Hampton University is a historically black university located in Hampton, Virginia. It was founded in 1868 by black and white leaders of the American Missionary Association after the American Civil War to provide education to freedmen. In 1878 it was also teaching Native Americans. Progressive education is at the heart of Hampton University. It offers over 80 academic programs including Engineering, Journalism & Communications, Natural sciences, Social sciences and research. Biomedical and behavioral education and scientific research are at the forefront of the University’s mission. Hampton, Virginia is located in the overlapping Hampton Roads and Tidewater areas of southeast Virginia and northeastern, North Carolina (Figure 1). The RCMI projects and programs will target the Hampton Roads and Tidewater regions.

### Population Demography

One of the unique features of the Hampton Roads area is the distinctive nature of its population. The racial and ethnic composition in Hampton Roads is significantly different from that of the Nation (see Table 1). Hampton Roads has proportionately more African Americans than the Nation and proportionately fewer persons in every other racial category. The 2007 American Community Survey estimates that approximately 15.1% of the Nation’s population is Hispanic, compared to 4.0% in Hampton Roads. Filipinos (a subset of the Asian Population) account for 1.8% of the region’s population, compared to a nationwide average of 0.8%. Virginia’s ethnic diversity is one of the strengths of the proposed Research Centers for Minority Institutions.

#### Table 1. Hampton Roads Population Demography

<table>
<thead>
<tr>
<th>Location</th>
<th>Population</th>
<th>% African American</th>
<th>% Caucasian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gloucester County, Virginia</td>
<td>38,250</td>
<td>8.3</td>
<td>87.9</td>
</tr>
<tr>
<td>Isle of Wight County, Virginia</td>
<td>37,438</td>
<td>21.9</td>
<td>72.4</td>
</tr>
<tr>
<td>James City County, Virginia</td>
<td>76,326</td>
<td>13.2</td>
<td>80.4</td>
</tr>
<tr>
<td>Mathews County, Virginia</td>
<td>9,054</td>
<td>10.3</td>
<td>86.3</td>
</tr>
<tr>
<td>Surry County, Virginia</td>
<td>6,793</td>
<td>45.2</td>
<td>52.8</td>
</tr>
<tr>
<td>York County, Virginia</td>
<td>69,567</td>
<td>13.0</td>
<td>75.5</td>
</tr>
<tr>
<td>Chesapeake, Virginia</td>
<td>244,788</td>
<td>29.9</td>
<td>61.4</td>
</tr>
<tr>
<td>Hampton, Virginia</td>
<td>139,556</td>
<td>50.2</td>
<td>41.4</td>
</tr>
<tr>
<td>Newport News, Virginia</td>
<td>185,440</td>
<td>40.9</td>
<td>48.3</td>
</tr>
<tr>
<td>Norfolk, Virginia</td>
<td>252,788</td>
<td>41.6</td>
<td>47.0</td>
</tr>
<tr>
<td>Poquoson, Virginia</td>
<td>12,392</td>
<td>1.2</td>
<td>94.3</td>
</tr>
<tr>
<td>Portsmouth, Virginia</td>
<td>98,104</td>
<td>52.7</td>
<td>40.2</td>
</tr>
<tr>
<td>Suffolk, Virginia</td>
<td>91,772</td>
<td>41.6</td>
<td>51.7</td>
</tr>
<tr>
<td>Virginia Beach, Virginia</td>
<td>463,324</td>
<td>19.0</td>
<td>66.7</td>
</tr>
<tr>
<td>Williamsburg, Virginia</td>
<td>15,221</td>
<td>14.0</td>
<td>74.5</td>
</tr>
<tr>
<td>Currituck County, North Carolina</td>
<td>26,552</td>
<td>5.7</td>
<td>90.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,729,114</strong></td>
<td><strong>30.1</strong></td>
<td><strong>55.2</strong></td>
</tr>
</tbody>
</table>

| Virginia                        | 8,512,428  | 19.4                | 68.6        |
| United States                   | 317,791,782| 13.4                | 70.2        |

*Data was taken from the 2010 United States Census.*
Virginia Cancer Incidence and Mortality Rates

Many cancers are disproportionately represented in underserved population groups, including Virginia. Analysis of state and regional cancer incidences revealed that the Hampton Roads/ Tidewater areas have some of the highest cancer incidence and mortality rates in the nation. Remarkably, breast, bladder, late-stage cervical, and oral & pharyngeal cancer incidence rates are among the highest for African Americans (AAs) in the US, are significantly higher than US averages, and are found in the Hampton Roads/ Tidewater region.

