

# Annual Presentation to MLAC

Steven Shea, PhD,  
Professor and Director (*he/him*)  
Oregon Institute of Occupational Health Sciences



# Oregon Institute Of Occupational Health Sciences MLAC Agenda, July 28, 2022



1. **Institute Overview**
  - Steven Shea, PhD, Professor, Director
2. **Combating the Obesity Epidemic**
  - R. Stephen Lloyd, PhD, Professor, Associate Director
3. **The Impact of Work Schedule on Firefighters' Health**
  - Nicole Bowles, PhD, Assistant Professor
4. **Outreach Overview**
  - Erin Flynn, PhD, Outreach Director (new full-time position)

# Oregon Institute of Occupational Health Sciences Overview

(Oregon Statute 353.460)



- The Institute is dedicated to health and safety in the workplace.
- Our mission is to promote wellness and prevent disease and disability among working Oregonians.
- We fulfill our mission through basic and applied research, and outreach and education.

# Institute Structure

## Basic Research

- Allen Lab
- Butler Lab
- Kretzschmar Lab
- Lloyd Lab
- McCullough Lab
- Weinhouse Lab

## Clinical & Applied Research

- Anger Lab
- Bowles Lab
- Hammer Lab
- Hurtado Lab
- Huang Lab
- Olson Lab
- Shea Lab
- Thosar Lab

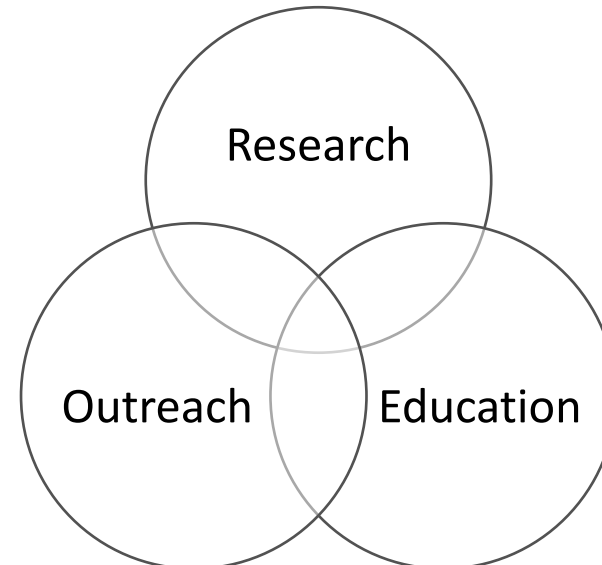
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- Oregon Healthy Workforce Center
  - Oregon Fatality Assessment & Control Evaluation (OR-FACE)

## Outreach & Education

- Erin Flynn, Director
- Communications
- External Relations
- Research Dissemination
- Partnerships & Consultation
- Education & Training

## Administration

- Finance
- Grants management
- Human Resources
- Operations/facilities

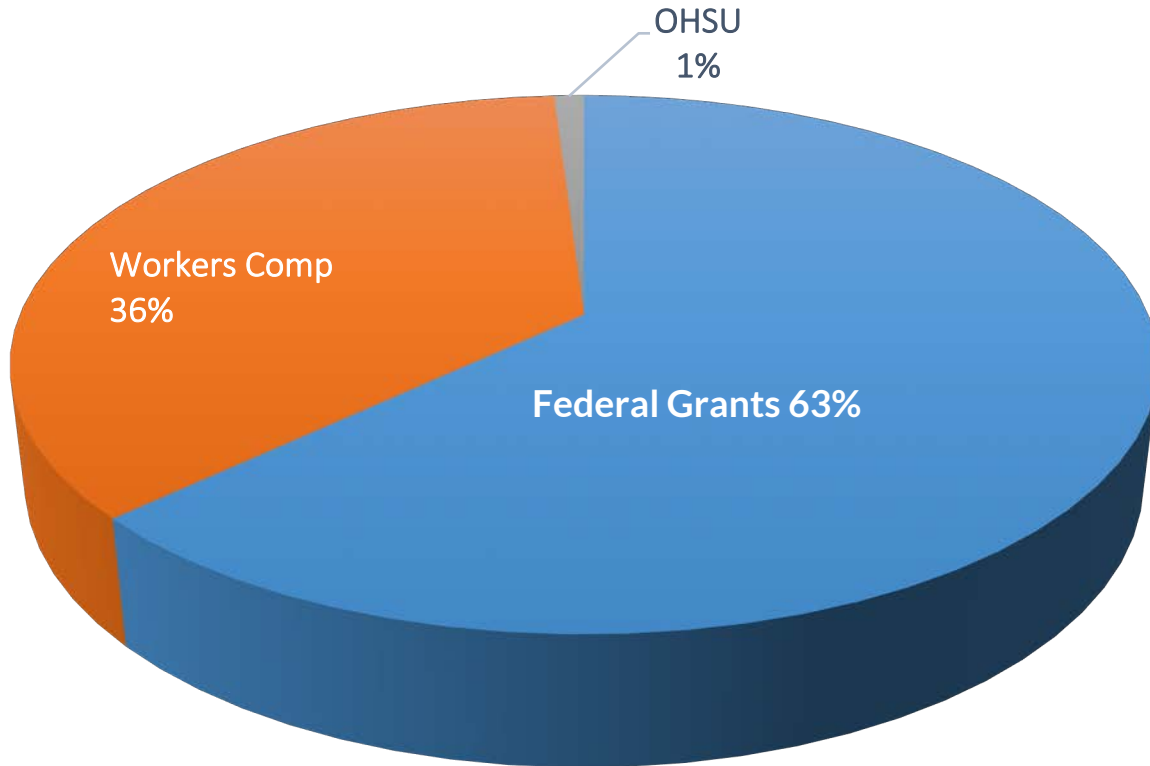


# Research Focus Areas

- Total Worker Health: Combined Safety and Health Promotion Interventions in the Workplace
- Sleep and Shiftwork: Impact on Health and Safety
- Injury, Treatment, Recovery, and Prevention
- Exposure Biology: Role of Genome Instability in Human Disease

