

TO: The Board of Regents Addendum XI-A-6
Academic Affairs Committee

MEETING DATE: April 8, 2022

SUBJECT: Establishment of the Nebraska Center for Women's Health Research in the Department of Obstetrics and Gynecology in the College of Medicine at the University of Nebraska Medical Center

RECOMMENDED ACTION: Approval to establish the Nebraska Center for Women's Health Research in the Department of Obstetrics and Gynecology in the College of Medicine at the University of Nebraska Medical Center (UNMC)

PREVIOUS ACTION: None

EXPLANATION: Women have unique health needs, and most diseases and conditions affect women differently than men. The goal of the Nebraska Center for Women's Health Research is to bring together multidisciplinary scientists from across the University to facilitate collaborative translational and clinical research relevant to pressing women's health conditions and women's health disparities due to gender or ethnicity. The Center will help leverage research resources across the University of Nebraska campuses to strengthen research of women's health differences, conduct health disparities research, provide scientific leadership, and strengthen faculty mentoring.

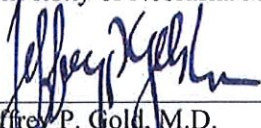
This proposal has been reviewed by the Council of Academic Officers; it also has been reviewed by the Academic Affairs Committee.

PROGRAM COST: \$106,475 for Year 1; \$5,066,205 over five years

SOURCE OF FUNDS: UNMC Departments of Obstetrics and Gynecology and Pediatrics; Olson Center for Women's Health; Child Health Research Institute; College of Medicine Dean's Office; UNMC Vice Chancellor for Research Office; extramural grants, and private foundations.

SPONSORS: H. Dele Davies
Senior Vice Chancellor for Academic Affairs

Jeffrey P. Gold, Chancellor
University of Nebraska Medical Center

RECOMMENDED: 

Jeffrey P. Gold, M.D.
Executive Vice President and Provost

DATE: March 4, 2022



January 7, 2022

Jeffrey Gold
Chancellor, University of Nebraska Medical Center
Executive Vice President and Provost
University of Nebraska
3835 Holdrege Street
Lincoln, NE 68583

Dear Provost Gold:

I am forwarding you the materials relating to a proposed center titled Nebraska Center for Women's Health Research (NCWHR) to be administered by UNMC. The goal of the NCWHR is to bring together multidisciplinary scientists from across departments, colleges, and universities within Nebraska to facilitate collaborative translational and clinical research relevant to pressing women's health conditions and women's health disparities due to gender or ethnicity.

Women have unique health needs, and most diseases and conditions affect women differently than men. The Nebraska Center for Women's Health Research (NCWHR) brings attention to these differences by creating and promoting resources across University of Nebraska campuses that increase awareness of women's health and sex differences and health disparities research. Sex and gender play important roles in how health and disease affect individuals. Understanding their influences improves the health and lives of women and men. A multi-departmental center is proposed because no individual department or college has the multidisciplinary faculty and interdisciplinary approaches to accomplish the goals of the NCWHR.

This proposal has been reviewed by us, and it has our approval. We are requesting your review and approval, that of the Chief Academic Officers, and that it be reported to the Board of Regents at an upcoming meeting.

Sincerely,

A handwritten signature in black ink, appearing to read 'H. Dele Davies'.

H. Dele Davies, MD, MS, MHCM
Senior Vice Chancellor
University of Nebraska Medical Center

University of Nebraska Medical Center New Academic Center

Academic Centers include bureaus and institutes

I. Descriptive Information

Name of Institution Proposing New Center
University of Nebraska Medical Center (UNMC)
Name of Proposed Center
Nebraska Center for Women’s Health Research
Name of the Programs (majors) Involved
Other Programs Offered in this Field by Institution
Administrative Unit(s) for the Proposed Center [e.g. college, school, division, etc.]
UNMC, College of Medicine, Department of Obstetrics and Gynecology
Physical Location, if applicable
UNMC, College of Medicine, Department of Obstetrics and Gynecology, DRC II, 4 th Floor
Date Approved by the Governing Board
Pending
Proposed Date the Center will be Initiated
<i>Upon approval by the Coordinating Commission</i>

II. Review Criteria

A. Purpose and Context for the Center

Women have unique health needs, and most diseases and conditions affect women differently than men. The Nebraska Center for Women’s Health Research (NCWHR) brings attention to these differences by creating and promoting resources across University of Nebraska campuses that increase awareness of women’s health and sex differences and health disparities research. No similar program or instructional unit exists at the University of Nebraska that centers on women’s health research and health disparities.

Sex and gender play important roles in how health and disease affect individuals. Understanding their influences improves the health and lives of women and men.

Women in the United States experience myriad health disparities compared with men in the United States or with women in other high-income countries. For example, the life expectancy of U.S. women increased at a slower rate than that of U.S. men between 1985 and 2010 and based on 2019 data the life expectancy of U.S. women (78.8 years) lags behind women's life expectancy in high-income peer countries like Canada (82.2 years) and United Kingdom (81.2 years). The U.S. ranks lowest in life expectancy at birth for women among countries with high Gross Domestic Product (GDP) per capita. Reports from the National Institutes of Health (NIH) National Institute of Diabetes and Digestive and Kidney Diseases indicate that on average, rates of obesity are higher in women (about 40%) than men (35%) and extreme obesity rates are higher in women (9.9%) than men (5.5%). Among women there is also a significant racial/ethnic disparity in obesity. Over half of non-Hispanic black women (57%), almost half of Hispanic women (47%), over one in three non-Hispanic white women (38%), and about one in eight (12%) non-Hispanic Asian women are obese. Another prevalent sex difference is osteoporosis which affects 54 million adults aged 50 years or older. Women have a four times higher rate of osteoporosis and a two times higher rate of osteopenia compared with men. In a study of Medicare beneficiaries who experienced fractures between 2010 and 2015, non-Hispanic black postmenopausal women had significantly higher prevalence of femur and hip fractures than non-Hispanic white postmenopausal women.

Women also suffer from more simultaneous chronic conditions than men, 38% of women compared to 30% of men have multiple chronic conditions. Of men and women with autoimmune disease, four out of five are women. Conditions such as type 2 diabetes, heart disease, Alzheimer's disease, cancer, and sports injuries affect women and men differently. Furthermore, pain researchers indicate that not only do women suffer more painful conditions, but they also perceive pain more intensely than men do. Conditions such as migraine headaches affect women (18%) at a higher rate than men (6%).

Certain conditions exclusively or disproportionately affect women. The reproductive lifespan is considerably shorter for women than men, resulting in menopause-related changes in metabolism, reductions in bone health, increased risk of cardiovascular disease and stroke, and impaired neural function. The U.S. maternal mortality rate of 17.4 per 100,000 pregnancies ranks last overall among industrialized countries. The women's placenta is arguably one of the most important organs in the body. It influences not only the health of a woman and her fetus during pregnancy, but also the lifelong health of both mother and child. Despite its importance, we know little about this critical but temporary organ. Moreover, an estimated 10% of reproductive-age women experience severe pain from endometriosis. Women also experience pain and infertility because of uterine fibroids, with more than 80% of black women and nearly 60% of white women having uterine fibroids by age 50. Moreover, black women tend to experience onset at a younger age, more severe symptoms and higher rates of surgery and hospitalization. There is limited data on how fibroids affect Hispanic, Asian, and other women of color. These are but a few examples of pressing women's health research issues and health disparities that can be addressed by establishment of the NCWHR.

There have been important advances in medicine and prenatal care in recent years. Despite these advances, birth outcomes are worse in the United States than in many other developed countries. Many babies are born early or have low birthweight. Among some groups of people, the problems actually are getting worse. Preconception health and preconception health care can make a difference. Women's health research and education programs in preconception health care and nutrition are needed to identify risk factors and improve outcomes for mothers and babies, improve transgenerational health of families, and reduce the rate of maternal mortality.

Other research areas include, but are not limited to, preterm birth, infertility, uterine fibroids, gynecologic cancers, menopause, osteoporosis, environmental insults on fertility and early development, vascular disease, mental health, and health disparities. Research is needed to identify biomarkers to improve risk assessment associated with conditions and diseases affecting women's health.

Understanding how sex and gender influences health and disease improves the health and lives of women and men. A multi-departmental center is proposed because no individual department or college has the multidisciplinary faculty and interdisciplinary approaches to accomplish the goals of the NCWHR. Dr. John Davis and Ms. Carrie Drummond met with leaders representing all colleges on the University of Nebraska Medical Center (UNMC) campus to introduce them to the concept of the NCWHR and obtain their input and level of enthusiasm for the Center. Unanimous support was received for the proposed NCWHR. Support also was gained from the University of Nebraska-Lincoln, the Department of Veterans Affairs Hospital, Omaha, NE and the Wichita State University, Wichita, KS. Letters of support are attached.