Table 2. Virginia Cancer Incidence and Mortality Rates for cancer types in the Hampton Roads/ Tidewater region ranked in the top 10 in the nation

<table>
<thead>
<tr>
<th>Cancer Type</th>
<th>Population</th>
<th>City/ County</th>
<th>US Incidence per 100,000</th>
<th>VA Incidence per 100,000</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast Cancer</td>
<td>AA women</td>
<td>Chowan County (NC)</td>
<td>124.0</td>
<td>199.0</td>
<td>7</td>
</tr>
<tr>
<td>Bladder Cancer</td>
<td>AAs</td>
<td>Suffolk</td>
<td>11.7</td>
<td>19.0</td>
<td>9</td>
</tr>
<tr>
<td>Bladder Cancer</td>
<td>AA men</td>
<td>Suffolk</td>
<td>19.5</td>
<td>34.1</td>
<td>8</td>
</tr>
<tr>
<td>Cervical Cancer- Late Stage</td>
<td>AA women</td>
<td>Richmond</td>
<td>5.0</td>
<td>8.9</td>
<td>2</td>
</tr>
<tr>
<td>Cervical Cancer- Late Stage</td>
<td>AA women</td>
<td>Newport News</td>
<td>5.0</td>
<td>8.5</td>
<td>5</td>
</tr>
<tr>
<td>Renal and Pelvis cancer</td>
<td>AA men</td>
<td>Chesterfield County</td>
<td>25.1</td>
<td>47.0</td>
<td>8</td>
</tr>
<tr>
<td>Oral and Pharyngeal Cancer</td>
<td>AA men</td>
<td>Norfolk</td>
<td>14.0</td>
<td>24.8</td>
<td>7</td>
</tr>
<tr>
<td>Oral and Pharyngeal Cancer</td>
<td>AA men</td>
<td>Petersburg</td>
<td>14.0</td>
<td>23.1</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cancer Types</th>
<th>Population</th>
<th>City/ County</th>
<th>US Mortality per 100,000</th>
<th>VA Mortality per 100,000</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prostate Cancer</td>
<td>All</td>
<td>Petersburg</td>
<td>19.2</td>
<td>51.6</td>
<td>5</td>
</tr>
<tr>
<td>Prostate Cancer</td>
<td>AA men</td>
<td>Northampton County</td>
<td>38.9</td>
<td>105.6</td>
<td>2</td>
</tr>
<tr>
<td>Prostate Cancer- Late Stage</td>
<td>AA men</td>
<td>Northampton County</td>
<td>38.9</td>
<td>305.6</td>
<td>2</td>
</tr>
<tr>
<td>Prostate Cancer- Late Stage</td>
<td>AA men</td>
<td>Petersburg</td>
<td>19.2</td>
<td>51.6</td>
<td>6</td>
</tr>
<tr>
<td>Ovarian Cancer</td>
<td>AA women</td>
<td>Virginia Beach</td>
<td>6.1</td>
<td>8.7</td>
<td>6</td>
</tr>
<tr>
<td>PancreaticCancer</td>
<td>AA men</td>
<td>Suffolk</td>
<td>14.8</td>
<td>27.5</td>
<td>3</td>
</tr>
<tr>
<td>PancreaticCancer</td>
<td>AA men</td>
<td>Virginia Beach</td>
<td>14.8</td>
<td>26.2</td>
<td>5</td>
</tr>
<tr>
<td>Stomach Cancer</td>
<td>AA men</td>
<td>Newport News</td>
<td>8.2</td>
<td>14.8</td>
<td>2</td>
</tr>
<tr>
<td>Uterine Cancer</td>
<td>AA women</td>
<td>Virginia Beach</td>
<td>8.5</td>
<td>13.5</td>
<td>3</td>
</tr>
</tbody>
</table>

As for mortality rates, Petersburg has the 5th highest prostate cancer mortality rate and Northampton county has second highest for black men, two cities within the tidewater region. Ovarian, pancreatic, stomach and uterine cancer represent cancers with high ranking mortality rates in AA in the region presenting opportunities for the proposed RCMI. Furthermore, it was revealed that the southeastern region of Virginia was a hotspot for colon cancer mortality. Confronting these significant cancer disparities impacting underserved populations will require a sizable cadre of highly skilled, productive researchers working collaboratively to develop innovative transdisciplinary cancer research approaches.
Much of the area where HU resides does not overlap with the catchment areas identified by NCI-designated cancer centers (Figure 3). In response to the growing disparities in the Hampton Roads and Tidewater regions and to provide a diverse form of cancer treatment and help improve survival and quality of life (QOL) following a cancer diagnosis in Virginians, HU opened its doors to the HU Proton Therapy Institute (HUPTI) in 2010, the largest stand-alone proton treatment center in the world and the only treatment facility of its kind at any minority serving institution. The Hampton University Proton Therapy Institute (HUPTI) brings the latest, most precise cancer fighting technology to Virginia and beyond.

ENVIRONMENT: The Hampton University Proton Therapy Institute (HUPTI) is a cancer treatment facility that specializes in proton therapy which is a state of the art cancer treatment modality. It is a unique private and public partnership that brings together health care providers, business, education, the military (Department of Defense), and private sector industry leaders. It is also the first at a historically black college or university. The HUPTI is the largest freestanding proton therapy facility in the world, the only facility of its kind in Virginia, and the eighth such facility worldwide. Patient treatment began in August 2010. To date, HUPTI has attracted over $50 million in federal and private research funds. Its research legs are the Hampton University Cancer Research Center and the Center for Advanced Medical Instrumentation at Hampton University (HU). The latter research group has earned at least nine patents for cancer detection and treatment devices. The school works in conjunction with several hospital systems, such as Riverside, Sentara, and the Eastern Virginia Medical School, who facilitates the clinical rotations for the HU graduate students who are majoring in Medical Physics. To date, 60% of all patients are treated for PCa and about half are of African descent (Figure 5).
PROTON RADIATION: HUPTI boasts 6 treatment rooms including 4 gantry rooms, one fixed-beam room, and a gantry dedicated to research. At the heart of the facility is a 200-ton cyclotron that accelerates protons at two-thirds the speed of light, sending the resulting proton beam down a beam line. Once the proton beam reaches the treatment room it is prepared for treatment by a 90-ton gantry.

