FY2016

Federal Initiatives of the University of Montana

Royce C. Engstrom
President

The University of Montana
FY2016 Federal Initiatives

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For details or more information, contact Dr. Scott L. Whittenburg, Vice President for Research and Creative Scholarship, The University of Montana, at VPR@umontana.edu or (406) 243-4766
Defense and Veterans

Defense Critical Languages and Cultures Program
UM has received funding from the Department of Defense, Operations and Maintenance, Defense-wide, for language instruction and cultural background training related to Arabic and Chinese. A special focus has been Afghanistan, although the program is expanding into other areas and needs to turn its focus more in these new directions. Funding has been obtained through direct contact with DOD/National Security Education Program and response to BAAs. The University is also interested in looking at larger contract opportunities.

Cybersecurity and Big Data
The University of Montana is expanding our current efforts in a two-year cybersecurity degree and the newly created Cyber Innovation Laboratory, developed in collaboration with state technology companies, to create new certificate and degree offerings involving cybersecurity, big data and assurance. Working in collaboration with the IBM’s Academic Initiative, the University already boasts a national, first-of-its-kind undergraduate course in stream computing, allowing students to learn real-time analytical skills in mathematics, computer science and business process optimization. This initiative will expand our commitment to education in this field critical to local businesses and promote research in an area of increasing federal support.

Neural Injury Center
The UM Neural Injury Center is part of UM’s campus-wide initiative to provide diagnostic care and rehabilitative intervention for veterans and other Montanan’s with traumatic brain injury (TBI). The Center stands apart as a resource for veterans as it provides state-of-the-art clinical intervention for patients within a university setting that is not only coupled with basic biomedical research, but facilitates the direct integration of their rehabilitative therapy with their educational goals.

Agriculture, Ecology and Fire

McIntire Stennis Cooperative Forest Research Program
The McIntire Stennis program provides support to state-certified Schools of Forestry across the U.S. The program is funded under the USDA’s National Institute for Food and Agriculture (NIFA). Funds are formula-based and must be matched on a one-to-one basis. Funds can be used for research and training across a broad variety of efforts including ecological restoration; catastrophe management; valuing ecological services; energy conservation, biomass and biobased materials; carbon sequestration and climate change; fostering healthy forests; and maintaining competitiveness in the forestry resource sector. The FY 2014 House number is $32.934 million and the Senate number is $33.961M.

Wildland Fire Science Partnership
The Wildland Fire Science Partnership is a joint program of the US Forest Service, the University of Montana and the University of Idaho. It is funded under the Forest Service/Join Fire Science account in the Interior Appropriations Bill and operated out of the Rocky Mountain Research Station in Fort Collins, CO. Current funding for the Partnership is $2.6 million which is divided as follows: $1.3 million to the Forest Service and $650,000 each to UM and UI. The program is designed to integrate multiple fire programs to give wildland fire managers new approaches, techniques, information and advanced tools to help them address rising fire suppression costs, deteriorating ecosystems, increasing fire hazards and other disturbances that affect water and environmental quality.

Wildlife Biology
The University of Montana is a leader in both educating students in wildlife biology and in conducting research in selected areas. Montana’s tourism and timber and agricultural industries are dependent on understanding of the wildlife-habitat relationships. UM can be -- and needs to be -- a leader in the emerging fields of conservation genetics, landscape pattern and connectivity and quantitative wildlife ecology. It can build on its expertise in threatened and endangered species, the maintenance of biological diversity and problems associated with small
population sizes. UM will be seeking research funding for these areas. We may also consider a workshop or conference designed to identify the top 10 challenges in wildlife biology research, moving beyond individual species to more integrative approaches.

USGS Cooperative Research Unit (CRU)
UM houses the Montana Cooperative Wildlife Research Unit. Research emphases within the Unit include ecology and management of carnivores, applied landscape ecology, management of large game, interactions between forest management and wildlife, environmental influences on the demography and diversity of birds and related issues. CRUs generally have several positions assigned to a campus. For FY 2013, the budget request was $18.921 million, a slight increase over the FY 2012 appropriated level of $18.7 million but a slight reduction from the $19.1 million appropriated in FY 2012.