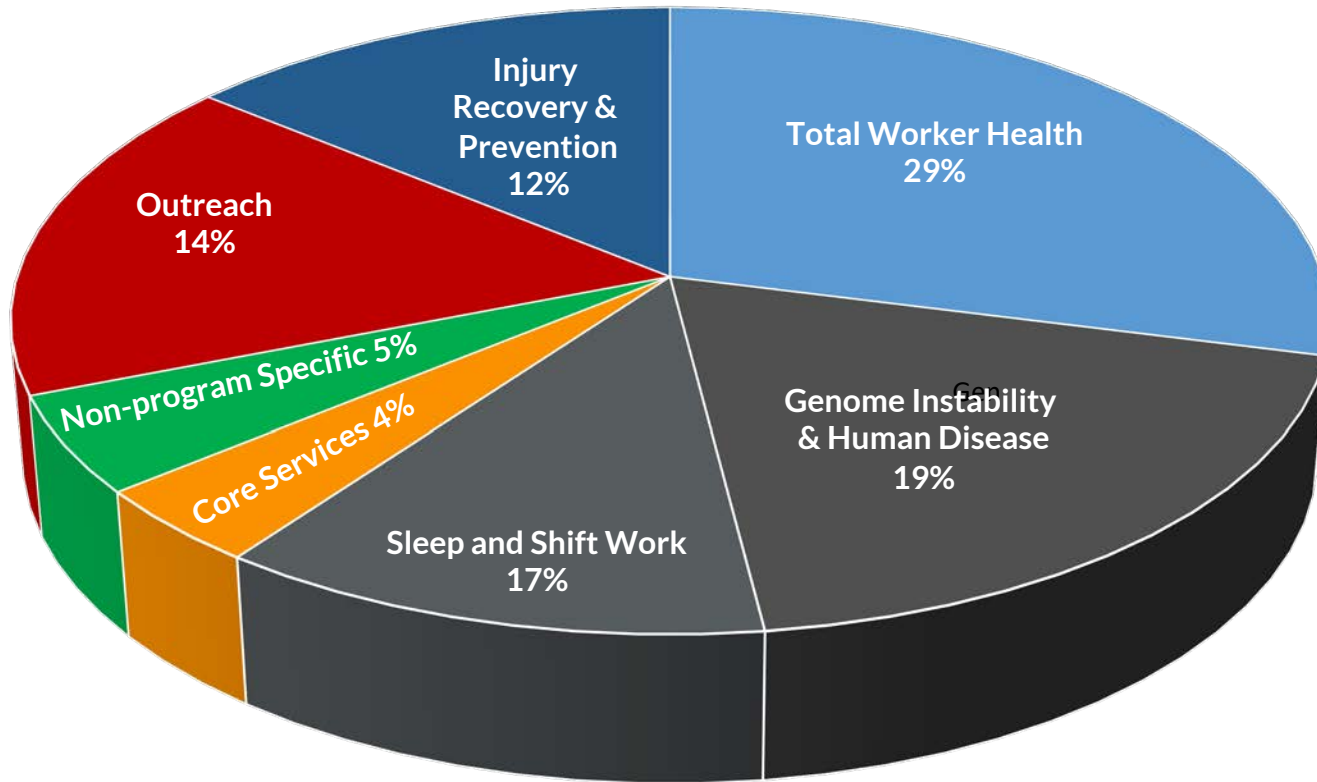


# 2021 Income



Workers Compensation Income	\$ 3,775,469
Total Grants and Contracts	\$ 6,734,119
OHSU Support	\$ 139,090
<hr/>	
<b>Total Income 2021</b>	<b>\$10,648,678</b>