HUPTI CLINICAL RESEARCH RECRUITMENT CLINIC: Patient Exam Room #5 (C146) is being used for participant recruitment purposes. It is here where participants are consented, phlebotomized, measured, weighed, and informed about research protocols.

HUPTI LABORATORY: In addition, the Hampton University Proton Therapy Institute (HUPTI) also houses the Cancer Research Center’s “Radiation Biology Lab” located in room C174 and research office (room C106). Specifically, the lab space (10’ x 15’) currently houses a chemical fume hood, biological safety cabinet (tissue culture hood), CO2 incubator, and other equipment necessary for radiation biological studies. It is here where all biospecimens are processed and stored. The also houses cell cultures and a cell culture repository which will be used as resources for future irradiation studies. HUPTI also contains a 10,000 square feet of space on the second floor to be built-out for research labs and classrooms (Figure 4). This is the site of the future Cancer Research Center and all of its programs. Use of the proton facility for researchers at Hampton University is a priority following fulfillment of the institute’s clinical obligations. Dell computers which are networked to equipment through the University network system.

Figure 5. a) Patients by race, b) Patients by diagnosis, c) Patients by age, and d) Patients by zip code, through Sept. 2018
II. Biomedical Research I Building (Frank Fountain Building)

After construction of HUPTI, Hampton University (HU) embarked on an ambitious, strategic initiative to enhance its research competitiveness in the biomedical sciences. Since 2010, HU has endeavored to build an infrastructure that would serve to address and reduce health disparities in the Hampton Roads/Tidewater region and beyond. HU has made significant advances toward achieving this goal through the establishment of cancer research centers, institutes and research initiatives. In 2013, the HU Cancer Research Center and Minority Men’s Health Initiative were founded and were located in the Frank Fountain Building. In 2019, Hampton University became a, R2, High Activity Research University, according to the Carnegie Commission classification, providing clear evidence that the University is committed to becoming a leader in the areas of health and cancer disparities. The Frank Fountain Biomedical Research I Building was the first of 2 research buildings built to support the new strategic plan for research. It is a state-of-the-art 27,000 square foot Biomedical Research Center on the Hampton University Campus (Figure 6).

a. Hampton University Cancer Research Center (Frank Fountain Biomedical Research I Building)

huknowscancer.com

ENVIRONMENT: In 2013, Hampton University established the Cancer Research Center. The Hampton University Cancer Research Center (HUCRC) is located in the Frank Fountain Building. The HUCRC was founded in July 2013 by Dr. Luisel Ricks-Santi. The HUCRC has aligned its aims and goals with the rigorous requirements of the National Cancer Institute Cancer Center Support Grant. The mission of the Hampton University Cancer Research Center is to foster collaborative, interdisciplinary research and apply novel strategies to cancer research, while leveraging expertise and resources at Hampton University, to improve cancer outcomes and eliminate cancer disparities. The vision for the Hampton University Cancer Research Center is to become internationally recognized for cutting edge clinical-translational research of cancers that disproportionately affect ethnically diverse and underserved populations.

With Dr. Ricks-Santi’s departure, Dr. Neelam Azad will serve as interim director of HUCRC.

LABORATORY (MAIN CAMPUS): One of the HUCRC labs is also located in the Frank Fountain building. It is 1000 square feet and this lab will focus on cancer genomics. The Cancer Research Center Genomics Lab also houses several thermocyclers, waterbaths and heating blocks, vortexers, biological safety cabinet (Biosafety level 2), refrigerated centrifuges, an Eppendorf liquid handling station, 2 incubators, 2 refrigerators, 1 -20°C Freezer, spectrophotometers, microscopes, liquid nitrogen storage tank, and an ultracentrifuge.

Furthermore, given the potential of cancer genomics in the improvement of health and elimination of suffering due to cancer, the HUCRC houses a next-generation sequencer, which has the capability of genetically profiling patients to determine if they have a predisposition to cancer and to profile tumors to determine...
expression of genes at the mRNA level. In addition, the next generation sequencer has the ability to profile tumors to determine the best course of treatment. The Life technologies Personal Genome Machine (PGM™)
System combines semiconductor sequencing technology with natural biochemistry to directly translate chemical information into digital data, democratizing sequencing and making it accessible to virtually any lab or clinic. The system leverages the exponential improvements in the semiconductor industry (known as Moore’s Law) to provide scalability and flexibility for various applications. The system’s use of the simplest, natural sequencing chemistry eliminates the need for expensive optics and reduces complex chemistries to measure natural DNA extension. Direct, real time sequencing detection provides sequencing results typically in less than 3 hours. Remarkably, the HUCRC has the only next-generation sequencer in the Hampton Roads area. For DNA, RNA, and protein analysis, we have obtained the Qubit® 2.0 Fluorometer which quantitates DNA, RNA, and protein with unprecedented accuracy, sensitivity, and simplicity, as well as a 2100 Agilent Bioanalyzer which provides sizing, quantitation and quality control of DNA, RNA, proteins and cells on a single platform, providing high quality digital data. For protein analysis, the lab has obtained a Perkin Elmer microplate reader. In addition to next generation capabilities, the lab houses a life technologies real-time PCR machine. The Applied Biosystems® QuantStudio™ 7 Flex Real-Time PCR System advances our research further by enabling a broad range of real-time PCR-based applications through its multiplexing capabilities and interchangeable block formats. The QuantStudio™ 7 Flex system accommodates the interchange of a 96-well, 96-well Fast, 384-well, or TaqMan® array card block. Furthermore, the lab houses an eppendorf biorobot which will allow automation of protocols such as DNA/RNA isolation and treatment of cells in a 96- and 384-well format, as well as many other applications.

