



# Center for Global Child Health Research

*Thriving Brains and Bodies*  
*Nutrition From Conception Through Infancy*

April 13-14<sup>th</sup>, 2022

OHSU Auditorium (aka "The Old Library" 3286 SW  
Research Drive  
Portland, Oregon USA  
97239

# APRIL 13

When we launched the Center for Global Child Health Research in March 2019, it was with a commitment to improving outcomes for child health worldwide, especially in resource-limited settings and populations. Collaboration, conversation, connection—they were and are our watch words. With our first annual symposium—*Thriving Brains and Bodies: Nutrition From Conception Through Infancy*—we're excited to open our doors to the global child health research community within Oregon Health & Science University and beyond.

4pm Keynote

**Mark Manary** MD  
Helene Roberson Professor of Pediatrics  
Washington University School of Medicine

*“Wasting and Cognition: Strategies to Heal Both Brain and Body”*

Introduced by **Christina Lancioni** MD

5:15p Poster session and reception

# APRIL 14

## Malnutrition worldwide: from severe wasting to obesity

**Indi Trehan** MD MPH DTM&H (University of Washington)  
“A Global Malnutrition Whirlwind Tour”

**Joanna Cummings** MS RD-AP CNSC (OHSU)  
“Educating Clinical Nutrition Specialists to Treat Malnutrition in Lao PDR”

**Amy Valent** DO (OHSU)  
“Eating for the ‘quality’ of two: transgenerational impacts of nutrition”

**Brooke Napier** MD (OHSU)  
“Regulation of innate immune memory by saturated fatty acids”

Panel moderated by **Diane Stadler** PhD RDN LD

11:30am Lunch (Catered box lunches)

## Breastmilk & gastrointestinal health

**Shelley McGuire** PhD (University of Idaho / Washington State University)  
“The human milk microbiome: what’s normal?”

**Sarah Andres** PhD (OHSU)  
“Building healthy barriers: the infant gut in health and disease”

**Dave Dallas** PhD (Oregon State University)  
“Digestive survival of human proteins and release of antimicrobial and immunomodulatory milk peptides in infants”

**J. Bruce German** PhD (University of California, Davis)  
“Milk: The Rosetta Stone for Diet and Health”

Panel moderated by **Brian Scottoline** MD PhD

## Environmental stress, neurodevelopment, & mental health

**Elinor Sullivan** PhD (OHSU)  
“The Influence of Maternal Nutrition and Metabolic State on Offspring Risk for Psychiatric Disorders”

**Alice Graham** PhD (OHSU)  
“Advancing understanding of prenatal influences on neurodevelopment”

**Jeff Measelle** PhD (University of Oregon)  
“Thiamine supplementation for lactating mothers improves neurocognitive outcomes in Cambodian infants at risk of thiamine deficiency”

**Philip Fisher** PhD (Stanford University)  
“Food insecurity and hunger among households with young children and the early childhood workforce during the pandemic”

Panel moderated by **Daniel Marks** MD PhD

9:30-11:30am

12:30-2:30pm

2:45-4:45pm



# PARKING

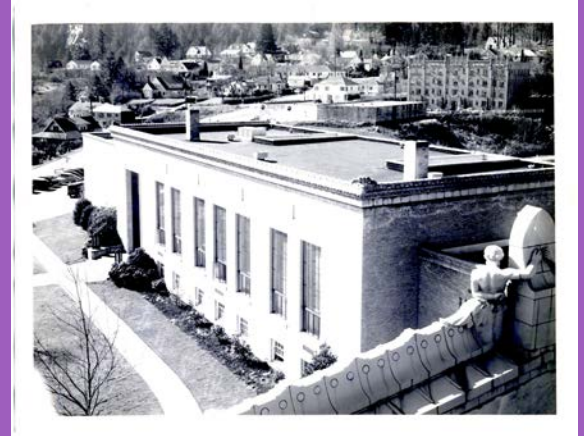
Free parking is available for the event near the venue at Garage D (please see map, next page). There will be parking attendants on hand during April 13 from 4-7pm and April 14 from 8:30-10am. Garage D will not be accessible to the public after 10am, Thursday.