# 2021 Expenditures by Program Area



## Expenses

All salaries and fringe benefits	\$6.695.884
Services and Supplies	\$2.711.091

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<b>Total Expenditures</b>	<b>\$9.406.975</b>
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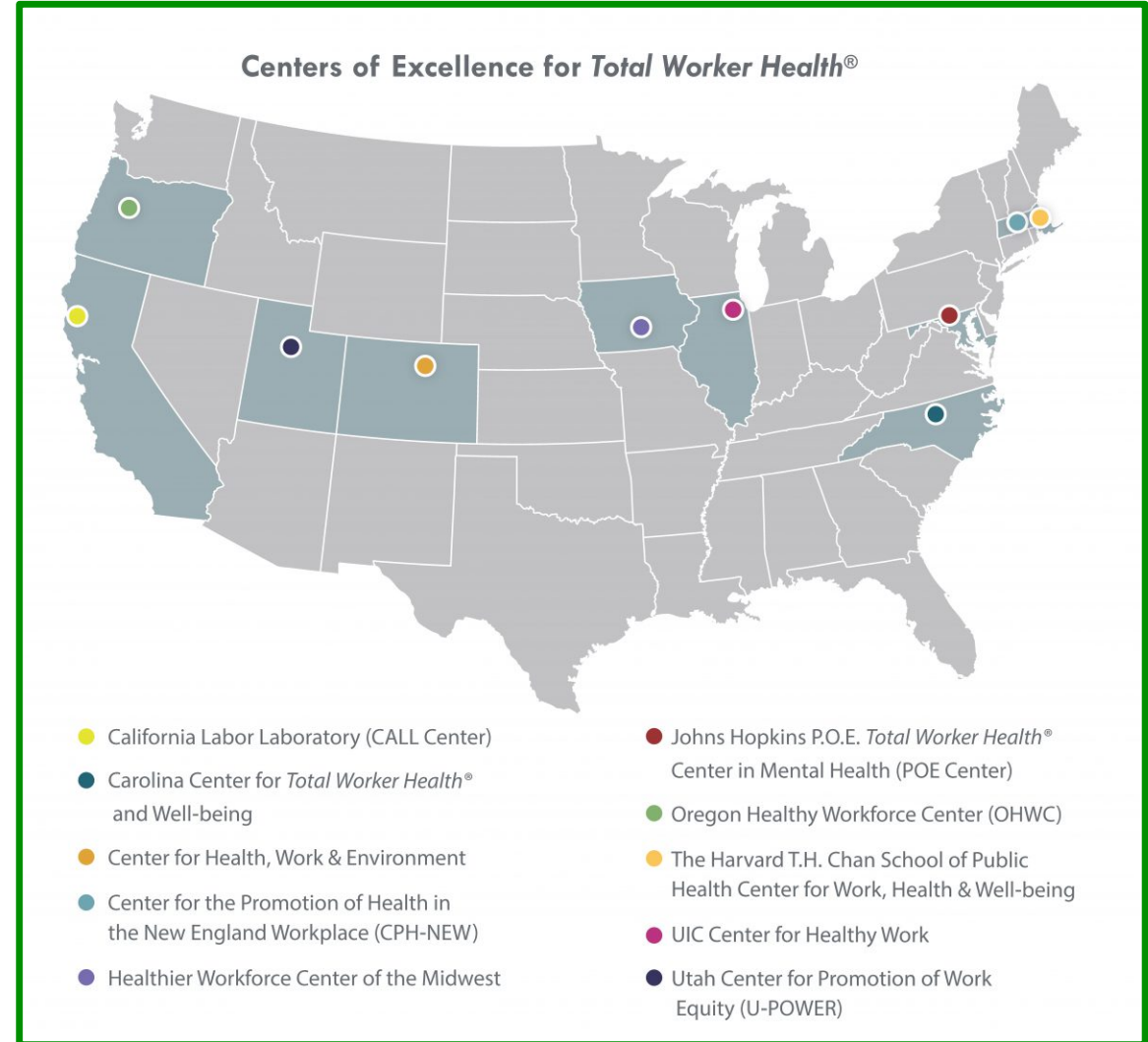
# Oregon Healthy Workforce Center

## A NIOSH Center of Excellence for Total Worker Health™



**OREGON HEALTHY  
WORKFORCE CENTER**

NIOSH TOTAL WORKER HEALTH® CENTER OF EXCELLENCE







Pamela Ahr, CSP, ARM, MBA  
SAIF Director, Safe and Healthy  
Workplace Center



Robert Camarillo,  
Executive Secretary  
Oregon Building Trades Council



Mimi Casteel  
Winegrower, General Manager  
Bethel Heights; Hope Well Wine



Sally Coen, BA  
Administrator, Workers  
Compensation Division, DCBS



David W. Robinson, PhD  
Interim Provost  
OHSU



Lou Savage  
Managing Principal,  
LexTerra Strategies, LLC



Ron Tubby, Senior  
Environmental Health  
and Safety Program Manager, Intel  
Chair, Advisory Board



Andrew R.O. Watson, PhD, CLP,  
Senior Director of Technology  
Transfer, Technology Transfer &  
Business Development, OHSU

# External Advisory Board

# Recent Notable Achievements



## OHWC gets renewed for 5 more years!

The Oregon Healthy Workforce Center (OHWC) is celebrating! Led by Co-Directors Leslie Hammer, PhD and Ryan Olson, PhD, and founded in 2011 by Kent Anger, PhD, our center has been successfully...

[Read more](#)



## ASSP Regional Safety Professional of the Year Award

Dede Montgomery, M.S., C.I.H., President of the Columbia-Willamette Chapter of the American Society of Safety Professionals (ASSP) was recently awarded the Region 1 Safety Professional of Year (SPY)...

[Read more](#)



## Professor Steven Shea receives Outstanding Investigator Award

We are very pleased to announce that our Institute's Director, Professor Steven A Shea, PhD, has just received a 7-year \$6.5 million "Outstanding Investigator Award" from the National Heart,...



## Dr. Leslie Hammer receives OHSU Distinguished Faculty Award

The Senate's annual Distinguished Faculty Awards recognize faculty members for exceptional work promoting OHSU's mission. Last week, Dr. Leslie Hammer was awarded the Distinguished Faculty...



## Dr. Saurabh Thosar receives \$2.97 million R01 NIH grant

Dr. Saurabh Thosar, Assistant Professor at the Institute and colleagues was awarded a 5 year \$2.97 million R01 grant from the National Institutes of Health (NIH) to study the effects of sleep and the...

[Read more](#)



## Dr. Steven Shea receives 2021 Medical Research Foundation of Oregon mentor award

The Medical Research Foundation of Oregon has distinguished six Oregon scientists as recipients of its 2020 and 2021 Mentor, Discovery, and New Investigator awards. We are pleased to congratulate our...

Thank you!

Questions?

