



2019 - 2020

Biennial Report

Standing firmly at the intersection of the workplace and well-being since 1988.



Dede Montgomery, CIH, Senior Research Associate, Outreach and Education



L. Casey Chosewood, MD, MPH, the Director of the Office for *Total Worker Health*® at the National Institute for Occupational Safety and Health, responds to questions from the audience during a panel discussion at 2019 Fall Symposium on "Substance Use and the Workplace: Building safe and healthy workplaces for all employees." (From left) Pam Pearce, Nicole Bowles, PhD, L. Casey Chosewood, MD, MPH, Dennis McCarty, PhD, Jerry Gjesvold.

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Anjali Rameshbabu, PhD, (Right) interviews Dr. Alisha Moreland-Capuia for "What's Work Got To Do With It?" podcast episode.

About Us

Oregon Institute of Occupational Health Sciences is dedicated to improving the health and safety of the workforce. Since 1988 we have stood firmly at the intersection of the workplace and well-being. We are an internationally recognized team of scientists, and our work stretches from molecular-level research, to clinical studies, to programs in the workplace. With essential base funding through Oregon's Workers' Compensation system, we leverage this investment to obtain highly competitive

federal grants that bring in more than twice the dollars provided by the Oregon base funding, substantially magnifying our impact. While our research receives national and international acclaim, our goal is to create safe, healthy workplaces right here in Oregon. Our [Advisory Board](#) ensures stakeholder input to the direction of the Institute. Learn more about our accomplishments on our [website](#).


Message from Our Director



I am pleased to present our Institute's Biennial Report for 2019-2020, a period that includes the beginning, but sadly not yet the end, of the COVID-19 pandemic. Before this pandemic, our Institute had numerous notable achievements in biomedical research, education, outreach and dissemination as we worked to improve the lives of workers. The COVID-19 pandemic then came to affect almost every aspect of our lives, our work, our relationships and possibly our health and wellbeing. During this crisis, much of our research at OHSU had to temporarily stop, slow down, or change such that it could be done remotely. It then picked up quickly. Similarly, our education moved online to webinar formats and continued apace. In addition, our outreach and dissemination activities – which usually rely heavily on personal interactions, if anything, increased despite the physical distancing. We also became engaged in numerous activities and developing resources for Oregonians specific to the COVID-19 pandemic. Thus, we have been able to continue with our mission despite these challenges due to the proficiency, adaptability and dedication of the 91 staff members who have worked in our Institute across this 2-year period, and these accomplishments have been bolstered by the numerous collaborations and partnerships across Oregon and beyond.

Excerpts of our Institute's activities and accomplishments across this period are presented in this Biennial Report. Along with the varied and impressive profiles of some of our researchers, other more quantitative indicators of success include publishing 138 peer reviewed articles and garnering more than \$10M in investigator-initiated federal grant funds. In addition, for a complete picture, we hope that you visit our Institute's [website](#) for more information about our research, teaching, outreach, training and education and other resources that we have curated to help with the current COVID-19 crisis. I also invite you, as a stakeholder, a researcher, an educator, an employer, an employee, and/or a community member, to reach out to us to let us know if there are other ways we may be able to help improve the lives of your workers through our biomedical research, education or outreach.

Respectfully submitted on behalf of our Institute,

A handwritten signature in blue ink that reads "Steven A. Shea Ph.D.".

Steven A. Shea, PhD

Director, Oregon Institute of Occupational Health Sciences

Exposure Biology: Genome Instability and Human Disease



Doris Kretzschmar, PhD

Associate Professor, Oregon Institute of Occupational Health Sciences
Associate Professor, Molecular and Medical Genetics

We recently generated new models to study the role of Tau, a key protein in the development of Alzheimer's and neurodegenerative diseases. Over the last two years we obtained data that Tau affects the stability of DNA and the transcription of genes which provided the basis for further studies funded by a new grant from NIH. In addition, we established *Drosophila* as a model to investigate effects of botanicals on age-related changes like reduced locomotion and disrupted sleep. These studies are part of a collaborative effort to study the beneficial effects of botanicals using different animal models with the goal to identify plant extracts and compounds that promote resilience during aging. These studies have also recently been funded by a multidisciplinary project grant.



R. Stephen Lloyd, PhD

Associate Director for Basic Research
Professor, Oregon Institute of Occupational Health Sciences
Professor, Molecular and Medical Genetics

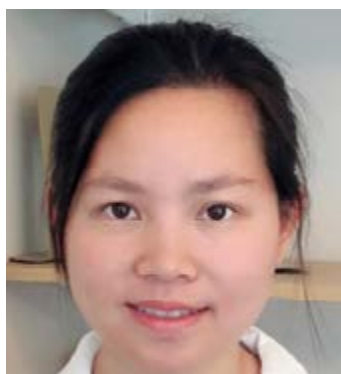
Human disease risk represents a very complex set of interacting factors, including environmental and work-place stress and chemical exposures as well as inter-individual differences in genetic composition. One of the best-documented outcomes of stress is the production of chemicals that have the capacity to damage the genetic material within cells. Although all cells have defenses and DNA repair mechanisms to combat this damage, the efficiencies with which cells can respond varies between individuals and thus can modify disease risk. Over the past year, we have had several publications characterizing inter-individual differences in DNA repair and the mechanisms through which maximizing repair can lead to prolonged health.