**OFFICE:** The lab contains 3 offices and houses 4 offices with Dell Latitude E6530 with Windows 7 Ultimate, operating systems, 64-bit, 3rd gen Intel® Core™ i7-3740QM Processor (2.7GHz, 6M cache, Upgradable to Intel® vPro™ technology).

**b. The Hampton University Minority Men’s Health Initiative (MMHI)** mmhi.hamptonu.edu

**ENVIRONMENT:** MMHI can also be found on the first floor of the building. The Hampton University Men’s Health Initiative is focused on reducing health disparities; however, the ultimate goal is to improve the health of all Americans. For example, according to the American Cancer Society African-American men have a 59 percent higher incident rate of prostate cancer than white men. The Hampton University leadership believes that one’s health and longevity should not be dependent on where you live, socioeconomic status, gender or race and ethnicity. Hampton University will serve as the lead institution on the initiative and has asked several other historically black colleges and universities to partner in the implementation and advancement of innovative transdisciplinary research to effectively reduce health disparities in minority men. The other universities involved are Jackson State, Clark Atlanta; Howard, North Carolina A&T and St. Augustine. This Initiative has identified six areas to receive a comprehensive approach to narrowing the gender gap of health disparities. These areas are prostate cancer, cardiovascular disease, diabetes, obesity, melanoma in Hispanics and violence prevention. The researchers will implement a sustainable and transferrable collaborative research model in all of the six areas to positively influence the healthy outcomes of minority men. The HUMHI will serve as a hub for the coordination of collaborative research within and beyond Hampton University. Additionally, the initiative will provide web and teleconferencing, sharepoint and database sharing capabilities. The MMHI Research Lab contains equipment such as biosafety cabinet, fume hood, luminex machine, plate reader, fluorescent
microscope, western blot stations, pH meters, nanodrop 8000, centrifuges, scales, refrigerators and freezers to support MMHI project.

**OFFICE**: There are 6 offices that house 8 Dell Latitude E6530 with Windows 7 Ultimate, operating systems, 64-bit, 3rd gen Intel® Core™ i7-3740QM Processor (2.7GHz, 6M cache, Upgradable to Intel® vPro™ technology).

c. **Animal Facility-Zebrafish Lab (Frank Fountain Biomedical Research I Building)**

**ENVIRONMENT**: The Zebrafish lab is also located in the W. Frank Fountain Research Lab at Hampton University. It is equipped for all the molecular/cell biology and embryological analysis. There is 1,000 sq. ft. of dedicated lab space (incl. benches, procedure rooms for microscopy/microinjection) and shared equipment (centrifuges, etc.), tissue culture, histology, chemical and x-ray processing rooms (shared with 2 other faculty).

**Animals**: The lab has dedicated aquaculture space housed on the 1st floor of the W. Frank Research Lab with 12 racks. This facility has the capacity to house thousands of zebrafish. It has been updated with the latest water maintenance and monitoring equipment and is scheduled for AALAC certification.

**Computer**: Each lab member has a personal computer, networked securely. Each imaging system is equipped with the necessary hardware and software to capture and process high quality images. There is a dedicated server for lab use and additional server space and institutional backup with support is available to ensure all data is securely stored and archived. There is an administrative area on the 2nd floor (photocopier, fax, b+w and color printers, etc.).

**Office**: The PI’s office is located adjacent to the lab. The PI has both Windows and Linux PCs for his dedicated use. Access to a full-time administrative staff employee is made through the Department of Biological Sciences.

**Major Equipment**: The lab has 5 microinjection units (dissecting microscope, manipulator, injector) for delivery of reagents into the zebrafish embryo. The lab, also, has its own imaging station with fluorescent compound and dissecting Nikon microscopes, a Nikon 80i upright scope with NIS-Elements deconvolution software, Nikon and SPOT digital cameras, and a newly installed Optigrid Structured Illumination Microscopy (SIM), for rapid imaging of live zebrafish samples or fixed tissues with confocal-quality using multichannel fluorescence and real-time 3D/4D imaging.

