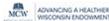


To be precise: Precision medicine and heart disease

Conversations with Scientists
November 1, 2017



Featuring...



Genetic Approaches to Heart Disease
Speaker: Aron Geurts, PhD, associate professor of physiology, Medical College of Wisconsin

Dr. Geurts is a member of the Cardiovascular Center and Genome Sciences and Precision Medicine Center. He is a recognized innovator in the field of genetic engineering and gene editing and will be talking about the complexity of cardiovascular genetics and how gene editing contributes to our understanding of these diseases.



The Promise of Stem Cells in Cardiology
Speaker: Ivar Benjamin, MD, FAHA, FACC, professor of medicine, division of cardiovascular medicine, Medical College of Wisconsin

Dr. Benjamin is the Director of the Cardiovascular Center and president-elect of the American Heart Association. He is board certified in internal medicine and cardiology and a recipient of the Christ T. Smith Endowed Chair of Cardiovascular Medicine. Dr. Benjamin will be talking about how stem cells are an important area of continuing research for treating cardiovascular disease.



Ethics of personalized Medicine
Speaker: Ryan Spellacy, PhD, associate professor in the institute for health and equity, division of bioethics, Medical College of Wisconsin

Dr. Spellacy is the Ursula von der Ruhr Chair in Bioethics at MCW. He will be helping us move beyond the slogans and bumper stickers in the ethical debates around these technologies and equipping us to engage in meaningful discussion about the ethical issues surrounding these technologies.



What we hope you walk away with tonight...

- An understanding of what Precision Medicine is and why these are exciting times
- An appreciation for your genome and how it plays a role in disease and can be used in treatment and preventative care
- An awareness for how genetic engineering plays a role in Precision Medicine and basic research to fill in the knowledge gaps
- A deeper grasp and optimism regarding stem cells and how they will one day contribute to treating cardiovascular disease
- Feeling empowered with your new knowledge and carrying some helpful tips on how to engage others in meaningful discussions on these topics



Believe the ads?



Medicine today is based on evidence-based epidemiology (population-level responses to a therapy)

Healthcare is about taking averages

Headache?
Adults: Take 2 aspirin

Shaq = 4 aspirin
Danica = 1 aspirin



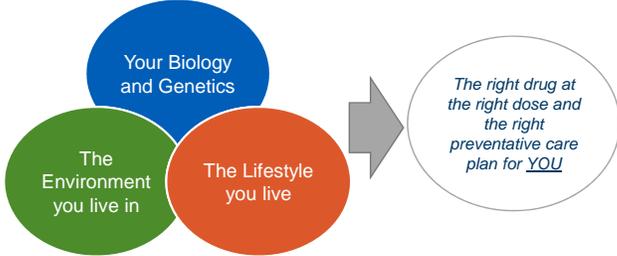
Out of 6 billion chemical units in their DNA, Shaq and Danica differ at only 4-6 million places (99.9% identical)




ADVANCING A HEALTHIER WISCONSIN ENDOWMENT

Slide credit to Howard Jacob, PhD, Hudson Alpha

Precision Medicine – a Goal





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Doesn't this seem obvious?

- Examples that have been around
 - Matching of blood types for transfusion
 - HLA matching of organ donor to recipient
 - Prescription eye glasses
- Researchers hope Precision Medicine will expand this to many more aspects of everyday healthcare




ADVANCING A HEALTHIER WISCONSIN ENDOWMENT

Precision Medicine Initiative



Mission: To enable a new era of medicine through research, technology, and policies that empower patients, researchers, and providers to work together toward development of individualized treatments.

Go find out more and participate!
<https://allofus.nih.gov/>

"And that's why we're here today. Because something called precision medicine ... gives us one of the greatest opportunities for new medical breakthroughs that we have ever seen."
President Barack Obama
January 30, 2015




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What's it going to take?

Sequencing 1,000,000 patients and following their medical histories... its a start

- 1) Filling in the gaps – understanding **roles of genes** and genetic variation
- 2) Improvement of cutting edge technologies – **stem cells, genetic engineering, big data, and artificial intelligence**
- 3) Public participation and acceptance through **conversation and overcoming ethical challenges**

Training health care providers and getting insurance to pay for it