# Combating the Obesity Epidemic

R. Stephen Lloyd, PhD (*he/him*)

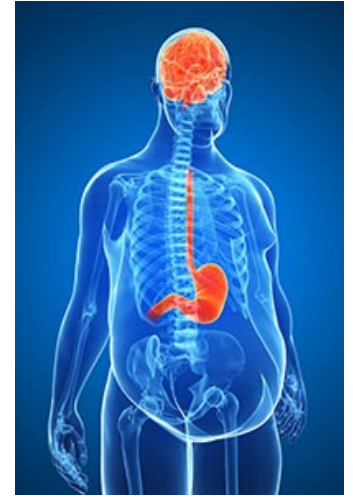
Professor, Associate Director of Basic Research

Oregon Institute of Occupational Health Sciences



# Obesity Trends in the US

National Institute of Diabetes & Digestive & Kidney Diseases

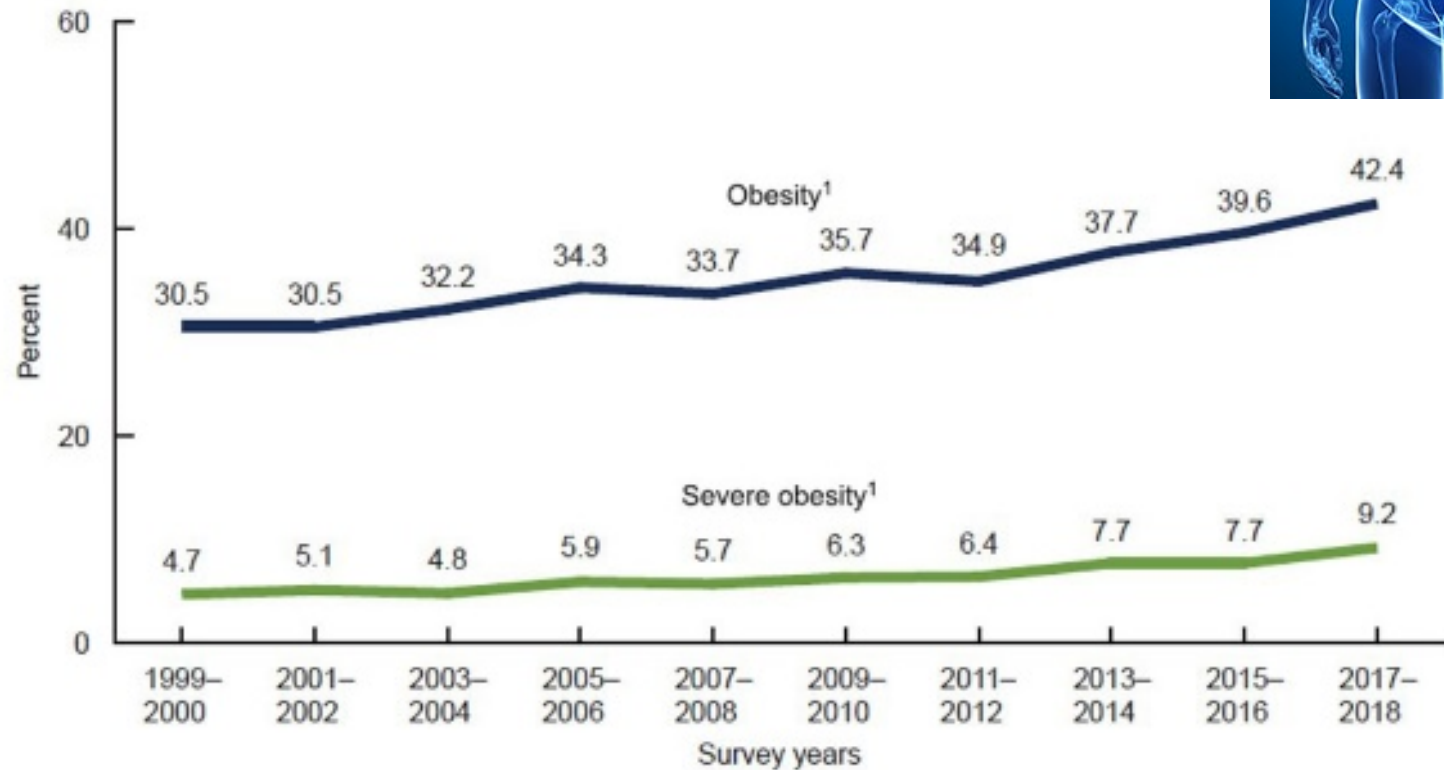


## Adult Obesity in the US

- Prevalence - Greater than 40%
- ~50% increase since 2000
- Equally effecting women & men
- Impacts all ethnicities

## Childhood Obesity in the US

- Greater than 20%
- 400% increase from 1980



All data and terminology from the current NIDDK web site: <https://www.niddk.nih.gov/>

# Impact of Obesity on Worker Compensation Claims

*Archives of Internal Medicine* – a Duke University 12,000 individual study

- Obese workers file ~2X the number of claims compared to non-obese workers
- Cost of claims averages ~7X for obese workers vs non-obese workers  
\$7,500 vs \$51,000
- Number of lost work days averages ~13X higher for obese workers
- Obese workers in high-risk jobs incur the highest medical and economic costs

Our laboratories have discovered a new mechanism regulating obesity  
which in turn, revealed counter measures to prevent the disease