**Other**: Core facilities for DNA analysis and gene manipulation, histology, and microscopy are available in the area. The investigators in the building share a media preparation/glassware washing technician.

d. **Hampton University Skin of Color Research Institute (Frank Fountain Biomedical Research I Building)**

By the year 2050, individuals with skin of color (including Africans, African Americans, Asians, Native Americans and Hispanics) will comprise more than half of the U.S. population. Currently, there is limited information on structural, functional, and clinical properties in skin of color—which hinders progress towards the development of effective therapies. N 2009, the Hampton University Skin of Color Research Institute (HUSCRI) was established to address these knowledge gaps and to advance our understanding of skin diseases primarily affecting these patients population. Their goal is to understand unique properties of skin of color, elucidate the process of cutaneous diseases in skin of color and to develop new tools, technologies and techniques to advance the assessment, diagnosis and treatment of diseases and conditions affecting people of color.
ENVIRONMENT AND LABORATORY: HUSCRI is also located in the Frank Fountain Building and uses its dedicated, world-class research resources (researchers and facilities) to conduct research to develop therapies and identify disparities in cutaneous diseases affecting people with skin of color. HUSCRI’s current focus of clinical and basic research for skin of color is in three areas: keloids and other fibroproliferative disorders, pigmentary disorders and melanoma. HUSCRI is also exploring identification of possible link/role of alterations in genetic, epigenetic and signal pathways to observed differences in the biology of ethnic skin disorders. HUSCRI is comprised of an office suite for its clinical and scientific directors, 2 laboratories and 2 shared equipment rooms totaling 4400 sq/ft of space. Within its labs, there are 2 separate enclosed tissue culture facilities, a shared resources room with a Millipore water filtration system, ice machine, and dish washer. It also houses a microscopy room with confocal and phase contract microscopes, cameras and computer equipment. There are also several freezer rooms with controlled access. The labs contain several Dell computers networked to equipment and to the HU network.

III. Biomedical Research II Building

The National Institutes of Health awarded Hampton University an $8 million stimulus grant to construct a Biomedical Research Center (BRC) now known as the Biomedical Research II Building. The 64,000-square-foot building on the university campus is a state-of-the-art research center for biomedical researchers from both HU and the local region. The interdisciplinary biomedical research facility will be home to the HU-RCMI program and research activities such as cardiovascular disease, diabetes, adolescent health, HIV/AIDS, bio-molecular cancer imagining, medicinal chemistry, Alzheimer’s and other projects from the Hampton University Schools of Nursing, Pharmacy, and Science. This will create a dynamic environment where researchers will look beyond their focused areas to develop multi- and transdisciplinary RCMI projects. This will also serve as a magnet to attract talented researchers, particularly minority researchers, to Hampton University.

Research II houses several large labs (biology, pharmacy, nursing, and physics labs) containing water purification systems, shared labs for autoclaving and glass washing, ice machines, freezer rooms, and other core labs. There are several rooms for tissue culturing and an observation room for behavioral scientists. One of the other projects housed in the BRC is the existing HU Center for Advanced Medical Instrumentation. Devices developed by this center have been successfully used for breast cancer localization and treatment in clinical trials.

a. Molecular Biology Lab

Environment: The molecular biology lab (PI: Jermel Watkins, PhD, ~2000sq/ft) contains a dark room for microscopy, a tissue culture room, basic equipment for molecular biology such as thermocyclers, centrifuges, and gel running stations as well as several freezers and refrigerators.

b. School of Pharmacy Experimental Therapeutics Core Laboratory (Drs. Anand Iyer and Neelam Azad)

Environment: The Department of Pharmaceutical Sciences at the School of Pharmacy houses the BioAnalytical Facility, which has instrumentation in Kittrell Hall and Biomedical Research II Building). The Pharmaceutical Analysis Laboratory contains a Tandem Mass
Facilities & Other Resources

Spectrometer, HPLC, Peptide Synthesizer, Glove Box and Rotavapor. The major equipment in the Synthetic Chemistry Lab includes Glass Oven, Rotary Evaporators, 300 mHz NMR Spectrometer, Gas Chromatograph, UV/Visible Spectrophotometer and FT-IR Spectrophotometer. The molecular biology laboratories house: Biological Safety Cabinets with dedicated incubators, Inverted Phase Contrast and Epi-Fluorescence Microscopes, BioRad Experion, Nanodrop, Microplate readers, ultracentrifuge, PCR & RT-PCR systems, Electroporation system, Electrophoresis units, Cell Counter, Flow cytometer, Sonic Dismembrator, Film Developer and Imager for imaging gels and blots and other relevant equipment.

c. Major Instrumentations Room
Environment: The shielded major instrumentation room (PI: Dr. Mikhail Bondarev, PhD, ~5,000sq/ft) has in it an NMR and HPLC. It also contains several computers and has room for future instrumentation.

IV. Other laboratory and research facilities

Department of Biological Sciences (DuPont Building) (Chair: Eric Lewellan, PhD)
The Department of Biological Sciences houses a 16-station interdisciplinary laboratory funded by the Howard Hughes Medical Institute, as well as a 1000 ft2 cancer laboratory established through partnerships between the Department of Biological Sciences and the University of Pittsburg Cancer Institute. In addition, all faculty share a 300 ft2 tissue culture laboratory and a 1000 ft2 laboratory with basic shared laboratory equipment such as a nanodrop/computer, centrifuges, minucentrifuges, incubators, pH meters, scales, plate readers, chemical storage, PCR hood, thermocyclers, shakers, inverted microscopes, compound microscopes, and dissecting microscopes.

Keck-HU Bioinformatics Laboratory (PI: Edison Fowlks, PhD): A center for in silico research and computational biology modeling, the Keck-HU Bioinformatics Lab is equipped with computers to accommodate 24 students during research or training sessions. In this laboratory, students learn to navigate the NCBI website. They also learn to design student-centric in silico research and computational modeling projects and present their findings to the class or members of the department. As in the case of all research projects in biology, the scientific method guides the process of discovery. This lab is equipped for videoconferencing through Skype and other technologies.

