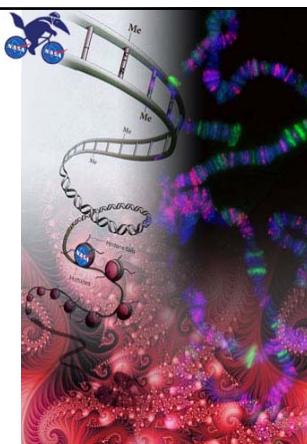


The Promise of Genomics and Epigenetics Studies In NASA Exercise Research

Shlomit Radom-Aizik PhD
Director, Pediatric Exercise and Genomics Research Center (PERC)

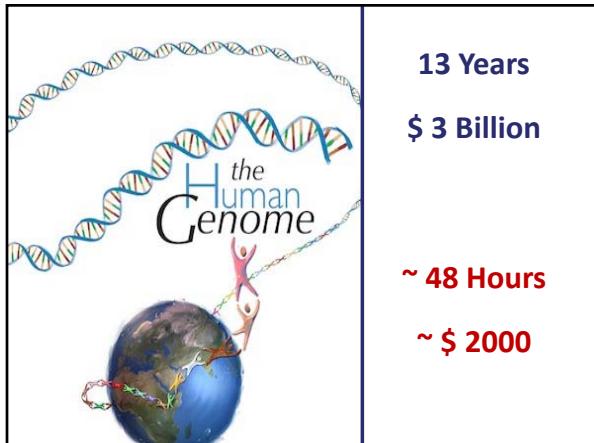




Goals for Today's Talk

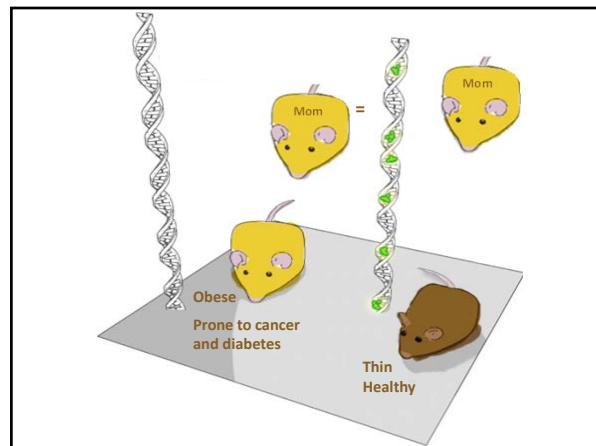
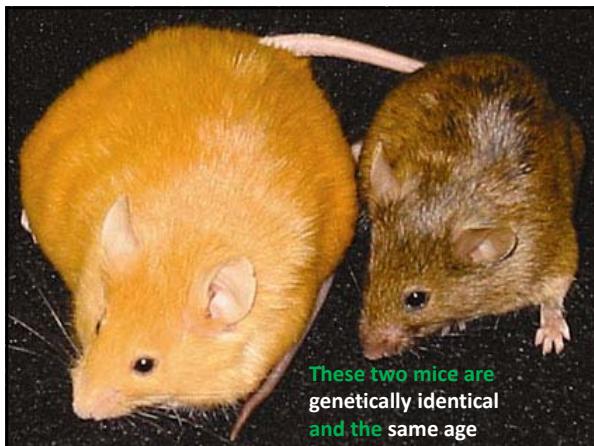
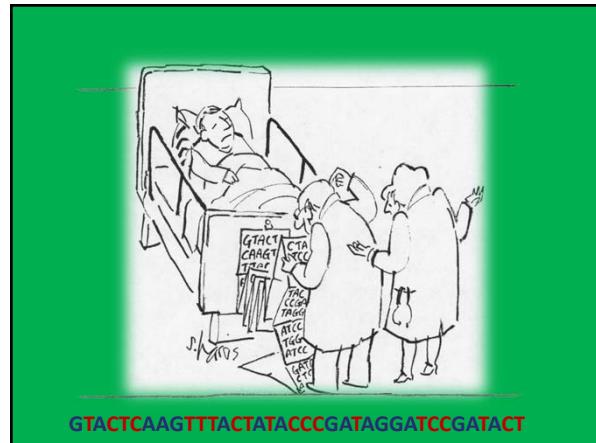


