Seeking Funding Outside the Norm: Unique Opportunities Within Military Research

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Outline

1. USARIEM Introduction
2. Military Medical Research Overview
3. Educational & Training Opportunities
4. Types of Military Research Efforts (basic to advanced)
5. Research Funding Opportunities
6. Online Resources
US Army Research Institute of Environmental Medicine (USARIEM)

4 Research Divisions

Biophysics & Biomedical Modeling
- Biomedical Modeling
- Non-Combat Injury Prevention Modeling
- Physiological Monitoring
- Biomedical Sensors

Thermal & Mountain Medicine
- Heat Stress Physiology
- Cold Stress Physiology
- Altitude and Hypoxia Stress
- Protective Equipment and Microenvironment
- Hydration

Military Nutrition
- Nutritional Physiology & Metabolism
- Dietary Requirements
- Eating Behavior & Food Choices
- Nutritional Evaluation of Field Rations
- Dietary supplements

Military Performance
- Physical Performance Optimization
- Injury Reduction/Bone Health
- Military Biomechanics
- Cognitive Performance
- Injury Epidemiology
- Deployment Health & Protection

Diverse Research Personnel

Civilian & Military Researchers
- Physiologists
- Biomedical Engineers
- Psychologists
- Epidemiologist
- Dieticians
- Biologist
- Physical Therapists
- Occupational Therapists
- Physicians Assistant

Postdoctoral Fellows, Graduate & Undergraduate Students (ORISE)
**Mission:**

Conduct research to sustain & enhance performance (physical & cognitive) & minimize medical problems associated with military operations at environmental extremes (heat, cold, & high terrestrial altitude).

**Research Thrusts:**

- Heat Stress
- Cold Stress
- High Terrestrial Altitude & Hypoxia Stress
- Hydration
- Protective Equipment & Microenvironment
Unique Facilities & Research Capabilities

Hypobaric Chambers  |  Biomechanics Lab  |  Water Immersion Lab  |  Thermal Chambers

Human Performance Laboratories
Military Medical Research & Technology

Laboratories Maintain Capabilities to Address the Full Spectrum of Threats to Service Member Health & Performance

- Environmental Hazards
  - Heat and Cold
  - Altitude
  - Toxic Industrial Chemicals & Materials

- Chemical/Biological Warfare Threats
  - Bacterial Threats
  - Viral Threats
  - Toxin Threats
  - Nerve Agents
  - Vesicant Agents
  - Blood Agents

- Endemic Disease Threats
  - Parasitic Diseases
  - Bacterial Diseases
  - Viral Diseases

- Combat Injuries
  - Hemorrhage
  - Head Trauma
  - Blast Injury

- Operational Stressors
  - Sleep Deprivation
  - Traumatic Stress & Situational Stressors
  - Physical Workload
  - Cognitive Burden & Operational Complexity

- Systems Hazards
  - Laser
  - Blast
  - Biomechanical Insults & Stresses
  - Noise

- Battle Sequelae
  - Loss of Limbs
  - Loss of Tissue
  - Loss of Vision
  - Pain

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Educational & Training Opportunities

**A potential gateway to the DoD**
Educational & Training Opportunities

- Open to US citizens & US nationals
- 3 year highly competitive fellowship
- attend any US university of interest
- full tuition + all fees
- monthly stipend - $34k/year
- <$1k/year medical insurance

https://ndseg.asee.org

Eric Jankowski, NDSEG Fellow

“The academic freedom that is enabled by the NDSEG fellowship is invaluable. With this support I’ve been able to pursue the projects that I’ve found most interesting, not those that have been dictated by someone else's grant. I feel very fortunate - this is the way science is meant to be done!”
Educational & Training Opportunities

**Science, Mathematics And Research for Transformation (SMART) Scholarship for Service Program**

[https://smart.asee.org](https://smart.asee.org)

- Undergraduate or graduate degree
- Science, Technology, Engineering & Mathematics (STEM)
- Full tuition, fees + stipend ($25-38k)
- DoD job upon graduation

The Science, Mathematics And Research for Transformation (SMART) Scholarship for Service Program is an opportunity for students pursuing an undergraduate or graduate degree in Science, Technology, Engineering, and Mathematics (STEM) disciplines to receive a full scholarship and be gainfully employed upon degree completion. Students pursuing degrees related to the following are encouraged to apply:

- Aeronautical and Astronautical Engineering
- Biosciences
- Chemical Engineering
- Chemistry
- Civil Engineering
- Cognitive, Neural, and Behavioral Sciences
- Computer and Computational Sciences and Computer Engineering
- Electrical Engineering
- Geosciences
- Industrial and Systems Engineering (technical tracks only)
- Information Sciences
- Materials Science and Engineering
- Mathematics
- Mechanical Engineering
- Naval Architecture and Ocean Engineering
- Nuclear Engineering
- Oceanography
- Operations Research (technical tracks only)
- Physics
Educational & Training Opportunities

http://orise.orau.gov/

- Undergraduate Students
- Graduate Students
- Recent Graduates
- Postdoctoral Fellows
- Faculty
- K-12 Students & Teachers
- Research Teams

Develop Individual Development Plan (IDP) with mentor to achieve educational/training goals.

*sponsor: US Department of Energy (DOE)*
Types of Military Research Efforts

**Terminology matters!**
Basic Research (6.1)

Systematic study that provides fundamental knowledge or understanding of phenomena.

- Define effects on physiology
- Develop models
- Identify new countermeasures / candidates
- Assess threat (e.g., environmental, infectious, etc.)
Applied Research (6.2)

Translates promising basic research into solutions for broadly defined military needs.

- Evaluate candidate countermeasures
- Validate models
- Establish effects of treatment(s)
- Down-select candidate
Advanced Technology Development (6.3)

Development & integration of technology products for field experiments & tests (validation in relevant environment).

- Approval of IND
- Test FDA-licensed product for additional use(s)
- Evaluate pre-clinical safety (Phase 1)
Research Funding Opportunities

**Collaboration is Critical!**
Research Funding Opportunities

US Army Medical & Materiel Command (USAMRMC)

Core Funding (Presidential budget)

Non-Core Funding
Congressional line-item additions to budget

Military Operational Medical Research Program (MOMRP)

CDMRP - specific topics
DMRDP
MOMRP BAAAs - generic
AFIRM - University-based consortia
DARPA
ONR
Research Funding Opportunities

Congressionally Directed Medical Research Programs (CDMRP)

- Congressionally appropriated funds for a specific topic
- ~25-30% funding level with ~$0.5-1 billion/year
- Direct + indirect costs – tuition / fees are NOT funded
- Open competition – consumers included as reviewers
- Period of Performance: ≤4 years
- Detailed oversight – quarterly reports, site visits, etc.

http://cdmrp.army.mil/default
Research Funding Opportunities

Defense Medical Research Development Program (DMRDP)

- Joint Service – Army, Navy, Air Force members & their families
- Topic coordinated through Joint Program Committees (JPCs)

- Direct + indirect costs – ~$1.5-4 million/year
- Complimentary to core funding initiatives

“Unnecessary duplication of funding, or accepting funding from more than one source for the same research, is prohibited.”

http://cdmrp.army.mil/funding/dmrdp
Keys to a Successful Research Application

✓ Partnerships with DoD scientists
  - What is the military mission?
  - What are the research thrusts & military medical threats?
  - What are the current “gaps”?
  - Terminology matters

✓ Applications requiring extensive equipment investment will not be favored
  - Funding is not designed to facilitate the setup of new labs

✓ Innovative research providing rapid solutions
  - Proven track-record of success
  - Collaborative, team player
  - Rapid transition
Take Home Message

✓ Think NON-traditionally

  Unique DoD opportunities for education/training/research

✓ What do YOU bring to the table that is unique?

✓ There is strength in numbers - make as many meaningful contacts as possible throughout your career

✓ Always be looking to build your CV

  Diverse experiences are a strength
Online Resources

  Focus: soldier, ground force mission (6.1 only)

  Focus: pilot, aerospace mission (6.1 only)

  Focus: sailor, marine, ship, ocean mission (6.1 - 6.3)

  Focus: defense-wide technology innovation (6.1 – 6.3)

  Focus: weapons of mass destruction (6.1 – 6.3)

Chemical Biological Defense Program (CBDP): www.jpeocbd.osd.mil/
  Focus: chemical/biological warfare defense (6.1 - 6.3) – managed through DTRA

Defense Medical R&D Program (DMDRP): dmrdp.dhhq.health.mil/home.aspx
  Focus: military specific medical research (6.1 – 6.3)

Congressional Directed Medical Research Program (CDMRP): cdmrp.army.mil/
  Focus: medical research of interest to a Congress person (6.1 only)
Thank You!

Questions?