Keck-HU Genomics Laboratory (PI: Edison Fowlks, PhD): The focus of this laboratory is on the genome of yeast, the fruit fly, and plant model systems. DNA Microarray technology is the major approach currently in use. This laboratory is also the site for our new Synthetic Biology Project that seeks 1) to design and construct new biological parts, devices, and systems, and 2) to redesign existing natural biological systems for useful purposes. This lab is equipped for videoconferencing through Skype and other technologies.

Department of Chemistry (Chair: Oluwatoying Asojo, PhD)
The Department of Chemistry is located in Turner Hall, and has a total of 8 research and instrumentation laboratories. The major instruments necessary to conduct the research activities are available within the department such as UV/VIS Spectrometer, Double Beam Lambda 650 PerkinElmer UV/Vis Spectrometer, 3D Capillary Electrophoresis and Series 1100 Mass Spectrometer with Kayak workstation, Metrohn Ion Chromatograph 861, Shimadzu Gas Chromatograph GC-17A FID/ECD, Varian FTIR 1000 Scimitar Series, Varian Graphite Furnace Atomic Absorption Spectrometer SPECTRA AA220 with GTA 110, Beckman Coulter Allegra x-22 Centrifuge, FotoDyne Convertible Camera Station, GeneAmp 9700 PCR system, Jasco Fourier Transform Infrared FTIR 4200 with IRT-3000 IR Microscope, Leica CME Microscope (2), VWR Vistavision Microscope with camera, 400 MHz JEOL Nuclear Magnetic Resonance Spectrometer with Autosampler, TA instruments TGA 2050 Thermogravimetric Analyzer with DSC 2920, BAS Electrochemistry workstation to include Rotating Disc Electrode RDE 2 with cell, Shimadzu Spectrofluorometer RF-5301PC, and Varian 500-MS ion trap mass spectrometer.

Physics (Chair: JaeTae Seo, PhD)
The department of Physics has laboratories in Olin Hall, Turner Hall, the Graduate Research Center and Armstrong Slater Hall. The Optical Spectroscopy and laser development group include three main laboratories
1. Bridgman Crystal Growth Laboratory
2. Spectroscopy Laboratory
3. Laser development Laboratory
The experimental nuclear physics group has a computer laboratory for faculty, undergraduate, and graduate students. The Physics Department also has two teaching laboratories as well as a small computer laboratory. The research laboratories of the fluorescence spectroscopy & application group are located in the Olin Engineering Building and Turner Hall at Hampton University. Research space is available for chemical preparation and material synthesis (~680 sqft.), bridgman bulk crystal growth (~1020 sqft.), laser spectroscopy, and solid-state laser development (~870 sqft).

**Laser Spectroscopy and Materials Modeling Laboratories:**
The research laboratories for the laser spectroscopy and materials modeling group are located in the Graduate Physics Research Center at Hampton University. Several consolidated and shockproof laboratories with state-of-the-art scientific facilities and instrumentation for material preparation, laser spectroscopy, and device development and testing are available as described below.

**Materials Synthesis Laboratory:**
High quality optical semiconductor quantum dots and metal nanoparticles have been synthesized for various photonic applications. The laboratory for materials synthesis is equipped with 1) three chemical reactors; 2) three chemical hoods with exterior ventilation; 3) a glove box; 4) two centrifuges (over ~20000 rpm) for micro particle filtration; 5) a spin coater for controlled film deposition on glass substrates; 6) polymer deposition facilities; 7) a vacuum evaporator; and 8) laboratory glassware for material preparation and chemical reactions.

**Laser Spectroscopy Laboratory:**
The laser spectroscopy laboratory is equipped with state-of-the-art facilities for analyzing linear or nonlinear optical properties of nanoscale materials and structures in the broad temporal region from CW to femtosecond, the wide spectral region from visible to near infrared spectra, and the large temperature range from 4.2K to 300K. The laboratories are well installed for characterizing optical properties with a variety of spectroscopic techniques including Z-scan, four-wave mixing, pump-probe, absorption, luminescence, and time-resolved spectroscopy with optical delay stages. Two optical cryogenic systems (Janis Research Corp, SHL-4-1) closed-cycle helium refrigerators are available for studying optical properties in the temperature range 4.2K to 300K. Optical absorption measurements have been carried out using a UV-VIS-Near IR absorption spectrometer (Agilent Tech, 8453). Vibrational modes of optical materials have been analyzed with three Raman spectrometers (Inspector and Examiner, DeltaNu) with two optical microscopes.

The pulsed spectroscopy systems include a Nd:YAG laser (~ 6 ns, 1064, 532, and 355 nm, Continuum, Surelite II), a mode-locked picosecond Nd:YAG laser (~20 ps, 1064, 532, and 355 nm, Leopard, Continuum), a regenerative amplifier Ti:Sapphire laser (~150 fs, 387.5 nm, 775 nm and 1550 nm, CPA2001, Clark-MXR), an OPA (~150 fs, 400 nm - 2600 nm), an UV-Vis-IR Multichannel Spectrometer (Acton SP750i, 350 - 2200 nm), a 0.75-m monochromator (Acton, 750), four photomultiplier tube detectors (Hamamatsu, R928, R6636-10, R406), an electrically cooled InGaAs detector (Acton Research, ID441), two ultrafast photo detectors (Electro-Optics Technology, Silicon PIN Detector ET-2030), two boxcar integrators (Stanford Research Systems (SRS), SR250), three motorized time delay systems (National Aperture, Sevo 3000), two digital (Tektronix, TDA 430A, 400 MHz; LeCroy, 9370M, 1 GHz) and one analog (Tektronix, 2467B, 400 MHz) oscilloscopes.

