



## MEET THE NAMRU-D PROFESSIONALS

The NAMRU-D scientists bring to the table a powerful array of expertise covering a broad range of topics. We have doctorate and master's trained professionals in the following areas:

- Aerospace Physiology
- Applied Behavioral Science
- Applied Physiology
- Biomedical Engineering
- Biology
- Business Administration (Healthcare)
- Chemical Engineering
- Chemistry
- Cognitive Neuroscience & Psychology
- Cognitive Psychophysiology
- Differential Psychology
- Education
- Environmental Engineering
- Ergonomics / Human Engineering
- Experimental Psychology
- Flight Surgery
- Health & Physical Education
- Human Factors Psychology
- Industrial & Organizational Psychology
- Interdisciplinary Studies in Management
- Microbiology
- Neuroscience
- Physical Biochemistry
- Public Health
- Sports Medicine / Physiology
- Toxicology
- Zoology

Our co-location with the Air Force's 711th Human Performance Wing at Wright-Patterson Air Force Base facilitates direct collaboration and allows us to leverage their extensive research capabilities. As a result, **NAMRU-D is the one-stop research lab for answering your aeromedical and environmental health scientific questions.**

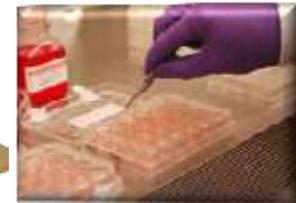
## WORKING AT NAMRU-D

NAMRU-D is a nationally recognized employer of choice which emphasizes professional and personal development, teamwork and work-family balance for all its employees. The result of our policies is a collection of exceptionally motivated and capable scientists, technicians and support staff all devoted to one thing: outstanding research. In recognition of our flexible and employee-centric policies, NAMRU-D was awarded the prestigious When Work Works Award (formerly known as The Alfred P. Sloan Award for Excellence in Workplace Effectiveness and Flexibility) in 2014.

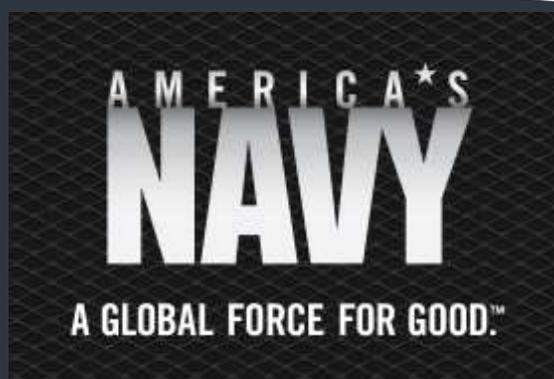
If you are seeking employment at Naval Medical Research Unit Dayton, consult USAJOBS.gov or contact our Human Resources Office at (937) 938-3914.



# Naval Medical Research Unit Dayton



## NAMRU-D



Naval Medical Research Unit Dayton  
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Wright-Patterson AFB, OH 45433  
(937) 938-3872



## Delivering solutions

- ★ To the Field
- ★ To the Fleet
- ★ For the Future

# Naval Medical Research Unit Dayton

DELIVERING SOLUTIONS



## ENVIRONMENTAL HEALTH EFFECTS

The Environmental Health Effects Directorate (also referred to as the Toxicology Directorate) studies the toxicity of chemicals and materials used in military operations that may affect our military and civilian populations. NAMRU-D has the capability to study toxic effects of materials using both *in vitro* and *in vivo* systems and then conduct risk assessments using *in silico* modeling approaches. Our *in vitro* lab is able to evaluate the cytotoxicity, mutagenicity, genotoxicity, and the mechanism of action of toxins. Animal systems are used to examine the toxicities of materials via various routes of exposure. We have particular expertise in evaluating inhaled toxins and have the ability to precisely test gases, vapors, aerosols, particulates and nanoparticles using both whole-body and nose-only inhalation chambers. The results of our studies are used to develop state-of-the-science health protective exposure standards for our military and civilian populations.