Forest Products/Wood Utilization
For many years, UM participated in a Wood Utilization Research (WUR) consortium that consisted of 14 institutions. Funding was earmarked under USDA/NIFA and used for research on sustainable bioproducts from wood and woody residues, advanced engineered wood and biopolymer composites, biofuels, biopharmaceuticals and the manufacture, marketing and economic analysis of these bioproducts. While there are no longer earmarks, some language which seems to have similar objectives has been included in the Agriculture Appropriations Bill under the title, “forest products”.

NSF EPSCoR
Montana NSF EPSCoR is a statewide science infrastructure program funded by the National Science Foundation. EPSCoR, which stands for Experimental Program to Stimulate Competitive Research, builds capacity across the state in science and technology through investments in people, tools, and ideas. Montana currently has an NSF Track-1 EPSCoR of approximately $4M per year to develop research infrastructure. The NSF EPSCoR program also funds Track-2 awards which include several NSF EPSCoR jurisdictions and Track-3 awards which are single faculty awards.

Health and Education

Neuroscience – the Brain Initiative
The University of Montana has embarked on the formation of the Brain Institute in response to the national Brain Initiative. UM has a number of faculty, departments and schools/colleges that would be major contributors to the Brain Institute include the recently proposed Center for Neural Injury and Rehabilitation, the School of Physical Therapy and the Skaggs School of Pharmacy, within the College of Health Professions and Biomedical Sciences and the social sciences and psychology within the College of Arts and Sciences. The proposed institute will provide a collaborative platform for university researchers to seek additional federal funding in neuroscience and help support educational initiatives in this and related fields.

Montana Safe Schools Center
The MSSC program provides schools not only in Montana but across the US with training, research and professional development services covering a variety of topics from suicide prevention to emergency response and crisis management. UM houses MSSC, but all funding comes from grants and consultation fees, which are negotiable based on the needs and resources of the school. In particular, the Center is interested in working with the Department of Defense and the services to address domestic violence and child abuse among the force. Safe Schools for FY 14 the House number is $75 million and the Senate number is $150 million.

Rural Institute on Disabilities
UM’s Rural Institute on Disabilities teamed with the Research and Training Center on Independent Living at the University of Kansas to develop this program. Living Well with a Disability aims to reduce the severity and incidence of secondary conditions (e.g. depression and pressure sores) by promoting healthy, independent living. Federal
funding currently comes from the National Institute on Disability and Rehabilitation Research (NIDRR) in the Department of Education.

Re-authorization of the Rehabilitation Act of 1973 / Workforce Investment Act
UM’s RTC:Rural program currently receives funding from the NIDRR, a division of the Office of Special Education and Rehabilitative Services within the Department of Education. The Rehabilitation Act of 1973 actually requires the NIDRR to fund a rural center. This requirement does not appear in at least one draft of the Workforce Investment Act of 2012 though, leaving the potential for a rural center to appear at odds with the NIDRR’s long-range plan. Changing the language to include a requirement will help ensure the RTC:Rural program receives NIDRR funding.

NIH IDeA
The IDeA program is NIH’s version of EPSCoR. There are two components to IDeA. One is the INBRE program which seeks to develop a network of researchers in the medical and biomedical fields and the other is the COBRE program which supports the development of research clusters. UM has been successful in the COBRE program including a recently announce COBRE 3 award this year. For FY14 the Senate number is $275.957 million.

Pell Grants
Students pursuing undergraduate degrees can apply for this need-based grant, which does not have to be repaid, by filling out FAFSA. Awards are determined based on expected family contribution, cost of attendance per institution, the student’s enrollment status and whether the student attends for a full academic year or less. The grant will now only cover 12 straight semesters, rather than the previous 18. Funds will only cover fall and spring courses, leaving students who take summer courses to find other sources of funding, such as Stafford loans. A recent change to that structure means the loans begin accumulating interest at the end of study, whether the student has graduated or is no longer enrolled. It also led to significant decrease in summer enrollment at UM. About 37 percent of UM students receive Pell Grants.

