing about your research project?

Compared to the current therapeutic options for endometriosis, our proposed new treatment does not target hormonal pathways and therefore avoids hypoestrogenic and contraceptive side effects.

Most challenging part of your research project?

Recapitulating our cell model findings in our mouse model of endometriosis.

How would you describe yourself in 3 words?

Quiet but driven.

Interesting fact about yourself?

I briefly worked as a restaurant critic.



Name: Joseph Hurt, MD PhD

University: University of Colorado Anschutz Medical Campus
Assistant Professor, Divisions of Reproductive Sciences and
Maternal Fetal Medicine, Department of Obstetrics and
Gynecology, USA

Research Project: *Adiponectin receptor regulation of myometrial contractility suggests novel therapeutic targets to augment uterine quiescence and prevent preterm birth.*

How would you summarize your research project in simple terms, to a non-scientific audience?

We want to identify new molecular mechanisms based on normal pregnancy physiology that can keep the uterus quiet and non-contracting until the fetus is fully developed.

What motivated you to research this area?

As a maternal fetal medicine clinician, I see firsthand how preventing preterm delivery might improve a baby's chance for a long, healthy and productive life. Although our ideas start in the lab, we hope to take our research from the bench to the bedside and translate our findings into improved patient care. This project aims to identify maternal metabolic signals that might lead to new preventive therapies.

What do you hope to achieve through the Ferring Innovation Grants program?

This grant gives us the means to perform critical rigorous genetic studies of our proposed therapy. We hope that this work opens a new area of research and discoveries that will soon lead to clinical trials and application.

Most exciting thing about your research project?

We can always see the clinical implications of our work, which is very exciting. But, discovering something new in the lab and getting to see it first is its own special excitement and reward. Discovery science can be a roller coaster of highs and lows, but we're energized by the possibility of helping people on the largest scale. The most exciting thing is discovering new knowledge.

Most challenging part of your research project?

Making sure that our initial findings are durable and important, making sure that we have tested our findings as rigorously as possible.

How would you describe yourself in 3 words?

Meticulous, curious, and hopeful.

Interesting fact about yourself?

Obstetrics was never on my radar before my rotation as a medical student – you never know where your professional enthusiasm will lead you!



Name: Ursula Kaiser, MD

University: Brigham and Women's Hospital, Harvard Medical School, USA

Research Project: *Differential modulation of LH and FSH by GnRH analogs for improved treatment of reproductive disorders.*

How would you summarize your research project in simple terms, to a non-scientific audience?

The production of two key pituitary hormones that control fertility need to be tightly coordinated. GnRH analogs are a class of drug treatments used to treat infertility and other reproductive disorders. We plan to test the effects of GnRH analogs on these two key pituitary hormones using more detailed methods than used previously, to see if they can be leveraged in new ways to improve reproductive outcomes.

What motivated you to research this area?

I have always been fascinated by the concept that a single hormone, GnRH, can have differential effects on the two pituitary gonadotropins, LH and FSH, depending on its pattern of input. My goal is to understand the mechanisms by which the pituitary gland decodes this GnRH input to determine how much LH vs FSH to produce. If we understood this better, we could develop better treatments for infertility and other reproductive disorders.

What do you hope to achieve through the Ferring Innovation Grants program?

This is a great opportunity to take an existing very widely used class of medications and better understand how they work, with the hope of then using them in more refined ways in a more personalized medicine type of approach.

Most exciting thing about your research project?

I love the idea that we can take something that is now essentially used as an "on-off" switch and expand its use by designing a "rheostat" to fine-tune treatments of reproductive disorders.

Most challenging part of your research project?

Having already started to work on this, I have realized that the permutations and combinations of the studies with the various GnRH analogs is much greater and more labor-intensive than initially anticipated.

How would you describe yourself in 3 words?

Hard-working, curious, perseverant.

Interesting fact about yourself?

I started medical school at age 19.

Anything else you'd like to add?

I'm very appreciative of the support from the Ferring Research Institute to pursue my goal of improving treatments for infertility and reproductive disorders.



Name: Sarah A Marshall, BSc, MSc, PhD

University: Monash University, Australia

Research Project: *Exploring novel therapies for preeclampsia: the role of soluble prorenin receptor on vasculature function.*

How would you summarize your research project in simple terms, to a non-scientific audience?

This project is about understanding the role of a newly identified protein (sPRR) upregulated in the blood stream of women with the pregnancy disease preeclampsia.

What motivated you to research this area?

Worldwide preeclampsia kills over 60,000 women and over 500,000 babies every year. Yet we still don't have a targeted treatment. Instead, we manage the key symptom – high blood pressure – and cure the disease by the premature delivery of the baby. As a scientist, I have been intrigued by our lack of understanding of the causes underlying preeclampsia, which is extremely prevalent (5% of pregnancies) and devastating.

What do you hope to achieve through the Ferring Innovation Grants program?

This program will allow me to characterize the contribution of sPRR to the clinical symptoms of preeclampsia with a focus on the renal vasculature.