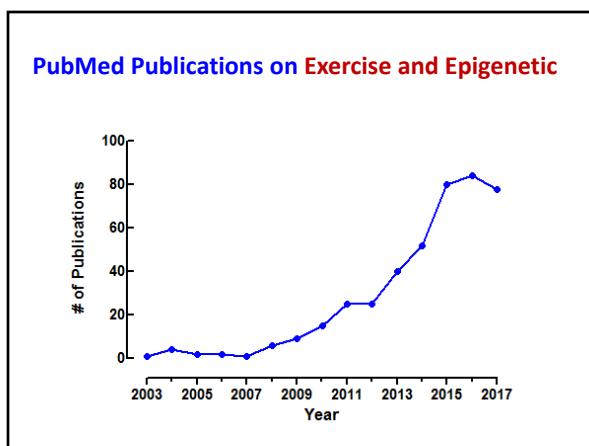
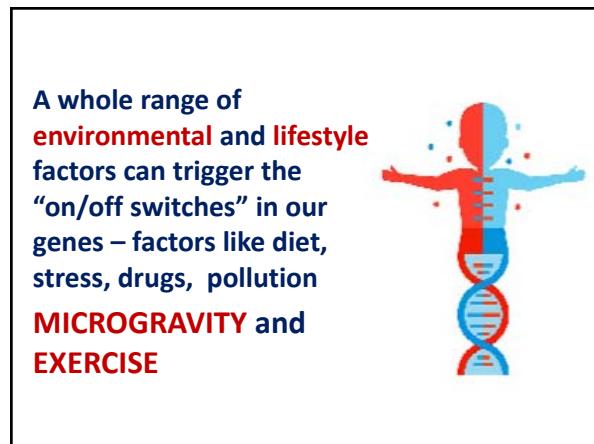
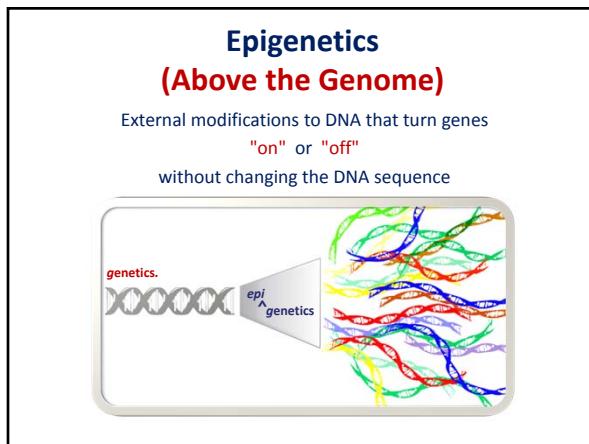
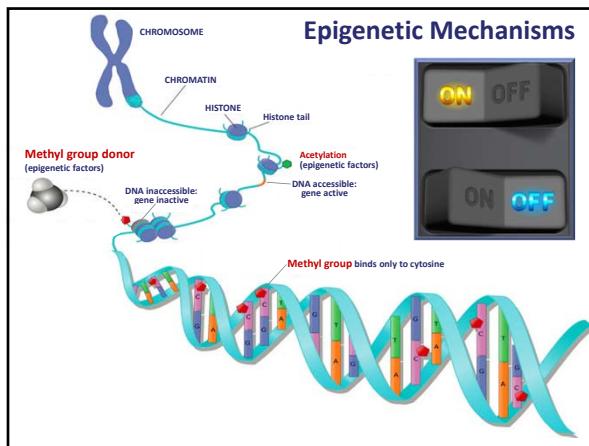
- Genomics and Epigenetics
relevant concepts in the evolving field
- MoTrPAC; new NIH initiative and its connection to NASA exercise research
- Current genomic and epigenetic studies in NASA exercise research