The goal of the NCWHR is to bring together multidisciplinary scientists from across departments, colleges, and universities within Nebraska to facilitate collaborative translational and clinical research relevant to pressing women's health conditions and women's health disparities due to gender or ethnicity. The goal of the NCWHR is central to the mission of UNMC and is consistent with the five-year University of Nebraska (NU) strategy and statewide plan for post-secondary education. Scientific literature, trends in health care, and the enclosed letters of support across colleges and campuses provide evidence of need and demand for the NCWHR. The NCWHR will provide leadership, mentoring, and infrastructure necessary to build upon established research excellence to impact the next stage of development through early career development, education and high-impact research discoveries affecting women's health. Partnerships with Nebraska business and collaborations throughout NU campuses and with higher education institutions external to the university will provide fertile soil furthering advancements in women' health, developing a competent workforce, and spurring economic development.

The NCWHR will be a center to implement research, education, leadership, mentorship, and training focused on health issues facing women throughout the life span. The Center will provide a hub that provides infrastructure that supports collaboration and team science. The creation of the multi-college, multi-campus NCWHR will foster cross-communication between basic researchers and clinicians. Moreover, the Center will provide a dynamic and engaging environment for understanding the mechanisms of diseases affecting women, addressing health disparities, and translating laboratory information toward the development of better diagnostic and therapeutic strategies. Focused collaborative efforts already exist on the UNMC and UNL campuses and formation of the NCWHR will serve to expand these and develop new collaborations and training opportunities. Science focused on various aspects of women's health issues and health disparities will grow the research enterprise, enhance doctoral and postdoctoral education and training opportunities, increase translational research opportunities, improve patient care, and expand community outreach.

Center Goal:

The goal of the NCWHR is to bring together multidisciplinary scientists from across departments, colleges, and universities within Nebraska to facilitate collaborative translational and clinical research relevant to pressing women's health conditions and women's health disparities due to gender or ethnicity. The Center will provide leadership, mentoring, and infrastructure necessary to build upon established research excellence to impact the next stage of development through early career development, education and high-impact research discoveries affecting women's health.

Mission Statement:

The mission of the NCWHR is focused on advancing the health of women to become a state and nationally recognized center of excellence in women's health research through innovative, collaborative research, premier educational programs, top-notch quality patient care and outreach to Nebraska women.

Vision:

The vision of the NCWHR is to be a nationally recognized women's health research center that:

- Ranks among the leading women's health research centers.
- Advances understanding of health disparities to enhance the health of women.
- Prepares the next generation of women's health scientists.
- Embraces the richness of diversity to build unity.
- Creates economic growth in Nebraska.

The establishment of the multi-college, multi-university NCWHR will promote interdisciplinary research and education activities across campuses, colleges, and departments at the University of Nebraska that aim to improve the prevention, diagnosis, and treatment of women's health issues.

Research to improve the health of women requires a comprehensive consideration of the many factors that influence women's health, such as sex and gender, race and ethnicity, and many other factors that influence health disparities. Moreover, it is important to consider these factors and their potential interactions across the lifespan. The NIH Strategic Plan for Women's Health Research is "guided by three principles: (1) consideration of the complex intersection among multiple factors affecting health of women, foremost sex and gender; (2) inclusion of diverse populations of women in clinical research, especially known to experience a disproportionate burden of illness; and (3) active engagement to integrate perspectives from a diverse workforce of scientists with differing skills, knowledge, and experience." By including women in research and looking at sex differences, studies have found examples of diseases that present differently in women and men. For example, research shows that women are more likely than men to develop lung cancer, that women are more susceptible than men to many sexually transmitted diseases, and that women respond differently than men to immunotherapies used to treat certain advanced cancers.

Research and education programs in preconception health care and nutrition are needed to identify risk factors and improve outcomes for mothers and babies, improve transgenerational health of families, and reduce the rate of maternal mortality. Other research areas include, but are not limited to, preterm birth, infertility, uterine fibroids, gynecologic cancers, menopause, osteoporosis, environmental insults on fertility, early development and puberty, vascular disease, mental health, and health disparities. Research is needed to identify biomarkers to improve current risk assessments associated with conditions and diseases affecting women's health.

The Center will encompass various clinical and basic science departments and colleges within UNMC including the Departments of Obstetrics and Gynecology, Biochemistry and Molecular Biology, Cellular and Integrative Physiology, Internal Medicine, and Pediatrics. Faculty members from the Colleges of Allied Health Professions, Public Health and Nursing will participate in the Center. Additionally, faculty from the Veteran's Affairs (VA) Medical Center and the University of Nebraska at Lincoln (UNL) will be part of the Center. The Center will engage its members by hosting monthly meetings and seminars, developing requests for applications (RFAs) for pilot projects, and participating in the development and review of grant applications. We plan to issue RFAs that involve cross-campus and basic-clinical science projects to foster interactions, develop new collaborations, and result in new funding opportunities.

The proposal to create the NCWHR complies with criteria in Section 2.11 of the Bylaws of the Board of Regents:

- The Center has interdisciplinary breadth encompassing commitment of funding and faculty time from more than one department.
- The Center has an identifiable budget (attached).

- The Center proposal provides evidence that the multi-departmental center will more effectively achieve stated academic objectives than current departmental, school, or college structures.

B. Centrality to UNMC Role and Mission

The mission and vision of the NCWHR is fully aligned with the mission of UNMC: "... to lead the world in transforming lives to create a healthy future for all individuals and communities through premier educational programs, innovative research and extraordinary patient care." The NCWHR comprises a diverse group representing the state of Nebraska, and through collaboration NCWHR ensures that research, mentoring, education, and patient care at the University of Nebraska are the best.

C. Relationship of the proposal to the University of Nebraska's Five-Year Strategy

The vision and goals of the NCWHR are in line with the NU Vision "The world leader in making breakthrough discoveries and building the skilled workforce necessary to solve the most urgent 21st century challenges." The NCWHR contributes to the University of Nebraska Five-year strategy:

- **Access, Affordability, and Attainment:** All participants of the NCWHR will have access to outstanding women's health education and research opportunities that will prepare them for success in life and work.
- **Workforce Development:** The educational and training opportunities afforded by the NCWHR will provide highly skilled, competent scientists and health care professionals in the field of women's health and health disparities research. Training provided will also support Nebraska's workforce needs for skilled workers to support animal production, a major industry in Nebraska.
- **Culture, Diversity, and Inclusion:** The NCWHR is an inclusive organization of a diverse group of faculty and trainees across University of Nebraska campuses. Further, the focus of NCWHR is to identify and reduce gender and racial disparities. We will have a bias for action in selecting focal areas for improvement of women's health.
- **Partnerships:** The NCWHR recognizes that to achieve its Vision the Center will continue to develop partnerships across campuses, within the community, and with other institutions. Women's health research matters to Nebraskans and the NCWHR can be a national leader in women's health and health disparities research.
- **Efficiency and Effectiveness:** The NCWHR understands the requirement to operate with common sense and prudence. Research resources are precious.

D. Consistency with the Comprehensive Statewide Plan for Post-Secondary Education

- **Meeting the educational needs of students.** The NCWHR will employ information technologies to expand educational opportunities, overcome geographic barriers, and provide high quality educational materials not only to trainees and faculty of the NCWHR, but to the larger Nebraska community. Improving women's health in Nebraska will require training and educational programs that are not restricted by factors such as geographic location, economic status, age, culture, disability, color, national origin, or gender. The NCWHR will ensure that trainees are competent in areas appropriate to their field of research.
- **Meeting the needs of the State.** The NCWHR will prepare trainees and faculty for productive careers in women's health research, which will enhance workforce development, and improve healthcare for women in Nebraska and elsewhere. The NCWHR will contribute to the health and prosperity of Nebraskans and to the vitality of the state through research and development efforts, technology transfer and technical assistance, and by attracting external funds to support these activities. The NCWHR will work to effectively recruit and retain more Nebraska students and out-of-state students to Nebraska higher education institutions. Research and training opportunities in women's health can be

applied to economic and health needs of Nebraskans, as well as the intellectual accomplishments of the state.

- **Meeting needs through exemplary institutions.** The NCWHR has established a goal of becoming a nationally recognized center of excellence in women's health research. Research in women's health disparities is long overdue. Prioritizing women's health research will allow Nebraska to become more prominent and nationally competitive for research funding and to meet the health and economic needs of the state.
- **Meeting needs through partnerships and collaboration.** The NCWHR will work as a partner with Nebraska universities, businesses and with other states whenever appropriate to share resources and develop collaborative research programs that enhance training and research opportunities for Nebraskans. Because agriculture remains a foundation of Nebraska's economy and is becoming more technical and diversified, training and research expertise provided by the NCWHR will lead to more employment opportunities that are attractive to recent graduates, creating a virtuous circle of economic growth.

E. Evidence of Need and Demand

Women have unique health needs, and most diseases and conditions affect women differently than men. The NCWHR brings attention to these differences by creating and promoting resources across University of Nebraska campuses that increase awareness of women's health and sex differences and health disparities research. No similar program or instructional unit exists at the University of Nebraska that centers on women's health research and health disparities.