**Amanda K. McCullough, PhD**

Professor, Oregon Institute of Occupational Health Sciences
Associate Professor, Molecular and Medical Genetics

The research focus of my laboratory is on the biochemical mechanisms and regulation of DNA repair systems. The goal of this research is to translate basic science discoveries related to cellular DNA damage response pathways into actionable clinical interventions and improved therapeutic response. We made significant advances during 2019-2020 in our understanding of a novel druggable target for acute myeloid leukemia (AML). AML is a complex blood cell disease in which different genomic alterations define multiple subtypes that confer significant differences in patient prognoses. We have shown that deficiencies in a DNA repair enzyme make these cancer cells more susceptible to killing by conventional chemotherapy which suggests that small molecule inhibitors of this enzyme may be a beneficial therapeutic approach for AML.

I was honored to receive the 2019 Excellence in Graduate Education Award from the OHSU School of Medicine Graduate Studies. In addition, I was selected to participate in, and completed, the Center for the Improvement of Mentored Experiences in Research (CIMER) Train-the-Trainers Workshop: Facilitating Entering Mentoring, and am now one of 16 facilitators offering the CIMER training to OHSU graduate faculty.

**Xiaoquan Rao, PhD**

Assistant Professor, Oregon Institute of Occupational Health Sciences

My research focuses on the health effect of environmental pollutants such as particulate matter. Air pollution has been confirmed as an important risk factor for global mortality and cardiovascular disease. Our current projects aim to investigate the underlying mechanisms by which air pollutants promote diabetes and cardiovascular diseases. The laboratory utilizes state-of-the-art whole body mouse exposure systems and various molecular, physiologic, immunologic, and imaging approaches to dissect the role of inflammatory regulation and lipid oxidation in air pollution-associated cardiometabolic diseases.

Spotlight:
Caren Weinhouse PhD
Environmental Epidemiology



Pollution, climate change, and other environmental factors pose new challenges for the health and safety of the workforce. Dr. Weinhouse focuses her research program on mechanisms of transcriptional regulation and epigenetic patterning in response to environmental cues or stressors, with a particular emphasis on chemical pollutants.

Where are you from?

Detroit, Michigan. I went to a very diverse state school for undergrad (Wayne State University in Detroit) and then the University of Michigan in Ann Arbor for grad school. I really enjoyed both experiences for different reasons.

What is your field of research?

Environmental epigenetics. My research program focuses on the ways that environmental stressors can impact gene behavior. Each of your genes has its own "dimmer switch" that controls its activity. These dimmer switches are made up of chemical modifications to DNA called epigenetics, which can respond to the environment to change the activity of your genes without changing your DNA.

What are your big research questions?

My big research question is "How do environmental stressors cause these changes to epigenetics?" Right now, we have a lot of correlative evidence that shows that mice and people exposed to certain chemical pollutants have different epigenetics than their unexposed counterparts. But we don't know if the pollutant is causing those differences and if so, how it is doing that. So my two big questions in the lab right now are how much of those differences are actually due to the environmental exposure (vs. genetics or random differences) and how do our prior exposures to a variety of stressors influence the way that we will respond to future exposures?

How are you finding the answers to those questions?

I am answering the first question with a cool mouse study that lets me fractionate the portion of the epigenetic response that is due to random chance, genetics, environment, and a fourth option that we call gene-environment interactions - basically, an environmental effect that only occurs in people with certain genes and

not in others. In the second question, I am taking a broad view of the environment and focusing on cellular stress responses that respond to a wide variety of stressors, including natural fluctuations in the cell and also any external stressor that can impact the organism and therefore the cell - like nutrition, pollution, and psychosocial stressors. Using a mixture of next-generation sequencing and single-cell imaging approaches, I am asking whether the baseline epigenetics of cellular stress response genes are important for responsiveness and whether these genes can develop transcriptional memories after repeated exposures. A transcriptional memory is kind of like an immune memory, in that a cell will respond more quickly or more strongly (or, alternatively, less quickly or less strongly) in response to a second hit of a stressor as compared to an initial hit. The implications of this project are big - basically, if these genes behave the way that I think they do, people's total environmental burden over their lifetimes determine how they'll respond to future stressors, which has important social justice implications for those among us that are exposed disproportionately to pollution, poor diet, and psychosocial stress.

How did you get started in science?

I have always really enjoyed biology and understanding how living things work. I like that biology is a mix of awe-inducing complexity and innovation, and also surprising messiness. Biology is much less linear and predictable than chemistry or math, partly because it has evolved in response to our environments and partly because that messiness allows us to be flexible in response to new environments. I had a great mentor in undergrad named Bob Asking who studies extended longevity in fruit flies. He really made the time to encourage me and to talk out interesting science questions with me. That experience was pretty formative. I have

always wanted to work towards social justice, too, to make an impact on the world that would leave it better for others. The research that I do now is a great combination of figuring out how things work and working towards environmental justice.

Why did you choose OccHealthSci?

OccHealthSci is an incubator for translational research. It's a really unique place where people that focus on very fundamental biology and people that focus on very applied human health come together to produce work that is both detailed and mechanistic, and also relevant and useful to people. It's also a terrific place to be a new scientist - senior faculty are very invested in mentoring junior folks here and are very engaged in making sure that we succeed.

How will your research impact the future of Work?

Ultimately, I would like to see my work translated to human populations to improve human health. We know that complex diseases, like cardiovascular disease, diabetes and cancer, which are common and growing health problems in the workforce, have strong environmental risk factors, but we don't really understand how the environment increases risk for those diseases. Cellular stress responses usually don't work well in those diseases, which suggests that they might be important in disease development. My hope is that, if we understand how cellular stress responses work on the nitty-gritty level and how environmental exposures can affect how well we mount stress responses in our cells, we can better understand how the environment increases risk for those diseases and we can better prevent chronic disease disparities due to poor environments.

