

# BRAIN WAVES



ROSKAMP INSTITUTE & CLINIC NEWS



Drs. Joseph Ojo, Andrew Pearson, and Fiona Crawford

## Congratulations to Newest Graduate of Our Ph.D. Program

We are pleased to announce that Andrew Pearson has become the 18th graduate of our Neuroscience Ph.D. program. Dr. Pearson is from Manchester, England, having earned his undergraduate degree in Biomedical Sciences from the University of Chester and Master's degree in Stem Cell Engineering from Keele University in the UK.

Andrew has worked on numerous projects, throughout his graduate studies, since joining the Roskamp Institute in January 2018. Together with supervisors Drs. Joseph Ojo and Fiona Crawford, his research investigated the contributions of the brain's immune system to the progression of brain pathology and the development of cognitive impairment following Traumatic Brain Injury (TBI).

Andrew's research has taken him from the lab to the computer, where he has been using artificial intelligence and machine-learning algorithms to uncover the mechanisms driving neurodegeneration and to identify new and more effective drugs that can be put into the clinical research pipeline. "We are incredibly proud of Andrew and his achievements" said Dr. Ojo, "Our work together has resulted in three grants from the National Institute of Health (NIH), and we are delighted that Andrew will be staying with the Institute to continue work on these projects."

In these new studies, Dr. Pearson will target microglia, the immune sentinel cells of the brain that regulate inflammation following TBI. Using genetically-engineered animal models, Dr. Pearson will investigate how altering the expression of single genes in microglia can influence the inflammatory response to TBI. Additionally, his research will investigate the interaction between inflammation and the dysfunction of the brain's vascular network and how this is influenced by risk genes associated with Alzheimer's disease.

"The ability of our scientists to rapidly adopt and integrate new research techniques is a defining factor in the Roskamp Institute's ability to be continuously on the cutting edge of neuroscience. These groundbreaking studies will ultimately help us to achieve our goal of discovering better treatments for those living with TBI-related disabilities," said Dr. Crawford.

November 2022



## Positioning the Roskamp Institute Clinic for the Future

It was with sadness that the Roskamp Institute recently announced the departure of Dr. Andrew Keegan, who has directed our Clinic for over a decade and with whom we have worked for more than 15 years. While we are sad to see him go, we are pleased that he plans to pass on his knowledge and formidable patient skills to new generations of neurologists in the Department of Neurology at the Medical University of South Carolina in Charleston. During his time with us, Dr. Keegan has built an extensive clinical practice in this community serving many thousands of patients as well as managing our Clinical Trials division and participating in our scientific research programs. We wish him all the very best and know his patients, like us, will miss him, but look forward to continuing our collaborations with him in the coming years.

We are delighted to welcome Dr. Michael Hoffmann, longstanding collaborator and consultant to the Institute, as the new Medical Director of the Roskamp Institute Clinic. Dr. Hoffmann will work remotely from his own clinic in Winter Garden, Florida, which will become a satellite clinic for the Institute. Dr. Hoffmann is internationally recognized as an expert on the more difficult-to-diagnose (and often missed) neurological conditions which he has described in his textbook, “Cognitive, Conative and Behavioral Neurology” (Springer). Dr. Hoffmann has worked with the Roskamp Institute Clinic for 11 years and presents an engaging and enlightening monthly seminar virtually at the Institute.



Dr. Michael Hoffmann  
Clinic Medical Director



Dr. Sanjay Yathiraj  
Clinical Trial Director

We are also very pleased to announce that Dr. Sanjay Yathiraj has joined the Institute as Clinical Trial Director to manage our pharmaceutical company-sponsored trials and to support our clinical research coordinators, Carole Kringel and Lance Hare. Dr. Yathiraj is a board-certified neurologist with his own practice in Bradenton and affiliations at local hospitals, including Blake Medical Center and Manatee Memorial Hospital.

Dr. Hoffmann will be seeing patients virtually and also working with our nurse practitioners Barbara Wawryszyn and Rachel Aronow, as well as supporting the Institute’s Department of Defense (DoD)- and National Institutes of Health (NIH)- sponsored clinical studies. Also involved in these studies are Dr. Laila Abdullah, Grace Bartenfelder and Dakota Helgager, who conduct clinical studies with experimental approaches derived from the Institute’s own research.

Dr. Hoffmann is also very interested in, and experienced with, novel, non-pharmacological, approaches to treat neurological diseases, such as transcranial magnetic and electric field stimulation. We anticipate the potential of introducing such approaches to our Clinic.

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## Positioning the Roskamp Institute Clinic for the Future *(continued)*

Dr. Yathiraj will assume Dr. Keegan's role on the pharmaceutical clinical trials for Alzheimer's disease, which are currently underway in our Clinic, and also has future plans to see patients at our Clinic. This critically important facet of our Clinic operations enables us to offer our patients access to the latest experimental treatments, which we expect will be expanding over the next few years as decades of research start to pay off with new drugs and other treatments that can slow or delay the disease.