Women in the United States experience myriad health disparities compared with men in the United States or with women in other high-income countries. For example, the life expectancy of U.S. women increased at a slower rate than that of U.S. men between 1985 and 2010 and based on 2019 data the life expectancy of U.S. women (78.8 years) lags behind women's life expectancy in high-income peer countries like Canada (82.2 years) and United Kingdom (81.2 years). The U.S. ranks lowest in life expectancy at birth for women among countries with high GDP per capita.

Reports from the NIH National Institute of Diabetes and Digestive and Kidney Diseases indicate that on average, rates of obesity are higher in women (about 40%) than men (35%) and extreme obesity rates are higher in women (9.9%) than men (5.5%). Among women there is also a significant racial/ethnic disparity in obesity. Over half of non-Hispanic black women (57%), almost half of Hispanic women (47%), over one in three non-Hispanic white women (38%), and about one in eight (12%) non-Hispanic Asian women are obese.

Osteoporosis, a condition resulting in decreased bone strength, thereby increasing subsequent risk of fracture is another prevalent sex difference. Osteoporosis affects 54 million adults aged 50 years or older. Women have a four times higher rate of osteoporosis and a two times higher rate of osteopenia compared with men. In a study of Medicare beneficiaries who experienced fractures between 2010 and 2015, non-Hispanic black postmenopausal women had significantly higher prevalence of femur and hip fractures than non-Hispanic white postmenopausal women.

Women also suffer from more simultaneous chronic conditions than men, 38% of women compared to 30% of men have multiple chronic conditions. Conditions such as type 2 diabetes, heart disease, Alzheimer's disease, cancer, and sports injuries affect women and men differently. Furthermore, pain researchers indicate that not only do women suffer more painful conditions, but they also perceive pain more intensely than men do. Conditions such as migraine headaches affect women (18%) at a higher rate than men (6%).

Certain conditions exclusively or disproportionately affect women. The reproductive lifespan is considerably shorter for women than men, resulting in menopause-related changes in metabolism, reductions in bone

health, increased risk of cardiovascular disease and stroke, and impaired neural function. The U.S. maternal mortality rate of 17.4 per 100,000 pregnancies ranks last overall among industrialized countries. The women's placenta is arguably one of the most important organs in the body. It influences not only the health of a woman and her fetus during pregnancy, but also the lifelong health of both mother and child. Despite its importance, we know little about this critical but temporary organ. Moreover, an estimated 10% of reproductive-age women experience severe pain from endometriosis. Women also experience pain and infertility because of uterine fibroids, with more than 80% of black women and nearly 60% of white women having uterine fibroids by age 50. Moreover, black women tend to experience onset at a younger age, more severe symptoms and higher rates of surgery and hospitalization. There is limited data on how fibroids affect Hispanic, Asian, and other women of color. These are but a few examples of pressing women's health research issues and health disparities that can be addressed by establishment of the NCWHR.

There have been important advances in medicine and prenatal care in recent years. Despite these advances, birth outcomes are worse in the United States than in many other developed countries. Many babies are born early or have low birthweight. Among some groups of people, the problems actually are getting worse. Preconception health and preconception health care can make a difference. Women's health research and education programs in preconception health care and nutrition are needed to identify risk factors and improve outcomes for mothers and babies, improve transgenerational health of families, and reduce the rate of maternal mortality. Other research areas include, but are not limited to, preterm birth, infertility, uterine fibroids, gynecologic cancers, menopause, osteoporosis, environmental insults on fertility and early development, vascular disease, mental health, and health disparities. Research is needed to identify biomarkers to improve risk assessment associated with conditions and diseases affecting women's health.

At present, there is no organizational unit to spur collaboration in women's health research. Initial discussions with leaders and investigators across University of Nebraska campuses revealed abundant opportunities for collaboration to develop the NCWHR. The various colleges and campuses that expressed unanimous support for development of the NCWHR include the College of Medicine, College of Nursing, College of Allied Health Professions, College of Pharmacy, College of Public Health, the Fred and Pamela Buffet Cancer Center, the Monroe-Meyer Institute and the University of Nebraska-Lincoln. Additional opportunities exist for collaboration with the UNMC Department of Pediatrics and the Child Health Research Institute (CHRI), which will foster maternal, fetal, and neonatal research. The creation of NCWHR will foster cross-communication between our basic researchers and clinicians. It will provide a dynamic and engaging environment for understanding the mechanisms of diseases affecting women, integrating laboratory information toward the development of improved diagnostic and therapeutic strategies. The NCWHR will serve as a hub for women's health research across multiple departments, colleges, and campuses as well as the community, i.e., Susan G. Komen, Lozier Foundation, Omaha VA Hospital.

F. Organizational Structure and Administration

Center Director:

The Center Director also will serve as the Director for Research and Development for the Olson Center for Women's Health¹.

John S. Davis, PhD will commit 25% of his effort as the NCWHR Director. Dr. Davis is currently the Director of Research and Development for the Olson Center for Women's Health². Dr. Davis has appointments in the

¹ Olson Center for Women's Health is supported by an endowment and is independent of the Nebraska Medicine Olson Center for Women's Health Clinic located on the 4th floor of the Durham Outpatient Center; Carl Smith, MD, Chairman of the Department of Obstetrics and Gynecology serves as president, Olson Center for Women's Health Advisory Committee; <https://www.unmc.edu/obgyn/about-us/board.html>.

² <https://www.unmc.edu/obgyn/research/academic-research/index.html>

Department of Biochemistry and Molecular Biology and the Eppley Institute for Research in Cancer. He also serves as a Senior Research Career Scientist at the Omaha Department of Veteran's Affairs Hospital. Dr. Davis is trained in cellular and molecular endocrinology with a focus in women's reproductive health and disease pathogenesis. He is currently directing research aimed at understanding the mechanisms controlling the development of the ovary and steroidogenesis as well as understanding how aging alters women's fertility and osteoporosis. He has a record of accomplishment in attracting extramural funding from a variety of funding agencies, managing active research programs, and publishing in top-notch scientific journals. In addition, he has a stellar record of mentoring graduate and summer students and junior faculty, training basic and clinical fellows, assistant professors, visiting scientists, and postdoctoral fellows. These include men and women of diverse backgrounds and nationalities. Many of his trainees have gone on to successful independent careers in academia, medicine, and industry. Dr. Davis is well qualified to lead this Center.

The Olson Center for Women's Health has made a positive impact on women's health research, providing seed research grants, bridge grants, funding for education programs, and enabling the hiring of talented individuals to uphold its mission.

Internal Advisory Committee:

The Center Director will form an Internal Advisory Committee (IAC) comprised of the Center Director, Chair of the Department of Obstetrics and Gynecology, Executive Director of the Child Health Research Institute, Medical Director of the Olson Center for Women's Health outpatient clinics, and the UNMC Senior Associate Dean for Research and Development. The IAC will:

- Oversee the progress of the NCWHR
- Provide internal quality control
- Recommend priority research areas
- Facilitate project-to-project interactions
- Identify resources
- Coordinate resource utilization

Steering Committee:

The Center Director will form an internal Steering Committee that comprises NCWHR members from each of the represented NU campuses and colleges. The NCWHR Steering Committee meetings will take place monthly. This mechanism is in use currently with other multi-location programs and works to keep the faculty and research projects energized. The monthly meeting will provide an opportunity for NCWHR members to provide overviews of current and planned research. The Steering Committee will select Pilot Projects as described below and the IAC will review the selections to provide a system of checks and balances. The Steering Committee will help guide the Center's activities, including:

- Selecting speakers for the NCWHR lecture series
- Identifying faculty mentors for young investigators target research areas
- Identifying and developing relevant research areas for funding opportunities
- Evaluating Pilot Projects applications
- Performing long-term strategic planning

External Advisory Committee:

An External Advisory Committee (EAC) of women's health research experts will be formed to provide input into new approaches and funding opportunities in various areas of women's health research. The EAC will conduct an annual site visit to review the Center's activities, progress and make recommendations for future growth and development including:

- Scientific performance of NCWHR
- Impact of NCWHR

- Strategic direction in context of national climate
- Potential new research directions for NCWHR
- Collaborative opportunities
- Other issues at the request of the Center Director or the NCWHR Internal Advisory Committee

Project Coordinator:

A Project Coordinator (Carrie Drummond, 0.5 FTE) supported by the Olson Center for Women's Health will be responsible for communications related to the work of the center, scheduling meetings, organizing the lecture series and pilot project program. The coordinator will also assist with coordination of efforts to develop research proposal across departments and colleges.

