DIVISION OF HEALTH SCIENCES AND HONORS COLLEGE MATCHING RECEPTION
Schedule

• Opening Remarks
• College of Public Health and Human Sciences
• College of Veterinary Medicine
• College of Pharmacy

• Mixer-reception in lobby
What is undergraduate research?

Undergraduate research:

An inquiry or investigation conducted by an undergraduate student that makes an original intellectual or creative contribution to their discipline

Slide courtesy of Prof. Harriet Nemhhard
Student benefits of undergraduate research

• Engages and empowers students in hands-on learning

• Enhances the student learning experience through mentoring relationships with faculty

• Provides effective career preparation

• Promotes interest in graduate education

• Develops critical thinking, creativity, problem solving, self confidence, and intellectual independence

Source: Council on Undergraduate Research. Dr. Nancy Hensel, Executive Officer; slide courtesy of Prof. Harriet Nembhard
Honors College resources

• HC Advisors! (and assistant dean)
• Extensive online resources: https://honors.oregonstate.edu/current/thesis
• HC 408 series

• Thesis mentor
• Departmental/College advisors
• Previous students, current students
College of Public Health and Human Sciences

RESEARCH PORTFOLIO

Marie Harvey, DrPH, MPH, Associate Dean for Research
Signature Research Areas Span the Expertise and Disciplines of Our Faculty

• Health systems reform and health policy
• Healthy developmental processes and transitions across the lifespan
• Impact of environmental and occupational hazards on human health
• Optimal health through nutrition and physical activity
• Predictors and consequences of chronic diseases and the promotion of healthy behaviors
Faculty Make Significant Contributions to the Advancement of Scientific Knowledge

• Study individuals across the life course
• Focus on promoting health equity and reducing health disparities
• Conduct both basic and applied research
• Translate research finding into practice to influence policies and programs in real-world settings
Self-Regulation Promotes Thriving

- Self-Regulation Promotes the Five Cs of Positive Youth Development
  - Competence, Confidence, Character, Caring, Connection
  - Leads to a sixth C of Contribution
- Extensions
  - International: Belize, Czech Republic, Costa Rica, El Salvador, Iceland, Norway, Slovak Republic
  - New population: Immigrants and Refugees

John Geldhof; 470 Waldo Hall; john.geldhof@oregonstate.edu
Families and Poverty in Oregon

David W. Rothwell
Assistant Professor
Human Development & Family Sciences

• College of Public Health and Human Sciences
Families and Poverty
Assistant Professor David W. Rothwell, PhD

Contact me to study these questions:

- Why is poverty important and how do we measure poverty?
- Why has rural poverty risen so much in the past 25 years?
- How do changing family structures, economies, and policies affect the poverty rate?
- How does poverty in Oregon compare to other states? How does poverty in the US compare to other countries?

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Translational Metabolism Research Laboratory

Sean Newsom & Matt Robinson

Assistant Professors

• College of Public Health and Human Sciences
Translational Metabolism Research
School of Biological and Population Health Sciences

Yumie Takata
Assistant Professor

• College of Public Health and Human Sciences
Epidemiologist: “Disease Detective”
Nutrition and Cancer
Work with Data
Interpret Research Findings
Can Help with Nutrition Policy

Yumie Takata, PhD
yumie.takata@oregonstate.edu
Nutrition and Epidemiology Programs,
School of Biological and Population Health
Sciences
College of Public Health and Human Sciences
School of Biological and Population Health Sciences

Victor Bovbjerg
Professor and Coordinator

• College of Public Health and Human Sciences
Recent student projects

- Cross-cultural medical care
- Defibrillator knowledge and use
- Nutrition and pregnancy outcomes
- Predictors of cancer outcomes
- Integrated medicine
- Social support and diabetes control

Current research

- Injury prevention and control
- Athletic injuries
- Occupational health
- Community and ecosystem health

Viktor Bovbjerg: viktor.Bovbjerg@oregonstate.edu
How you may work with me

*Thesis, internship, field work*

1. Focus group and interviews with USDA multistate research team
2. Cloud-based data management customization with Computer Scientists
3. Nutrition/Health promotion game development with EdTech experts
4. Develop life-skill team building workshops for high school athletes
5. Develop WAVE Project resource webpage with IT experts
6. Train youth/adult educators & volunteers – Curriculum/Cooking
7. Field test 3D animation games, sports nutrition curriculum, survey instruments, cloud-based data management system with OSU Extension
For more information about additional PHHS research mentors. Click here.
Oregon State University College of Pharmacy

http://pharmacy.oregonstate.edu/
Evolution of Pharmacotherapy

Pharmaceutical Sciences

Disease

Disease Understanding

Drug Discovery

Drug Validation

Drug Toxicity

Drug Formulation

Patient Management

Pharmacy Practice

Drug Outcomes

Paying for Drugs

http://pharmacy.oregonstate.edu/

Crouzon Syndrome

Wild-type  Bcl11b<sup>+/−</sup>
Pharmacy Practice-based Research

Community Rx
Ambulatory Care
Mental Health
Inpatient
(Corvallis-based)
Natural Products Drug Discovery

Anti-infectives
Anti-cancer
Cardiovascular

Ishmael Mahmud McPhail Philmus Proteau

Sikora Stevens Yin Zielke Zabriskie
Cell Signaling & Gene Expression
Microbiome

Cell signaling

Systems Pharmacology
Gene Expression/Disease
Microbiome

Brown
David
Filtz
Indra
Indra
Kioussi
Leid
Morgun
Cell Signaling & Gene Expression
Microbiome

Cell signaling
Systems Pharmacology
Gene Expression/Disease
Microbiome

Arup Indra
From Eczema to Melanoma

Identify Cause

Cure disease

Leid and Indras

Ctip2-/- Ctip2ep-/-

Eczema : itch

Identify prognostic biomarkers

Lipidomics by UPLC-TOF-MS.

