



Sustaining Health:

THE UNCOMPROMISING PURSUIT OF HEALTHIER PEOPLE AND COMMUNITIES

Defining the Challenge

There is nothing more fundamental to life itself than the pursuit of a sustained state in which all people and communities are healthy and well. This pursuit requires understanding the fundamental bases of health, wellness, and disease and the application of that knowledge to promote the well-being of people and communities. Importantly, this grand challenge spans both physical and mental health and requires considering social, cultural, and environmental determinants of health and well-being. Advances made over the past century related to health have resulted in an unprecedented increase in human longevity, but these advances have been accompanied by increasing challenges related to chronic health problems and skyrocketing costs. During this time health science research has become increasingly technical, fast paced, and multidisciplinary. Continued progress depends on collaboration among basic, applied, and clinical scholars from a broad array of disciplines combined with science-driven outreach and translation to effective interventions and policy, with a goal of improving the quality of life for all.

WSU's Role in the Solution

Washington State University is exceptionally positioned to effectively tackle many aspects of the challenge to improve and sustain health and well-being. The University's land-grant mission supports a critical mass of highly productive faculty and staff committed to improving health through better production of healthful and safe foods, and the sharing of acquired knowledge to important stakeholders. WSU's state-wide campuses are also home to an impressive contingent of basic scientists and clinicians actively engaged in both fundamental and applied health research, including a developing emphasis on public health both domestically and globally. Having a faculty presence in several medically-underserved communities across Washington state allows WSU to train and engage with health care providers embedded in these communities, optimizing health care delivery in these at-risk regions of the state. Specifically, the research done in the WSU College of Nursing works to transform health care to be affordable and accessible for all, starting with underserved communities in the state.

WSU is also positioned to optimize human health by advancing knowledge of the natural, social, and built environments to improve the air we breathe, the water we drink, the creative arts we enjoy, and the communities and buildings in which we work and live. Collaboration and synergy across a wide array of strengths—for example, anthropology, economics, nutrition, fundamental cell and molecular biology, and both basic and applied infectious disease research and epidemiology—allows programs such as the Allen School for Global Animal Health to add vital and unique dimensions to WSU's impact by providing an unparalleled interface among animal agriculture, human health, and economic security on a global scale. In these and other ways, the collective potential for WSU faculty to

creatively and collaboratively advance and sustain human health and well-being is not only vibrant, comprehensive, and holistic but also unique within the state of Washington.

Key Research Themes

- ◆ **Understanding health and the onset and progression of disease**
 - The fundamental biology of life
 - The molecular and cellular bases of disease
 - From brain to behavior
 - Advanced materials and health
- ◆ **Changing the course of disease**
 - Novel therapeutic strategies
 - Pharmacogenomics and individualized therapies
 - Innovative solutions to infectious disease
- ◆ **Promoting individual health and wellness**
 - Healthful foods and nutrition
 - Recuperative sleep
 - Quality exercise
 - Health literacy
 - Behavioral, social, and cultural influencers of health
- ◆ **Promoting healthy communities and populations**
 - Interventions to improve public health and wellness outcomes
 - Health care access in rural and underserved areas
 - Food safety and biosecurity
 - Reproductive sciences
 - Global animal health

Descriptive Sentences of Each Key Research Theme

1. **Understanding health and the onset and progression of disease.** Basic research aimed at investigating human and animal health and disease at the molecular, cellular, and organismal levels is fundamental and essential to determining avenues leading to health promotion and disease prevention and treatment across the lifespan. These research programs span myriad approaches including those utilizing mathematical modeling, molecular and cellular systems, animal models, and clinical and other intervention trials.
2. **Changing the course of disease.** Translating cutting-edge basic science knowledge into health care practice and delivery is needed to change the course of disease. Fundamental knowledge applied to the discovery and development of novel therapies and vaccines remains a critical strategy to improving health and well-being. With advancing understanding of the differences in the fundamental biological makeup of individuals, these therapies can be tailored to maximum benefit with minimal ill effects.
3. **Promoting individual health and wellness.** Effective communication and outreach to deliver evidence-based information to people, families, and communities regarding the biological, environmental, social, and behavioral influencers of health is essential for improving and sustaining individual health. In addition, optimizing the biological and social factors underpinning the production, processing, and distribution of sustainable, adequate amounts of safe plant- and animal-based foods is crucial for sustaining human health and well-being.
4. **Promoting healthy communities and populations.** Promoting and sustaining healthy communities and populations requires population-based translation of many of the same factors required to promote and sustain the health of individuals, including a safe and abundant food supply, reproductive health, and innovative

solutions to infectious disease. In addition to what can be learned from basic biomedical science, physical and mental health and well-being are determined in part by the complex interactions we have with other people as well as with our natural, creative, and built environments. Successful integration across these many dimensions of health is required to develop, test, and implement effective interventions to sustain public health, and especially to reduce disparities in and increase the effectiveness of health care delivery to benefit all people, specifically those in underserved communities.