NCWHR Participants:

The NCWHR membership will include interested faculty, trainees, and staff on all University of Nebraska campuses. The Center will encompass various clinical and basic science departments and colleges within UNMC including the Departments of Obstetrics and Gynecology, Biochemistry and Molecular Biology, Cellular and Integrative Physiology, Internal Medicine, and Pediatrics. Faculty members from the Colleges of Allied Health Professions, Public Health and Nursing will participate in the Center. Additionally, interested faculty and trainees from the VA Medical Center and other Nebraska University campuses will be part of the Center. The Center will engage its members by hosting monthly meetings and seminars, developing requests for applications (RFAs) for pilot projects, and participating in the development and review of grant applications. We plan to issue RFAs that involve cross-campus and basic-clinical science projects to foster interactions and develop new collaborations.

G. Partnerships with Business

Although no direct business partnerships currently exist, many aspects of current research programs have direct implications for farm animal production and food security since cattle provide a critical biomedical model for women and are also an important agricultural commodity and food source. Currently funded UNMC and UNL collaborative projects examine mechanisms to understand and improve cattle reproduction and are supported by competitive grants from the USDA. In the state of Nebraska, beef cattle production is the largest animal agricultural commodity (January 2021) with over seven million fed cattle marketed through processing facilities, \$1,296 million dollars in cash receipts through the export of veal and beef, nine million head on feed and 7,910 million pounds marketed annually. Nebraska pork production is also robust with Nebraska ranking 6th among states with the most hogs and pigs. The NCWHR would explore partnerships with Nebraska cattle and pork producers and companies involved in cattle and pork production.

H. Collaborations with Higher Education Institutions External to the University

The NCWHR also will extend collaborations to other institutions. Ongoing external collaborations include: Department of Biological Sciences, Wichita State University, Wichita, KS (letter provided); Kansas University Medical Center, Kansas City Kansas; Department of Obstetrics and Gynecology, Division of Reproductive Sciences, University of Colorado Anschutz Medical Campus, Aurora, CO; Animal Reproduction and Biotechnology Laboratory, Department of Biomedical Sciences, College of Veterinary Medicine and Biomedical Sciences, Colorado State University, Fort Collins, CO; University of Albany, Albany, NY; Vincent Center for Reproductive Biology, Vincent Department of Obstetrics and Gynecology, Massachusetts General Hospital, Harvard Medical School, Boston, MA; and Huazhong Agricultural University, China. We have active collaborations with these institutions and the development of the Center will further solidify these interactions as we expect to cross train junior investigators from these institutions.

I. Constituencies to be Served

The educational programs for the NCWHR will benefit the participating students, post-doctoral fellows, residents, and faculty from all colleges across all campuses. The discoveries generated by the NCWHR investigators will pave the way for future improvements in the diagnosis, prevention, and treatment of women's health disorders. The educational and research programs of the NCWHR will have a major impact on health care for women in Nebraska and elsewhere. The NCWHR will promote increasing the number of skilled graduates, expanding a workforce prepared to work in this important area, and expanding research and technology transfer in Nebraska.

J. Anticipated Outcomes, Significance, and Specific Measures of Success

Strategic Plan: Our five-year strategic plan encapsulates three goals: 1) build Center infrastructure, 2) develop teams and increase research success, and 3) promote reputation for and culture of research excellence in research in women's health and health disparities.

- **Goal 1: Promote and facilitate research in understanding of prominent health issues facing women and health disparities, as well as understanding the devastating nature of diseases that adversely impact women's health.** Support training and mentoring students and early-stage investigators to transition as established investigators in women's health research.
- **Goal 2: Provide Pilot Funds to support cross-campus collaboration among basic and clinician scientists and procure extramural funding to support new research.**
 - Research teams. Teams composed of three to five researchers focused on integrated topics will be established. Teams will meet weekly to plan research, share results, provide peer mentoring, and write manuscripts and grants.
 - Grant seekers. A grant review team will provide review and mentorship for faculty trying to improve their grant funding success. The review team will meet once monthly or as needed to review aims pages and experimental designs.
 - Writing retreats. The NCWHR will collaborate with existing programs at UNMC that provide workshops on grant writing. Writing skills can be improved. Faculty will be invited to attend existing workshops to support grant or manuscript writing. As an example, current the UNMC campus has resources for grant writing assistance.³
- **Goal 3: Foster trans-institutional collaborations.**

Below, we provide examples of programs that will be used to instill a culture of high-quality research. To obtain buy in from the faculty and increase success probability, we will survey and rank the programs of greatest interest. The Steering Committee, along with the Internal and External Advisory Boards, will decide annually which programs to promote that year.

 - Chalk talks. One member each month (3rd Thursdays 5:30-7:30 pm) will present their work. Notes will be taken and given to the member for later reflection.
 - Journal club. Once monthly (e.g., 1st Mondays) 5-6:30 pm, we will have theme-based journal clubs, with a research team covering basic and translational research articles in the 90 minutes. The plan is that the journal club will serve as a preliminary literature search that will yield a review article for the research team presenting.
 - Seminars and Science Café. The NCWHR will collaborate with existing seminar programs to provide opportunities for research presentations and to bring in national speakers. One example is connecting with the UNMC Science Café to cover women's health research topics, including aging, osteoporosis, maternal fetal health, diabetes, menopause, cancer, and fibroids.
 - Promote attendance at national and international conferences. The goal is to build national and international recognition of the Center. The NCWHR could sponsor trainee attendance at

³ <https://www.unmc.edu/com/research/hanover-research.html>

international meetings, for example, the Endocrine Society⁴, the Society for Reproductive Investigation⁵, and the Society for the Study of Reproduction⁶.

Expected Outcomes:

- Recruit outstanding investigators engaged in research relevant to the health of women and health disparities. (increased number of NIH grants, new collaborations)
- Advance rigorous research that is relevant to the health of women. (implement lecture series, seed grants and foster collaboration)
- Leverage resources to consider sex and gender influences that enhance research for the health of women. (enhanced collaboration, grants, outreach)
- Promote training and careers to develop a well-trained, diverse, robust workforce to advance science for the health of women. (increased trainees and new investigators)
- Enhance dissemination and implementation of evidence to improve the health of women. (increased publications in peer-reviewed journals, increased numbers of grants).

Metrics of Success:

- Success in research. This will be evaluated by number of publications, grants submitted, grants funded, and collaborative projects with publications with two or more team investigators; total dollars per year, and research impact (publication quality, number of citations, journal impact factor and quantity) annually.
- Increase the number of health care providers actively engaged in women's health research, including physicians, nurses, allied health professions, and pharmacists. This will be assessed by annual satisfaction surveys and comparing the number of investigators who stay in Nebraska or are recruited to Nebraska from before and after the Center was established.
- Identify research opportunities to improve health outcomes. Health providers will identify research areas that would directly impact health outcomes pertinent to the region and state or have national implications.
-

K. Potential for the Center to contribute to Society and Economic Development

Contribute to Society. The potential exists for partnerships with communities with a high prevalence of residents at risk for or with existing women's health issues and health disparities. For example, we have partnered with investigators in the College of Public Health to provide educational opportunities to underserved communities as part of a large NIH P50 application. Additionally, projects have been proposed to examine uterine fibroids, a prominent health disparity experienced by black women. The Lozier Foundation has expressed interest in supporting educational and outreach programs on women's health related health disparities.

Economic Development. The NCWHR will promote increasing the number of skilled graduates, expanding a workforce prepared to work in this important area, and expanding Research and Technology Transfer. Because agriculture remains a foundation of Nebraska's economy and is becoming more technical and diversified, training and research expertise provided by the NCWHR will lead to more employment opportunities that are attractive to recent graduates, creating a virtuous circle of economic growth. The anticipated growth in extramurally funded research will expand the research base and attract students, postdoctoral fellows and faculty to UNMC.

⁴ <https://www.endocrine.org>

⁵ <https://www.sri-online.org>

⁶ <https://www.ssr.org>

L. Adequacy of Resources:

- Faculty/Staff

The Department of Obstetrics and Gynecology and UNMC are in the midst of an initiative to build on recent successes in basic and applied research. The emphasis on research in the Department of Obstetrics and Gynecology coupled with the outstanding clinical care and outreach of the Women's Health Resource Center, and the collaborative ties with the University of Nebraska-Lincoln (UNL) campus, the Omaha Department of Veteran's Affairs (VA) Medical Center, and the Department of Pediatrics bring together a critical mass of scientists with a dynamic and fertile research and education environment. These laboratories are actively engaged in several areas that impact women's health including ovarian development and premature ovarian failure, female infertility, preterm birth, fetal/neonatal development, reproductive endocrinology of menopause, polycystic ovary syndrome, bone health and osteoporosis, uterine fibroids, ovarian and breast cancers, onco-fertility and preservation of gonadal function.

Missing is an organizational structure to spur training and research collaboration across NU departments, colleges and campuses that result in additional research and training support. Availability of various cell culture and in vivo model systems (rodent, porcine, bovine, and human) and existing shared research cores will further foster and facilitate research activities of the Center.

