

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 2, 2019

6:30 - 8:30 p.m.

Medical College of Wisconsin

Milwaukee | Central Wisconsin | Green Bay

Speakers

**DESIGNING
PREVENTION**



Opening Remarks

Gerald Harris, PhD, PE



The Science of
Understanding and
Preventing Baseball Injuries

Janelle Cross, PhD



How Vehicle
Safety Advances

Frank A. Pintar, PhD

ABOUT THE SPEAKERS



Janelle Cross, PhD

Assistant Professor of Orthopaedic Surgery
Medical College of Wisconsin

Janelle Cross, PhD, is Assistant Professor of Orthopaedic Surgery and Director of the Sports Medicine Research Division at the Medical College of Wisconsin. Dr. Cross received her PhD in biomedical engineering from Marquette University in 2015.

Area of Interest: My area of interest is sports biomechanics. I investigate how athletes move, with the goal of preventing injuries and maximizing performance utilizing motion capture, force plates, electromyography and various other biomechanical tools. Work in my lab involves baseball pitching, hitting, running, and jumping/landing mechanics. I hope this work will lead to new strategies for the training and rehabilitation of athletes.

Highlight of My Career: I had the opportunity to present my research at the International Congress on Sports Sciences hosted by the Colombian Olympic Committee in Cali, Colombia. Working with a translator to present to an audience was intimidating and exciting at the same time!

Fun Fact: My freshman year of college I played basketball at a junior college. After transferring to the University of Iowa, I walked onto the rowing team. This led to being a graduate assistant rowing coach during my master's degree.

Take Away Message: Technology is changing the way we analyze athletes. Sports biomechanics uses tools to assess athletes to improve their performance and prevent injuries.



Frank A. Pintar, PhD

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

Frank A. Pintar, PhD, is Professor and Chair of Biomedical Engineering at Marquette University and Medical College of Wisconsin. Dr. Pintar received his PhD in biomedical engineering from Marquette University in 1986. He has worked at the Medical College of Wisconsin for over 31 years.

Area of Interest: My areas of interest in research are understanding the biomechanics of brain and spinal cord injury, mechanical stability of spine surgery techniques, and military and motor vehicle crash trauma. I have worked in collaboration with medical professionals in neurosurgery, orthopedic surgery, emergency medicine, trauma surgery, physical medicine and rehabilitation, otolaryngology, and radiology. I have found that the best science occurs when you work in a team environment.

Highlight of My Career: Being involved in building, establishing, and maintaining a laboratory with research professionals that enjoy their work and have made significant contributions to the safety of occupants in transportation and military environments.

Fun Fact: I regularly volunteer in the church nursery. I have been told I am a baby whisperer and have a unique ability of putting kids at ease. I have two grandchildren that call me "Opa."

Take Away Message: Advancing the science of vehicle collision safety has taken interdisciplinary teams asking difficult questions and working together to solve problems. The first step in preventing injuries is understanding how and why injuries occur. Often a difficult scientific problem cannot be solved until the right tools have been developed.

DO MORE ... THINK BIG

Explore how biomedical engineering informs the prevention of injuries

● Watch

- Explore biomechanical modeling of various sports:
<https://www.bob-biomechanics.com/examples.html>
- Look at the science behind athletics with ESPN Sports Science:
<http://www.espn.com/espn/sportscience/index>
- Find background on how the limits of human tolerance were established with early space exploration in PBS' "Space Men":
<https://www.pbs.org/wgbh/americanexperience/features/spacemen-limits/>

● Read

- Learn more about sports science, tools, and performance testing:
<https://www.scienceforsport.com/articles/>
- A Virginia Tech graduate student describes her work to build safer cars:
<https://vtnews.vt.edu/articles/2018/02/ictas-albertdoctoralscholar.html>
- Why Cars are Safer Than They've Ever Been: www.popularmechanics.com/cars/a11201/why-cars-are-safer-than-theyve-ever-been-17194116

● Do

- Visit "National Biomechanics Day" to find information and events involving biomechanics:
<http://nationalbiomechanicsday.asbweb.org/>
- Check the safety ratings of your vehicles:
www.safercar.gov
www.iihs.org/iihs/ratings
www.euroncap.com/en



JOIN US NEXT WEEK!

Creating a Better Diagnosis

Tuesday, April 9, 6:30 - 8:30 p.m.

Join us next week as Marquette University and Medical College of Wisconsin experts explore how biomedical engineers are improving tools to give patients a better diagnosis, including how imaging advancements are diagnosing diseases and offering hope for healthier outcomes with every diagnosis.



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 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