Sleep and Shiftwork: Impact on Health and Safety

**Charles N. Allen, Ph.D.**

Professor, Oregon Institute of Occupational Health Sciences
Professor, Behavioral Neuroscience

Circadian rhythms are 24-hour cycles in physiology regulated by the brain's suprachiasmatic nucleus (SCN). Neuronal network activity is required for the brain's circadian clock's proper function. We used a combination of electrophysiological and long-term imaging methods to study cellular mechanisms required for circadian clock function. We demonstrated that the circadian neural network uses endocannabinoids, adenosine, and gamma-aminobutyric acid (GABA) as intercellular signaling between SCN neurons and astrocytes. These signaling compounds synchronize the electrical activity and the molecular circadian clocks of the SCN neurons. These findings suggest that intercellular and possibly long-range SCN GABAergic signaling is essential for behavioral rhythmicity and proper functioning of the SCN neural network.

**Matthew P. Butler, Ph.D.**

Assistant Professor, Oregon Institute of Occupational Health Sciences

Disruptions of our internal body clocks and sleep, as often encountered by shift workers, increase the risk for disease. The goals in our laboratory are to understand how endogenous clocks in the body are synchronized, and how these regulate physiology and behavior. We use neuroendocrinology and behavior studies in mouse models and prospective and cross-sectional cohort studies to inform our approaches. Our current studies examine the mechanisms of androgen receptors and sex differences in the circadian clock. We have discovered a hormonal effect on light sensitivity and activity levels in mice. We are also examining the reproductive consequences of shift work and the gender differences in the association of sleep apnea, heart disease, and mortality.

**Andrew McHill, Ph.D.**

Research Assistant Professor, Oregon Institute of Occupational Health Sciences

My team has been active in uncovering potential mechanisms for poor cardiometabolic health and performance in individuals that work shiftwork schedules. To fund this research, I obtained 3 grants, including an NIH Career Development Award and two Oregon Clinical and Translational Research Institute awards, in collaboration with other members of the Institute. When the COVID-19 pandemic made conducting this research difficult, I pivoted to use the consequences of the pandemic on professional sports as a natural experiment to determine the impact of travel on athletic performance. These findings garnered much local and national attention, including the entire front page of the Sunday sports section of the Oregonian, Oregon's largest newspaper, and an interview on National Public Radio's "All Things Considered" radio show.

**Steven A. Shea, Ph.D.**

Director, Oregon Institute of Occupational Health Sciences
Professor Oregon Institute of Occupational Health Sciences
Professor, OHSU-PSU School of Public Health

Over the past two years our research team has performed numerous intensive physiological studies in the laboratory in human volunteers to help understand the effects of night shift work, sleep and stress upon health. In a typical laboratory experiment, we would have a volunteer stay in a laboratory suite for a week while we control the pattern and timing of all behaviors and assess any differences in physiological responses to the same physical or cognitive stresses across the day and night. Throughout these intensive experiments, we typically record all heart beats and brain waves and take frequent blood samples to examine physiological responses. We have published numerous important papers based on these laboratory studies in volunteers (see publication list within the Biennial Report) that lay the groundwork for studies outside the laboratory in actual workplaces. For example, I am collaborating with Institute faculty members on a number of interventions in the workforce, including interventions to: improve sleep and health for workers in a variety of sectors and industries from the Military, Public Safety, and long-haul trucking to call centers. Much of my research has been in the field of the effects of sleep and circadian rhythms on physiology and pathophysiology in humans, including mechanisms underlying the morning peak in adverse cardiovascular events. Acknowledgement of the importance of our research was the award in 2019 of the "Outstanding Scientific Achievement Award" from the Sleep Research Society. One of my main specific responses to the COVID-19 pandemic was serving as Chair of the Rulemaking Advisory Committee for Oregon OSHA's permanent rule on infectious diseases.

**Saurabh Thosar, Ph.D.**

Assistant Professor, Oregon Institute of Occupational Health Sciences

My current research program is based on my experiences both at Indiana University and at OHSU, and include investigating the mechanisms by which common behaviors (e.g. physical in/activity, food intake, and sleep), and the circadian system affect vascular endothelial function in health and in disease. Our long-term goal is to inform and develop improved preventative (e.g., physical activity), and remedial (chronotherapy) countermeasures against cardiovascular disease. Current projects include: 1) Understanding the effects of chronic sedentary behavior on cardiovascular function, and sleep; 2) Investigating circadian rhythms in coronary microvascular function; and 3) Identifying the mechanisms by which blood pressure is regulated during sleep. These studies will help us understand how common daily behaviors interact and affect nighttime sleep.

Spotlight:
Nicole Bowles, Ph.D.
Neuroendocrinology and Clinical
Epidemiology



Stress is a challenge for almost every worker. Dr. Bowles' research laboratory examines the role of cannabinoid signaling in the modulation of sleep and circadian rhythms and how these signaling patterns buffer the cardiometabolic responses to psychosocial and environmental stress. Her interdisciplinary research uses a community-based participatory research framework to study populations of shift workers including on-duty Oregon firefighters as well as community engagement methods to bring diverse populations into a laboratory environment where she is able to control the environment and behaviors to systematically measure sleep and circadian phase.

Where are you from?

I'm originally from Philadelphia. I went to NYU for my undergraduate training and graduated with a major in Chemistry with a minor in Math.

What is your field of research?

As a translational researcher, I work to move basic science into practice. I study neuroendocrinology to understand the relationship between the brain and hormones. I look at the patterns, causes, and effects to see if and how they may relate to health outcomes.

What are your big research questions?

One question is the interaction between circadian rhythms and the body's stress response. The other question is how the endocannabinoid system is a regulator of stress.