Native American

UM National Native Children’s Trauma Center
Suicide leaves a deep mark in Montana communities and in the social fabric of our state. In June 2014, the U.S. Centers for Disease Control ranked Montana and Wyomining highest in the nation for suicide. Montana has ranked in the top 5 states for death by suicide for each of the past 35 years. Nationally, the annual economic cost of suicide is calculated at $42.2 billion. Separately, for every suicide death there is an average of 6 individuals or “survivors” profoundly impacted by the loss. These numbers climb substantially in small, close knit communities and on Montana’s seven American Indian reservations. Accordingly, in Montana the number of individuals deeply impacted is, at a minimum, 1,400 each year but may be 4,000 or higher. The University of Montana’s National Native Children’s Trauma Center (NNCTC) and Montana Safe Schools Center (MSSC) proposes creation of a framework for dissemination to public health departments, hospitals, clinics and schools in each of the Montana’s 56 counties, as well as the Montana Office of Public Instruction and the Department of Public Health and Human Services. Intervention and protocol training via the proposed Montana Resiliency Network will be available through 9 regional trainings per funding year, with trainer support, cross-agency referral, protocol, advocacy, and case management assistance facilitated by 9 regional, part time staff. The framework will outline clear, concise and practical, guidance for: 1) suicide prevention programming, 2) media messaging, 3) suicide screening, 4) emergency department assessment, 5) patient referral, 6) follow up care, 7) emergency transportation, 8) workplace suicide prevention, 9) postvention and 10) training.

Native American and Rural Health
The University of Montana and Montana Tech propose to work with Montana Northern Plains Indian and rural populations across the state to build capacity to address health disparities and disability due to chronic conditions and disease. The University will use a grassroots, community-based participatory approach to assess gaps in critical resources, knowledge and services focused on prevention, early detection and early intervention of diseases particularly relevant to Native American and rural populations such as type-2 diabetes, obesity, cancer, trauma and injury.
MAKING AN IMPACT ON
Wildlife Biology

THE UNIVERSITY OF MONTANA’S Wildlife Biology Program is – and will continue to be – a leader in the emerging fields of conservation genetics, landscape connectivity, and quantitative wildlife ecology.

Protecting the park and forest lands of Glacier National Park and the Crown of the Continent for future generations should be high priority. This is a special area of our nation, but one subject to significant impact by climate and weather-related events. The long-term implications for wildlife in the area are disturbing.

The U.S. Geological Survey (USGS) has taken a primary role in researching and responding to needs of the area. One example is the National Climate Change and Wildlife Science Center (NCCWSC), created in 2008 to assist in meeting the challenges of climate change and its effects on wildlife. The NCCWSC has four primary goals:

- Forecast fish and wildlife population and habitat changes in response to climate change;
- Assess the vulnerability and risk of species and habitats to climate change;
- Link models of physical change (such as temperature and precipitation) with models that predict ecological, habitat and population responses;
- Develop standardized approaches to monitoring and help link existing efforts to climate and ecological or biological response models.

Other divisions of USGS are also pursuing research and management strategies that are associated with climate change and wildlife. The Northern Rockies Science Center, for example, has a number of scientists in the Glacier area.

But, much more remains to be done. The University of Montana can assist by collaborating with the USGS, involving its students in the Wildlife Biology Program, and building on existing research strengths, including predicting population trends, identifying critical landscape corridors, invasive species management, developing genetic tools for conservation, assessing physiological stress, and protecting freshwater ecosystems.

The University of Montana is a leader in educating students in wildlife biology and conducting wildlife research. The Wildlife Biology Program was established in 1936 and currently enrolls students from 37 states and 8 countries. Research has covered a wide range of species, including wolverines, bear, elk, snowshoe hare, mountain goats, bighorn sheep, bull trout and westslope cutthroat trout. Research has tended to focus on small populations and corridors for migration, which are of particular importance to maintaining individual species and overall biodiversity.