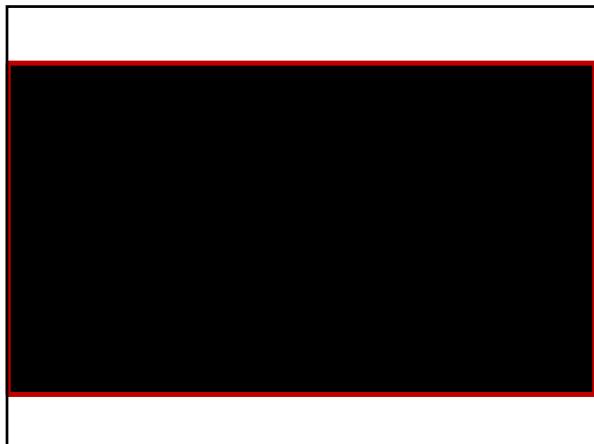


the Human Genome

13 Years
\$ 3 Billion
~ 48 Hours
~ \$ 2000







NIH common fund groundbreaking exercise trial to create the molecular map in response to exercise

NATIONAL INSTITUTES OF HEALTH

The Molecular Transducers of Physical Activity Consortium consists of 19 awards for research at 23 institutions

Adult/Pediatric Clinical Centers
Bioinformatics Center
Chemical Analysis Sites
Consortium Coordinating Center
Preclinical Study Sites



Molecular Transducers of Physical Activity Consortium (MoTrPAC)

Why now?

- Technology
- Databases-Big data

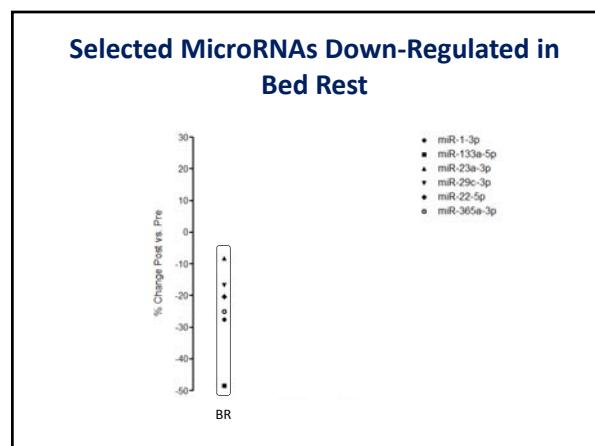
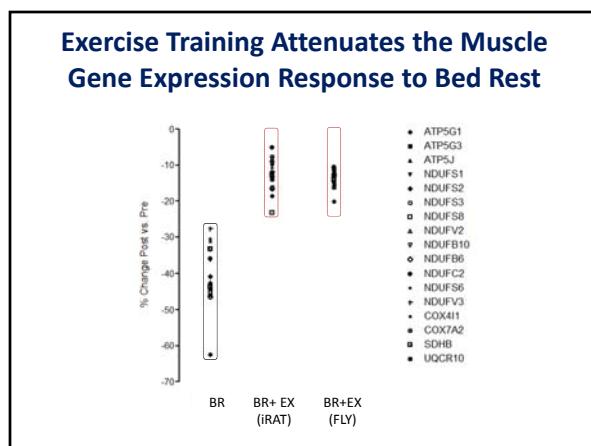
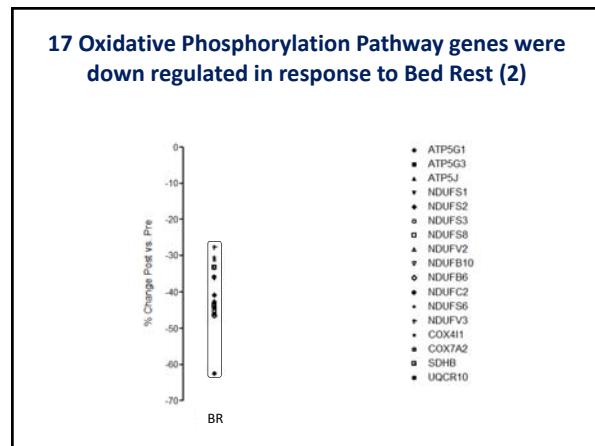
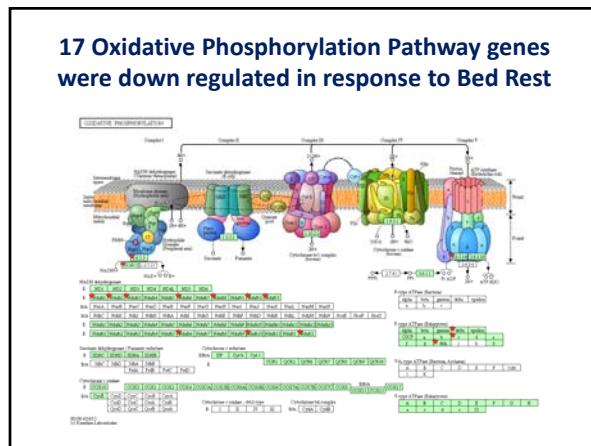
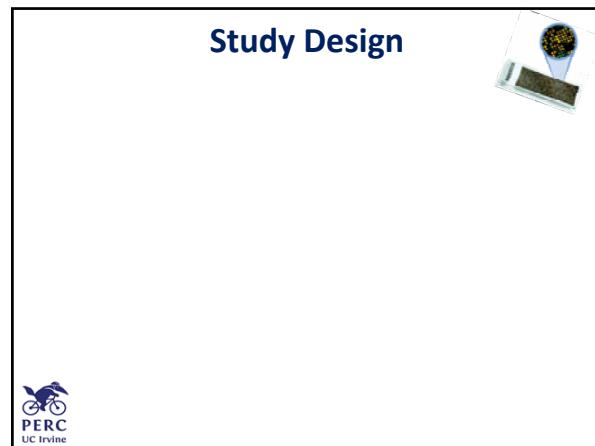
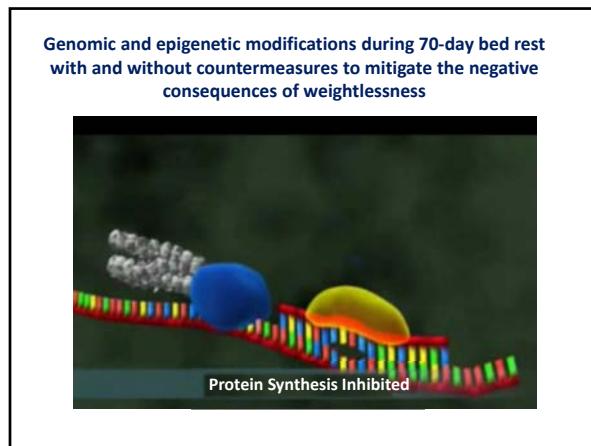
Long term goals:

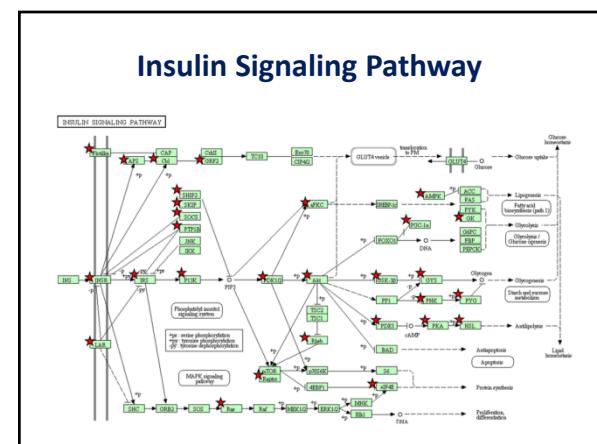
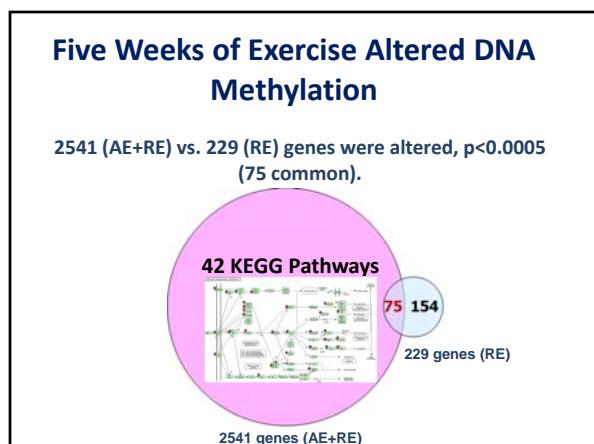
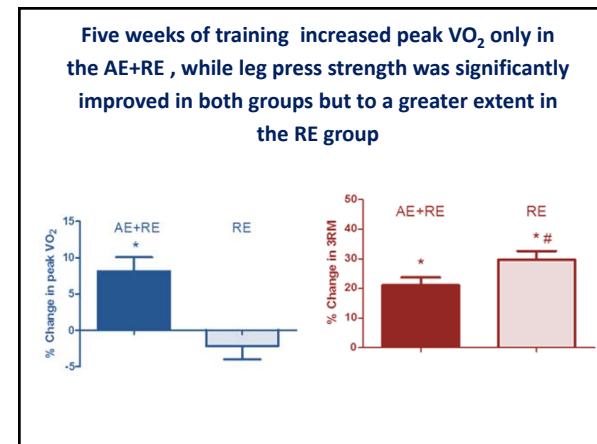
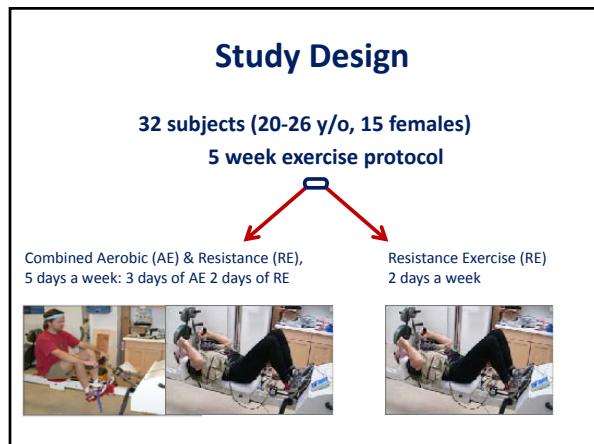
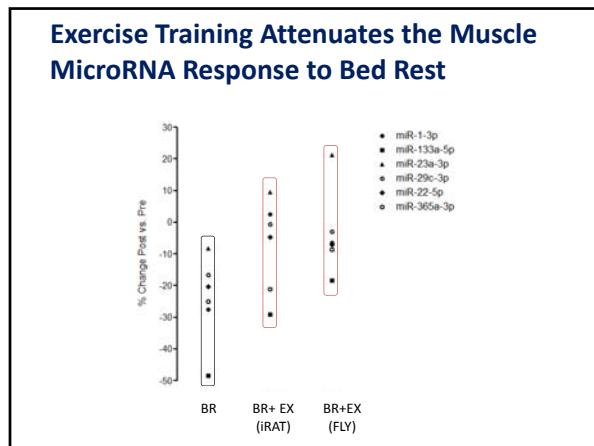
- Personalized exercise prescription
- Exercise medicine