# VACCINATION POLICY

It is OHSU's policy that all attendees of an OHSU sponsored event are either fully vaccinated or have received a negative PCR test within 48 hours of an events. By attending this event, you agree to be in compliance with this policy. *The registration list you sign upon arriving will serve as your attestation.*

# VENUE

The Auditorium/Old Library building, dedicated on June 7, 1940, was the first library building on the Marquam Hill campus of University of Oregon Medical School (now OHSU). Construction began in December 1938, and the Library moved into the new building in October 1939. In the twenty-first century,



*The Old Library, Marquam Hill Campus, taken from the roof of Mackenzie Hall, c. 1939. Partial view of the neighborhood surrounding the Medical School. Image is facing southwest.*

the building came to house event and conference space, library storage, the Teaching and Learning Center, the Office for International Affairs, and the Student Access office.

## *Thriving Brains and Bodies* **Nutrition From Conception Through Infancy**

**Director** David Lewinsohn

**Assistant Director** Deborah Lewinsohn

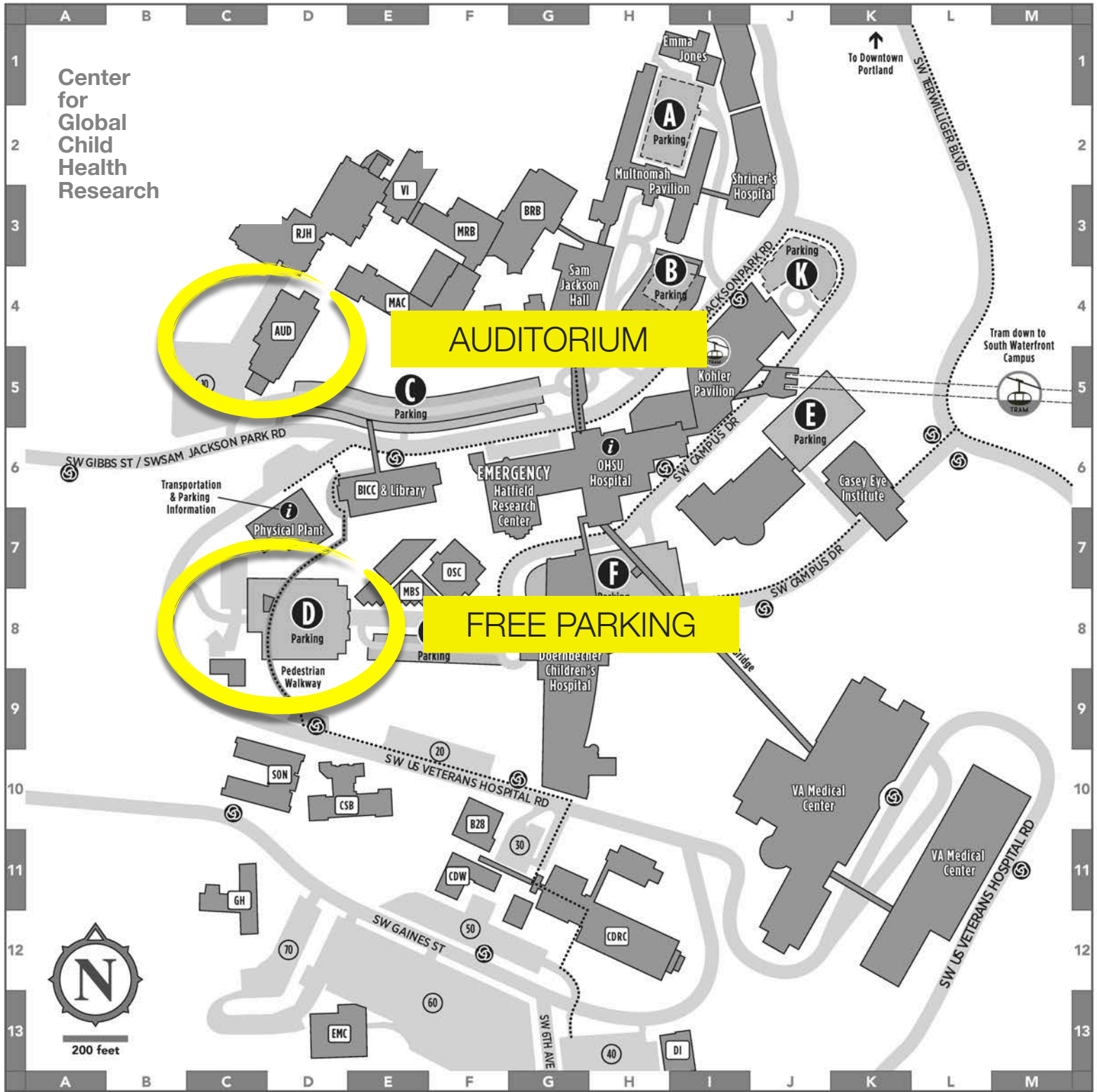
**Symposium Co-Chairs** Christina Lancioni  
Daniel Marks  
Brian Scottoline  
Diane Stadler