The cw spectroscopy systems include one HeCd laser (30 mW at 325 nm, 120 mW at 442 nm, Melles Griot), one Nd:YAG laser (1064nm, 20 mW), one Ar-ion laser, three HeNe lasers (Melles Griot, 632.8 nm, 5 mW), two lockin amplifiers (SRS, SR510), two optical choppers (SRS, SR540), two UV lamps (302 and 356 nm, UVP), and the optical detectors described above.

**Device Development and Testing Laboratory:** In addition, device development and testing laboratories are fully equipped with state-of-the-art facilities to conduct nanophotonic device development and testing. All of these facilities are completely available to the participants of the proposed program.

**Modeling and Computational Tools:**
A sophisticated grid-based FDTD code of MEEP and a grid-enabled computing cluster are available to analyze and design electro-optical fields for plasmon-coupled optical material systems.
NanoHU Laboratories

The Nanoscience project at Hampton University (NanoHU) promotes the nanoscience research activities at Hampton University. NanoHU is spread across the campus and involved by various departments of School of Science (Departments of Biological Sciences, Chemistry & Biochemistry, Marine and Environmental Science, Mathematics, and Physics) and School of Engineering.

Peptide Synthesis Laboratory: This laboratory is located in the Graduate Physics Research Center (GPRC) room 107 and the facility is dedicated for the development of small peptides to complex proteins that can obtain up to 108 amino acids. The laboratory is equipped with Peptide Synthesizer, (Tribute, Protein Technologies), and Freeze Dryer (Lyph lock Labconco) and a chemical hood with exterior ventilation.

Analytical Laboratory: The analytical lab is located in the GPRC room 112, which helps in quantitative assessment of peptides and further electrochemical oxidation of synthesized peptides. The laboratory equipped with High performance liquid chromatography (HP1050 Agilent technologies) and BASi Epsilon electrochemical workstation (C3 potentiostat, Bioanalytical Systems) and Rotating Disk Electrode (RDE-2, Bioanalytical Systems). The instruments are connected to secured Dell computers and can be connected to HU network.

Organic synthesis Laboratory: The synthesis laboratory is located in the Turner Hall room 110. It serves as a basic reagent preparatory lab, and is heavily used for the preparation of nanoparticles and nanoassemblies of peptide and nanoparticles. The laboratory is equipped with chemical hood with exterior ventilation, rotatory evaporator (Buchi 215), dry bath incubator, UV-Vis spectrometer (GeneSys 10S, Thermofisher) digital melting point apparatus (Stuart SMP10, Thermofisher), weighing balance. The labs contain several Dell computers networked to equipment and connected to the HU network. Some of the computers are equipped with ChemBioDraw 13.0 (Perkin Elmer) which can be used to draw chemical structures and perform semi-empirical calculations for molecular simulations.

Behavior Science Research Center: The BSRC supports, promotes and nurtures research activities at Hampton University by bringing together behavioral science researchers in the department of Education, psychology, and sociology in the School of Liberal Arts and the School of Nursing. The Center provides a coordination and facilitation of institutional infrastructure activities needed to increase funded research strengthen faculty research capacity; provide rigorous undergraduate research training, and foster collaboration with productive high research institutions. All BSRC research projects utilize African American participants; employ culturally sensitive techniques; consider the role of social class with ethnic and racial differences; use advanced multivariate statistical techniques to determine the role of social, ethnic, and racial factors. The center for Minority Special Education (CMSE) Online is a compilation of grant proposal writing materials and resources links developed by the CMSE. This web site is sponsored by Hampton University’s BSRC as a grant writing resource for minority researchers.

V. Resources for Career Development

a. Center for Teaching Excellence (CTE)
The Center for Teaching Excellence (CTE) is a faculty resource facility that is dedicated to providing comprehensive programs for professional development including strategies for improved pedagogy in all disciplines, methods for increasing faculty research and scholarship, and innovative approaches to assessment. The CTE, located on the fifth floor of the Harvey Library, maintains online website that contains archived monthly newsletters focusing on pedagogical strategies and teaching excellence, instructional webinars on tenure and promotion, basic grant-writing tips as well as links to publications and books ranging from classroom management to pedagogy. The Center personnel are content experts in Pedagogy (Dr. Leona Johnson), Statistical Analysis (Dr. Spencer Baker), Use of Technology in the Classroom (Dr. Arun Verma) and in Grant-writing (Dr. Zina McGee). The CTE is committed to promoting outstanding educational exchange between Hampton University faculty and students in the effort to foster an academic environment in which both can realize their full potential. The Center is also committed to offering institutional and global outreach services so as to address the most current faculty development issues. Finally, CTE is committed to stimulating the faculty’s creativity, collegiality, and exploration for the common goal of teaching excellence. In the effort to fulfill its mission, CTE conducts the following activities:
• Eight (8) hour New faculty orientation workshop during the Fall Faculty Institute
• Monthly workshops and interactive sessions directed toward improving the quality of instructional skills
• Dissemination of monthly newsletter contain articles on classroom management and pedagogical development
• Quarterly demonstrations of new classroom technology
• Skills-Development workshops to train faculty in the use of various software applications (Blackboard, TracDat etc.)
• Mid-semester and end of semester mentor-mentee mixer