Our neuropsychologist Dr. Cheryl Luis will continue her excellent work with our patients and their caregivers, as she has done for more than 15 years.

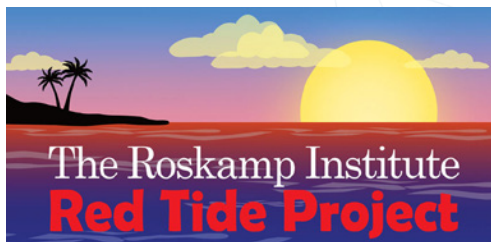
We are confident that with these changes in our clinic management, along with the continuing excellent work of all our support staff, particularly our receptionist Megan Mahoney and patient coordinator Lia Ramirez, we will continue to provide our community with the support and resources that they have come to expect from the Roskamp Institute – to combat very challenging neurological conditions.



### Department of Defense support for the Roskamp Institute Traumatic Brain Injury Cerebrovascular Research Program

Dr. Corbin Bachmeier recently was awarded two contracts by the Department of Defense to investigate the role of the brain vasculature in neurological diseases following Traumatic Brain Injury. These new projects will build upon his prior work with the Department of Veterans Affairs, which found that certain cells associated with the brain vasculature progressively degenerate in the chronic stages following head trauma. Under normal conditions, these cells have important roles in supporting neuronal function and removing toxic proteins from the brain. The focus of the new projects is to identify therapeutics that rejuvenate the injured cerebrovascular cells in order to facilitate the elimination of toxic agents from the brain and improve overall brain function in the aftermath of head trauma. Dr. Bachmeier's projects will continue over the next three years, and he will be supported in these endeavors by Dr. Maxwell Eisenbaum, who graduated from the Institute Ph.D. program earlier this year.

*Our thoughts are with everyone who has suffered loss as a consequence of Hurricane Ian, and we know that many of our clinical study participants are from the hardest-hit areas such as the Sanibel/Captiva Islands, Ft. Myers, and Port Charlotte. We are very grateful to all our participants who volunteer their precious time and biological samples to our research, through which we have made tremendous advances in understanding the underlying causes of complex neurological conditions and diseases and identifying treatments. We hope to see you in the near future as we continue to expand our clinical studies into Gulf War Illness, Traumatic Brain Injury and red tide research.*



## Roskamp Institute Research shows the Impact of Red Tide Blooms on the Brain Health of Southwest Florida residents

Roskamp Institute scientists, in collaboration with the Gulf of Mexico Coastal Ocean and Observing System (GCOOS), have been conducting a clinical research study to understand the potential impact of red tide blooms on brain health. The team recently published findings from their study in the peer-reviewed journal *Harmful Algae*. The study provides new evidence that red tide exposure can affect human brain health. This study suggests, for the first time, that certain individuals are susceptible to the neurological effects of airborne exposure from red tide blooms.

According to the study, individuals with a prior medical history of migraine or chronic fatigue syndrome (extreme fatigue that worsens with physical and/or mental activity) are more likely to have symptoms that have previously only been associated with eating seafood contaminated with red tide toxins. However, participants in this study had only been exposed to red tide toxins in the air.

Prior to the study it was well-known that eating red tide toxin-contaminated shellfish produces an illness called neurotoxic shellfish poisoning (NSP) which causes nausea, vomiting, diarrhea, numbness and tingling, dizziness, headache, and a reversal of hot and cold sensations. Even though volunteers had not eaten contaminated shellfish, some reported symptoms similar to NSP. Among individuals who experienced NSP-like symptoms, more tended to have a prior medical history of migraine or chronic fatigue syndrome.

Although respiratory symptoms are well-documented during red tide blooms, neurological aspects have not been fully examined in large populations, such as the one studied in this project. This study was conducted with more than 250 community volunteers from Sarasota, Manatee, Lee, Charlotte and Collier counties. It showed that reporting of neurological symptoms was more common when a red tide bloom was present in the area compared to when it was not present. Not surprisingly, the more severe the red tide bloom the more volunteers were likely to report respiratory symptoms. When neurological symptoms were reported, they usually occurred at the same time volunteers experienced respiratory symptoms.

“During previous studies looking at how red tide toxins affected lung function, study participants sometimes reported headaches, and we thought it was important to investigate this further,” said Dr. Laila Abdullah, Research Scientist at the Roskamp Institute, and lead author of the paper *“Exposure-response relationship between K. brevis blooms and reporting of upper respiratory and neurotoxin-associated symptoms.”*

“Building on previous findings, we found that migraine sufferers reported headaches during red tide blooms. However, we did not expect that people would report NSP-like symptoms,” she said. “Our study also indicates that repeated airborne exposures in otherwise healthy people can also make them more sensitive to red tide.”

