



RESEARCH PORTFOLIO CASE STATEMENT

Complementary and Integrative Medicine in Clinical Neuroscience

1. VISION STATEMENT

Our vision is to provide a transdisciplinary platform for rigorous scientific evaluation of complementary and integrative therapies, with the goal of implementing their rational use in optimizing neurological and behavioral health. Optimization of health using these therapies encompasses disease treatment, disease prevention and health promotion. Complementary and integrative therapies include natural products (botanicals, diet, and dietary supplements), and mind and body therapies (meditation, yoga, tai-chi, hypnotherapy, movement therapies, acupuncture, spinal manipulation, and massage). The collaboration at OHSU of MD, ND, PhD, DAOM and other related health professional researchers highlights our ability to investigate complementary therapies at various levels from preclinical and clinical studies of efficacy, to mechanism of action, and health services research including cost effectiveness analyses.

We also hold a longer term vision to offer our expertise in complementary and integrative therapy across health disciplines, to contribute to the education arena at OHSU, and to inform health promotion for OHSU's employees and clinical service providers.

2. URGENCY

Many common diseases of the nervous system cause significant disability and pain and/or are related to abnormal behaviors (e.g., stress and addiction). In many cases standard medical treatments fail to address the associated morbidity and produce significant side-effects, whereas complementary and integrative therapies are often effective substitutes with better side-effect profiles. Additionally, the costs to society for managing these diseases of the nervous system are high, but could be significantly reduced with the use of evidence-based complementary and integrative therapies that improve brain health. In addition, health promoting and disease preventing effects of these therapies could significantly improve the well-being of our society, especially for the aging population.

3. RESOURCES

OHSU is known nationally and internationally for complementary and integrative medicine research. OHSU has one of the longest histories of NIH research funding to study complementary therapies, and continues to have a significant amount of federal and other external funding to pursue this research. The strong team of researchers at OHSU is enhanced by close links with three higher education institutions in Portland that train naturopathic physicians, chiropractors, Oriental medicine physicians, and acupuncturists. These factors, along with OHSU's position as a national leader in clinical neuroscience, behavioral neuroscience and basic neuroscience, provide an impressive foundation for transdisciplinary research to optimize the use of complementary therapies for neurological health.

The resources available at OHSU for complementary and integrative research include excellent clinical trials expertise in the Schools of Medicine and Nursing and the Oregon Clinical & Translational Research Institute. OHSU has leading expertise in specific clinical areas including the Departments of Neurology and Behavioral Neuroscience, and Medical Informatics and Clinical Epidemiology. The Bioanalytical Shared Resource Pharmacokinetic Core provides essential



equipment for analysis of biological samples and standardization of some forms of complementary therapies, while the Advanced Imaging Research Center can be used to study biomarkers and mechanisms of action of complementary modalities.

OHSU also has the leading program nationally for training complementary medicine researchers in clinical neuroscience based on its successful history of training grants in the area, and the ongoing success of its trainees.

4. LEADERSHIP

Barry Oken, MD, MS, Professor, Departments of Neurology, Behavioral Neuroscience and Biomedical Engineering

Lynne Shinto, ND, MPH, Associate Professor, Departments of Neurology and Obstetrics & Gynecology

Amala Soumyanath, PhD, Associate Professor, Department of Neurology.

5. PARTNERS

Advanced Imaging Research Center

Bioanalytical Shared Resource Pharmacokinetic Core

Cognitive Systems Laboratory/Northeastern University

Helfgott Research Institute/National College of Natural Medicine

Kaiser Permanente Center for Health Research

Layton Aging and Alzheimer Disease Center

Linus Pauling Institute/Oregon State University

Multiple Sclerosis Center

Oregon Clinical & Translational Research Institute

Oregon Collaborative for Integrative Medicine

Oregon College of Oriental Medicine

Oregon Research Center for Complementary and Alternative Medicine Research in Neurological Disorders

Pacific University

Parkinson's Center

University of Western States

VA Medical Center

6. TRAJECTORY

There was little OHSU complementary and integrative medicine research in neuroscience before 1999 when Dr. Barry Oken obtained, as principal investigator, a 5-year, \$7.8 million NIH-NCCAM P50 center grant and established the Oregon Center for Complementary & Alternative Medicine in Neurological Disorders (ORCCAMIND). ORCCAMIND helped develop ongoing collaborations in this area with local institutions: the Linus Pauling Institute at Oregon State University; University of Western States (then, Western States Chiropractic College); the National College of Natural Medicine (then, National College of Naturopathic Medicine); and the Oregon College of Oriental Medicine.

The next center grant was an NIH-NCCAM 3-year \$1.8 million center grant awarded to Dr. Oken as PI. This U19 grant mechanism was geared to further increase collaborations with local complementary medicine institutions. This grant was focused on expectancy and placebo effects. Each of the four projects had a co-leader from OHSU and from one of the local complementary medicine institutions. Projects encompassed both animal and human studies.