How are you finding the answers to those questions?

In the lab, we manipulate the environment to learn about behaviors and biosystems. Our fieldwork is comprised

of wearables to measure biological activities, along with observational and epidemiological studies.

How did you get started in science?

When I was in high school, I took a health class and found it really interesting. So, I decided to take Chemistry after that, and then I really knew I wanted to continue in science. Those experiences in school are part of the reason I like mentoring so much. Exposing young people to lots of science can build their confidence and create new opportunities for growth and success.

Why did you choose to work at the Oregon Institute of Occupational Health Sciences?

I was looking for a group where I could research circadian and translational research. OccHealthSci is unique in that we happen to do both.

How will your research impact the World of Work?

My goal is to contribute to our understanding of how to optimize not only the environment, but also the quality of life for night-workers.

Injury, Treatment, Recovery and Prevention

**Ryan Olson, PhD**

Professor, Oregon Institute of Occupational Health Sciences
Professor, OHSU-PSU School of Public Health
Co-Director, Oregon Healthy Workforce Center

Insufficient sleep is related to workplace safety, high risk for obesity, chronic disease, and early mortality. Long haul team truck drivers, where one driver sleeps in a moving vehicle while the other partner drives, face especially challenging sleeping conditions. Our Tech4Rest pilot study evaluated interventions to advance team drivers' sleep, health, and well-being: (1) a therapeutic mattress system vs. a traditional coil spring mattress, and (2) then we added an active suspension seat and a behavioral healthy sleep intervention (Fit4Sleep, adapted from our effective Safety & Health Involvement For Truckers [SHIFT] program). Compared to a new coil spring mattress, the therapeutic mattress altered the prevalence of certain vibration frequencies, produced greater improvements in fatigue and sleep, and was universally preferred. The addition of the seat and behavioral program produced the largest effects on sleep outcomes, as well as new additional improvements in physical activity.

**Emily Huang, PhD**

Associate Professor, Oregon Institute of Occupational Health Sciences

My research team focuses on improving the quality of life for individuals through building a healthy and safe workplace, mainly through improving organizational safety culture and climate. Over the past two decades, I have developed and applied an interdisciplinary approach in order to ensure employees' health, well-being and safety at work. Besides conducting scientific research, My team has also provided consulting services to the field by putting scientific approaches into practice. In addition, my lab is focusing on examining and evaluating possible interventions that could help improve workplace safety culture and climate and, in turn, promote organizational and societal well-being.

Total Worker Health®

**W. Kent Anger, PhD**

Director of Applied Science, Oregon Institute of Occupational Health Sciences
Professor, Oregon Institute of Occupational Health Sciences
Professor, OHSU-PSU School of Public Health

We published the results of an NIEHS-funded study of Egyptian pesticide workers exposed primarily to chlorpyrifos, among the most widely-used pesticides in the world and a bioterrorism agent. We demonstrated for the first time a dose-response in a test of motor and cognitive performance based on job title (applicator, technician, engineer, control). This established that long-term exposure to chlorpyrifos is neurotoxic in adult workers. It also suggested that the mechanism that produced the neurotoxicity was different following long-term exposures than in short-term exposures, which explained the mystery of why neurotoxic effects in many prior studies had not correlated with biomarkers of short-term exposures.

**Leslie Hammer, PhD**

Professor, Oregon Institute of Occupational Health Sciences
Co-Director, Oregon Healthy Workforce Center

My research examines the health effects of supportive supervision at work, the health consequences of work-family conflict. Upon securing my third Department of Defense grant, Behavioral Health and Resilience Training for Military Leaders, I personally delivered the training to the platoon leaders at Joint Base Lewis McChord. In addition, I continued with my dissemination and implementation efforts of the of SERVe training to foster a supportive work environment for service members, as well as SHIP training to improve the health, safety and wellness of workers. The latter has been customized and adapted for use by SAIF in a Leadership Program available to policy holders. I also secured supplemental funding for my MESH (Military Employee Sleep and Health) study to enable an additional data collection during COVID and the ability to examine if the leadership training (pre-COVID) mitigated some of the negative psychological impacts of COVID on service members. I also participated on the OHSU COVID Wellness Task Force and supported the development of the OHSU COVID Wellness Pulse survey. Finally, I have been working closely with my Co-Director, Ryan Olson, on strategic planning, preparation, and submission of the Oregon Healthy Workforce Center funding renewal through the National Institute of Occupational Safety and Health (NIOSH).

Spotlight:
David Hurtado, Sc.D.
Social Epidemiology



The work environment has profound multilevel and cumulative impacts on populations' health. Dr. Hurtado's research concerns the development of evidence-based organizational approaches to maximize workers' well-being, safety, and productivity through the integration of theoretical and methodological tools from diverse public health disciplines.

Where are you from?

Born and raised in Bogotá, Colombia, but I moved to the US in 2008 to attend graduate school at Harvard University

What is your field of research?

My research is at the intersection of organizational psychology, social and occupational epidemiology.

What are your big research questions?

The goal of my research program is to identify and intervene on modifiable organizational factors that increase the risk of occupational injury or disease. I have specialized in the healthcare industry where there is a high incidence of stress, mental health issues, musculoskeletal disorders and overall sick leave.

How are you finding the answers to those questions?

By partnering with organizations, regulators and community-based groups to design, implement and evaluate

practical, feasible and participatory occupational health and safety programs.

How did you get started in science?

I've been fascinated by how individual and population health reflects the circumstances in which we live and accumulate across the life course. Started in social sciences but moved toward public health to focus on health outcomes and metrics.

Why did you choose to work at the Oregon Institute of Occupational Health Sciences?

