BOARD OF TRUSTEES
THE UNIVERSITY OF NORTH CAROLINA AT GREENSBORO

ACTION ITEM
Request to Establish a Center for Research Excellence in Nanobiosciences

BACKGROUND INFORMATION
The University of North Carolina at Greensboro (UNCG), recently recognized as a “high research activity” institution by the Carnegie Foundation for the Advancement of Teaching, is committed to increasing the volume of activity associated with its research mission. To achieve this goal, research activity associated with the sciences must increase. In addition, the research needs to be translated into useful products. To meet these goals, strategic initiatives such as the creation of centers such as the Center of Research Excellence in Nanobiotechnology (CREN) are needed. CREN will target the life sciences, specifically an emphasis in biotechnology, nanotechnology, and the convergence of biotechnology and nanotechnology, nanobiotechnology.

RECOMMENDED ACTION
It is recommended that the Board of Trustees of The University of North Carolina at Greensboro approve the establishment of the Center for Research Excellence in Nanobiosciences.

A. Edward Uprichard
Provost and Vice Chancellor for Academic Affairs
Form A
Request to ESTABLISH an Institutional Center or Institute

Within two years of receipt of permission to plan, the proposed center/institute must submit a request to establish.
Submit three copies of all materials to the Associate Provost for Research and Public/Private Sector Partnerships, 1601 HHRA, Campus

Contact Information:
Name: Rosemary C. Wander
Title: Associate Provost for Research and Public/Private Sector Partnerships
Campus Address: 1601 MHRA
Campus Telephone: 256-0426
FAX number: 334-4624
E-Mail address: rcwander@uncg.edu
Other contact names and email addresses:

I. General Information

Proposed Name of Center/Institute:
Center for Research Excellence in Nanobiosciences (CREN)

Date Approval to Plan granted (attach copy of approval letter): 3/5/2007

Organizational structure
☒ Center  ☐ Institute

Proposed Status
☒ Institutional (UNCG campus only). Complete this form.
☐ Inter-Institutional (involves more than one UNC system campus)

STOP: If you checked “Inter-Institutional,” you must follow a different procedure to gain Office of the President approval to plan for and establish a center/institute. Contact the Associate Provost for Research and Public/Private Sector Partnerships at 256-0429 for more information.

Type of Center / Institute
☒ Research  ☐ Public Service  ☐ Instructional  ☐ Membership [will receive substantial portion of funding from membership fees paid by corporate or other private/governmental entity]

Please attach responses to the following. Provide the information on one side of the paper, 1 1/2 inch left margin, all other margins 1 inch, Times Roman. Do not exceed 5 pages.
II. **State the proposed mission of the center or institute.**

The mission of the Center for Research Excellence in Nanobiosciences (CREN) is to (1) develop novel classes of nanomaterials that have superior physical and biological properties and can be functionalized for innovative biotechnologies and (2) secure patents and transfer technologies that have commercial potential.

III. **Explain how the proposed name of the center or institute accurately reflects the scope of the mission of the center or institute.**

The Center for Research Excellence in Nanobioscience is to function as a leader in the area of nanobioscience at UNCG, in the Triad, and throughout North Carolina. The phrase “Center for Research Excellence” identifies it as having a position of prominence. The word “nanobioscience” captures the discipline in which the prominence exists.

IV. **Describe the relevance of the mission of the proposed Center / Institute to the UNCG mission, including any impact upon the existing academic departments, centers, and institutes.**

One goal of the 2003-2008 Long-Range Plan for UNCG (http://provost.uncg.edu/pdf-documents/UNCG_Plan_2003-2008.pdf) is “to continue and enhance major initiatives to build basic and applied research strengths in the life, health and physical sciences, and information technology.” Clearly nanobiotechnology is a critical component of the continuation and growth of this research.

CREN will develop research in the areas of synthesis and characterization of nanomaterials, nanoscale modeling and simulation, diagnostics, and toxicology of nanomaterials. Through research in these areas, CREN will promote new research efforts in the Departments of Biology, Chemistry and Biochemistry, Physics and Astronomy, Nutrition, Exercise and Sports Science, Computer Science, the rapidly developing doctoral program in Medicinal Biochemistry, the Laboratory for Molecular Medicine, the Center for Drug Design, and the Center for Biotechnology, Genomics, and Health Research at UNCG. In addition to strengthening research programs related to nanobiotechnology, CREN will be expected to contribute to strengthening academic programs related to nanobiotechnology and articulation agreements between UNCG and community colleges.