# Discovery of a Key Genetic Regulator of Obesity: DNA Repair

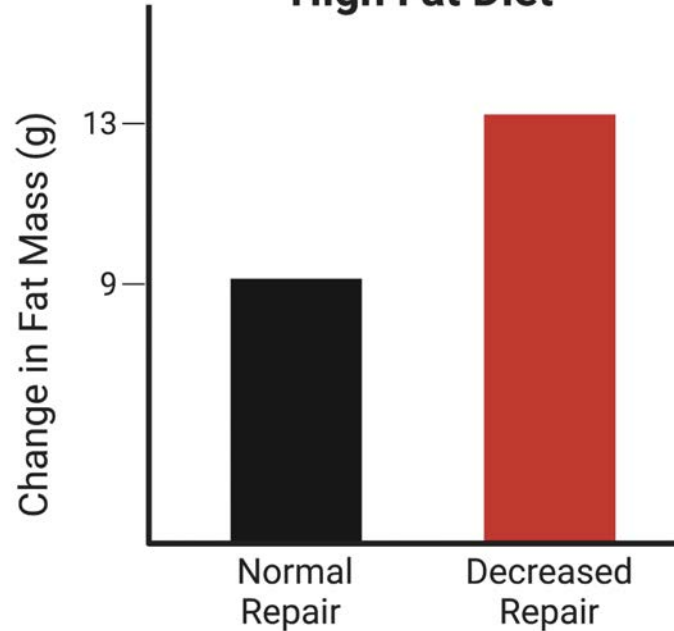


Repair deficient  
50 grams

Repair proficient  
30 grams



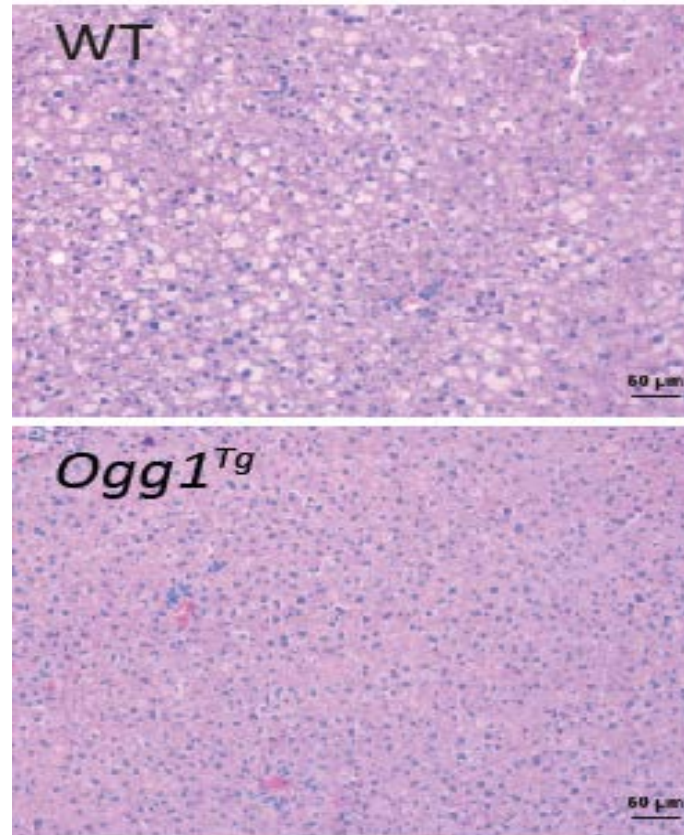
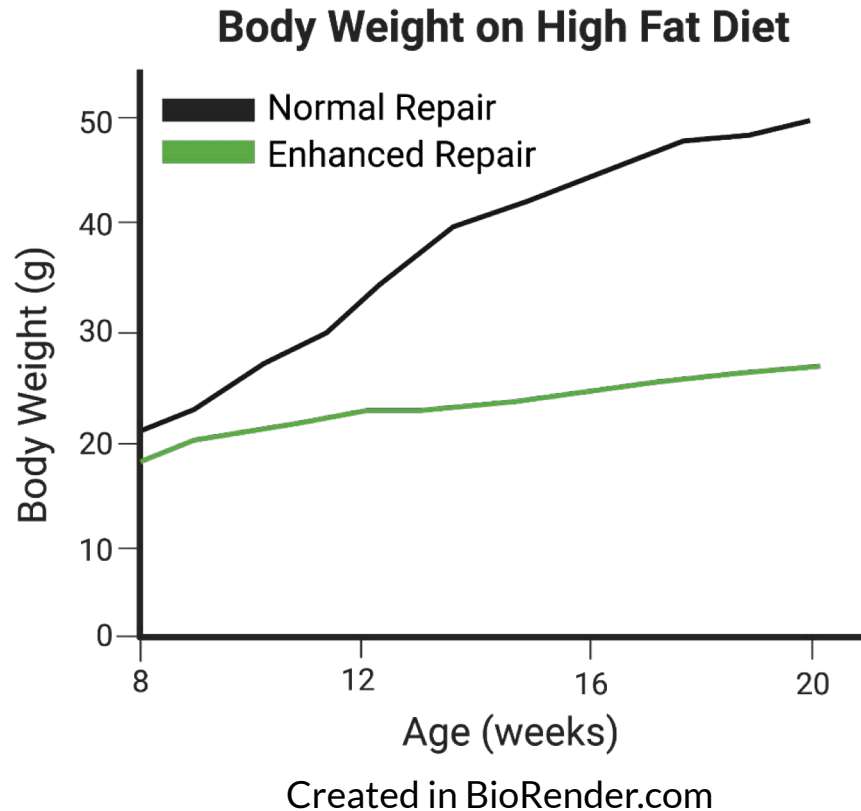
Change in Fat Mass on a  
High Fat Diet



Created in BioRender.com

If decreasing DNA repair leads to obesity,  
what if we enhanced DNA repair?