**Finance and Budget** Lynne Swarbrick

**OHSU Liaison** Caroline Saxe  
**Audio and Video** Mitch Carter  
**Coordination** Andrew Stout

Special thanks to Zoë Fanning, Marika Fugate, Paula Muessle, Eva Niehaus, Donna Wegner,





Baird Hall	BH F-4	CDRC Child Development & Rehabilitation Center West	CDW F-11	Kohler Pavilion	I-5	Physicians Pavilion	H-4
BICC Biomedical Information & Communication Center & Library	BICC E-6	Dillehunt Hall	DH G-4	Mackenzie Hall	MAC E-4	Richard T. Jones Hall	RJH D-3
Biomedical Research Building	BRB G-3	Doernbecher Children's Hospital	G-8	Medical Research Building	MRB F-3	Sam Jackson Hall	G-4
Building 28	B28 F-10	Dotter Institute	DI H-13	Modular Office Building	MBS E-7	School of Nursing	SON D-10
Campus Services Building	CSB E-10	Emma Jones Hall	I-1	Multnomah Pavilion	H-3	Shriner's Hospital for Children	J-2
Casey Eye Institute	K-6	Energy Management Center	EM C E-13	OHSU Auditorium	AUD D-4	Transportation & Parking	i D-7
CDRC Child Development & Rehabilitation Center	CDRC H-12	EMERGENCY	F-6	OHSU Hospital	i H-6	VA Medical Center	J-10
		Gaines Hall	GH C-11	OHSU Student Center	OSC F-7	Vollum Institute	VI E-3
		Hatfield Research Center	F-6	Physical Plant	D-7		

# MARQUAM HILL CAMPUS

- Parking Garage
- Information
- Tram
- Permit Parking Lot
- TriMet Bus Stop
- Walking Route

## DRIVING DIRECTIONS TO MARQUAM HILL

OHSU interactive map: [www.ohsu.edu/map](http://www.ohsu.edu/map)

### From Lake Oswego/Sellwood Bridge area

- Travel north on S.W. Macadam Ave.
- Turn left onto S.W. Boundary St.
- Proceed one block and turn right onto S.W. Corbett Ave.
- Turn left onto S.W. Hamilton St.
- Turn right onto S.W. Barbur Blvd. and continue for approximately 2.5 miles.
- Make a sharp left onto S.W. Caruthers St.
- Turn left at the second light onto S.W. 6th Ave.

### From the west

- Travel east on Hwy. 26/Sunset Hwy.
- Stay in the right lane and follow the signs to I-405 (Salem/The Dalles).
- After passing through the Vista Ridge tunnel, stay to the right as the freeway branches.
- Take the 6th Ave. exit.
- Turn right onto S.W. 6th Ave., following signs to OHSU.