Reputation and impact of the researchers and research. A great Institute, within an expanding University within a very livable city.

How will your research impact the World of Work?

The biggest question for me right now is how to make more equitable, safer and healthier workplaces for everyone but especially for workers who historically have been marginalized.

Outreach and Education



Dede Montgomery, MS, CIH
Senior Research Associate
Outreach and Education Lead



Anjali Rameshbabu, PhD
Oregon Healthy Workforce Center
Manager



Helen Schuckers, MPH
Research Associate
Dissemination Specialist



Nichole Guilfoyle, BS
Research Associate
Education and Implementation
Consultant

Connect • Learn • Lead

Providing leadership, education, resources and strategic support for workforce safety, health, and well-being.

Publishing in Popular Media

Hammer L, Alley L. 4 Key Strategies to Support Employee Well-Being During COVID-19. Medium. 2019.

Hammer L, Alley L. Lead with Empathy During the COVID-19 Crisis. The Conversation. 2020.

Hammer L, Alley L. Supporting Worker Sleep is Good for Business. The Conversation. 2020.

Schuckers H. 10 Things to Know About Total Worker Health. Medium. 2020.

Olson R., Hill A. Sleep, Circadian Biology, and Health: Action in the Behavioral Interactions! Association of Behavior Analysis International Blog. 2020.

Montgomery D., Hill L., Wood M. Oregon Organizations Collaborate to Move the Needle Toward Total Worker Health. Professional Safety. 2019.

Alley, L. Breaking the Silo: Modern Research on Employee Well-being. Medium. 2019.

Hill L., Montgomery D., Bowers-Payne R. The Journey to "Be Well: Implementing Total Worker Health in Eugene, Oregon. American Industrial Hygiene Association Synergist. 2019.

Collaborative Partnerships

100+ valued partners

Summer Internships

28 undergraduates mentored

Classes and Presentations

2000 participants trained

Science Seminars

30 academic seminars hosted

Biannual Symposia

400 professionals trained

Exhibits

20 events & exhibits staffed

Monthly Newsletter

2400 Subscribers

Social Media

11,800+ impressions monthly

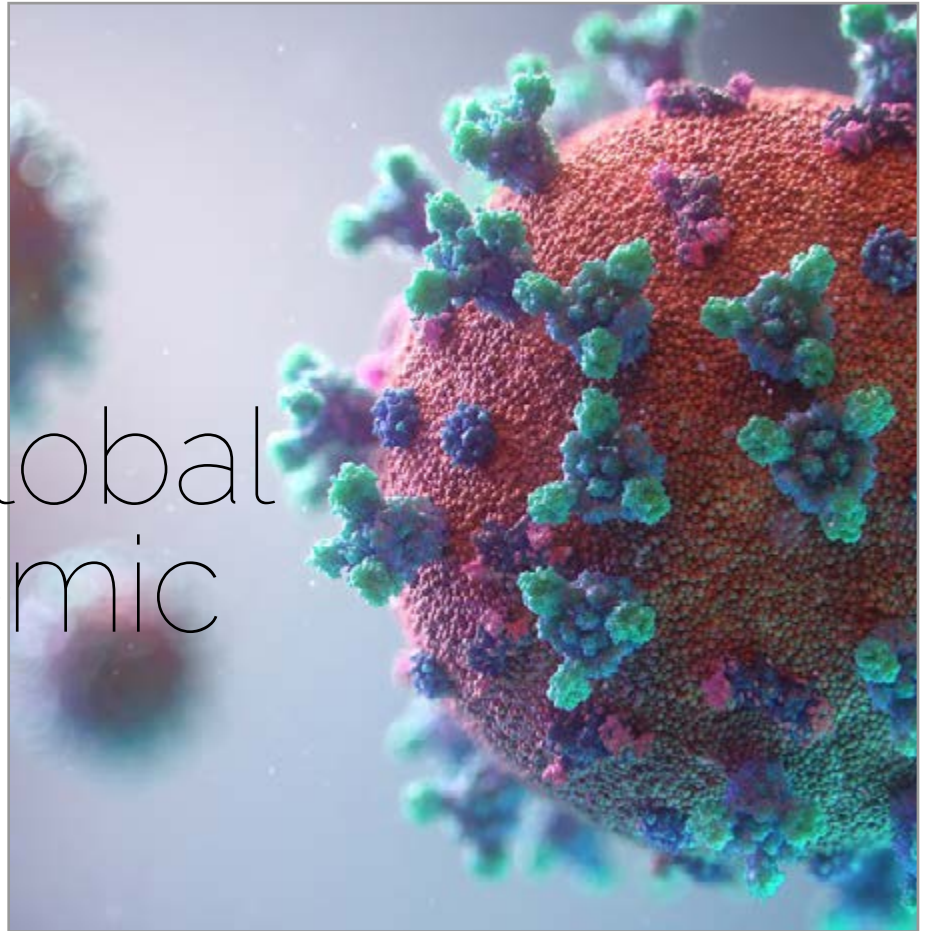
Podcasts

2400 listens

Oregon and the Workplace Blog

52,000 page views

The Global Pandemic



As the events of the pandemic paused many research activities in 2020, Institute staff quickly pivoted to provide expertise and resource materials to support the safety, health, and well-being of Oregon's workforce through the development of trainings, staffing and participation in local and statewide occupational pandemic response efforts, and launching several online resource hubs.

Oregon COVID-19 Construction Task Force

Outreach Lead, Dede Montgomery provides technical support to enhance safety, health, and well-being. The task force is a partnership of union and non-union industry professionals, with support from Oregon OSHA. OHWC created a webpage to share task force resources.