The Nebraska Medicine Olson Center for Women's Health Clinic located on the 4th floor of the Durham Outpatient Center offers women an array of healthcare services and specialists⁷. The clinic provides outstanding patient care, but does not have a direct research component. A gift agreement established the Olson Center for Women's Health endowment, a separate entity in the Department of Obstetrics and Gynecology that supports the activities and staff of the Olson Resource Center⁸ and the Research Director of the Olson Center for Women's Health⁹. This entity supports research activities and research-related recruitment salaries and startup funding when resources are available. Funding for faculty recruitment is shown in the proposed budget.

The NCWHR will serve to bridge the gap between basic and applied clinical sciences. The programs offered by the Great Plains IDeA-Clinical and Translational Research (CTR) Network, the Child Health Research Institute, the Fred and Pamela Buffet Cancer Center, and the Monroe-Meyer Institute provide additional opportunities for collaboration with NCWHR and bridging the gap.

Current research activities in the Department of Obstetrics and Gynecology are funded by four NIH projects (~\$1,064,000 annually) led by Drs. John Davis, Shyamal Roy and So-Youn Kim. One of these NIH projects is tied to an NIH P30 grant that involves investigators in Kansas, Colorado, and New York. The Department of Veterans Affairs funds projects by Dr. Davis (~\$300,000 annually) and a VA Career Development award to Dr. Michele Plewes (~\$160,000/annually). Dr. Kim also is supported by startup funds (\$300,000) from the Olson Center, the UNMC Vice Chancellor for Research (VCR) Office, and Buffett Cancer Center. Dr. Kendra Clark in the Davis lab is supported by an NIH F32 Postdoctoral Fellowship (~\$75,000 annually). Dr. Davis is also funded by the USDA with subcontracts to long-time collaborators Drs. Andrea Cupp and Jennifer Wood in the Department of Animal Sciences at the University of Nebraska-Lincoln. The collaboration with UNL takes shape in the form of dual mentored predoctoral and postdoctoral fellowship grants, and USDA and NIH grants. The Davis and Cupp laboratories are also currently collaborating on two funded NU Collaboration initiative grant awards (\$150,000 for each project) examining mechanisms that impact reproductive health in females.

⁷ <https://www.nebraskamed.com/nebraska-medical-center/durham-outpatient-center/olson-center>

⁸ <https://www.unmc.edu/obgyn/community/index.html>

⁹ <https://www.unmc.edu/obgyn/research/academic-research/index.html>

- **Physical Facilities and Equipment**

No additional physical facilities are needed at this time. The NCWHR will be located in the Department of Obstetrics and Gynecology on the 4th Floor of the Durham Research Center (DRC II), University of Nebraska Medical Center. Additional contiguous laboratory and office space on the same floor will be requested for faculty recruits supported by the Departments of Obstetrics and Gynecology and Pediatrics, the Olson Center for Women's Health, and the Child Health Research Institute.

The NCWHR website¹⁰ will provide information on center members and activities. This will establish a repository for the NCWHR lecture series, which will provide members (including graduate students, postdoctoral fellows, and junior and senior faculty members) an opportunity to listen to and comment on the latest research that will help develop new ideas and foster critical thinking skills. It will also provide a platform for the community to interact with the NCWHR. To reach other campuses and institutions, we will use Zoom and modern webinar technology, already in place.

- **Budget Projections [Table 1 and Table 2]**

The budget has been projected for five years. Funding support will come from various sources including the Departments of Obstetrics and Gynecology and Pediatrics, the Olson Center for Women's Health, Child Health Research Institute, College of Medicine Dean's Office, the UNMC Vice Chancellor for Research Office, the Chancellor's Office at UNMC, and private foundations. To maintain sustainability, faculty will continue to complete for individual grants from federal sources (NIH, USDA, VA) and develop large multi-department, multidisciplinary NIH P30 Program Project, and P50 Center Grants, with the funded investigators to be recruited by the Center. The NCWHR will work with the University of Nebraska Foundation to secure additional programmatic support for women's health research and education. As a current leader in women's health research, the Olson Center research laboratories are well equipped to conduct further investigations in the field.

The Center is expected to initially recruit two faculty members with expertise in women's health research. Recruits will have a record of collaborative research and sustained extramural funding. The research areas will complement existing expertise within the Departments of Obstetrics and Gynecology and Pediatrics. It is expected that the recruits will collaborate with existing faculty and clinician scientists to expand translational research in areas such as preterm birth, maternal-fetal health, placental function, uterine fibroids, uterine cancers, and aging. This collaboration is expected to expand the research enterprise and result in new funded research programs in women's health research.

A goal of the NCWHR is to bring together multidisciplinary scientists from across departments, colleges, and universities within Nebraska to facilitate collaborative translational and clinical research relevant to pressing women's health conditions. A NCWHR seed grant program will enhance and grow collaborative women's health research opportunities at UNMC. Target research areas include, but are not limited to, maternal health, preterm birth, infertility, uterine fibroids, gynecologic cancers, menopause, osteoporosis, environmental insults on fertility and early development, and health disparities. A seed grant program would support collaborative seed grants. Individual seed grants would be initially capped at \$25,000. The number of seed grants will be contingent on availability of resources; but the NCWHR would be able to administer up to four seed grants annually. Funding for a single seed grant of \$25,000 for each of years one to three has been secured. A request for applications (RFA) system will be announced through the Nebraska Center for Women's Health Research website and through campus-wide communications. These funding opportunities will highlight potential topic areas that will facilitate interactions across departments and promote basic-clinical science projects with a goal to increase research expertise in target research areas and increase future grant acquisitions. Seed grants will be selected following peer-review and ranking based on the quality of science, evidence of collaboration

¹⁰ <https://www.unmc.edu/obgyn/research/NCWHR/index.html>

and plans for future research development. During the one-year funding period, teams composed of three to five researchers, based on specific research target areas, will meet regularly to plan research, share results, provide peer mentoring, and write manuscripts and grants. Seed grant awardees will prepare final reports and make presentations to the NCWHR. The seed grant program will also serve as a vehicle to identify mentors for residents, graduate and medical students, post-doctoral fellows, and junior faculty to embark on a career in women's health research. The Center will provide leadership, mentoring, and infrastructure necessary to build upon established research excellence to impact the next stage of development through early career faculty development and high-impact discoveries effecting women's health.

The development of the NCWHR monthly lecture series will provide graduate students, medical students, postdoctoral fellows, residents, and faculty members an opportunity to hear and question the latest research that will help develop new areas of women's health research. This is an excellent opportunity to enhance cross disciplinary collaboration with and community outreach. Invited campus visits and presentations are preferred in combination with web-based technology based on Zoom to provide audio-visual links and recording capability. The lecture series will link investigators, departments, and campuses with relevant research from local and national experts.

M. Summary

The goal of the NCWHR is to bring together multidisciplinary scientists from across departments, colleges, and universities within Nebraska to facilitate collaborative translational and clinical research relevant to pressing women's health conditions and women's health disparities due to gender or ethnicity. The goal of the NCWHR is central to the mission of UNMC and is consistent with the five-year NU strategy and statewide plan for post-secondary education. Scientific literature, trends in health care, and the enclosed letters of support across colleges and campuses provide evidence of need and demand for the NCWHR. The NCWHR will provide leadership, mentoring, and infrastructure necessary to build upon established research excellence to impact the next stage of development through early career development, education and high-impact research discoveries affecting women's health. Partnerships with Nebraska business and collaborations throughout NU campuses and with higher education institutions external to the university will provide fertile soil furthering advancements in women' health, developing a competent workforce, and spurring economic development.

NCWHR - Letters of Support

- **Carl V. Smith, MD**
Professor and Chairman, Department of Obstetrics and Gynecology, Senior Associate Dean for Clinical Affairs, University of Nebraska Medical Center
- **Jennifer Larsen, MD**
Vice Chancellor for Research, Louise and Morton Degen Professor of Internal Medicine, Department of Internal Medicine, University of Nebraska Medical Center
- **Ann Anderson Berry, MD, PhD**
Professor of Pediatrics, Vice Chair for Research, Division Chief of Neonatology, University of Nebraska Medical Center
Executive Director, Child Health Research Institute (CHRI)
- **Debra Romberger, MD**
Henry J. Lehnhoff Professor and Chairman, Department of Internal Medicine, University of Nebraska Medical Center
- **Matthew Rizzo, MD**
Francis and Edgar Reynolds Professor and Chairman, Department of Neurological Sciences, Director, Mind and Brain Health Laboratories, University of Nebraska Medical Center
Director, Great Plains IDeA-CTR Network
- **Laura D. Bilek, PT, PhD**
Associate Dean for Research, Karen Linder Distinguished Professorship for Women's Health, College of Allied Health Professionals, University of Nebraska Medical Center
- **Robin Lally, PhD, RN**
Interim Associate Dean for Research, Bertha L. Pankratz Professorship in Nursing, College of Nursing, University of Nebraska Medical Center
- **Athena K. Ramos, PhD, MBA**
Assistant Professor, Center for Reducing Health Disparities, Department of Health Promotion, College of Public Health, University of Nebraska Medical Center
- **Frederick G. Hamel, PhD**
Associate Chief of Staff/Research, Research Integrity Officer (RIO), Omaha Veterans Affairs Medical Center
- **Andrea S. Cupp, PhD**
Irvin T and Wanda R Omtvedt Professor of Animal Science, Reproductive Physiology, Department of Animal Science, University of Nebraska-Lincoln
- **George R. Bousfield, PhD**
Dr. L.M. Jones Distinguished Professor, Department of Biological Sciences, Wichita State University, Wichita, Kansas
- **Barbara Ducharme**
Regional Vice President, Midwest, Susan G. Komen

December 2, 2021

John Davis, PhD
Director, Nebraska Center for Women's Health Research
Director of Research and Development, Olson Center for Women's Health
Via email to jsdavis@unmc.edu

Dr. Davis:

I am pleased to write a letter of support for the Nebraska Center for Women's Health Research!