### From the east

- Travel west on I-84. Follow signs to I-5 south (Salem).
- Cross the Marquam Bridge and merge into one of the two left lanes to City Center/Beaverton.
- Take the S.W. 6th Ave. exit. Immediately move to the left lane and turn onto S.W. College St. (or the next street that allows a left turn).
- Turn left onto S.W. Broadway Ave. and move to the right lane.
- Bear right onto S.W. 6th Ave., following signs to OHSU.

### From the south via I-5

- Travel north on I-5.
- Take exit 297 (Terwilliger Blvd).
- Turn left at stop light onto S.W. Terwilliger Blvd.
- Turn right onto S.W. Barbur Blvd. and continue for approximately 3 miles.
- Make a sharp left onto S.W. Caruthers St.
- Turn left at the second light onto S.W. 6th Ave.

### From the south using S.W. Barbur Blvd.

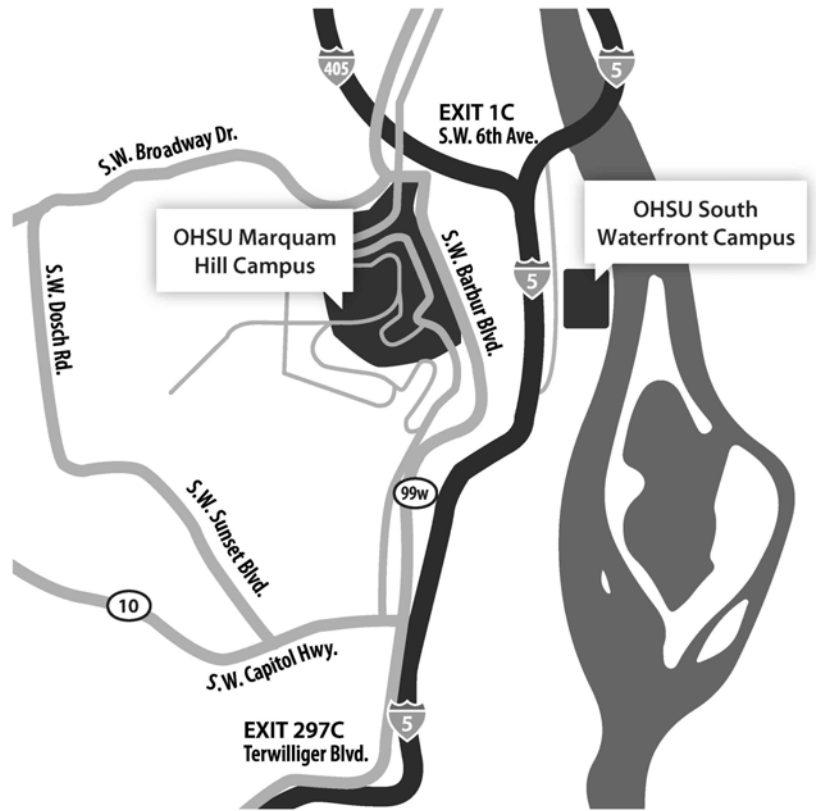
- Travel north on S.W. Barbur Blvd.
- Make a sharp left onto S.W. Caruthers St.
- Turn left at the second light onto S.W. 6th Ave.

### From the southeast

- Travel west on S.E. Powell Blvd.
- Cross the Ross Island Bridge and take the City Center exit.
- Stay in the left lane and merge onto S.W. Kelly, which will turn into S.W. Arthur.
- After crossing S.W. Barbur Blvd., bear left onto S.W. Caruthers.
- Turn left onto S.W. 6th Ave.

### From the north

- Travel south on I-5 toward Salem.
- Cross the Marquam Bridge and merge into one of the two left lanes to City Center/Beaverton.
- Take the S.W. 6th Ave exit. Immediately move to the left lane and turn onto S.W. College St. (or the next street that allows a left turn).
- Turn left onto S.W. Broadway Ave. and move to the right lane.
- Bear right onto S.W. 6th Ave, following signs to OHSU.