Training of researchers was an important component of the original ORCCAMIND center grant. There were 4 career development grants under the ORCCAMIND center grant. Two awardees (Drs. Amala Soumyanath and Lynne Shinto) continued at OHSU as faculty and have obtained R01 grants as PI's. Dr. Shinto studied several dietary supplements for effects on neurological diseases in clinical trials and Dr. Soumyanath brought a botanical product (*Centella asiatica*) from the lab to the clinic. This emphasis on training new researchers was further facilitated by an institutional NCCAM T32 training grant awarded to Dr. Oken in 2005 and was successfully renewed in 2010. The next T32 renewal proposal has been favorably reviewed and is expected to be funded through at least 2020. The T32 has provided funding for 28 post-doctoral fellows and one Behavioral Neuroscience PhD student based at OHSU or at one of our partnering institutions. Four 5-year clinical training grants have been awarded to post-doctoral fellows finishing their T32 and an additional K23 training grant is highly likely to be funded within the next few months given its favorable reviews.

The complementary medicine neuroscience researchers have worked closely with disease based groups and have brought unique knowledge to these collaborative projects. Research grants and funding have commonly had a focus on aging/neurodegeneration or on multiple sclerosis but there have been other projects studying stress-related disorders and pain, two areas of high cost and limited treatment options making them a priority for complementary research. There are now a half-dozen R-level grants in the general field at OHSU while 15 years ago there were none. Projects at OHSU have encompassed a wide range of CAM approaches including acupuncture, mindfulness meditation, dietary interventions and botanical medicines, reflecting a major expansion of CAM research at OHSU in the last 15 years. Collaborations have continued with the Linus Pauling Institute, National College of Natural Medicine, University of Western States, and the Oregon College of Oriental Medicine. National recognition is present for meditation and yoga intervention trials across several populations and for diet and dietary supplements for delaying age-related cognitive decline.

7. NEEDS

This group needs to have some organizational mechanisms both to bring successful complementary researchers together, and to foster collaborations with more disease-focused neuroscience research groups. This need, and the ones listed below, would likely be served by a formal research Center with cores, training options, and pilot grants.

Pilot Grant Funding: The scientific process of iterative refinement based on results from basic and mechanistic studies and from clinical studies requires multiple studies. Obtaining NIH and other external funding generally requires some pilot data from smaller experiments. It would be very helpful to the process of moving the field forward if there was sufficient and reliable funding to annually award several pilot grants, such as \$50,000 grants to OHSU faculty and \$25,000 to early clinical investigators. The expectation is that these grants would lead to NIH or other external grants. The group has significant expertise in this process by having participated successfully in MRF and NIH center pilot grant programs.

Administrative hub: It is important to have a unified presence. This could be simply administrative, so that an administrator would develop a database of CAM researchers and resources that could be easily accessed by researchers at OHSU, the partners, and industry. It could be fractional salary support for a faculty member to maintain the working collaboration and facilitate communication as new opportunities arise.

Preceptorship Opportunities: In order to increase inter-professional understanding, preceptorship opportunities for OHSU medicine, dentistry and nursing students could be fostered across



disciplines to participate in complementary and integrative medicine research and teaching exposure. For example, funding for mind-body training for clinicians and students is tied to research projects in those areas.

Research Ancillary Support:

Some important services are needed for multiple researchers such as biostatistics and computer programming/engineering. Having a fractional FTE statistician and/or engineer to support the research outlined in this portfolio is a need. Although this type of support is needed for all research, OHSU complementary medicine research has a grant and publication history of using these services in innovative ways. An understanding of the specific needs and approaches of complementary and integrative medicine research would enable such a dedicated person to assist maximally in advancing this research. Importantly, having a dedicated person would be crucial in the initial stages of planning and piloting research projects for grant application purposes. The ongoing Data and Safety Monitoring Board (DSMB) initiated by ORCCAMIND would continue support of complementary medicine in neuroscience projects needing a DSMB.

Inter-professional mentorship: An internship scheme somewhat like the Diversity program where a student from a CAM institution could do a research project with an OHSU researcher would be useful. Some funding would be needed for the research project and student stipend.

Biomarker development grant: Development of the means of measuring biomarkers of good health – neurological or otherwise, that can be a single resource for multiple trials in the neuroscience arena e.g., cognitive status, quality of life questionnaires and ecological momentary assessment. Besides these easily shared outcome markers, neuroimaging and anti-oxidant status are important development areas.

Education and Advocacy: Funds to establish CAM journals in library, education events including conferences and invited speakers, etc. With the changing medical school curriculum this is an opportune moment for greater incorporation of complementary and integrative education in general. Exposing medical and graduate students early in their careers to research in evidence-based complementary and integrative treatments and their neurologic applications is crucial for fostering professional interest in these areas. This could include an Internet/Social Media presence to increase the visibility of complementary and integrative research in neuroscience that may enhance the interest of the public and potential research participants, and, importantly, attract sponsors.