By generating a **comprehensive map of molecular responses** to physical activity, MoTrPAC will lay the foundation for a new era of biomedical research on **Precision Exercise Medicine**.

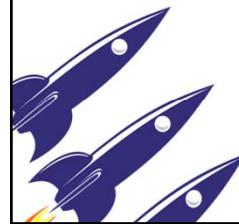
Current Genomic and Epigenetic Studies in NASA Exercise Research







Mapping the genomic responses to exercise in altered gravity conditions, will allow us to develop Precision Exercise-Medicine Programs to be used in space and maintain our astronauts health



Acknowledgments

University of California Irvine

Greg Adams PhD
PI, Integrated Endurance And Resistance Exercise Countermeasures To Unloading Induced Skeletal Muscle Dysfunction. NSBRI NCC 9-58-70 & MA01601
Lead researcher UCI site 70 day Bed Rest Study, MA02801
Fadia Haddad PhD
PERC Molecular Laboratory Manager
Cherryl Nugas
PERC Staff Research Associate
Tomasz Owerkowicz PhD
Project coordinator

George Washington University, Washington DC

Joseph M Devaney PhD
Biostatistician
Eric P Hoffman MD
Director Research Center for Genetic Medicine, Children's National Medical Center, Washington, DC



Pediatric Exercise and Genomics Research Center (PERC)