One of the strengths of the University’s program is its location – close to Glacier National Park and the Crown of the Continent, as well as thousands of acres of other park, forest, and wilderness land. These are the habitats for the many species that inhabit our national parks and forestlands, sustaining biodiversity, ecosystem services, and the spectacular Northern Rockies ecosystem—a national treasure which attracts scientists and tourists from all over the world.

These areas are, however, facing an increasing number of challenges from extreme weather events, intense wildland fires, water scarcity, and the threat of invasive species. All of these can affect the ecology and habitats which wildlife depends upon, putting new stresses on ecosystems already responding to long-term climate trends. While there is widespread knowledge of how these trends are threatening the iconic glaciers of Glacier National Park, other impacts are less well known and understood.

These impacts on ecosystems and habitats ultimately affect animal food supplies, hibernation cycles, migration, population growth, and interactions with human beings. Understanding and mitigating these impacts is a pressing need in order to protect native species, maintain biodiversity and the many valuable services intact ecosystems provide, and retain the heritage which is so intertwined with our nation’s history and concept of the American west.

FOR MORE INFORMATION
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BUDGET REQUEST
Budget request: For FY 2016, the University requests that $2 million be included in the USGS budget (perhaps under NCCWSC) to expand research on habitat and ecosystem impact on the major and threatened species of the Glacier and Crown of the Continent area, with emphasis on development of management strategies to protect the wildlife of the area.
MAKING AN IMPACT ON Wildland Fires

THE WILDLAND Fire Science Partnership is a cooperative research and science delivery team of scientists and students from the University of Montana, the University of Idaho, and the U.S. Forest Service Rocky Mountain Research Station. Innovations from the WFSP are increasing effectiveness of fire management through application of relevant science, educating current and future fire professionals, and sharing science with users.

**FY16 Projects:**

**Smoke and fuels science.** We will partner with the National Wildland Fire Coordinating Group to deliver an updated smoke management guide and will deliver content for both education and training courses, made broadly accessible online.

**Mobile technology for improved firefighter safety.** We will deliver applications that support better decision-making and that increase situational awareness

**Initial Decision Information Systems (IDIS).** IDIS will focus exclusively on the first and most important decision on every fire: how to engage. IDIS’s tools, data, maps, and information will provide extensive initial decision support for fire managers.

**Satellite assessments before, during and after fires.** Remote sensing and field assessments are widely used to map fire potential, on-going fires, and fire effects. Our guides improve effectiveness helping to predict and assess burn severity.

**Learning Networks.** WFSP will integrate boots-on-the-ground service with science, technology, and education. We will bring fire professionals to the lab to work with cutting-edge technology. Students will gain academic and operational experience as they work on degrees. Our professional networks allow sharing of new ideas and strategies and provide outreach strategies to managers and citizens.

Wildfires are on the rise. Fire seasons today are longer, involve more large fires, and drive up suppression and rehabilitation costs. Effective fire management must protect people, limit money spent, and foster resilience to future fires. Strategic, cohesive action, grounded in science is needed. That science must be shared with the public. Science can help managers mitigate wildfire risks and help residents, local governments, and public policy work together to improve wildfire management. Without proactive work, fire seasons will become more destructive and costly, threatening people and landscapes in ever-expanding wildland-urban settings.

The Wildland Fire Science Partnership has provided independent perspectives on natural resource management; extraordinary scientific, technical, and educational capacity; and unique interdisciplinary teams of scientists, students, and managers. We provide solutions and science-based strategies for dealing with the new realities of fire.

- The WFSP is a proven leader in fire science and management.
- We deliver timely, relevant science to land managers, policy makers, and citizens.
- We educate leaders and work with managers to reduce fire costs and increase safety.
- Our work is oriented to economical and sustainable forest and rangeland management.
- We have educated dozens of firefighting students, who are now professional leaders better prepared to deal with current challenges.
- Our technology has save > $500k in fire aviation costs and reduced exposure of firefighters to hazard.
- We have assisted people in effectively addressing current and future fire challenges.
- We are building research capacity and collaboration to benefit people in the West, the U. S. and the world.

The FY15 Projects listed will: (1) improve fire fighter and public safety, (2) provide science for effective fire management, and (3) further the health and resilience of forests and rangelands.