# PASSION CANNOT BE TAUGHT, BUT IT CAN BE MODELED.

## *A conversation with Mark Manary MD*

On a Friday in March, it's 5am in Portland, 7am in St. Louis, and 2pm in Blantyre, Malawi, where Dr. Mark Manary will land tomorrow.

But first, a quick chat by phone.

Since 1985, Dr. Manary has dedicated his life to food security and health in Africa. He has conducted dozens of clinical trials in Africa and is the founder of a non-profit, Project Peanut Butter.

Across the world, severe acute malnutrition is the largest killer of children under five years of age, associated with nearly half of all childhood deaths. The current standard of care for this condition is ready-to-use therapeutic food (RUTF). Dr. Manary and his team developed and trialed the first RUTF and continue to improve RUTF and, through Project Peanut Butter, produces RUTF at local factories in Malawi, Sierra Leone, Ghana and the Ivory Coast.

Dr. Manary received the distinguished honor of Academic Humanitarian Physician of the Year by American Association of Medical Colleges in 2004; the World of Children Health Award in 2007; and he is a Fulbright Scholar. When he lands in Malawi, he will continue the work that has not only earned him a reputation as one of the world's foremost experts in childhood malnutrition but keeps him on the vanguard in search for solutions.

When the Center connected with Dr. Manary to plan his key note for our 2022 symposium, the conversation turned toward the collaborative nature of his work. The following is an edit of a discussion we started that morning and continued through email while he was in Africa.

*CENTER FOR GLOBAL CHILD  
HEALTH RESEARCH What ques-  
tions do students and mentees*

*Dr. Manary is the Helene Roberson Professor of Pediatrics at Washington University School of Medicine in St. Louis. His keynote address, "Wasting and cognition: strategies to heal both brain and body" opens the symposium at 4pm PST, April 13, at the Old Library.*

*often not ask you that they should? What aspects of work in global health are often overlooked if you're viewing it from the outside?*

MARK MANARY Students and mentees should ask themselves why they want to do this work and if that reason can sustain them through the difficult times. A genuine desire to give of yourself is needed to actually impact any sit-

For example, there is often a misconception that malnutrition is due to ignorance or lack of education on healthy food choices, or a breakdown of the caring structure of the family unit. In reality, it is more often due to lack of access to food, lack of resources to procure food, or a very seemingly common event that tips the scales to undernutrition. Examples of this might be a sister that loses her husband and has to stay with a fam-

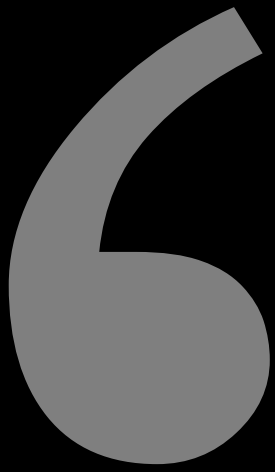
*Some of our most successful and competent collaborators and colleagues have just a high school education. It is important to treat everyone with dignity and give them the chance to do the work.*

-uation, and most certainly this is the case in global health. Self-motivation is necessary, and a facile, creative, active manner of working is needed. In many situations you are a singular provider of the health services and given this, you must continue on every day. In order to devise effective approaches, you must understand the daily constraints and what leads to the health need.

-ily member for an extended period of time, and the resources available to this family member are insufficient to feed everyone.

*CENTER You've spoken very graciously of your collaborators and colleagues in Africa. For someone embarking on their first trip overseas for field work, what advice can you give them as they begin building their global team?*

*(Continued on page 23)*



**In Lao, 34%  
of children  
under five  
years of  
age are  
stunted and  
27% are  
underweight.**

—Joanna Cummings, MS, RD-AP, CNSC  
“Children of Sticky Rice”

Malnutrition Worldwide



**Indi Trehan MD MPH**

Associate Professor of Pediatric Emergency  
Medicine and Infectious Diseases  
Adjunct Associate Professor of Global Health  
and Epidemiology  
University of Washington

# A Global Malnutrition Whirlwind Tour

Day Two of the symposium leads off with a primer of nutrition and global health. Dr. Trehan's talk will briefly introduce some of the various forms of malnutrition across the life cycle as a means of setting the stage for the more detailed talks to follow during the course of the symposium.



