

UNIVERSITY OF MIAMI

THE DR. JOHN T. MACDONALD FOUNDATION
BIOMEDICAL NANOTECHNOLOGY INSTITUTE
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Lecture Series



DR. SABITA ROY PRESENTS:

Linking The Gut Microbiota to the Opioid Crisis

Wednesday, September 29, 2021 @ 3:30 PM

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MEETING ID: 937 5581 5553

PASSCODE: 380805

ABOUT THE LECTURE

Prolonged exposure to opioids results in analgesic tolerance, drug overdose, and death. The mechanism underlying morphine analgesic tolerance still remains unresolved. We show that morphine analgesic tolerance was significantly attenuated in germfree (GF) and in pan-antibiotic-treated mice. Reconstitution of GF mice with naïve fecal microbiota reinstated morphine analgesic tolerance. We further demonstrated that tolerance was associated with microbial dysbiosis with selective depletion in Bifidobacteria and Lactobacillaeae. Probiotics, enriched with these bacterial communities, attenuated analgesic tolerance in morphine-treated mice. These results suggest that probiotic therapy during morphine administration may be a promising, safe, and inexpensive treatment to prolong morphine's efficacy and attenuate analgesic tolerance. We hypothesize a vicious cycle of chronic morphine tolerance: morphine-induced gut dysbiosis leads to gut barrier disruption and bacterial translocation, initiating local gut inflammation through TLR2/4 activation, resulting in the activation of proinflammatory cytokines, which drives morphine tolerance.

ABOUT THE SPEAKER

Sabita Roy is a Professor and Vice Chair for Research in the Department of Surgery, at the University of Miami. She received her Ph.D. degree from the University of Kansas and pursued postdoctoral training in Pharmacology at the University of California, San Francisco. After completion of her post-doctoral training, she was recruited as an Assistant Professor and rose to the rank of professor at the University of Minnesota. In 2016 she was recruited as Professor and Vice Chair to the University of Miami. Dr. Roy's research is focused on delineating the role of the gut-immune brain axis in the co-morbidities associated with chronic opioid use. Her recent studies are focused on investigating the role of the gut microbiome in opioid induced tolerance, addiction and dependence. Her research has been continuously supported by grants from the national Institute of Drug Abuse. She currently runs a T-32 training grant. She has more than 150 publications in high-ranking journals. She was the past president of Society of Neuroimmune pharmacology (SNIP) and the Section Editor of the Journal of Neuroimmune Pharmacology. She has trained over 14 predoctoral students and 25 postdoctoral students.