



Pacific Northwest bioMedical Innovation Co-laboratory (PMedIC):

An OHSU/PNNL Collaboration



PMEDIC FALL 2023 NEWSLETTER

PMedIC by the Numbers

88

individual OHSU and PNNL scientists collaborating on programmatic grants or pilot projects
(60 percent increase from fiscal year 2022)

58

total externally funded projects
(40 percent increase from fiscal year 2022)

7

Laboratory Directed Research and Development program and Exploratory Research Seeds Pilot projects

47

innovative joint publications

6

PMedIC Innovation Award projects since fiscal year 2021

2

cross-institutional workshops and retreats

PMedIC was launched in 2018. This partnership between Oregon Health and Science University (OHSU) and Pacific Northwest National Laboratory (PNNL) offers collaborative research and educational experiences for staff, faculty, clinicians, and students at the campuses of both institutions.

Vision:

Improve human health and disease treatment through collaborations that integrate cutting-edge research and education with clinical practice.

Mission:

Generate, interpret, and integrate multi-dimensional panomics data, imaging, and clinical results to gain mechanistic understanding of disease and develop innovative therapies.

High-Impact, Innovative Joint Publications (2020 – 2023)

47

Publications

20

Scival Topics

40

Institutions

Regional



Featured



In the past three years, there have been 47 joint publications. The field weighted citation impact is higher for PMedIC joint publications than for either institution alone, demonstrating increased impact for PMedIC publications. These publications include collaborations with regional universities as well as national powerhouses.

FY23 Joint Publications

School of Medicine Paper of the Month October 2023

SCIENCE ADVANCES | RESEARCH ARTICLE

HEALTH AND MEDICINE

Human cerebrospinal fluid contains diverse lipoprotein subspecies enriched in proteins implicated in central nervous system health

Nathaniel J. Merrill¹, W. Sean Davidson², Yi He³, Ivo Diaz Ludovico¹, Snigdha Sarkar¹, Madelyn R. Berger¹, Jason E. McDermott^{1,4}, Linda J. Van Eldik⁵, Donna M. Wilcock⁶, Matthew E. Monroe¹, Jennifer E. Kyle¹, Kimberley D. Bruce⁶, Jay W. Heinecke⁶, Tomas Vaisar⁷, Jacob Raber^{7,8}, Joseph F. Quinn^{7,9}, John T. Melchior^{1,2,7*}

> *Trials*. 2022 Oct 22;23(1):885. doi: 10.1186/s13063-022-06782-z.

Xanthohumol microbiome and signature in adults with Crohn's disease (the XMaS trial): a protocol for a phase II triple-masked, placebo-controlled clinical trial

Blake O Langley^{1,2}, Jennifer Joan Ryan¹, John Phipps¹, Lita Buttolph¹, Brenna Bray¹, Joseph E Aslan³, Thomas O Metz⁴, Jan F Stevens⁵, Ryan Bradley^{6,7}

> *Protein Sci*. 2023 Jan;32(1):e4538. doi: 10.1002/pro.4538.

Graph identification of proteins in tomograms (GRIP-Tomo)

August George^{1,2}, Doo Nam Kim³, Trevor Moser¹, Ian T Gildea¹, James E Evans^{1,4}, Margaret S Cheung^{1,5}

Critical Care Neurology (H Hinson, Section Editor) | Published: 15 September 2022

Mass Spectrometry-Based Approaches for Clinical Biomarker Discovery in Traumatic Brain Injury

Matthew Creech DO, MPH¹, Lindsey Carvalho MD¹, Heather McCoy MD¹, Jon Jacobs PhD & H. E. Hinson MD, MCR²



Contents lists available at ScienceDirect

Journal of Chromatography A

journal homepage: www.elsevier.com/locate/chroma

Anion exchange and extraction chromatography tandem column isolation of zirconium-89 (⁸⁹Zr) from cyclotron bombarded targets using an automated fluidic platform

Matthew J. O'Hara^{1,2*}, Jennifer C. Carter³, Cynthia M. Kellogg⁴, Jeanne M. Link⁵

¹Nuclear Sciences Division, Pacific Northwest National Laboratory, 902 Battelle Blvd., P.O. Box 999, Richland, WA 99352, United States
²Center for Radiochemistry Research, Knight Cardiovascular Institute, Oregon Health & Science University, 3181 Sam Jackson Park Rd., Portland, OR 97239, United States

> *Nat Microbiol*. 2023 May;8(5):751-753. doi: 10.1038/s41564-023-01361-7.