Most exciting thing about your research project?

This project could not only help us further understand the complications of preeclampsia, but also establish a new drug target for future treatment.

Most challenging part of your research project?

The most challenging part of this research will be to develop a safe and effective way to reduce circulating levels of sPRR during pregnancy. As this is a new area of research, I have needed to design and develop numerous components of this project, which have been both challenging and exciting.

How would you describe yourself in 3 words?

Inquisitive, motivated and practical.

Interesting fact about yourself?

I have an incredibly talkative eclectus parrot named Melvin.



Name: Kathryn E. Meier, PhD

University: Washington State University, USA

Research Project: *FSH receptor as a therapeutic target in prostate cancer.*

How would you summarize your research project in simple terms, to a non-scientific audience? This project investigates how the follicle-stimulating hormone (FSH) receptor promotes the growth of prostate cancer cells, with the goal of determining whether this receptor is a potential target for drug therapy in prostate cancer.

What motivated you to do research in this area?

This particular grant was inspired by conversations with Dr. Dennis Marshall from Ferring Pharmaceuticals. He had written a review article on the subject, and shared his enthusiasm with me. I have expertise with G protein-coupled receptors (GPCRs) in cancer, but had not worked on the FSH receptor before. I find this receptor extremely promising as a potential therapeutic target.

What do you hope to achieve through the Ferring Innovation Grants program?

I hope to stimulate further research regarding the role of FSH in prostate cancer, and more broadly, to draw attention to the potential utility of GPCR ligands in cancer prevention and therapy.

Most exciting thing about your research project?

The most exciting aspect to me personally is the opportunity to explore the function of a receptor that I have not worked on before. With respect to medical benefit, GPCR ligands (for example, future FSH receptor antagonists) provide a relatively non-toxic approach to cancer therapy that can be personalized to the patient.

Most challenging part of your research project?

It always takes some time to become familiar with a new type of receptor, but this is of course part of what makes the project very interesting. I have considerable experience with the experimental approaches, as well as with studying the roles of GPCRs in prostate cancer.

How would you describe yourself in 3 words?

Scientist, mentor, advocate.

Interesting fact about yourself?

I first worked in a research laboratory when I was 17 years old. Thanks to the support of strong mentors, I have continued to do so ever since.

Anything else you'd like to add?

I am very grateful for this opportunity to contribute to prostate cancer research. I look forward to seeing how Ferring can move the project forward towards a new therapeutic agent in the future.



Name: Victor M. Navarro, PhD

University: Brigham and Women's Hospital, Harvard Medical School, USA

Research Project: *Targeting the Kappa Opioid Receptor to Regulate LH Pulses in PCOS Patients.*

How would you summarize your research project in simple terms, to a non-scientific audience?

This project intends to characterize the use of peripherally restricted opioid agonists to shut down the neurons that are abnormally hyperactivated in PCOS patients, therefore, improving their reproductive and metabolic condition.

What motivated you to research this area? This is a novel area of research and the neurons to be targeted (KNDy) are especially unique in that they can be reached from outside the blood brain barrier, which offers an extraordinary opportunity to target them and address a syndrome that currently does not have any

effective treatment.

What do you hope to achieve through the Ferring Innovation Grants program?

We hope to confirm that peripherally restricted kappa agonists are a useful tool to improve the quality of life of patients suffering PCOS.

Most exciting thing about your research project?

The high translational potential to humans.

Most challenging part of your research project?

Replicate a PCOS model in the mouse that closely resembles that in the human.

How would you describe yourself in 3 words?

Creative, consistent, passionate.

Interesting fact about yourself?

I knew I was going to be a scientist at age 8 when I got my first microscope for Christmas.

Anything else you'd like to add?

We welcome any candidates to join our lab!



Name: Willis K. Samson, PhD, DSc

University: Saint Louis University School of Medicine, USA

Research Project: *A Novel Ligand (Adropin) – Receptor (GPR19) Handshake: Implications for the Control of Growth Hormone Secretion.*

How would you summarize your research project in simple terms, to a non-scientific audience?

We have discovered a novel mechanism by which growth hormone secretion is controlled and seek to determine if novel medicines can be developed using this mechanism for the treatment of growth failure and aging.

What motivated you to research this area?

I have a longstanding interest in how the release of hormones produced in the anterior pituitary gland is controlled.

What do you hope to achieve through the Ferring Innovation Grants program?

Our group hopes to discover novel hormone/receptor interactions like adropin/Gpr19 that can be developed into medicines that improve the quality of life.

Most exciting thing about your research project?

The most exciting thing about this research is the discovery of novel hormones and receptors.

Most challenging part of your research project?

The most challenging part of this work is to convince funding sources of the work's potential to improve the quality of human life; biomedical research is expensive and financial support of the Ferring Research Institute is crucial to our progress.

How would you describe yourself in 3 words?

Inquisitive, observant, dedicated.

Interesting fact about yourself?

I'd rather be outside than inside.

Anything else you'd like to add?