## Increased DNA repair = resistance to obesity, even on a 60% fat diet!



Normal repair  
Fat in liver  
(Clear regions)

Enhanced repair  
No fat in liver

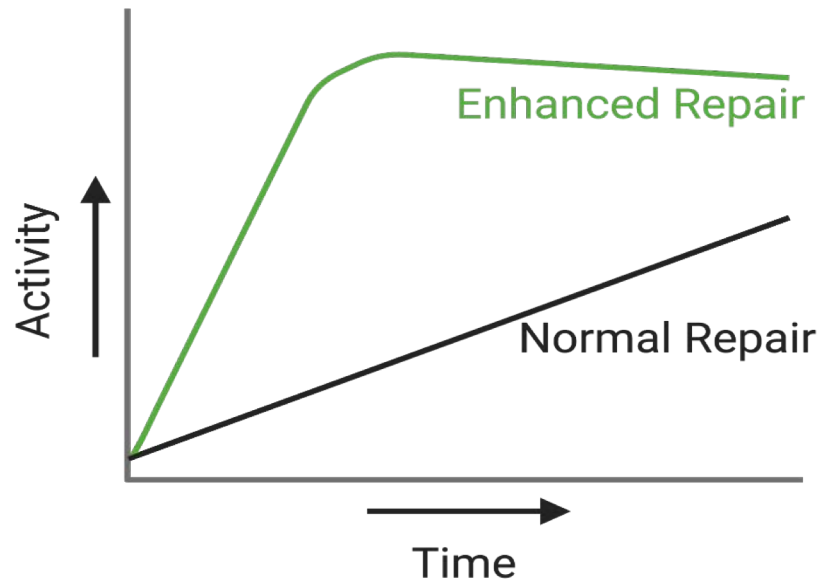
One cannot genetically modify humans, so is there an alternative strategy?



# Pharmacological Approach: Identification of chemicals for reducing obesity via increasing DNA repair

Approach: high throughput drug screening & artificial intelligence design

Have identified a class of chemicals  
that greatly increase repair rates



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Applications beyond obesity:

Diabetes

Neurodegenerative diseases including Parkinson's  
and Alzheimer's diseases

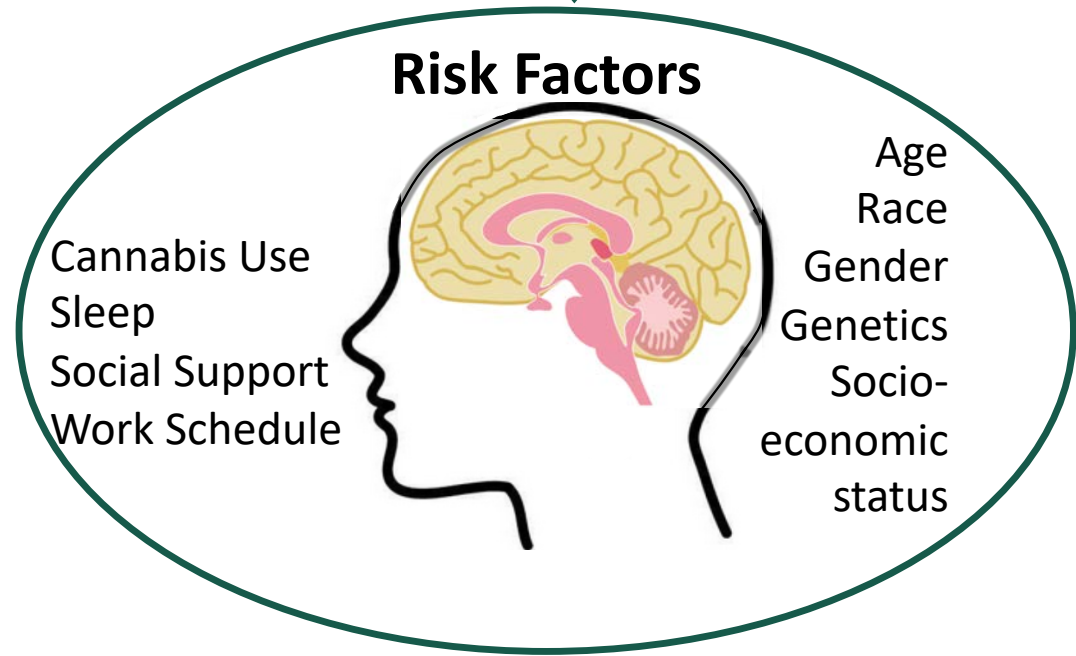
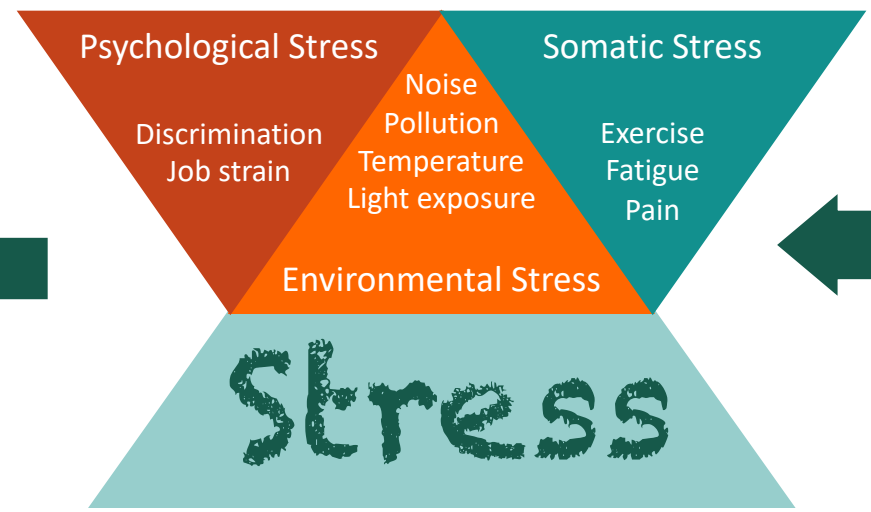
Thank you!