9:30am

Thursday, April 14<sup>th</sup>

**Joanna Cummings** MS RD-AP CNSC  
Associate Dietetic Internship Director, Graduate  
Programs in Human Nutrition  
OHSU

# Children of Sticky Rice

*Educating Clinical  
Nutrition Specialists to  
Treat Malnutrition in Lao  
PDR*

To address malnutrition, the government of Lao PDR, the US government, and OHSU partnered to establish the National Institute of Nutrition (NIN). The curriculum includes nutrition assessment, diagnosis, Nutrition Focused Physical Exam techniques, counseling, intervention, and follow-up.

Joanna Cummings' talk will provide an overview of the program's design and achievements to date.



9:50am

Thursday, April 14<sup>th</sup>

# Eating for the 'quality' of two:

## *Transgenerational impacts of nutrition*

Nutrient-poor diets during pregnancy are associated with abnormal baby growth patterns in the womb, which can lead to long-term childhood and adult health risks. Consuming nutrient-dense food choices as part of healthy eating patterns prior to pregnancy and continuing throughout gestation can help reduce pregnancy complications and support healthy offspring development.

**Amy Valent DO**

Assistant Professor  
Division of Maternal-Fetal Medicine  
Department of Obstetrics & Gynecology  
OHSU

10:10am  
Thursday, April 14<sup>th</sup>

# Brooke Napier <sup>PhD</sup>

Assistant Professor  
Department of Biology  
Portland State University


## *Regulation of innate immune memory by saturated fatty acids*

Westernized countries are heavily dependent on diets enriched in saturated fatty acids (SFAs); however, most research models of inflammation and infection are carried out in mice fed a low-SFA diet, creating a scenario that overlooks SFA-dependent control of disease outcome.

In Dr. Napier's talk, she identifies a previously unrecognized role of dietary SFAs, specifically palmitic acid (PA), in inducing a broad and long-lived innate immune memory response which is harmful during an acute septic response, but beneficial for pathogen clearance during systemic infection.

10:30am

Thursday, April 14<sup>th</sup>



**Only 41% of infants aged 0-6 months are exclusively breastfed, despite an abundance of scientific evidence outlining the benefits of breastfeeding.**

— Sarah Andres, PhD  
“Building Healthy Barriers”

# Shelley McGuire <sup>PhD</sup>

Director and Professor Margaret Ritchie  
School of Family and Consumer Sciences  
University of Idaho

## *The Human Milk Microbiome*

# What's Normal?

Once thought to be sterile, human milk has its own unique microbes that are likely important in helping establish the infant's gastrointestinal microbiome during early life.



12:30pm

Thursday, April 14<sup>th</sup>

# Building healthy barriers

## *The infant gut in health and disease*

The neonatal intestine forms early during development, but continues to mature right up to and even after birth. The single layer of epithelial cells that lines the surface of the intestine is the most rapidly renewing tissue in the human body. These cells are responsible for an incredible array of functions.

Dr. Andres' talk will incorporate the latest research findings in the field to describe the elegant sophistication of the neonatal intestinal epithelium; discuss the role of environmental factors, such as nutrients and microbes, in shaping the infant gut; and reveal a role for the intestinal epithelium in conditions such as malnutrition or diseases like necrotizing enterocolitis.

A black and white portrait of Sarah Andres, a woman with short, curly hair, smiling. She is wearing a dark blazer over a light-colored top with buttons.