Our progress is completely dependent on an excellent cadre of graduate students and the collaboration of my former student and current faculty colleague, Dr. Gina Yosten.



Name: John Arthur Taylor, III, MD, MS

University: University of Kansas Medical Center, USA

Research Project: *The Role of d-Dopachrome Tautomerase in Bladder Cancer Tumorigenesis.*

How would you summarize your research project in simple terms, to a non-scientific audience?

Macrophage migration inhibitory factor (MIF) is expressed in many tissue types and its levels are elevated in bladder cancer (BCa). We are exploring the role of a newly defined molecule, d-Dopachrome Tautomerase (D-DT or MIF2) in BCa development and progression relative to what is already known about MIF.

What motivated you to research this area?

I have been researching MIF's role in bladder cancer for many years and believe it is an ideal lead candidate for drug development. However, with the identification of MIF2 it is critical to understand the role each one plays in the pathogenesis of this

disease.

What do you hope to achieve through the Ferring Innovation Grants program?

We hope to have a better understanding of the role MIF2 plays in bladder cancer and the pathways involved.

Most exciting thing about your research project?

The opportunity to advance the science of MIF and ultimately translate these findings into improved outcomes for my patients.

Most challenging part of your research project?

Teasing apart the relative component contributions of MIF and MIF2 in bladder cancer as there can be some degree of "cross talk".

How would you describe yourself in 3 words?

Passionate, focused, humble.

Interesting fact about yourself?

I am a 3rd generation physician.

Anything else you'd like to add?

Founded and currently serve as President & Director of The Leo & Anne Albert Institute for Bladder Cancer Research.



Name: Suraj Unniappan, Professor, Department of Veterinary Biomedical Sciences, Western College of Veterinary Medicine (WCVM)

University: University of Saskatchewan, Canada

Research Project: *Nesfatin-1 and nesfatin-1-like peptide regulation of growth and stress hormones: novel targets for endocrine diseases.*

How would you summarize your research project in simple terms, to a non-scientific audience?

Based on strong preliminary evidence from my lab, this project aims to discover the roles of two naturally occurring peptides (nesfatin-1, and nesfatin-1-like peptide) in regulating growth and stress hormones.

What motivated you to research this area?

Our research resulted in several discoveries on nesfatin-1 and its biological actions, including its insulinotropic and glucoregulatory effects. We were the first to report the nesfatin-1-like peptide, and its

biological actions. The existing literature and preliminary results suggest a role for these peptides in regulating hormones that modulate growth and stress. This research is a logical extension of some of these seminal findings, and our focus will be to study the hormone like actions of nesfatin-1 and nesfatin-1-like peptide in regulating growth and stress.

What do you hope to achieve through the Ferring Innovation Grants program?

Our goal is to make key discoveries that provide novel information on these two important peptides. These findings could eventually assist us in determining the peptides' therapeutic potential in endocrine diseases.

Most exciting thing about your research project?

The probability of obtaining new knowledge that could advance our thinking and enable potential applications of such research is very exciting. As well, I really enjoy the opportunity to work with and train bright, young minds.

Most challenging part of your research project?

Our major challenge is to accurately place nesfatin-1 and nesfatin-1-like peptide within the bigger pictures of endocrinology.

How would you describe yourself in 3 words?

Father, husband, scientist.

Interesting fact about yourself?

I enjoy travel, history, art, architecture, coins and stamps of historic significance. In another aspect of my research, I use different species of fish to study hormones.

Anything else you'd like to add?

I would like to thank the Ferring team for supporting our research.



Name: Henrique Veiga-Fernandes

University: Champalimaud Center for the Unknown, Portugal

Research Project: *Neuro-immune interactions in inflammatory bowel diseases.*

How would you summarize your research project in simple terms, to a non-scientific audience?

We have recently discovered that the nervous system instructs intestinal immune cells and, as such, we will interrogate how this crosstalk can be used therapeutically in inflammatory bowel diseases.

What motivated you to research this area?

Neuro-immune interactions are emerging as major regulatory axis of tissue integrity. Nevertheless, whether neuronal cues might be used therapeutically to regulate immune responses remains mostly unexplored. We plan to harness these interactions in Inflammatory Bowel Disease (IBD), which despite its high prevalence, it is still an incurable condition.

What do you hope to achieve through the Ferring Innovation Grants program?

We aim to clearly establish the proof-of-concept that discrete neuro-regulatory molecules can be employed therapeutically to ameliorate IBD.

Most exciting thing about your research project?

The therapeutic strategy of harnessing neuronal functions to treat immune system disorders is certainly the most exciting and cutting-edge point of our project.

Most challenging part of your research project?

This is a frontier project bridging neuroscience, immunology and mucosal physiology. Bringing this expertise under the same umbrella is the most challenging, but also exciting aspect of this project.

How would you describe yourself in 3 words?

Curious. Perseverant. Determined.

Interesting fact about yourself?

I am also a music lover, a kin sportsman and a father of 3 beautiful kids.