Wellness Task Force

Oregon Health & Science University established a COVID Wellness Task Force and asked faculty members Leslie Hammer and David Hurtado to serve on the task force to develop and evaluate a Wellness Pulse Survey to assess employee psychological health and well-being, workplace experience, and wellness resources.

Region 10 Efforts

Dede Montgomery was requested and funded by NIOSH to provide COVID-19 industrial hygiene and safety support to workplaces in the Pacific Northwest and Region 10.

Agriculture

Oregon Institute of Occupational Health Sciences served as technical advisor to several groups and worker advocates in support of safety and health for farmworkers, specifically promoting engineering and behavioral control policies for fields and housing.

Mental Health & Suicide Prevention

Outreach Specialist, Nichole Guilfooy sits on two separate state and regional committees to support mental health and suicide prevention with a focus on safety, health, well-being during COVID-19.

Oregon OSHA Rulemaking

Director Steven Shea served as Chair of the of the Rulemaking Advisory Committee for Oregon OSHA's permanent rule on infectious disease. This joint committee was comprised of 12 leaders representing management and 12 leaders representing labor.



COVID-19 and the World of Work

A resource page sharing evidence-based and curated content, such as videos, trainings, articles, and resources for workforce safety, health, and well-being during the pandemic



COVID-19 Safety Climate Survey

One of the first COVID Safety Climate assessments designed to help organizations evaluate culture, predict outcomes and promote safety and health of employees as they return to work



Lead with Empathy during the COVID-19 Crisis

Published news article on the importance of supervisors/managers role modeling self care and how they can support their workforce's well-being



Pandemic Response Training for Supervisors /Managers

10 minute online leadership training to provide supervisors and managers with evidence-based strategies to support their workers during the pandemic



Oregon COVID-19 Construction Task Force Web Page

Resources developed by the task force to share best practices to help reduce exposure hazards and prevent COVID-19 infection within construction operations



Worker well-being during COVID Video

OHWC Outreach Director, Dede Montgomery discusses a Total Worker Health approach to COVID-19 and the workplace

TIDE : Team for Inclusion, Diversity and Equity

WE ARE PASSIONATE ABOUT CREATING AND SUSTAINING A COMMUNITY OF INCLUSION AND BELONGING. WE HONOR, RESPECT, EMBRACE AND VALUE THE UNIQUE CONTRIBUTIONS AND PERSPECTIVES OF ALL EMPLOYEES, STUDENTS, VOLUNTEERS AND OUR LOCAL AND GLOBAL COMMUNITIES

TIDE, Team for Inclusion, Diversity and Equity, is an active community within our Institute, that provides input and resources for the Institute on hiring, retaining, and providing an inclusive, diverse and equitable healthy working environment for all.

TIDE was created in 2019 by Nicole Bowles (faculty) and Jen Prissel (associate director) as a response to the Office of Diversity Equity and Inclusion's Ambassadors program.

Pictured here is a TIDE member perusing our library nook filled with books and resources. These items are for Institute members (faculty, students, staff and postdocs) to encourage reading, dialogue and self-awareness regarding our own bias, judgment and increasing emotional IQ. Bulletin board and

monthly emails to announce additional Inclusive events. TIDE also held monthly meetings with an active set of 20+ OccHealthSci members who worked towards thoughtful hiring and retention of a healthy workforce. Highlights of these meetings were having a presentation on how to have difficult conversations at work, learning about our communication methods while dealing with bias and a course on Teaching Tolerance.

As we move forward into 2021, David Hurtado (faculty) and Omar Ordaz-Johnson will assume the leadership role. As part of the future planning, they will be working to incorporate understanding, preventing and fighting bias within our research.



TIDE provides professional development opportunities and educational resources for Institute members to support a diverse and inclusive environment for our community.

2019 Financial Statement

July 1, 2018 - December 31, 2019

Income

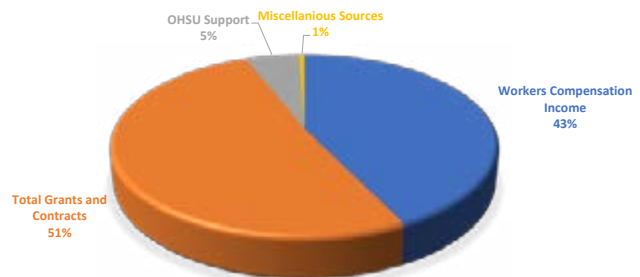
Workers Compensation Income	\$ 5,970,670.00
Total Grants and Contracts	\$ 7,159,233.00
OHSU Support	\$ 752,986.00
Miscellaneous Sources	\$ 74,286.00
TOTALS*	\$13,957,175.00

Expenses

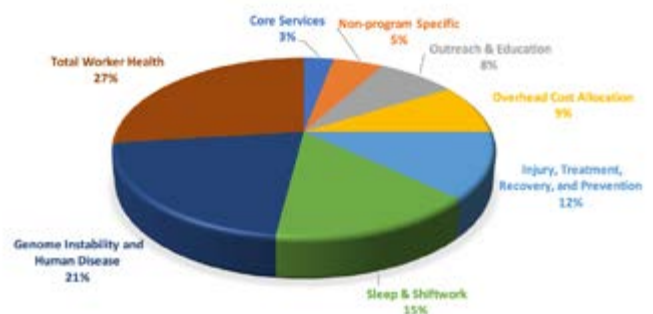
All Salaries & Fringe Benefits	\$ 6,531,211.00
Services & Supplies	\$ 5,088,144.00
Bond Principal & Interest	\$ 353,481.00
OHSU Overhead Cost Allocation	\$ 406,413.00
TOTALS*	\$12,379,249.00

*To transition our fiscal reporting from the financial year used at Oregon Health & Science University (July 1 through June 30 each year) to the calendar year, which is more useful to most stakeholders and fits with the content of the biennial reports, our 'yearly' financial statements have been split into an initial 18 month period (July 1 2018 through Dec 31, 2019), followed by a calendar year financial report for 2020 (Jan 1, 2020- December 31, 2020). In future years we will maintain this re-alignment to calendar year financial reporting.