V. **Provide a vision statement for the proposed center/institute.**

CREN will be a leader in the development and sustainability of nanobiotechnology at UNCG, the Triad, and ultimately North Carolina through its research and entrepreneurial activities.

VI. **Provide a five-year list of the specific goals of the proposed center/institute.**

**2006-2007**
- Submit documents for Permission to Plan and Permission to Establish CREN.
- Recruit and hire a Director.
- Obtain approval of Board of Trustees for CREN.
- Begin design/renovation process of laboratory space in Eberhart.

**2007-2008 (Year 1)**
- Begin employment of director (September 2007).
- Submit 6-8 proposals targeting the National Science Foundation, the Department of Energy, the Department of Defense, the National Institutes of Health, and/or business and industry, involving as much collaboration as possible with government, industry and other institutions,
ranging in amounts from $100,000 to over $1 million with project periods ranging from one to five years.

- Recruit one to two doctoral student(s) for fall term 2007 and a research technician beginning in spring term 2008.
- Occupy renovated laboratory.
- Publish manuscripts, disclose innovations, and apply for patents as appropriate.
- Purchase needed equipment.
- Initiate contact with local nanotechnology / nanobiotechnology industries, universities, and community colleges.

2008-2009 (Year 2)

- Recruit and hire three additional principal investigators (start in 2009-10).
- Relocate to the Core Laboratory Building at the Gateway University Research Park.
- Continue to grow CREN (publish manuscripts; disclose innovations and apply for patents; purchase equipment; recruit graduate and undergraduate students).
- Establish Advisory Board.

2009-2010 (Year 3)

- Recruit and hire Administrative Assistant.
- Submit 24-32 proposals for external funding (6-8 proposals from the director and each of the principal investigators).
- Continue to grow CREN.

2010-2011 (Year 4)

- Submit 24-32 proposals for external funding.
- Continue to grow CREN.

2011-2012 (Year 5)

- Submit 24-32 proposals for external funding.
- Continue to grow CREN.

VII. Describe how productivity will be evaluated.

Productivity will be evaluated in several ways. A primary metric will be the number of proposals submitted. It is anticipated that the proposals submitted will meet the goals described in item VI. By the end of its third year, except for the salary associated with the four state positions provided by UNCG (as described in item XII below), it is anticipated that CREN will be self supporting. In addition, productivity will be evaluated by the number of manuscripts submitted; the number of disclosures submitted to the Office of Technology Transfer; the number of patents applied for; and the number of internal and external collaborations.

VIII. If relationships with the external community are a part of the vision of the proposed Center/Institute, describe how this will occur and how its effectiveness will be measured.

CREN will have as one of its critical functions linking UNCG to the external community. It will do this by playing a prominent role in the efforts to build a nanoscience community in the Piedmont Triad and beyond. Personnel at CREN will work collaboratively with local nanotechnology / nanobiotechnology industries, Wake Forest University and the Wake Forest University Baptist Medical Center, including the Institute for Regenerative Medicine, the Center for Nanotechnology and Molecular Materials, the proposed Center for Nanomedicine, and the Nanotechnology Program at
Forsyth Technical Community College. When the Joint School of Nanoscience and Nanoengineering is established at the Gateway University Research Park, the joint millennial campus at UNCG and NCA&TU, CREN will be the first center associated with it and will provide a critical function in its entrepreneurial efforts. It is anticipated that CREN will work closely with the Office of Technology Transfer at UNCG and the Nanoaccelerator being developed in the Piedmont Triad. CREN, in addition to conducting basic research designed to increase the level of knowledge, will also conduct research designed to complement the efforts of the two dozen bioscience and three nanobiotechnology companies in the Triad. It is anticipated that the technologies developed at CREN will be commercialized in a manner to enhance the opportunity for university-driven economic development. The primary measure of these activities will be the number that occur and the outcome from them, including research collaborations with local businesses, universities and community colleges, proposals submitted, grants funded, manuscripts published, patents applied for and received, and workshops / symposiums presented.

