NAVAL MEDICAL RESEARCH UNIT DAYTON

CAPTAIN WILLIAM HOWARD
COMMANDING OFFICER

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Overview

Mission

To enhance the health, readiness, and performance of Warfighters through environmental health effects, toxicology, and aerospace medical research and development.

Vision

To deliver world-class research and development products to enhance Warfighter health, readiness, and performance in operational environments.

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Environmental Health Effects Laboratory

Health effects of environmental hazards/stressors.

Chemical stressors

U.S. Navy photo by PO3 Joseph C Boggio

Physical stressors

U.S. Navy photo by MC3 Macadam Weissman/Released

Combinations/Co-stressors

U.S. Navy photo by Mass Communication Specialist 3rd Class Roland John/Released

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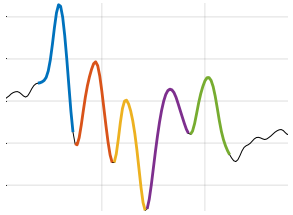
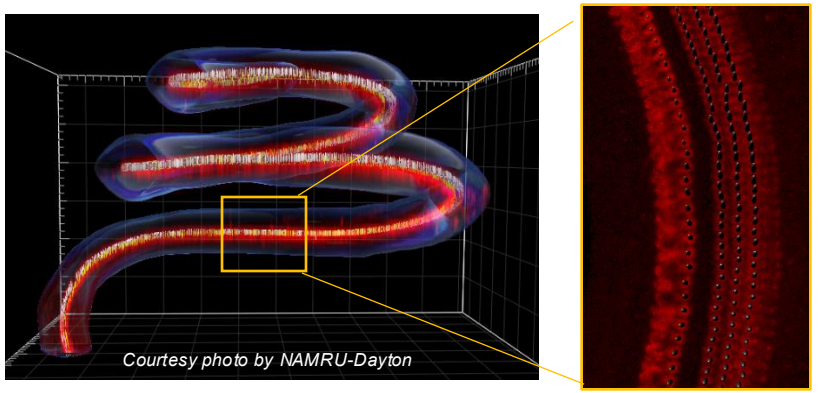
Environmental Health Effects Laboratory



Core Capabilities:

- *In vivo* exposures; unique expertise in inhalation toxicology
- *In vitro* exposures
- Determinations of health effects of exposure
  - General/gross tissue changes
  - Hematology & clinical chemistry
  - Ex vivo tissue analyses
  - Hearing testing
  - Microbiological/microbiome alterations
  - Chemical & analytical testing
  - Pulmonary assessments
  - Cognitive & behavioral testing
  - Neurophysiology evaluation
  - Reproductive & developmental effects
- Risk Assessment



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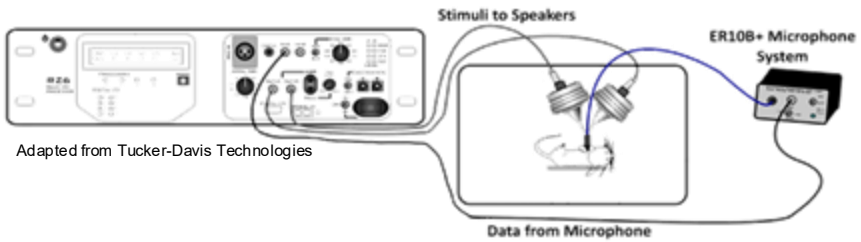
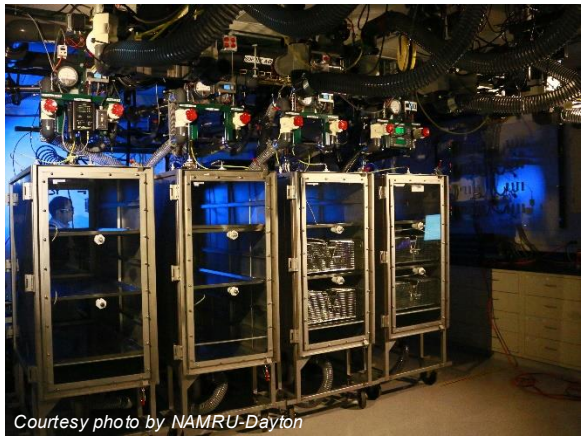
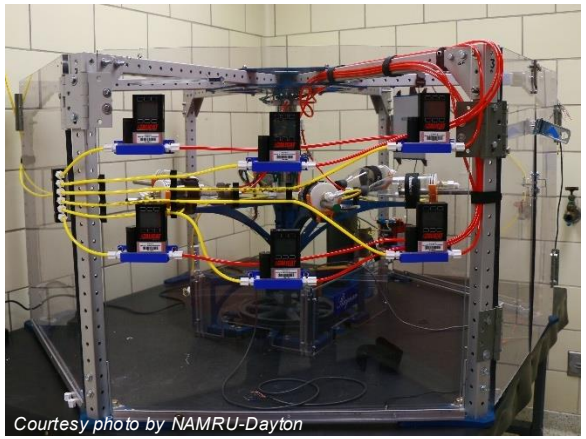
Environmental Health Effects Laboratory