The new Center is a very exciting addition to the research enterprise in Nebraska. As the President of the Olson Center for Women's Health and the chair of the Department of Obstetrics and Gynecology at UNMC, I can confirm our financial commitment to the funding of this new venture.

Lines two and three of the projected revenue table list a budget for each of the next five years to be funded by the Department, from several sources including the Olson Center endowment and from our department's allocation of state general funds from the Dean of the College of Medicine. This includes salary and benefits support for an administrator, your director line, and a new project investigator / PhD scientist. In year three a second PhD scientist is added, and we agree with that strategy. We will be reviewing our funding capabilities at that time to add that commitment.

In addition to our financial commitments, we stand ready to support in whatever fashion is necessary, the specific activities of the NCWHR as outlined in the Center application, to include seminars, pilot projects, collaborations, education, and outreach.

If you have any questions regarding our financial commitments for the NCWHR, please let me know.

Sincerely,



Carl V. Smith, MD
Professor and Chairman



December 6, 2021

Re: Nebraska Center for Women's Health Research

To Whom It may concern:

As Vice Chancellor for Research and an endocrinologist, I enthusiastically support this proposed Center for Women's Health Research. Women's health research crosses over departments and colleges, and already is a collaborative research focus. It has been often said that children's health also begins with women's health, specifically the health of the mother, so working together is essential for improving health outcomes, as well.

As noted, the Vice chancellor for research office, regularly contributes to the recruitment package of new research-focused faculty, and we would do so for this proposal, with funds consistent with the level of faculty being recruited, the type of research they do, resources they need, and funding they will likely bring with them. Similarly, with a new Center application, which generally has pilot grant funds associated with it, we would likely also contribute to the pilot grant fund to expand the total number of researchers working in this important area.

If you have any questions, please don't hesitate to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'JLarsen'.

Jennifer Larsen, M.D.

Vice Chancellor for Research

Louise and Morton Degen Professor of Internal Medicine

University of Nebraska Medical Center

Administrative Support: Pamela Welch (pswelch@unmc.edu) or Jodi Jamison

(Jodi.jamison@unmc.edu)

ph: 402-559-8490 | fax 402-559-9504

Email: jlarsen@unmc.edu

February 18, 2021

Nebraska Center for Women's Health Research (NCWHR)
Letter of Support

Dear Dr. Larsen and University of Nebraska Board of Regents,

I am pleased to write a letter of my strongest support for the development of the Nebraska Center for Women's Health Research. UNMC has a critically important and unmet research need in women's health. This hinders the work of scientists across campus and is a missed opportunity for the conduct of highly impactful and collaborative research at the University of Nebraska Medical Center. With the approval of the NCWHR, we have the opportunity to change that and move forward with a vision for research excellence in this area.

Over the last two years I have worked with Dr. John Davis and Dr. Carl Smith to ensure that there is a clear understanding of the potential synergies between the Child Health Research Institute (CHRI) and the NCWHR. As the Executive Director of CHRI for the past 18 months I have worked with scientists across the NU system to develop the institute and ensure its success. I am committed to working with Dr. Davis and his colleagues to build NCWHR. Opportunities include collaborative programmatic NIH submissions between CHRI and NCWHR, co-recruitment of leading scientists and enhanced opportunities for current research faculty to increase the depth and breadth of their research skills.

I am invested in this Center's success and willing to support it with my expertise in developing a research institute, my experience in perinatal research, and financially as demonstrated by the financial commitment I have made to faculty recruitment packages. Growth and development of research expertise across the reproductive lifespan gives UNMC and the NU system the highest chance of success at building nationally recognized and extramurally funded programs. The potential impact for CHRI and UNMC is high and I hope you will strongly consider supporting the development of NCWHR.

Sincerely,



Ann L Anderson Berry, MD, PhD, FAAP
Professor, Pediatrics, Vice-Chair, Research, Division Chief, Neonatology
Executive Director, Child Health Research Institute
University of Nebraska Medical Center
Medical Director, Nebraska Perinatal Quality Improvement Collaborative (NPQIC)
University of Nebraska Medical Center

981205 Nebraska Medical Center | Omaha, NE 68198-1205
402.559.6750 | fax 402.559.9333 | NICU 402.559.4442
alanders@unmc.edu

December 17, 2021

Re: Nebraska Center for Women's Health Research (NCWHR)

To Whom It May Concern:

I am writing with my enthusiastic support for the Nebraska Center for Women's Health Research (NCWHR). The NCWHR has the important mission of bringing together investigators, clinicians, and students across the University of Nebraska system to address the unique needs of women's health across the spectrum from better understanding of basic science disease mechanisms affecting women to addressing health care disparities affecting women. The NCWHR will provide much needed infrastructure to coordinate the activities of diverse departments and groups across the four campuses of the University of Nebraska system regarding women's health needs.

The Department of Internal Medicine looks forward to participation in the NCWHR. We have both basic science and clinical investigators who have interests in better understanding the role of sex and gender on disease manifestations and will be excited to participate in the seminars and research training activities of the Center. We also have students and trainees who desire to add a focus on issues related to women's health and health care disparities that will benefit from the planned activities of the Center. Our Internal Medicine Research Council will promote the activities of the NCWHR to our faculty and trainees.

Again, the NCWHR has my endorsement and I look forward to how the Center will impact UNMC, the University of Nebraska system, and our state and region in the next few years. If I can provide additional information, do not hesitate to contact me.

Sincerely,



Debra J. Romberger, M.D.
Henry J. Lehnhoff Professor
Vice Chair of Research & Chairman
Department of Internal Medicine

DJR/cmc



April 13, 2021

RE: Nebraska Center for Women's Health Research (NCWHR) Letter of Support

Dear Dr. Larsen and University of Nebraska Board of Regents,

I am pleased to write a letter of my strongest support for the development of the Nebraska Center for Women's Health Research. UNMC has a critically important and unmet research need in women's health. This hinders the work of scientists across campus and is a missed opportunity for the conduct of highly impactful and collaborative research on University of Nebraska campuses. With the approval of the NCWHR, we have the opportunity to change that and move forward with a vision for research excellence in this area.

Growth and development of research expertise across the reproductive lifespan gives UNMC and the NU system the highest chance of success at building nationally recognized and extramurally funded programs. The vision for the NCWHR fits very well with the vision for the IDeA CTR to build an effective infrastructure to nurture, develop, and guide our basic, clinical, and translational research investigators, as well as build collaborations among them and with community members.

I am committed to working with Dr. Davis and his colleagues to build NCWHR. Opportunities include partnering the Great Plains IDeA CTR with NCWHR to promote monthly women's health seminar series, host annual regional conferences, and administer pilot grants. Investigators in the NCWHR will be able to take advantage of the IDeA CTR comprehensive professional development program, advertised seminars hosted over a 4-state region, pilot grants, and access to like-minded investigators to develop productive collaborations.

I am invested in this Center's success. The expertise my team has garnered in developing and administering the IDeA-CTR program will be offered to the NCWHR Steering Committee for programs to administer and evaluate NCWHR research, educational activities and services. Dr. Davis has shared his vision for the NCWHR with the Idea CTR Community Advisory Board and received positive support for the program. Importantly, the advisory board provided a number of suggestions for topics to be considered during the development of the NCWHR.

The NCWHR will have a positive impact by increasing the number of successful basic and translational researchers working on vital women's health issues. Ultimately, this initiative will further advance the NIH mission to improve the health of Americans across the lifespan through innovative research, the highest quality patient care, outreach to underserved populations, while training the next generation of scientists.

Sincerely,

A handwritten signature in black ink, appearing to read 'Matthew Rizzo'.

Matthew Rizzo, MD, FAAN, FANA
Francis and Edgar Reynolds Professor
Chair, Department of Neurological Sciences
Clinical Program Leader, Neurosciences
Director, Great Plains IDeA-CTR Network
Director, Mind and Brain Health Laboratories
Co-Director, Center for Integrative and Translational Neuroscience
Chair, American Brain Coalition



December 15, 2021

University of Nebraska Medical Center
Center Review Committee

Dear Review Committee,

It is my pleasure to support the application for the Nebraska Center for Women's Health Research (NCWHR). Women, who have historically been left out of research studies, have unique medical concerns and pathologies that require targeted investigation and treatment. Additionally, female sex hormones increase or modify the risk of many pathologies including osteoporosis and breast cancer.