INCOME BY SOURCE



EXPENSES BY PROGRAM



2020 Financial Statement

January 1, 2020 - December 31, 2020

January 1, 2020 - December 31, 2020

Income

Workers Compensation Income	\$ 3,731,649.00
Total Grants and Contracts	\$ 5,857,849.00
OHSU Support	\$ 18,228.00
TOTALS	\$ 9,607,726.00

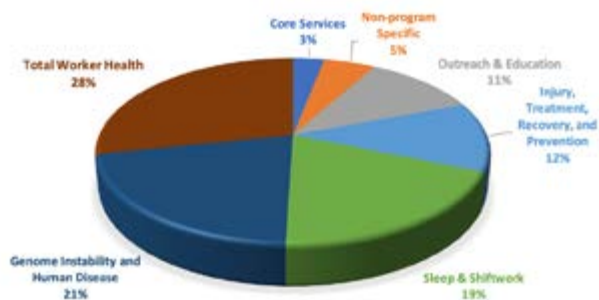
Expenses

All Salaries & Fringe Benefits	\$ 6,113,575.00
Services & Supplies	\$ 1,480,867.00
TOTALS	\$ 7,594,442.00

INCOME BY SOURCE



EXPENSES BY PROGRAM



Our Members

Faculty

Charles Allen, Ph.D. 1990-present
 W. Kent Anger, Ph.D. 1989-present
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2019 - 2020

Publications

Anger WK, Rameshbabu A, Olson R, Bodner T, Hurtado DA, Parker K, Wan W, Wipfli B, Rohlman DS. Effectiveness of Total Worker Health® interventions. In: *Total Worker Health: Integrative Approaches to Safety, Health, and Well-Being*. Washington D.C.: American Psychological Association. 2020; 77:216-230.

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2019 - 2020

Grants

Charles Allen, PhD

DHHS NIH Natl Inst of Neuro
Disorders & Stroke

Mechanisms of GABAergic signaling in the suprachiasmatic
nucleus network

W. Kent Anger, PhD

DHHS CDC Natl Inst for
Occupational Safety & Health

Oregon Healthy Workforce Center

Nicole Bowles, PhD

DHHS CDC Natl Inst for
Occupational Safety & Health

Oregon Healthy Workforce Center

American Sleep Medicine
Foundation

Effect of tetrahydrocannabinol (THC) on sleep in humans.

Oregon Healthy Workforce Center

A natural experiment for the impact of schedules on sleep,
health, and safety in firefighters

Medical Research Foundation of
Oregon

Role of the circadian system in endocannabinoidome signaling
in obese and non-obese adults

DHHS NIH Natl Ctr for Advancing
Translational Science

Oregon Clinical and Translational Research Institute (KL2)

Matt Butler, PhD

DHHS NIH Natl Heart, Lung, and
Blood Inst

Apnea patterns predict heart disease and mortality

DHHS NIH Natl Inst of Neuro
Disorders & Stroke

Androgen receptors and sex differences in the biological clock

U.S. Army Medical Research
Acquisition Activity DOD

Photosensitivity and pain in complex traumatic brain injury

Leslie Hammer, PhD

U.S. Army Medical Research Acquisition Activity DOD	Development and evaluation of Veteran Supportive Supervisor Training (VSST): improving reintegration of the Oregon National Guard and Reserves in the workplace
U.S. Army Medical Research and Materiel Command DO	Evaluation of a work-family and sleep leadership intervention in the Oregon National Guard: a behavioral health leadership approach
DHHS CDC Natl Inst for Occupational Safety & Health	Oregon Healthy Workforce Center
U.S. Army Medical Research Acquisition Activity DOD	Behavioral health & resilience training for military leaders
CDC NIOSH Continuation Training Program Grant	Graduate training in occupational health psychology
Oregon Institute of Occupational Health Sciences Innovation Pilot	A pilot study of a sleep intervention to improve workplace function among Oregon veterans

Emily Huang, PhD

United Nations Systems Staff College	Conduct road safety climate surveys
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David Hurtado, ScD

DHHS CDC Natl Inst for Occupational Safety & Health	Oregon Healthy Workforce Center
NIOSH Oregon Healthy Workforce Center	Pilot-testing the feasibility of a Total Worker Health interpersonal burnout intervention
NIOSH Oregon Healthy Workforce Center	A natural experiment for the impact of schedules on sleep, health, and safety in firefighters.
National Heart, Blood, Lung and Blood Institute	Shift Onboard: protecting new transit operators against safety and health hazards
National Institute for Occupational Health and Safety	Oregon Fatality Assessment and Control Evaluation (OR-FACE)

Doris Kretzschmar, PhD

DHHS NIH Natl Inst of Neuro Disorders & Stroke	Creating new drosophila models to study Tau loss and gain-off functions
DHHS NIH Natl Inst on Aging	Connecting Alzheimer's Disease, APP, circadian regulation
National Institutes of Health, National Institute of Neurological Disorders and Stroke	FoxP1 as a therapeutic target for Huntington's disease
Oregon State Univ	Links between age-related changes in energy metabolism and Alzheimer's disease
DHHS NIH Natl Inst on Aging	Connecting nuclear functions of Tau with pathology in Alzheimer's disease and other tauopathies
DHHS NIH Natl Ctr for Complementary & Integrative	Botanicals enhancing neurological and functional resilience in aging (BENFRA)