Questions?

# The Impact of Work Schedules on Firefighters' Health

Nicole Bowles, PhD (*she/her*)  
Assistant Professor  
Oregon Institute Of Occupational Health Sciences





**Cardiometabolic health**

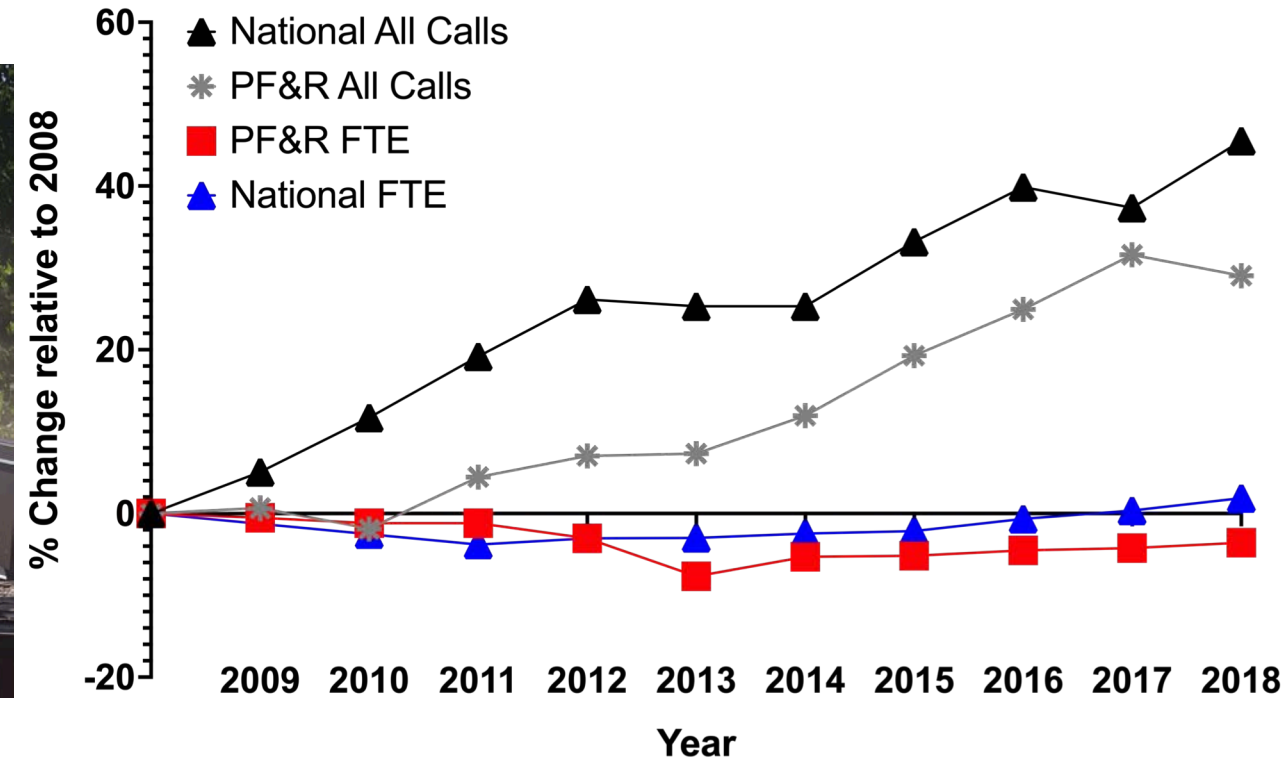
- Lipid Metabolism
- Endothelial Function
- Fibrosis
- Oxidative Stress

Interaction with circadian system

# Increased call volume has increased firefighters' occupational burden



Image from Portland Fire and Rescue



# Does a traditional 24/48 schedule provide adequate time for recovery?

24/48 Schedule						
Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Work Day	Day Off	Day Off	Work Day	Day Off	Day Off	Work Day

Legend:  
Work Day (Green)  
Day Off (Yellow)

...you go home and you're not well-rested and you're asked, "Where are we going to dinner tonight?" and it seems like such an insignificant question, [but] that's when a lot of people shut down and they just don't talk and what's important to your significant other you don't care about. Then that creates some tension which goes in a lot of different directions, like divorce.

**Representative quote from 24/48 firefighter**

Watkins, S. L., Shannon, M. A., Hurtado, D. A., Shea, S. A., & Bowles, N. P. (2021). *American journal of industrial medicine*, 64(2), 137-148.

# Are alternative schedules the answer?

1/3/2/3 Schedule						
Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Work Day	Day Off	Day Off	Day Off	Work Day	Work Day	Day Off

Legend:  
Work Day (Green)  
Day Off (Yellow)



“I’m definitely not as short with my kids. You get off shift and even if it was on the second day your kids would do something that were mildly irritating and you would just, at least I would just go off the deep end. And I am way, way better than I was 6 months ago [before the schedule change] and with that being said I am more involved with my kids than I was 6 months ago. Like right now I coach both of my kids’ basketball teams which is like every day 3-4 hours after school and I still feel great”.

Representative quote from 1/3/2/3 firefighter

Bowles et al. *In prep*



The Oregon Healthy Workforce Center will research the well-being of firefighters, among other occupations.

KEN REDDING



By **Elizabeth Hayes** – Staff Reporter, Portland Business Journal  
Sep 22, 2021

## IN THIS ARTICLE

The Oregon Healthy Workforce Center will use a five-year \$6.9 million grant to research the well-being of workers in health care, firefighting, in-home care and the utility and manufacturing industries.