**FOR MORE INFORMATION**

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**BUDGET REQUEST**

FY16 Request: $2.6M

Program Title: Wildland Fire Science Partnership

Appropriation Bill: Interior. Department: USDA Forest Service
The Defense Critical Language and Culture Program (DCLCP) provides intensive language and culture training for members of the Active Duty Military, the National Guard, Reserve and Intelligence Agencies utilizing a congressionally funded contract through the Defense Language and National Security Education Office (DLNSEO). DCLCP customers are primarily Special Operations Forces (Army and Marine), Intelligence Agencies, and the National Guard. Currently training includes on-site (University of Montana) and synchronous on-line language courses in Chinese, Dari, Farsi, Korean and Pashto; as well as culture courses about the Middle East, Central Asia, China, and Korea. Reflective of the armed forces reduced footprint in Central and Southwest Asia, and the US foreign policy shift towards East Asia, DCLCP has retained Dari and Pashto language capabilities while adding Korean and Chinese language and culture courses.

**BENEFITS of the DEFENSE CRITICAL LANGUAGE AND CULTURE PROGRAM**

DCLCP courses are designed to enable students to learn languages and understand cultures of strategically significant nations in the world of modernity at a time when bilateral and multilateral relations are increasingly complex. DCLCP provides students with language fluency and cultural awareness, essential elements of Counter-Insurgency Warfare, allowing them to conduct effective interaction in a variety of settings with heritage populations through language classes ranging from basic to advance. Each class is instructed by language and culture professors and is an accredited college course from the University of Montana. DCLCP is committed to adapting the content, length, location and timing of instruction and courses offered to fit the needs of military units and US government agencies. Department of Defense test results demonstrate DCLCP students’ end of course fluency rates are the best in the nation.

![DCLCP Test Results](chart.png)

DCLCP has leveraged the academic capabilities of The UM and fully integrated our program to afford our DoD students the optimal academic experience that fortifies them with a deep cultural and area studies understanding of their region and its peoples as well as a language fluency consistent with their diverse needs. Their accomplishments are validated with transferable college credit as well as the opportunity to combine their UM credits with those earned elsewhere and thereby earn a college degree.

**FOR MORE INFORMATION**

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**BUDGET REQUEST**

For Grant Year 2016 the DCLCP requests an award of $2,930,000.00; this amount will enable us to continue providing courses in Chinese, Dari, Farsi, Korean and Pashto while adding courses in Indonesian and Tagalog which have been requested by Command Language Programs of the Army and Marine Special Operations Command.
# Making an Impact on Native American and Rural Health

Montana is home to 58,000 Native Americans and the majority of the population (49,500) live in rural regions of the state. Native Americans residing on Montana’s seven reservations are part of the 60% or more of Montanans living in rural areas where health promotion services and specialty medical care is sparse. The Universities multi-disciplinary leadership team has expertise in Native American health, rural health and disability, health promotion, nutrition, physical activity, public and environmental health, behavioral and clinical psychology, community-based participatory research, continuing education and biomedical sciences.

## Benefits

The two Universities will work with Montana tribal college instructors and their students, tribal health entities and rural health programs to develop and implement educational activities for people interested in Native American and rural health professions. These individuals will participate in behavioral and community health education and technical assistance instruction to enhance skills and knowledge for working with underserved and Native American populations. The cross cutting content of this instruction includes nutrition, physical activity, traditional healing practices, psychology, preventive medicine screenings and early disease detection, community partnership building and basic science research.

The project has a clear link to the University’s long-range vision of assisting Montana communities to decrease health disparities and provide employment and educational opportunities in community and public health professions in minority and underserved populations. The effort will also support increasing health care infrastructure for Montana Indian and rural communities.

The University of Montana and Montana Tech propose to work with Montana Northern Plains Indian and rural populations across the state to build capacity to address health disparities and disability due to chronic conditions and disease. The University will use a grassroots, community-based participatory approach to assess gaps in critical resources, knowledge and services focused on prevention, early detection and early intervention of diseases particularly relevant to Native American and rural populations such as type-2 diabetes, obesity, cancer, trauma and injury. This approach can address health disparities by creating a balance between the scientific rigors of an academic institution with respect for indigenous wisdom about the local situation. The overall goal of the Institute is to promote sustained, improved health among Montana Northern Plains Indian and rural communities.