Cohort-based learning for microbiome research community standards

Julia M Kelliher¹, Marisa Rudolph², Pajau Vangay², Arwa Abbas³, Mikayla A Borton⁴, Emily R Davenport⁵, Karen W Davenport⁶, Natalia G Erazo⁷, Chloe Herman⁸, Lisa Karstens⁹, Brandon Kocurek¹⁰, Holly L Lutz¹¹, Kevin S Myers¹², Ingrid Ockert², Francisca E Rodriguez⁶, Camille Santistevan¹³, Jaclyn K Saunders^{14,15}, Montana L Smith¹⁶, Emily Vogtmann¹⁷, Amanda Windsor¹⁸, Elisha M Wood-Charlson², Lou Woodley¹³, Emiley A Eloë-Fadrosch¹⁹

One of the six joint publications earned the distinction of School of Medicine Paper of the Month for October 2023. August George, who was a OHSU PhD candidate and PNNL-Seattle intern during the summer of 2022, was first author on a GRIP-Tomo paper with PNNL Physicist, Margaret Cheung.

Exploratory Research Seeds Grant Highlight: PMedIC Joint Appointee Receives OHSU Paper of the Month Honor

OHSU recently announced that John Melchior, Jacob Raber, and Joe Quinn's paper, entitled "Human cerebrospinal fluid contains diverse lipoprotein subspecies enriched in proteins implicated in central nervous system health", was selected as the paper of the month. Melchior is a senior scientist at PNNL and holds a joint appointment with OHSU in the Department of Neurology, working with PMedIC. This paper represents important work that will influence future research through PMedIC.



JOHN MELCHIOR | PNNL

PMedIC Innovation grant awardees FY24

The OHSU PMedIC Innovation grant supports collaborative pilot projects between OHSU and PNNL researchers as part of the formal partnership called PMedIC. For FY2024, two awards of \$50K each were funded.

Defining the lipid and protein composition of purified Zika virus particles



JENNIFER KYLE | PNNL



FIKADU TAFESSE | OHSU

An integrated approach to understanding vulnerability in Tuberculosis among young children



JOSH ADKINS | PNNL



CHRIS LANCIONI | OHSU

https://pmedic.labworks.org/news_10312023.stm

PMedIC at the Molecular Microbiology and Immunology Annual Retreat

In September, members of PMedic team (Laura Erker, Liz Sturgill, Jason McDermott, and Jennifer Kyle) attended the annual OHSU Molecular Microbiology and Immunology Departmental Retreat in Welches, Oregon, where they talked with students, faculty, and trainees and presented a PMedIC informational poster. Ernesto Nakayasu (PNNL) also attended to give a joint presentation with Jonathan Pruneda (OHSU) on their PMedIC project. (Pictured left to right: Jason McDermott, Liz Sturgill, Laura Erker, Jennifer Kyle, and Ernesto Nakayasu at the Mt. Hood Oregon Resort for the 2023 Molecular Microbiology and Immunology Annual Retreat.)



Pilot Grants Drive Collaborative Opportunities and Allow Scientists to Explore New Research

Learn more about PMedIC's robust pilot funding program meant to support new collaborations for proof-of-concept work as well as to generate preliminary data for joint grant submissions. Grant types include exploratory research seeds (rolling), Laboratory Directed Research Development (fall deadline), and PMedIC Innovation Grants (July deadline).

<https://pmedic.labworks.org/funding.stm>

June Workshop Summary and a “Recipe for Success”

The second annual PMedIC workshop was held June 5 – 6, 2023 (pictured: Josh Adkins, Jon Jacobs, Joanna Pucilowska, and Jamie Lo) and included outgoing PMedIC co-directors (Beth Habecker and Bobbie-Jo Webb-Roberson) with incoming PMedIC co-directors (Jamie Lo and Josh Adkins). This year’s workshop highlighted unique capabilities at PNNL, presented by Jon Jacobs, and at the Knight Cancer Institute’s Immune Monitoring & Cancer Omics (IMCO) Laboratory, presented by Director Joanna Pucilowska. The joint PMedIC seminar was followed by discussions that included developing a “Recipe for Partnering Success”. Outcomes from that session are illustrated below.