Stephen Lloyd, PhD

DHHS NIH Natl Cancer Inst	Targeting DNA base excision repair in acute myeloid leukemias
OHSU Fund	Development of agonists of the DNA glycosylase OGG1 for the prevention of obesity and obesity-associated diseases
DHHS NIH Natl Cancer Inst subcontract through Vanderbilt Univ.	Novel targets in cancer chemotherapy chemical biology of guanine alkylation
DHHS NIH Natl Cancer Inst subcontract through Vanderbilt Univ.	DNA adduct-induced mutagenesis
DHHS NIH Natl Inst of Environmental Health Sciences	Role of base excision repair in limiting hepatocellular carcinomas

Amanda McCullough, Ph.D.

DHHS NIH Natl Cancer Inst subcontract through Vanderbilt Univ.	Novel Targets in Cancer Chemotherapy Chemical Biology of Guanine Alkylation
National Cancer Institute	Mechanisms and targeting of inflammatory cytokine-driven expansion and progression in AML
National Institute Environmental Health Sciences	Role of Base Excision Repair in Limiting Hepatocellular Carcinomas

Andrew McHill, Ph.D.

DHHS NIH Natl Heart, Lung, and Blood Inst	Uncovering Circadian Mechanisms of Poor Cardiometabolic Health
DHHS NIH Natl Ctr for Advancing Translational Science	Oregon Clinical and Translational Research Institute (KL2)
Oregon Clinical and Translational Research Institute	Uncovering biomarkers of poor cardiometabolic health altered by circadian timing
Oregon Clinical and Translational Research Institute	Uncovering Mechanisms of Poor Cardiometabolic Health during the Transition to Night Shift Work
OHSU School of Nursing	Human subject research in the COVID-19 era and beyond: virtual tools and social distancing
Oregon Institute of Occupational Health Sciences Innovation Fund	Impact of the transition into mass transit bus driving on workers' dietary behaviors relative to circadian timing and overall energy balance

Dede Montgomery, MS, CIH

DHHS CDC Natl Inst for Occupational Safety & Health	Oregon Healthy Workforce Center
DHHS CDC Natl Inst for Occupational Safety & Health	Intergovernmental Personnel Act (IPA) Mobility Program

Ryan Olson, PhD

Center for Construction Research and Training	R2P Coordination
DHHS CDC Natl Inst for Occupational Safety & Health	Oregon Healthy Workforce Center
DHHS NIH Natl Heart, Lung, and Blood Inst	SHIFT Onboard: protecting new transit operators against safety and health hazards
Oregon Home Care Commission	COMPASS – personal support worker adaptation
OHA Health Services, Public Health Division	Improving occupational health in Oregon: turning data to action

Omar Ordaz-Johnson, BS

DHHS NIH Natl Heart, Lung, and
Blood Inst

Sleep and circadian mechanisms contributing to disparity in
prevalence of hypertension between black and white Americans

Anjali Rameshbabu, PhD

DHHS CDC Natl Inst for
Occupational Safety & Health

Oregon Healthy Workforce Center

Xiaoquan Rao, PhD

DHHS NIH Natl Inst of
Environmental Health

Role of Lipid Oxidation in Air Pollution-Induced Atherosclerosis

Steven Shea, Ph.D.

DHHS NIH Natl Heart, Lung, and
Blood Inst

Circadian rhythms and cardiovascular risk

DHHS CDC Natl Inst for
Occupational Safety & Health

Oregon Healthy Workforce Center

DHHS NIH Natl Heart, Lung, and
Blood Inst

Circadian mechanisms of cardiovascular risk in obesity

DHHS NIH Natl Heart, Lung, and
Blood Inst

Sleep and circadian mechanisms contributing to disparity in
prevalence of hypertension between black and white Americans

U.S. Army Medical Research and
Materiel Command DO

Evaluation of a work-family and sleep leadership intervention in
the Oregon National Guard: a behavioral health leadership
approach

Xiaoquan Rao, Ph.D.

DHHS NIH Natl Inst of
Environmental Health

Role of lipid oxidation in air pollution-induced atherosclerosis

Saurabh Thosar, Ph.D.

Sleep Research Society Foundation	Circadian Rhythms of Vascular Function in Cardiovascular Disease
Medical Research Foundation of Oregon	Effects of sedentary behavior on cardiovascular health and sleep
DHHS NIH Natl. Ctr for Advancing Translational Science	Oregon Clinical and Translational Research Institute (KL2)

Mitch Turker, Ph.D., J.D.

DHHS NIH Natl. Inst on Aging	Identification of neuroprotective pathways of E2 against early and late onset hAPP/Ab-induced hippocampal injury
Univ. of California, Berkeley	GCR simulator validation studies with human and mouse models
Nzumbe Inc	NeuroPredict (tm), a screening assay for chemicals that affect the differentiation of human neural cells
Nzumbe Inc	Using epigenetic science to improve environmental health literacy

Shelby Watkins, MPH

Univ of Washington	A qualitative analysis of decision making and research utilization among firefighters
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Caren Weinhouse, PhD

Medical Research Foundation of Oregon	Do inter-individual genetic differences affect DNA methylation responses to mercury exposure?
DHHS NIH Natl. Inst of Environmental Health	Understanding the causes of DNA methylation response to methylmercury: a novel approach to quantify genetic, environmental, and stochastic factors

**Oregon Institute of Occupational
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