For Montana’s rural and Tribal healthcare providers there are no single information resources practitioners and consumers can use to make service universally accessible. The information resources developed through the Institute’s community-based participatory processes can meet the needs of individuals working to improve the health of all people living in rural areas. Moreover, the health promotion resources will reduce inappropriate and unnecessary medical service utilization; saving resources and meeting the spirit of healthcare reform for all Americans. Long term plans are to develop a program that will be sustainable and competitive for NIH P20 program grant funding through the National Center for Minority Health and Health Disparities.

## For More Information

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## Budget Request

FY 16 Budget Request: $3.0 million

Potential Federal Sources: CDC, HHS
The Montana Resilience Network
A framework for rural, community collaboration in suicide prevention

BACKGROUND
Suicide leaves a deep mark in Montana communities and in the social fabric of our state. In June 2014, the U.S. Centers for Disease Control ranked Montana and Wyoming highest in the nation for suicide. Montana has ranked in the top 5 states for death by suicide for each of the past 35 years. Nationally, the annual economic cost of suicide is calculated at $42.2 billion. Upwards of 25% of suicide deaths go unreported due to issues such as stigma, inaccurate reporting and institutional barriers to information sharing. Separately, for every suicide death there is an average of 6 individuals or “survivors” profoundly impacted by the loss. These numbers climb substantially in small, close knit communities and on Montana’s seven American Indian reservations. Accordingly, in Montana the number of individuals deeply impacted is, at a minimum, 1,400 each year but may be 4,000 or higher. Unfortunately, research shows that such individuals are 3 times more likely to attempt suicide than the general population. Clearly, support for those grieving is critical in suicide prevention, yet is often overlooked or unaddressed. Despite the good efforts of the State of Montana and numerous, dedicated individuals working on this issue, a critical need still exists for: 1) increasing the number of trained suicide interventionists in the state, 2) improving crisis information sharing across agencies, and 3) creating clear guidance for schools surrounding both suicide prevention activities and recovery or “postvention” protocols after suicide loss.

CRITICAL NEED: A framework outlining suicide prevention, intervention, assessment and recovery / postvention practices for Montana’s urban and rural communities and related skills training through the establishment of the Montana Resiliency Network.

The University of Montana’s National Native Children’s Trauma Center (NNCTC) and Montana Safe Schools Center (MSSC) proposes creation of a framework for dissemination to public health departments, hospitals, clinics and schools in each of the Montana’s 56 counties, as well as the Montana Office of Public Instruction and the Department of Public Health and Human Services. Intervention and protocol training via the proposed Montana Resiliency Network will be available through 9 regional trainings per funding year, with trainer support, cross-agency referral, protocol, advocacy, and case management assistance facilitated by 9 regional, part time staff.

The framework will outline clear, concise and practical, guidance for: 1) suicide prevention programming, 2) media messaging, 3) suicide screening, 4) emergency department assessment, 5) patient referral, 6) follow up care, 7) emergency transportation, 8) workplace suicide prevention, 9) postvention and 10) training.

Resources will be created by the NNCTC / MSSC as well as drawn in part from the Suicide Prevention Resource Center (SPRC), the U.S. Department of Education, the National Suicide Prevention Lifeline, and the Montana Department of Public Health and Human Services. Network trainers will deliver best practice programs such safeTALK (Suicide Alertness for Everyone), Applied Suicide Intervention Skills Training (ASIST), Question Persuade and Refer, and Mental Health First Aid and will complement efforts of the State of Montana Suicide Prevention Office and directly support the goals of the State of Montana 2014 Suicide Prevention Plan.