Thank you!

Questions?

# Outreach Overview

Erin Flynn, PhD (*she/her*)

Director of Outreach

Oregon Institute of Occupational Health Sciences





The Institute's Outreach Team facilitates the conversion of research into practice through:

- Communications & Dissemination
- Practitioner Education & Training
- Implementation Partnerships



# Communication & Dissemination

- Oregon & the Workplace Blog
- Monthly Newsletter
- Social Media
- Podcast
- Videos
- Websites
- Talks and presentations
- Conference Exhibits and Booths



**1,729 Newsletter  
Subscribers**



**Weekly Blog  
10,856 page views  
(2022)**



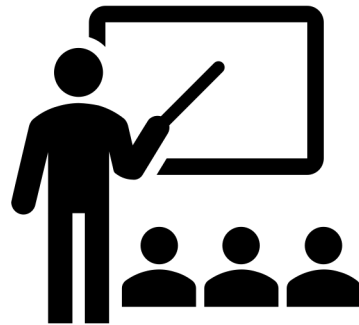
**Podcast  
26 episodes  
9,099 listens  
(since 2018)**



**Institute Website  
41,945 views**

# Practitioner Education & Training

- Bi-annual Symposia
- Summer Institute
- Total Worker Health







# TOTAL WORKER HEALTH<sup>®</sup> CURRICULUM

For occupational safety, health, Human Resource, wellness professionals and practitioners

Oregon Total Worker Health Alliance is a partnership between Oregon Institute of Occupational Health Sciences (including Oregon Healthy Workforce Center), Oregon OSHA, and SAIF.



## TOTAL WORKER HEALTH 101: THE BASICS

Prerequisite course with these objectives: Define terms and concepts of the Total Worker Health (TWH) approach; Identify the five defining TWH elements; Discuss how organizations can effectively implement TWH strategies; Develop "next steps" applicable to participant's organization.

## TOTAL WORKER HEALTH AWARENESS: WHAT SHOULD OSH PROFESSIONALS KNOW?

This session introduces the Total Worker Health approach to occupational health professionals, occupational health nurses, HR, benefits, wellness professionals, and others interested. This shorter session may precede TWH 101: The Basics but as a "teaser."



## TOTAL WORKER HEALTH WORKPLACE SOLUTIONS

Can be combined with TWH 101: The Basics for a full-day course. Objectives: Identify evidence-based Total Worker Health Worksite solutions, case studies, and tools; Describe strategies for workplace engagement, and evaluate solutions and interventions; Develop "next steps" related to these solutions, as applicable to participant's organization.

## TOTAL WORKER HEALTH: SLEEP, FATIGUE & SHIFT WORK

Can be standalone course or in combination with TWH 101: The Basics. Objectives: Recap the 5 key TWH elements; Examine health and safety evidence showing the need for organizations to be concerned about worker short sleep and fatigue; Understand how work scheduling, culture and shift work negatively impact employees' sleep; Discuss how the TWH concept can help organizations create strategies and initiatives to lessen worker fatigue, address causes of poor and low sleep, and improve health; Develop "next steps" applicable to participant's organization.

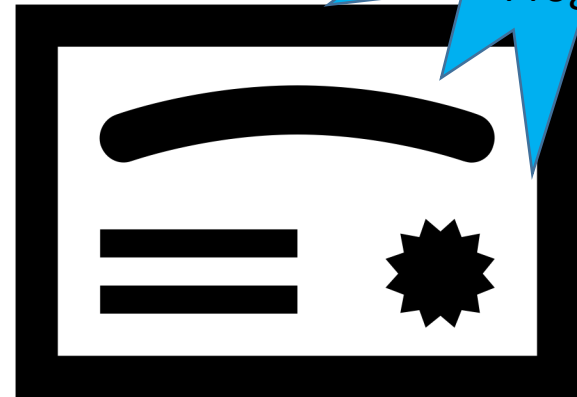
## TRAIN-THE-TRAINER

For graduates of the Total Worker Health 101: The Basics class. This virtual course was successfully pilot-tested October 2021; Scheduled for launch Winter 2022.



## QUARTERLY MEET-UPS

One-hour meet-ups open to graduates of TWH 101 course. Includes: networking opportunities, new resources, from NIOSH, OHWC and other TWH Centers, and TWH Affiliates. Participants are encouraged to provide feedback on TWH curriculum, and share implementation challenges and organizational successes.



Total Worker Health<sup>®</sup> is a registered trademark of the U.S. Department of Health and Human Services (HHS). Participation by the Oregon Total Worker Health Alliance does not imply endorsement by HHS, the Centers for Disease Control and Prevention, or the National Institute for Occupational Safety and Health.



# Implementation Partnerships

- Evidence-based Tools and Toolkits



Online training  
on safety, health  
& well-being



Behavior tracking  
“goal setting” to  
reinforce training  
concepts



Scripted group  
training &  
activities with  
social support



Downloadable  
tools ranging from  
case studies to  
safety climate  
surveys

# Community of Practice and Safety Support (COMPASS):

Creating Communities of Practice and Social Support Structures for Home Care Workers

Partner: Oregon Home Care Commission

COMPASS study participants reported:

- 76% improved safety behaviors
- 63% reported eating more fruits and vegetables
- 62% reported enhanced professional social community
- 50% corrected slip, trip, fall safety hazards in employer's homes



# Thank You!

Contact:

Erin Flynn  
Director of Outreach  
flynne@ohsu.edu



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[yourworkpath.com](https://yourworkpath.com) (tools and toolkits)



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