## Sarah Andres <sup>PhD</sup>

Assistant Professor  
Pediatric GI Division and Papé Family  
Pediatric Research Institute  
OHSU

12:50pm

Thursday, April 14<sup>th</sup>

# *Digestive survival of human proteins and release of antimicrobial and immunomodulatory milk peptides in infants*

Milk proteins have evolved to benefit the suckling neonate. The extent to which most human milk proteins survive within the infant remains mostly unknown, and thus their bioactive potential is unclear. For many milk proteins, partial digestion releases fragments—peptides—with known antimicrobial, prebiotic, immune-modulating, calcium-delivery, antihypertensive, and pain-modulating activities. The extent to which these peptides survive within the digestive tract need to be further examined to determine their biological relevance.

Dr. Dallas' objective is to determine the survival of milk proteins and release of bioactive peptides in the intestine of human infants. Through a process using mass spectrometry, Dr. Dallas' lab has identified an array of peptides released during digestion with antimicrobial and immunomodulatory actions.



## **Dave Dallas** PhD

Assistant Professor, Nutrition  
Program, College of Public Health  
and Human Sciences  
Oregon State University

1:10pm

Thursday, April 14<sup>th</sup>



## J. Bruce German, PhD

Professor, Foods for Health Institute  
University of California, Davis

# Milk

## *The Rosetta Stone for Diet and Health*

The evolutionary origin of lactation and the composition, structures and functions of milk's biopolymers highlight the Darwinian pressure on lactation as a complete, nourishing and protective diet. For example, milk contains free oligosaccharides; polymers of sugars whose stereospecific linkages are not matched by glycosidic enzymes within the infant. Hence, these glycan polymers travel to the lower intestine undigested.

In this microbe-rich environment, bacteria compete for the sugars via different hydrolytic strategies. One specific strain of bacteria, *Bifidobacteria longum* subspecies *infantis*, is uniquely equipped with a repertoire of enzymes capable of taking up, hydrolyzing, and metabolizing the complex glycans of human milk.



1:30pm

Thursday, April 14<sup>th</sup>

**18%** of families  
with young  
children  
reported  
experiencing  
hunger prior to  
the pandemic.  
By October  
2020, **30%** of  
families  
reported  
hunger.

— Phillip Fisher, PhD  
“Data from the RAPID survey project”

# *The Influence of Maternal Nutrition and Metabolic State on Offspring Risk for Psychiatric Disorders*

In recent decades, the prevalence of pediatric neurodevelopmental disorders such as attention deficit hyperactivity disorder and autism spectrum disorder have risen dramatically. Mounting evidence indicates an association between developmental exposure to maternal obesity and poor nutrition and increased risk of neurodevelopmental disorders. However, the mechanisms for this association remain unknown. Dr. Sullivan's work, using non-human primate models, demonstrates causal effects of maternal obesity and poor nutrition on offspring brain development and behavior, specifically increased anxious behaviors and impairments in social behavior.

Dr. Sullivan will present her hypothesis as well as the data and evidence her team has thus far mined in examining this potential essential link.


A portrait of Elinor Sullivan, a woman with long, wavy brown hair, wearing a dark blazer over a white top. She is smiling slightly and looking directly at the camera.

## **Elinor Sullivan** PhD

Associate Professor  
Departments of Psychiatry and Behavioral Neuroscience  
OHSU  
Division of Neuroscience  
Oregon National Primate Research Center

2:45pm

Thursday, April 14<sup>th</sup>

A portrait of Alice Graham, a woman with dark hair and glasses, smiling. The image is overlaid with a semi-transparent teal color.

## *Advancing understanding of prenatal influences on neurodevelopment*

This talk will focus on recent and upcoming efforts to advance understanding of the effects of prenatal conditions on brain development.

Stress sensitive aspects of the biology of a pregnant person and fetus create pathways through which the prenatal environment can impact the developing fetal brain. It is therefore not surprising that adverse conditions during pregnancy have repeatedly been associated with heightened risk for offspring development of psychiatric disorders.

The COVID-19 pandemic represents a unique stressor involving social isolation, instability in life circumstances, and threat of illness. Initial results from our ongoing longitudinal study of the effects of pandemic related stress on mental health during pregnancy and infant development will be presented with an emphasis on the importance of considering individual differences, variability in mental health symptoms over time, and specific factors that may mitigate or exacerbate effects of pandemic related stress on parents and infants.