ORGANIZATIONAL CAPACITY
UM’s NCCTC and MSSC build upon over fifty years of program work. Expertise in suicide prevention, response and related trauma stems from prior, community based and national level grant work with the U.S. Substance Abuse and Mental Health Services Administration, the National Child Traumatic Stress Network, publications with the American Psychological Association and the Journal of School Mental Health, and invitations to showcase work by entities such as the American Association of Suicidology and the International Association of Suicide Prevention.

FY 16 Budget Request: $1,475,650.

FOR MORE INFORMATION
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The Montana Center for Work Physiology and Exercise Metabolism (WPEM) is a recognized, Regents approved research center on the University of Montana campus (Missoula). Boasting two fully mobile laboratory setups, and a 3,550 square foot facility, including an environmental chamber that can simulate nearly any location on earth, WPEM has become a preeminent leader in occupational and environmental physiology. To improve the performance and safety of American warfighters, WPEM provides practical, translational research of the highest caliber. Since inception in 2007, WPEM has:

- Secured nearly $8 million in funding
- Published 40 peer-reviewed publications
- Established working relationships with: US Air Force (AFRL, AFSOC, Surgeon General), Department of the Army (DMRD, USARIEM, USAMRMC), Office of Naval Research (ONR), US Special Operations Command (USSOCOM), and the US Forest Service (USFS)

CRITICAL NEED: Objective management of physical stress using combined environmental conditions and real-time physiological metrics is not available. Present approaches that attempt to mitigate environmental related injury are cost prohibitive, inaccurate, and unable to aid in operational and/or training planning to reduce health risk and/or enhance performance. The technologies exist to execute the solution for this problem, but the incorporation of knowledge with the technology is lacking. The purpose for further work is to broaden the environmental stress physiological algorithms and predictive models beyond a theoretical construct and collaborate with commercial partners to advance findings towards product development.

WPEM has the scientific capabilities and the Federal wide connections to collect additional laboratory and field data to demonstrate the cost effectiveness and commercial potential of our environmental stress models, furthering the research capabilities of the University of Montana and contributing to economic development within the state.

Our objectives are:

- Transition research findings to increase the commercial viability of these approaches and predictive models.
- Implement predictive models into physiological monitoring to reduce the incidence of heat and cold related injury within the US military, private industry, and youth and professional sport.
- Contribute to a reduction in accidental death from environmental stress. Heat related injury is the leading cause of death and disability from participation in high school sports.

Immediate US military applications.

1. Provide the primary predictive algorithms for thermal and metabolic management associated with the USSOCOM TALOS project directions.
2. Promote operationally specific training, accomplishing necessary heat acclimation while minimizing the risk for heat injury (HRI).
3. Produce a heat readiness assessment tool that can be immediately implemented into the US military training pipeline.
4. Allow for a user friendly, real-time interface so personnel can revisit the metrics repeatedly to “re-assess” changes (both positive and negative) in heat readiness after periods of deployment, detraining, re-assignment, etc.
5. Produce a pre-enrollment candidate fitness assessment tool to increase recruiter/candidate success so that the issues recognized by the Commandant (fitness and fatness) can be better established prior to entering US military training pipelines.

ORGANIZATIONAL CAPACITY

We approach our research models with the use of a state of the art research facility on the University campus and during aggressive field studies using our three mobile research trailer systems. This combination of efforts increases the capacity at which we can provide meaningful data to teams and organizations within the operational environment.

Our recent work with the Air Force, Army, Office of Naval Research, and USSOCOM has led to the development of advanced predictive algorithms that allow us to forecast environmental stress and the degree to which individuals may be at risk for heat and/or cold related injury or reduced performance. Using these models, we can A) pre-identify candidates that are more susceptible to risk and B) provide a real-time comprehensive physiological monitoring system to greatly reduce injury risk while maximizing training adaptations.

Leveraging our cooperative agreements with the U.S. Army Research Institute for Environmental Medicine (USARIEM) and data share agreement with the Office of Naval Research (ONR) and our collaborations with Air Force Special Operations Command (AFSOC), we have a unique capacity to serve the US military and other agencies to better understand the physiological demands during training and operational stress in every environment.

FY 16 Budget Request: $500,000 – 1,000,000

FOR MORE INFORMATION
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