

Welcome to

Conversations with Scientists



Online Webcast

Email questions for our speakers throughout the program at ahw@mcw.edu

BIOMEDICAL ENGINEERING

Designing Tools for a Healthy Future

Presented in partnership with the Marquette University and Medical College of Wisconsin Department of Biomedical Engineering

Tuesday, April 16, 2019

6:30 - 8:30 p.m.

Medical College of Wisconsin

Milwaukee | Central Wisconsin | Green Bay

Speakers

**ENGINEERING
ANSWERS
FROM WITHIN**



Opening Remarks

Lars Olson, PhD



Engineering the Perfect Diet: The Problem with Sugar and Artificial Sweeteners

Brian Hoffmann, PhD



Healing from Within: Unlocking the Body's Capacity for Self-Repair

Brandon Tefft, PhD

ABOUT THE SPEAKERS



Brian Hoffmann, PhD

Assistant Professor of Biomedical Engineering
Max McGee National Research Center
Center for Advancing Population Science
Cardiovascular Center
Marquette University and Medical College of Wisconsin

Brian Hoffmann, PhD, is Assistant Professor of Biomedical Engineering at Marquette University and Medical College of Wisconsin. Dr. Hoffmann received his PhD in molecular and cellular pharmacology from the University of Wisconsin-Madison in 2010.

Area of Interest: My area of interest is developing a better understanding of the dietary impact that varying types of sugar and common non-caloric artificial sweeteners have on both healthy and diabetic models. Ultimately, the knowledge gained from these studies will allow consumers to make a more informed decision for their nutritional considerations. Additionally, outcomes of the studies will have the potential to inform and revise care guidelines that would lead to improved disease management among genetically susceptible populations.

Highlight of My Career: This past year, my research on the impact of sugar and non-caloric artificial sweetener consumption received worldwide attention, which showed me that what we study really does impact peoples' lives.

Fun Fact: I have three dogs that most people I talk to hear about in some fashion; they even make it into my scientific presentations. Their names have a Star Wars theme, as my wife and I are avid fans.

Take Away Message: What we consume in our everyday life has a big impact on diabetes, and the message consumers receive surrounding the topic is not always accurate. Diabetes is a complex metabolic disease that has many more contributing factors than just sugar consumption that must be considered.



Brandon Tefft, PhD

Assistant Professor of Biomedical Engineering
Marquette University and Medical College of Wisconsin

Brandon Tefft, PhD, is Assistant Professor of Biomedical Engineering at Marquette University and Medical College of Wisconsin. Dr. Tefft received his PhD in Biomedical Engineering from Northwestern University, Evanston, IL, in 2011. He completed postdoctoral training in cardiovascular medicine at Mayo Clinic, Rochester, MN, in 2018.

Area of Interest: My area of interest is engineering the next generation of implantable cardiovascular devices. My research group seeks to develop living tissues and stimulate the body's innate capacity for regeneration in order to repair or replace damaged or diseased tissues. We hope our work will lead to safer and more effective treatments for patients suffering from diseases including coronary heart disease and valvular heart disease.

Highlight of My Career: The first invention I patented is being developed by a major medical device company and has already been used in several clinical cases as part of a trial.

Fun Fact: My work involves culturing mammalian cells to create living tissues. This work has a surprising amount of overlap with my hobby of culturing yeast cells to create beer! I have been able to apply more than one concept from homebrewing to solve problems in the lab.

Take Away Message: The next generation of medical devices and therapeutics will promote better healing and regeneration responses from the body to more effectively fight disease and restore function. Engineering approaches will play a key role in unlocking the body's capacity for self-repair.

DO MORE ... THINK BIG

Explore how biomechanical engineers use the body to answer tough health questions

● Watch

- **What if we're wrong about diabetes:**
<https://www.youtube.com/watch?v=UMhLBPPtIrY>
- **What do artificial sweeteners actually do to your body:**
<https://www.youtube.com/watch?v=xblFEe9uOqQ>
- **Growing New Organs:**
https://www.ted.com/talks/anthony_atala_growing_organs_engineering_tissue
- **The Potential of Regenerative Medicine:**
https://www.ted.com/talks/alan_russell_on_regenerating_our_bodies

● Read

- **Research Features article on the Hoffmann Lab research:**
<https://researchfeatures.com/2018/04/05/no-substitute>
- **How Stuff Works Artificial Sweetener Overview:**
<https://science.howstuffworks.com/innovation/edible-innovations/artificial-sweetener.htm>
- **Mayo Clinic Center for Regenerative Medicine:**
<https://www.mayo.edu/research/centers-programs/center-regenerative-medicine>
- **National Institute of Biomedical Imaging and Bioengineering:**
<https://www.nibib.nih.gov/science-education/science-topics/tissue-engineering-and-regenerative-medicine>

● Do

- **Connect with the American Diabetes Association:**
<http://www.diabetes.org/>
- **Check out the Tissue Engineering and Regenerative Medicine International Society:**
<https://termis.org>



JOIN US NEXT WEEK!

Bridging the Gap

Tuesday, April 23, 6:30 - 8:30 p.m.

Join us next week as Marquette University and Medical College of Wisconsin experts explore how biomedical engineering advancements must be translated from the lab to the clinic, bridging the gap between technology and patient care using 3D printing and virtual reality.



ADVANCING A HEALTHIER
WISCONSIN ENDOWMENT

Driven by a vision of a healthier Wisconsin, the Advancing a Healthier Wisconsin Endowment was established at the MCW Medical School to propel the most promising work and ideas to build a healthier Wisconsin today, and for generations to come.

Conversations with Scientists is a free, public learning series presented by AHW to bring the research of MCW experts to the public, translating new discoveries into community knowledge and taking discussions out of the classroom or health clinic and into public conversation.

www.AHWendowment.org