The upcoming HEALthy Brain and Child Development Study, a national effort involving 25 sites around the country, will then be presented as a unique opportunity to further investigate how conditions during pregnancy and in the postnatal environment influence the developing brain.

**Alice Graham** PhD

Assistant Professor  
Department of Psychiatry  
OHSU

3:05pm

Thursday, April 14<sup>th</sup>

# *Thiamine supplementation for lactating mothers improves neurocognitive outcomes in Cambodian infants at risk of thiamine deficiency*

Women who must rely on mostly rice-based diets can have inadequate thiamine intake, placing their breastfed infants at risk of thiamine deficiency and, in turn, a range of physical and neurocognitive impairments. We investigated the impact of maternal thiamine supplementation on different aspects of infants' neurocognitive development across the first year of life.

In this double-blind, four-parallel-arm, randomized controlled trial, healthy mothers of exclusively breastfed newborn infants were recruited in Cambodia. At 2 weeks postnatal, women (n = 335) were randomized to one of four treatment groups to consume one capsule/day with varying amounts of thiamine for 22 weeks: 0, 1.2, 2.4, and 10 mg. At 2, 12, 24, and 52 weeks of age, infants' development was assessed with a variety of neurological and cognitive measures.

Maternal thiamine supplementation displayed a dose-response relationship to the magnitude of infants' improved neurocognitive development. However, only infants whose mothers received 10mg daily thiamine showed robust enhancements.

## **Jeffrey Measelle** PhD

Professor, Department of Psychology  
Co-Director, Center for Global Health  
University of Oregon

3:25pm

Thursday, April 14<sup>th</sup>

*Food insecurity and hunger among households with young children and the early childhood workforce during the pandemic*

## **Data from the RAPID survey project**

The RAPID-EC surveys have been gathering information from national samples of households with young children and child care providers since the start of the pandemic.

In this presentation Dr. Fisher will describe these results and related data from the RAPID-EC surveys, and consider how these experiences are affecting child well-being currently—as well as how they may affect the development of children who have lived through the pandemic across their lifespans.

**Phillip Fisher** PhD

Director of the Stanford Center on  
Early Childhood  
Graduate School of Education  
Stanford University

3:45pm

Thursday, April 14<sup>th</sup>

*(Continued from page 7)*

MANARY Set proper expectations. Understand that credentials and training are not indicative of an individual's ability or capacity. Some of our most successful and competent collaborators and colleagues have just a high school education. It is important to treat everyone with dignity and give them the chance to do the work.

Be a persistent empiricist. Nothing can get done if you are not persistent in striving toward your goals. Believe the results/ data from your research; they are telling you the truth. Truth is revealed in every well conducted study, whether hypotheses are proven or refuted. Unexpected results are an opportunity to make an advance.

*CENTER As their teacher, how do you empower a student to pursue the very consequential work of global health?*

MANARY Passion is necessary, it fuels the individual when the inevitable discouragements descend. Passion cannot be taught, passion can be modeled. We can inspire and encourage others to change the world for good, but a small dedicated group has to drive the process to realize improvement in the world. The group lends strength to its members.

Learn through doing. My students have told me "One of the wonderful things about you, Dr. Manary, is that you ask us to do the work and assume we will without any prior knowledge



*Still from YouTube*

or experience." This expectation frees one from past endeavors. If I challenge my students to commit to the work in spite of a lack of a step-by-step plan and to be resourceful, they will be empowered by their experiences and their life courses will be changed.

I encourage a student to live in the present; if one does not spend 90% of one's time, talent and material resources focused on a present problem, then one is squandering the available opportunity. Yesterday is gone and one does not know what tomorrow will bring.

When a student can move beyond the appreciation of suffering and misfortune to embark on the hard work of making the world a better place for others every day, then they are empowered. **END**