RECIPE FOR SUCCESS

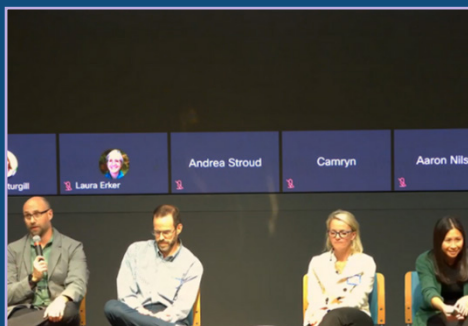


Ingredients:

- **Complementary Science:** Synergizing diverse scientific disciplines
- **Team Science:** Collaborating in interdisciplinary teams for holistic solutions
- **Mutual Vertical Respect:** Fostering respect across organizational hierarchies
- **Enduring Relationships:** Building upon long-standing connections through pilot projects
- **Bilingual Liaisons:** Facilitating communication between distinct academic languages

Instructions:

1. Begin with a trained team member to create an in-depth data analysis plan.
2. Execute long-term planning for both experimental design and relationship development.
3. Utilize regular teleconferences rather than emails; use shared project folders.
4. Leverage PMedIC leadership team to facilitate conversations and provide project management.



Grant Collaborations for Accelerating Scientific Discovery

FY22

Sneha Couvillion (PNNL) and Jeni Johnstone (OHSU)	Tom Metz (PNNL) and Lisa Vrooman (ONPRC)
Characterizing the fecal lipidome in children with ADHD following multinutrient supplementation	Proteomic and Metabolomic Analyses of Oviductal Fluid from Reproductive Age Rhesus Macaques (<i>Macaca mulatta</i>)
Ying Zhu (PNNL); Lynn Sakai and Amir Azarbal (OHSU)	Michael Huesemann (PNNL) and Fikadu Tafesse (OHSU)
Spatially-resolved proteomics of aortic aneurysm tissues	Measuring Antiviral Activity in PNNL Algal Extract Fractions Using OHSU Lung Epithelial Cell SARS-CoV-2 Assay
Jason McDermott (PNNL) and Anthony Barnes and Hillary Le (OHSU)	
Effects of ultrasound treatment on endothelial kinase networks	

FY23

Stephen Callister (PNNL) and Lisa Karstens (OHSU)	John Melchior (PNNL) and Tammy Martin (OHSU)
Tools for multi-omic investigation of the bladder microbiome	Identification of HLA-A29 peptides bound to the MHC-Class I groove in birdshot uveitis patient leukocytes
Ernesto Nakayasu (PNNL) and Marth Neuringer (ONPRC)	Josh Adkins (PNNL) and Isabella Rauch (OHSU)
Proteomic and metabolomic studies to understand biological dietary biomarkers of dietary omega-3 fatty acids and carotenoids in age-related macular degeneration	The roles of Caspase-1 and -8 in the mechanism of inflammasome induced cell extrusion
Ryan McClure (PNNL) and Duygu Dindar (OHSU)	Sneha Couvillion (PNNL) and Linda Musil (OHSU)
Metagenomic Analysis of Oral Microbiomes Associated with Esophageal Cancer	Discovery of a novel anti-fibrotic activity in lens cells

Ways to Connect and Learn

Quarterly Seminar Series

View all upcoming seminars and previous recordings here:

<https://pmedic.labworks.org/events.stm>

Departmental Seminars

Schedule an informational talk about PMedIC's opportunities at your next group meeting.

Focus Forums

Have a targeted group meeting with OHSU and PNNL scientists to discuss new research areas.

Bi-Annual Newsletter

Our PMedIC Newsletter provides regular communication about successful collaborations and ongoing initiatives and events. If you'd like to share this newsletter with a colleague, they are able to sign up by contacting your institutional co-director.

How to Acknowledge PMedIC

Acknowledge partnership in publications, posters, and talks:

"This research is affiliated with the PMedIC joint research collaboration between OHSU and PNNL."

Acknowledge pilot funding (publications, posters, talks):

ERS Grant: Supported by Exploratory Research Seed Grant funding from the OHSU School of Medicine.

LDRD: Conducted under the Laboratory Directed Research and Development program at Pacific Northwest National Laboratory, a multiprogram national laboratory operated by Battelle for the Department of Energy

ERS and LDRD: Conducted under the Laboratory Directed Research and Development Program at Pacific Northwest National Laboratory, a multiprogram national laboratory operated by Battelle for the Department of Energy and Exploratory Research Seed Grant funding from the OHSU School of Medicine.

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