IX. Provide information about the proposed director.
Dr. Yousef Haik has been recruited to serve as Director of CREN. He is a Professor and Chairman at United Arab Emirates University in the Department of Mechanical Engineering and in the Materials Science and Engineering Interdisciplinary Graduate Program. He is also a Research Professor at Florida State University in the Center for Nanomagnetics and Biotechnology. Dr. Haik has received eight teaching awards, supervised eight doctoral students, nine masters students, and 12 postdoctoral and research fellows. He has eight U.S. patents, eight U.S. patent applications, eight provisional patents, and 11 international patents.

X. Describe any proposed advisory or policy boards.
An advisory board composed of internal and external members will be created. The composition of the board will be developed after the director arrives on campus. It will be established in 2008-09.

XI. Attach the proposed center/institute’s organizational chart. Clearly explain, on the chart or in written form, the relationship of the center or institute to any academic units.
As an interdisciplinary center, CREN will report to the Associate Provost for Research and Public/Private Sector Partnerships.
XII. Supply budget estimates for the first year of operation, projections for the following four years, and anticipated sources of funding. Justify items included on the budget.

**Year One - $1,140,028**

**Personnel - $230,028**

The personnel deemed critical to starting CREN are the director, a research technician beginning in January 2008, and one doctoral student. The Director will be provided summer salary in year 1.

**Travel - $10,000**

Some travel is critical to establish CREN and required before external funding can be obtained.

**Equipment and Supplies - $650,000**

Equipment and supplies are necessary for a scientific laboratory. In particular, equipment specific to the needs of research in the area of nanobiotechnology, e.g., a transmission electron microscope with an X-ray diffractometer costing about $500,000, is needed. In addition, the director will bring some equipment from Florida State University and will have access to a variety of equipment already on campus. This includes a recently purchased confocal microscope, real-time PCR thermocyclers, automated sequencing equipment, an arrayer, Licor sequencing equipment, a Matrix-Assisted Laser Desorption Ionization (MALDI) time-of-flight mass spectrometer a flow cytometer, and a 300 and 500 MHz NMR.

**Laboratory Renovation – estimated at $250,000**

A laboratory, Eberhart Building room 203, will be renovated for CREN.

**Funding Sources** – Recurring funds ($427,000) will come from the Provost and Vice Chancellor for Academic Affairs and General Administration as four faculty lines. One time, start-up funds will be provided by the Provost ($200,000) and the Associate Provost for Research and Public / Private Sector Partnerships ($250,000). An out-of-state graduate student tuition waiver will be provided by the Dean of the Graduate School for three years. A Faculty Development Grant from the North Carolina Biotechnology Center has been submitted ($150,000). Any unmet funding needs for year 1 will be managed by using unspent funds for year two salary and / or delaying purchase of equipment / supplies.

**Year Two - $201,500**

Year two funding will include salaries for the director, a research technician, and one doctoral student totaling $201,500. These funds will be provided from the recurring salaries described above. These projections, as well as those for subsequent years, do not include salary increases. Salary increases will be managed in the same manner as salary increases for all faculty.

**Year Three - $349,000**

Year three funding will include salaries for the director, three principal investigators, and an administrative assistant totaling $349,000. Additional expenses, e.g. equipment, supplies, and student support, will be funded from external grants obtained by CREN personnel. By the end of its third year, except for the salary associated with the four state positions provided by the Office of the Provost, it is anticipated that CREN will be self supporting.

**Year Four - $349,000**

Year four funding will include salaries for the director and three principal investigators totaling $349,000. Additional expenses, e.g. equipment, supplies, and students support, will be funded from external grants obtained by CREN personnel.

**Year Five - $349,000**

Year five funding will include salaries for the director and three principal investigators totaling $349,000. Additional expenses, e.g. equipment, supplies, and student support, will be funded from external grants obtained by CREN personnel.
XIII. **Explain immediate space needs and project space needs for the next five years.**
A laboratory on the second floor of the Eberhart Building (room 203) will be renovated for CREN. When the Core Laboratory Building at the Gateway University Research Park is completed in the spring of 2009, CREN will be relocated to this facility.

XIV. **Describe how a website will be maintained.**
A website will be developed and maintained by CREN personnel.

Submitted by: Rosemary C. Wander
Title: Associate Provost for Research and Public/Private Sector Partnerships
Signature: ________________________________
Date: 3/26/2007

APPROVALS:

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