Researchers in the College of Allied Health are studying interventions to target diseases that disproportionately impact women. For example, ongoing research examines the role of diet and exercise in prevention of osteoarthritis and osteoporosis which are more prevalent in women than men.

The NCWHR would greatly enhance this research agenda by providing opportunities to collaborate across colleges, departments, and universities. The Center leadership would provide mentorship, administrative infrastructure, and access to equipment which will support the CAHP's scholars, and early researchers who are specifically interested in women's health. I commit the CAHP support of the NCWHR by participation in center activities, and I look forward to engaging with students, clinicians, and researchers addressing women's health issues.

Sincerely,

A handwritten signature in black ink that reads "Laura D. Bilek".

Laura D. Bilek, PT, PhD
Pronouns – she/her/hers
Associate Dean for Research
Karen Linder Distinguished Professorship for Women's Health
College of Allied Health Professions
Co-Chair, Medical Sciences Interdepartmental Areas, Graduate Studies
lbilek@unmc.edu

February 23, 2021

Nebraska Center for Women's Health Research

Dear Dr. Davis,

As the Interim Associate Dean for Research of the University of Nebraska College of Nursing, I am delighted to write in support of the Nebraska Center for Women's Health Research.

The mission of the College of Nursing includes transforming lives through innovative research. The vision for research that I have put forth is that we achieve this mission through working collaboratively within and outside of the University of Nebraska Medical Center and in such a manner that we address health inequities and produce clinically relevant, innovative and patient centered outcomes. These goals seem to align well with those of the Nebraska Center for Women's Health Research.

The College of Nursing is the home to approximately 40 scientists. Two specifically, Drs. Elizabeth Mollard, PhD, WHNP-BC, CNM, IBCLC and Tiffany Moore, PhD, RN develop and study interventions and outcomes in maternal child health with particular focus on the social determinants of health and health inequities that affect mothers and babies. Dr. Moore's work has involved the examination of potential biological markers of stress and maternal outcomes. Several more scientists, including myself, address issues of women's health in our research including cancer and health inequities associated with rural residence, sexual orientation and gender identity. Additionally, our PhD students have or are currently examining menopausal and post-partum experiences.

Therefore, we support the educational mission of the Nebraska Center for Women's Health Research and foresee future opportunities for collaboration to benefit women's health.

Sincerely,



Robin M. Lally, PhD, RN, MS, BA, AOCN, FAAN
Bertha L. Pankratz Professor of Nursing
Interim Associate Dean for Research
University of Nebraska Medical Center College of Nursing
Distinguished Scientist 2020
Member, Fred and Pamela Buffett Cancer Center
robin.lally@unmc.edu

February 22, 2021

Dear Dr. Davis:

I understand the critical importance of focusing on women's health and support your efforts to develop the Nebraska Center for Women's Health Research. As an Assistant Professor with the Center for Reducing Health Disparities at the College of Public Health, our mission is to promote equity and social justice in health and health care by leading collaborative efforts to generate and disseminate evidence-based, policy-relevant solutions, including those related to gender.

Over the years, I have worked on women's health issues including founding the Latinas, Tabaco, y Cáncer group, a Latina-focused, community-based holistic health promotion program in the Omaha metro area. I have participated in the Omaha Women's Health Conference planning committee and served on advisory boards for Patient-Centered Outcomes Research Institute (PCORI)-funded projects: (1) Bridging the chasm between pregnancy and health over the life course for women and the (2) National maternity health research network. I have a deep appreciation and understanding of women's health issues, especially those experienced by racial and ethnic minorities and the immigrant community.

I believe that this type of Center is critical to Nebraska and will be able to draw on the diverse experiences, professional training backgrounds, and research interests of University of Nebraska faculty to bring forth solutions to some of our most pressing health and social equity-related challenges. I look forward to continuing to work with you and the new Nebraska Center for Women's Health Research.

Please feel free to reach out to me with any questions.

Sincerely,



Athena Ramos, PhD, MBA, MS, CPM
Assistant Professor, Department of Health Promotion
(402) 559-2095
aramos@unmc.edu



In Reply Refer To: 636/151

3 December 2021

Dr. Jennifer Larsen, MD
Vice Chancellor for Research
University of Nebraska Board of Regents
987878 Nebraska Medical Center
Omaha, NE 68198-7878

Dear Dr. Larsen and University of Nebraska Board of Regents,

I am pleased to provide a letter of my strong support for the development of the Nebraska Center for Women's Health Research (NCWHR). The University of Nebraska Medical Center (UNMC) has a significant and unmet research need in women's health. This hampers the work of scientists across the Veterans Affairs Nebraska-Western Iowa Health Care System (VA-NWIHCS) and UNMC/UNL campuses and is a missed opportunity for the conduct of highly impactful and collaborative research on all NU campuses. With the approval of the NCWHR, we have the opportunity to change that and move forward with a vision for research excellence in this area. Women are a rapidly growing segment of the Veteran population served by the VA, and we have a strong interest in promoting women's health and the research that benefits it.

Dr. John Davis is a VA Senior Research Career Scientist and over the last twenty years I have worked Dr. Davis to ensure that there is a clear understanding of the potential synergies between the VA and UNMC. As the Associate Chief of Staff for Research (ACOS/Research) I have worked with scientists across the VA and UNMC systems to develop research programs and ensure their success. I am committed to working with Dr. Davis and his colleagues to build NCWHR. Opportunities include collaborative programmatic VA and NIH submissions between VA researchers and NCWHR, co-recruitment of leading scientists and enhanced opportunities for current research faculty to increase the depth and breadth of their research skills. This would include the use of the VA Career Development program to entice young clinicians and researchers to Nebraska.

I am invested in this Center's success and willing to support it with my expertise in managing the VA research enterprise, my experience in endocrinology research, and logistical support. Growth and development of research expertise across the reproductive lifespan gives UNMC, VA and the NU system the highest chance of success at building nationally recognized and extramurally funded programs. The potential impact for VA and UNMC is high and I hope you will strongly consider supporting the development of NCWHR.

Sincerely,

Frederick G. Hamel, Ph.D.
ACOS/Research
Research Integrity Officer (RIO)
Omaha Veterans Affairs Medical Center
Professor of Internal Medicine and
Pharmacology and Experimental Neuroscience
University of Nebraska Medical Center

November 30, 2021

Dr. John S. Davis
Director for Research and Development
Olson Center for Women's Health
Division Director for Research
Department of Obstetrics and Gynecology
Senior Research Career Scientist, Omaha VA

Dear John,

I am extremely pleased to write this letter of support for the establishment of the Nebraska Center for Women's Health Research (NCWHR) in the College of Medicine at the University of Nebraska Medical Center. The study of basic science surrounding women's gender health issues is an area that is lacking in the state of Nebraska, especially in the area of reproductive health disparities. As you know I am interested in how the ovarian microenvironment affects reproductive success. You, Dr. Wood and I along with collaborators at US Meat Animal Research Center have identified inflammation as a major factor contributing to excess steroids, ovarian fibrosis, increased oxidative stress (reactive oxygen species) and anovulation in beef cattle, characteristics that are reminiscent of women diagnosed with polycystic ovarian syndrome (PCOS). The disorder PCOS affects 1 of every 10 women, is uniquely dependent on race and ethnicity, and can lead to other disorders such as type II diabetes, obesity, heart problems and reduced quality of life for women diagnosed with this disorder. Because PCOS is often diagnosed in young girls having problems initiating their reproductive cycles at puberty; we have investigated how bovine females attain puberty. We have identified inflammation as a potential factor that may delay puberty and determined pubertal attainment may predict steroid excess phenotypes. We are also investigating how environment, nutrition and genomics may impact pubertal and reproductive outcomes and if prenatal programming may be a contributing factor.

We have established a great collaboration with NIH, USDA, and UN collaborative grants funding our co-investigation of basic scientific questions to better understand normal female fertility physiology which has the potential to improve the care of women with infertility. Due to our collaboration, we serve on each other's graduate student committees and served as co-and collaborating mentors for pre- and postdoctoral fellows funded by the USDA and NIH. Thus, we have developed a great foundation that will be leveraged to develop additional collaborations with others in this new center and obtain other funding opportunities to gain a better understanding of women health issues that may be critical to populations within Nebraska.

In addition to myself, we have a diverse group of scientists in the Department of Animal Science and Nutrition and Health Sciences that study diverse aspects of female reproductive health including: 1) effects of obesity and microbiome on oocyte competence (Jennifer Wood); 2)

effects of maternal stress on adaptive programming of offspring (Dustin Yates); 3) effects of gene knockouts/knockins/knockdowns on endocrine hormone secretion and fertility (Brett White, Andrea Cupp); 4) placental function (Sathish Natarajan); and 5) Genomic effects on fertility (Jessica Petersen). These individuals and others in Biochemistry, Biology, and Biological Systems Engineering departments would be interested in being active members of your center. I think many synergies could be developed that would allow new and novel scientific questions related to women's health to emerge.