### Core Capabilities

- ✦ **In vivo Toxicology** (Includes all potential exposure routes with a specialization in inhalation)
- ✦ **In vitro Toxicology** (animal/human cell lines and tissue models)
- ✦ **Toxicological Endpoint Determinations** (Neurobehavioral, Neurophysiological, Histology and Analytical/Clinical Laboratory)
- ✦ **Physiologically-Based Pharmacokinetic (PBPK) Modeling** (development and application)
- ✦ **Risk Assessment** (derivation of health protective exposure limits)

### Core Science Facilities

- ✦ **Access to Accredited Animal facility with necropsy, surgical and histology capabilities (AAALAC)**
- ✦ **Animal Inhalation Exposure Unit** (largest within DoD)
- ✦ **Analytical Laboratory**
- ✦ **Clinical Laboratory**
- ✦ **Cell Culture and Molecular Biology Facilities**
- ✦ **Neurobehavioral and neurophysiology Laboratories**



## AEROMEDICAL

The Aeromedical Directorate conducts basic and applied research to enhance the health, safety, and performance of naval and military pilots and aircrew. NAMRU-D's human-rated motion platforms include the Disorientation Research Device (DRD), the Visual Vestibular Sphere Device (VVSD), the Vertical Linear Accelerator (VLA), and the Neuro-Otologic Test Center (NOTC). Each device is capable of unique motion profiles, affording independent control of visual and vestibular stimuli to isolate sensory interactions associated with spatial disorientation and motion sickness. The DRD is a one-of-a-kind spatial disorientation research device capable of motion profiles with 6 degrees of freedom and up to 3 Gz resulting in a highly realistic experience for the pilot participants. NAMRU-D's hypoxia program is supported by a lab suite capable of running up to six Reduced Oxygen Breathing Devices (ROBD) each of which can simulate altitude exposures at up to 34k' under normobaric conditions. NAMRU-D facilities also house a Vision Science Center suite containing a full array of ophthalmic equipment and a fully instrumented sleep lab for fatigue research. This unique assortment of capabilities enables NAMRU-D to transition validated knowledge and effective technologies to the fleet that will mitigate and prevent leading factors associated with aviation mishaps.

### Core Capabilities

- ✦ **Altitude/Hypoxia Effects**
- ✦ **Fatigue Assessment and Mitigation**
- ✦ **Motion Sickness Countermeasures**
- ✦ **Spatial Disorientation**
- ✦ **Vision Standards and Protection**
- ✦ **Aviation Personnel Selection Testing (manned & unmanned)**

### Core Science Facilities

- ✦ **Disorientation Research Device (DRD)**
- ✦ **Spatial Disorientation simulator Laboratories (2)**
- ✦ **Visual Vestibular Sphere Device (VVSD)**
- ✦ **Vertical Linear Accelerator (VLA)**
- ✦ **Neuro-Otologic Test Center (NOTC) with state-of-the-science Motion Sickness Chair (Barany Chair)**
- ✦ **Normobaric Hypoxia Chamber**
- ✦ **Hypoxia Laboratory with 6 Reduced Oxygen Breathing Device's (ROBDs)**
- ✦ **Small Hypobaric Chambers (for sensor testing at altitude)**
- ✦ **Night Vision Laboratory**
- ✦ **Physical Performance Laboratory**
- ✦ **Sleep Laboratory**

## WORKING WITH NAMRU-D

NAMRU-D participates in a wide variety of collaborative efforts with military, government, academic and civilian research organizations. Our goal is to achieve the customer's research objectives in a cost-effective, expeditious and professional manner. We have the capability of conducting benchtop, animal and human research. NAMRU-D has its own Institutional Review Board (IRB) to monitor our human research protocols.



If you are interested in more information about collaborating with NAMRU-D, please contact the relevant Director or our Public Affairs Officer.

## SCIENCE DIRECTORS

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