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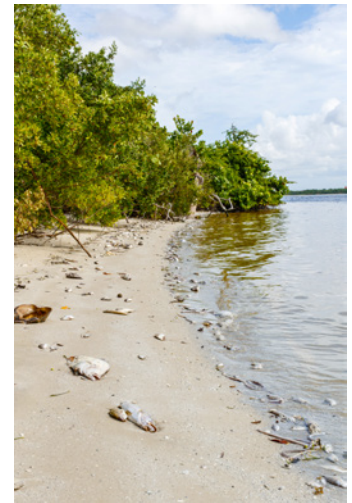


## Roskamp Institute Research shows the Impact of Red Tide Blooms on the Brain Health of Southwest Florida residents *(continued)*

One key question about red tide impacts on human health is why individuals respond so differently, said Roskamp Institute Executive Director Dr. Michael Mullan, physician and research scientist. “Different people respond to the toxins in different ways - from not being affected at all to experiencing a range of severe symptoms. We don’t understand why that is the case nor do we know the dose levels of toxins that are needed to cause neurological symptoms. There is still much to understand about this toxin and the levels of the threat it poses to human brain health.”

Study co-author Dr. Barbara Kirkpatrick, GCOOS Senior Advisor, was one of the lead researchers in the early studies of red tide and human health, including a study published in 2007 that found people with chronic lung diseases were impacted by airborne red tide toxins. She said this research is a continuation in gaining a fuller picture of the human health impacts of red tide. “Our work on the human-health impacts of red tide led to our development of the Red Tide Respiratory Forecast [redtideforecast.com], which helps people know which beaches could have red tide impacts throughout the day and lets them know when the best time to visit a particular beach will be. These latest findings indicate that there is much more for us to discover about how humans are impacted by red tide, and we’re hoping to continue building upon this work in future studies.”

Roskamp Institute CEO Fiona Crawford said that as a nonprofit organization dedicated to understanding the brain and finding treatments for brain disorders, the Institute is committed to continuing red tide neurological research. “More than three-fourths of Floridians live along our coasts, and more new residents are moving here every day. Harmful algal blooms like Florida’s red tide are predicted to become more frequent and longer lasting as our climate undergoes changes, and it is important to understand how our brains are impacted by red tides and what we can do to mitigate any risks they may pose.”



*This study was funded by the National Institute of Environmental Health Sciences (NIEHS).*

*Reference: Abdullah L, Ferguson S, Niedospial D, Patterson D, Oberlin S, Nkiliza A, Bartenfelder G, Hahn-Townsend C, Parks M, Crawford F, Reich A, Keegan A, Kirkpatrick B, Mullan M. Exposure-response relationship between K. brevis blooms and reporting of upper respiratory and neurotoxin-associated symptoms. Harmful Algae. 2022 Aug;117:102286. doi: 10.1016/j.hal.2022.102286. Epub 2022 Jul 12. PMID: 35944953.*

**If you want to learn more about this and other clinical research studies being conducted at the Roskamp Institute, please call Grace Bartenfelder at (941) 256-8019 ext. 3046.**

# THE ROSKAMP INSTITUTE

# OPEN HOUSE



THE ROSKAMP INSTITUTE IS HOSTING AN  
OPEN HOUSE WITH A SPECIAL INVITATION TO  
**VETERANS & MILITARY**

Highlighting the work at The Roskamp Institute &  
Clinic, showcasing research programs on:

- Traumatic Brain Injury
- Gulf War Illness
- Post-Traumatic Stress Disorder

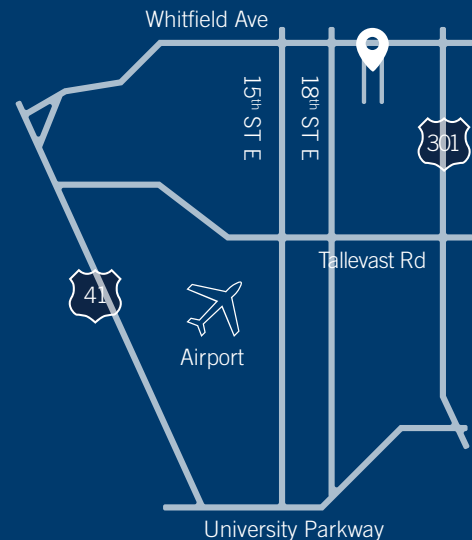
Featuring a Q&A with our top researchers.  
Refreshments will be provided.

For information please visit:  
**[RoskampInstitute.org/OpenHouse](http://RoskampInstitute.org/OpenHouse)**

Email your questions to:  
[info@roskampinstitute.org](mailto:info@roskampinstitute.org)

**FRIDAY**  
**NOVEMBER 11<sup>th</sup>**  
**2pm - 4pm**

ALL ARE WELCOME - THIS IS A **FREE** EVENT



From Scientific Research to Clinical Application

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