I am excited about the possibilities of enhanced collaborations, grant funding opportunities and collaborative interactions between scientists within Nebraska that would stem from the Nebraska Center for Women's Health Research (NCWHR). Please let me know if there is anything further that I can help organize or sustain as you move this project forward.

Best Regards,



Andrea S. Cupp, PhD
Irvin T and Wanda R Omtvedt Professor of Animal Science
Reproductive Physiology
A224i Animal Science Bldg.
Department of Animal Science, 68583-0908
acupp2@unl.edu



November 30, 2021

Nebraska Center for Women's Health Research (NCWHR)
University of Nebraska Medical Center
983255 Nebraska Medical Center
Omaha, Nebraska 68198-3255

Letter of Support

Dear Dr. Larsen and University of Nebraska Board of Regents:

I am pleased to provide a letter supporting the development of the Nebraska Center for Women's Health Research (NCWHR).

I have worked with Dr. John Davis for several decades. My laboratory has had a long-standing interest in the modulating effects of carbohydrates on the biological activities of glycoprotein hormones, luteinizing hormone (LH) and follicle-stimulating hormone (FSH). We first published a collaborative study on carbohydrate variants of LH in 2003. A few years later Dr. Davis joined a multi-investigator, multi-state collaborative NIH funded program project to study an age-related change in FSH carbohydrate that appears to play a role in age-related infertility in women. It is well known that prior to menopause women's health is generally better than that of men's but following menopause women become susceptible to cardiovascular disease more like men. In the two decades preceding menopause, other physiological changes begin, however, no suitable biomarkers are available to warn women these changes are underway. The switch from less carbohydrate content to more carbohydrate in FSH might provide such a marker, as FSH is secreted as soon as it is synthesized and carbohydrate content is affected by physiological changes in women. My laboratory isolated the FSH variants, which were extensively tested by Dr. Davis using his expertise in cell signaling. We were joined by Dr. T.R. Kumar at the University of Colorado Anschutz Medical Campus, who developed genetic models to study FSH glycosylation variants. These exploited his mouse line in which the endogenous FSH β subunit gene had been deleted. Replacing it with a human gene or a mutated gene that produced either one of the FSH glycosylation variants permits the impact of individual FSH variants to be studied in the intact animal. The project has expanded internationally to include the super-resolution microscopy expertise of Dr. K.C. Jonas at Kings College London to study the oligomerization of the FSH receptor in response to FSH variants, the carbohydrate mass spectrometry expertise of Dr. D.J. Harvey at Oxford University, as well as the antibody modeling expertise of MabSilico in France. An external advisory board reviews the project annually bringing experts from the University at Albany, Washington University in St. Louis, Northwestern University in Illinois and the Mexican National University in Mexico City.

I am committed to working with Dr. Davis and his colleagues to build NCWHR. We have many opportunities to develop additional collaborative programmatic NIH submissions to the National Institute on Aging (NIA) and Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD). Our collaborative research has resulted in the training of many postdocs and graduate students and provided opportunities for current research faculty to increase the depth and breadth of their research skills.

I am invested in this Center's success and willing to support it with my expertise in managing large multi-Institutional research projects, my experience in reproductive endocrinology research, and potentially supporting the cost of joint outside seminar speakers and pilot projects.

Growth and development of the research expertise across the reproductive lifespan gives WSU and UNMC and NU campuses the highest chance of success at building nationally recognized and extramurally funded women's health research and education programs.

We have demonstrated the positive impact of collaborative research which will be enhanced by the development of NCWHR.

Sincerely,

A handwritten signature in cursive script, reading "George R. Bousfield". The signature is written in black ink and is positioned above the typed name and contact information.

George R. Bousfield, Ph.D.
Dr. L.M. Jones Distinguished Professor
(316)-978-6088
george.bousfield@wichita.edu



Letter of Support
Nebraska Center for Women's Health Research (NCWHR)

Dear John Davis, Ph.D.,

Susan G. Komen® strongly supports the initiative and mission in developing the Nebraska Center for Women's Health Research.

Komen® Great Plains has been a long-time partner and collaborator with UNMC and Nebraska Medicine. We look forward to continuing that partnership with the NCWHR center to work together on education efforts and outreach to prioritize women's health. Susan G. Komen is keen to collaborate and share resources and materials with NCWHR and encourage young researchers.

Komen's mission is to save lives by meeting the most critical needs in our communities and investing in breakthrough research to prevent and cure breast cancer. This includes efforts to address gaps through culturally appropriate materials and to focus on reducing barriers to access to care in Nebraska communities which aligns very well with NCWHR's mission.

We look forward to our continued partnership with UNMC and Nebraska Medicine on this initiative supporting research and education in Nebraska.

Sincerely,

Barbara Ducharme

Barbara Ducharme
Regional Vice President, Midwest
Susan G. Komen®

**TABLE 1: PROJECTED EXPENSES - NEW ORGANIZATIONAL UNIT
Nebraska Center for Women's Health Research**

Personnel	(FY 2021-22) Year 1 (half year)		(FY 2022-23) Year 2		(FY 2023-24) Year 3		(FY 2024-25) Year 4		(FY 2025-26) Year 5		Total Cost
	FTE	Cost	FTE	Cost	FTE	Cost	FTE	Cost	FTE	Cost	
Faculty Director of Center ¹	0.00	\$33,330	0.25	\$67,993	0.25	\$69,353	0.25	\$70,740	0.25	\$72,155	\$313,573
Faculty Recruit ²			1.0	\$585,000	1.0	\$585,000	1.0	\$585,000	1.0	\$585,000	\$2,340,000
Faculty Recruit					1.0	\$292,500	1.0	\$585,000	1.0	\$585,000	\$1,462,500
Non-teaching Staff Support ³	0	\$23,145	0.5	\$47,215	1.0	\$96,318	1.0	\$98,245	1.0	\$100,210	\$365,132
Subtotal	0.00	\$56,475	1.75	\$700,208	3.25	\$1,043,172	3.25	\$1,338,985	3.25	\$1,342,365	\$4,481,205
Operating											
General Operating ⁴		\$25,000		\$35,000		\$50,000		\$50,000		\$50,000	\$210,000
Pilot Projects ⁵		\$25,000		\$50,000		\$100,000		\$100,000		\$100,000	\$375,000
New or renovated space											\$0
Library/Information Resources											\$0
Other											\$0
Subtotal		\$50,000		\$85,000		\$150,000		\$150,000		\$150,000	\$585,000
Total Expenses		\$106,475		\$785,208		\$1,193,172		\$1,488,985		\$1,492,365	\$5,066,205

¹ Faculty includes .25 FTE for the Director of the Center, and 1.0 FTE for Recruit #1 (years 2-5) and 1.0 FTE for Recruit #2 year 3-5, beginning Jan 1, 2024.

² The \$585,000 includes start-up/recruitment and ongoing operating and supplies.

³ Non-teaching Staff includes 0.50 FTE years 1-2 and 1.0 FTE years 3-5 for an Administrative Support Staff Member.

⁴ General operating expenses for the center include advertising, monthly meetings, seminar speakers, recruitment expense, travel/honorarium, website development, computer/office upgrades.

⁵ Seed grant funding.

NOTE: Increase in years represent incremental increases in base salaries at 2% per year. All salaries include benefits. Startup for new hires will be negotiated with the College of Medicine and VCR Office prior to letter of offer.

**TABLE 2: PROJECTED REVENUES - NEW ORGANIZATIONAL UNIT
Nebraska Center for Women's Health Research**

Personnel	(FY 2021-22) Year 1 (half year)		(FY 2022-23) Year 2		(FY 2023-24) Year 3		(FY 2024-25) Year 4		(FY 2025-26) Year 5		Total Cost
	FTE	Cost	FTE	Cost	FTE	Cost	FTE	Cost	FTE	Cost	
Reallocation of Existing Funds ¹				\$375,000		\$562,500		\$750,000		\$750,000	\$2,437,500
Endowment/Department Funds ²		\$56,475		\$360,208		\$475,672		\$633,985		\$637,365	\$2,163,705
Tuition and Fees											\$0
Grant Funding ³		\$50,000		\$50,000		\$100,000		\$50,000		\$50,000	\$300,000
NIH P50 Grant ⁴		\$0		\$0		\$55,000		\$55,000		\$55,000	\$165,000
Total Revenue		\$106,475		\$785,208		\$1,193,172		\$1,488,985		\$1,492,365	\$5,066,205

¹ The College of Medicine (COM) will provide these funds and the funding originates from COM, VCR, CHRI. Year 1 will be used for faculty recruitment and development.

² The source of these funds will be contingent on receiving from Department Funds.

³ Private sources have provided these funds for years 1-3 and will be contingent upon receiving in years 4-5.

⁴ The source of these funds will be contingent upon receiving.