Science Facilities:

- Analytical/Chemistry
- Animal Exposure Facility
- Animal Imaging
- Animal Pulmonary Assessment
- Cell/Tissue Culture (*In vitro*)
- Pre-clinical Assessment
- AFRL Animal Facility
- Animal Behavioral/Cognition
- Neuroelectrophysiology
- Physical Performance
- Animal Hearing Assessment
- Molecular Biology
- Rodent Centrifuge




Courtesy photo by NAMRU-Dayton


Courtesy photo by NAMRU-Dayton

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Naval Aerospace Medical Research Laboratory

Mitigate and prevent leading factors associated with aviation mishaps.
Protect and enhance the health, readiness, and performance of aircrew.

Acceleration & Sensory Science

Environmental Physiology

Expeditionary Medicine & Biomedical Sciences

Brain & Cognitive Sciences

Research Devices & ETSS Program

U.S. Navy photo by Mass Communication Specialist 3rd Class Wyatt L. Anthony/Released


U.S. Marine Corps photo by Staff Sergeant Mark E Morrow Jr.


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Naval Aerospace Medical Research Laboratory

Core Research Programs

- Acceleration & Multisensory Effects
  - Vestibular Physiology
  - Spatial Disorientation
  - Motion Sickness
- Aircrew Neck/Back Pain & Injury
- Cognitive Neuroscience
- Altitude Effects
  - Respiratory Physiology
  - In-cockpit Physiologic Monitoring
- Fatigue Assessment & Mitigation
- Vision Standards & Performance
- Aviation Personnel Selection Testing
- En Route Care
- CBRN & Human Performance
- Aircrew Physiology

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Naval Aerospace Medical Research Laboratory

Research Facilities

- Human Rated Motion Platforms
  - Disorientation Research Device/Kraken
  - MOOG
  - Vertical Linear Accelerator
  - Vestibular Research Lab
- Spatial Disorientation Simulators
- Cognitive & Applied Performance Lab
- Altitude Effects
  - Environmental Chamber
  - Reduced Oxygen Breathing Environment
  - Sensors Lab
  - Respiratory Physiology Labs
  - Unmanned Breathing Systems Lab
- Operational Biomechanics & Ergonomics (OBiE) Lab


Department of the Navy photo


U.S. Navy photo by Megan Mudersbach/Released


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Naval Aerospace Medical Research Laboratory

Research Facilities

- Sleep & Fatigue Lab
- Vision Research Labs
  - "Bug Eye" Collimated Light Flight Simulator
  - Marksmanship Performance & Laser Research Lab
  - Vision Performance Laboratory & Eye Examination Lane
  - Night Vision Goggle Lab
- Mixed Reality Simulation
- Naval Extended Reality User Support Lab
- MV-22 Osprey
- Fabrication Facility
- Wet Lab

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Hot topics

- AI assist for health status monitoring
- AI assist for remote medical decision making by non-experts
- Unmanned patient movement
- Personal battlefield exposure monitoring (e.g., chemical, thermal, blast exposures)
- Cognitive workload management in advanced aircraft and human-machine teaming
- Health and performance in cold environments

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Leadership Team

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