Arup K. Indra, Ph.D.
Co-director, OHSU-OSU Cancer Prevention and Control Initiative
Director, Graduate Admissions
Associate Professor | Department of Pharmaceutical Sciences
OSU-OHSU College of Pharmacy
Department of Dermatology, OHSU
Member, Knight Cancer Institute, OHSU
Affiliate Principal Investigator, Linus Pauling Institute, OSU

Dial @ 75775 Arup.indra@oregonstate.edu
From Eczema to Melanoma

Reduced Lymph Node invasion after targeted drug delivery

Leung et al., Journal of Clinical Investigation, 2004

Eczema: itch
Melanoma: beast

Identify Cause

Cure disease

Bioactive synthetic compounds kill human melanoma cells

Vehicle Aminocyclopentitols

Reduced Lymph Node invasion after targeted drug delivery

Vehicle Aminocyclopentitols

Bioactive synthetic compounds kill human melanoma cells

Vehicle Aminocyclopentitols

Bioactive synthetic compounds kill human melanoma cells

Lipidomics by UPLC-TOF/MS

Leid and Indras

Cure disease

Mahmud & Indra

Vehicle

Drug

Cure disease

Vehicle

Dial @ 75775 Arup.indra@oregonstate.edu

Leung et al., Journal of Clinical Investigation, 2004

From Eczema to Melanoma

Reduced Lymph Node invasion after targeted drug delivery

Leung et al., Journal of Clinical Investigation, 2004

From Eczema to Melanoma

Reduced Lymph Node invasion after targeted drug delivery

Reduced Lymph Node invasion after targeted drug delivery
DNA  RNA  PROTEIN

Gut-brain axis: Anxiety & Autism Spectrum Disorder

Development of bioinformatics & analytics tools for microbiome data

MICROBIOME DATA ANALYSIS:
- Bio-informatics: QC, assembly, annotation
- Multi-Omics analysis
- Multivariate analysis, Machine learning

Maude David
Microbiology & Pharmacy
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Oregon State University
The Autism Microbiome Project:
A crowdsourced study to assess the impact of the gut microbiome in Autism Spectrum Disorder

MICROBIOME DATA ANALYSIS:
- 16S data (ribosome)
- Associated pathways
- ASD Severity Biomarkers

ASD diagnosis confirmation with Digital Phenotype Score (Machine Learning)
(1) parent-directed questionnaire
(2) Videos based classifier

DIET + LIFESTYLE DATA

maude.david@oregonstate.edu
FOAM database update
⇒ Development of new annotation methods
⇒ Alignments of sequences
⇒ Hidden Markov Models

Tera-Terra: Deep soil metagenomes sequencing analysis

Autism Spectrum Disorder
- Meta-analysis of 16S microbiome datasets
- Calling Exact Sequence Variants
- Biomarkers Validation

Soil Multi-Omics analysis
- Identify pathways to test in mice
- Rank metabolites of interest (blood-brain barrier)
- Collaborate with Neuroscientists
- Design the experiment

Metabolites on mice behaviour

Anxiety Disorders
- Campus-wide crowdsourced initiative
- Mobile assessment
- Study & Kits Design
- IRB submission

Projects:

STATISTICS

BIOINFORMATICS

CLUSTER

CLINICAL DESIGN

MICROBIOLOGY

Prestat, David et al., NAR 2014

Collins et al., nature 2012
College of Veterinary Medicine

Luiz Bermudez
College of Veterinary Medicine

Research Opportunities
Ares of Research

1. Infectious Diseases (several)
2. Immune-nutrition
3. Immunology
4. Neuroscience (memory, epilepsy, electrophysiology)
5. Reproduction
6. Oncology (dog tumors)
7. Microbiome
8. Stem Cell Research
Projects

...MANY OF THEM

Talk to me about your interests

Also, you can contact me via e-mail:
luiz.bermudez@oregonstate.edu
Circadian Clocks in Reproduction and Cancer

Dr. Patrick Chappell, Dept. of Biomedical Sciences
patrick.chappell@oregonstate.edu 541-737-5361

Project 1: Epigenetic effects of light at night (LAN) on mouse mammary

- Do changes in methylation translate into changes in gene expression and protein abundance?
- Does genetic ablation of the clock in mammary exacerbate epigenetic changes?

Project 2: Effects of estrogen on intracellular circadian clocks in reproductive axis

- RNA-seq: What genes are selectively activated/repressed by E2 in each cell type?
- Peptide assays: What does KP secretion look like under varying E2 conditions?