b. CTE Mentoring Program
The CTE has over 25+ senior faculty members who are actively engage in mentoring junior faculty members. CTE utilizes this resource to offer a one year mentoring program whereby new faculty members are automatically enrolled in the program and are assigned tenured, senior faculty member from the mentee academic unit or closely related discipline to assist them navigating university tenure/promotion system and to assist them in developing high-quality instructional activities. The Mentors-Mentees are required to sign a contract stipulating that they will meet regularly and are required to keep a journal of mentoring activities. Mentors and mentees are expected to participate in at least two structured activities during at the mid-semester and at the end of the semester. Mentors are expected to attend mentees’ courses and provide observational critiques of teaching practices. Mentors are also expected to provide advice in preparation for tenure and promotion.

c. Hampton University Faculty Development Awards
Institutional support for research is provided through the Committee on Faculty Research (Refer to the Faculty Handbook and the Faculty Application for Hampton University Research Funds), under the leadership of the Office of the Provost. The Committee on Faculty Research: (1) evaluates proposals and make grants for faculty research; (2) facilitates opportunities to carry out research; (3) distributes a statement of the studies and experiments completed within the previous year and those which are in progress; (4) encourages systematic research studies and experiments; (5) strives to stimulate research viewpoints and interests; (6) collaborates when appropriate with the Provost and others; (7) assists in securing financial aid and in publishing [Hampton University Faculty Handbook]. Acquisition of the HU faculty development award has been a good predictor of future success as seen with current or past 7 out of the 9 NIH funded Hampton University PIs who started out as junior faculty members having received pilot study funding from the HU program.

VI. Conferences sponsored and held at Hampton University
a. Minister’s Conference. The Ministers’ Conference began in 1914 when the Negro Organizational Society, the Conference for Education in the South, the Southern Education Board, and the Cooperative Education Board sought to address the growing concerns of the African-American church and its relationship to the community. With Hampton Institute carrying strong influence with each of these community organizations, it became the birthplace of the original Ministers’ Conference, then known as The Conference of Negro Ministers of Tidewater, Va.

The ministers conference in its 105th year of existence represents the largest gathering of interdenominational African clergy in the world. Over the past three years there has been an aggregate of 18,650 participants of which 65% were African American men. The annual conference serves as an opportunity for leaders to come together, discuss ideas and to enhance their ministries. The Conference seeks to address
the growing concerns of the African American Church and its relationship to the community. Partnering with this organization would allow a unique opportunity to recruit participants for CAHDRE’s projects and to educate participants about clinical research studies and the work being done in the community by CAHDRE in partnership with community-based organizations. This information could be taken back to their respective communities across the nation.

In 2015, the Ministers’ Health Project (MHP) became a program of the Collaborations and Partnerships Core of the Hampton University Minority Men’s Health Initiative (MMHI). Utilizing the Hampton University Ministers’ Conference, an annual gathering that brings together more than 5,000 clergy members, the MHP is a community-based participatory initiative aimed at bringing health-based information to African American ministers. During the 2018 Hampton University Ministers’ Conference, MMHI, in partnership with the Hampton University School of Pharmacy, will provide information on the effective use of medication to improve health outcomes and to achieve the stated goals of Healthy People 2020.

b. **The Hampton University Skin of Color Research Institute Skin of Color (HUSCRI) Symposium.** The conference is designed to promote, develop, and advance the education, knowledge, and research of cutaneous disorders disproportionately affecting people of racial and ethnic minority groups. Centered on the theme of “From Bench to Bedside”, the symposium provides a program featuring a diverse panel of nationally recognized physician-scientists, basic scientists, and clinicians who updated attendees on the latest research advances across multiple relevant disciplines, including public health, basic science, and the clinical diagnosis and management of select complex and rare dermatologic conditions. Every other year, the directors of the symposium, Valerie M. Harvey, MD, MPH and David H. McDaniel, MD, organize an enriching program that include sessions in vitiligo, disorders of hyperpigmentation, keloids, central centrifugal cicatricial alopecia (CCCA), and cutaneous lupus. A diverse panel of internationally recognized experts usually present the latest research advances across multiple disciplines, including public health, basic science, medical dermatology, and surgical dermatology. A highly diverse audience of approximately 120 participants attend, with attendees self-identifying as 48% black or African American, 34% white, 14% Asian, and 4% Hispanic or Latino (Figure 14).

c. **Hampton University’s Conference on the Black Family.** Since 1978, this conference has created a forum for prevalent issues concerning the Black Family. The conference is held annually on campus, and brings together professionals, educators, community leaders, corporations, and a cross section of the community to discuss various topics affecting families. These topics have included health, business, education, financial education to name a few. This conference presents a unique opportunity to reach the target audience that would be the focus of this grant.

d. **Pan-Hellenic Council Information.** On May 10, 1930 the Pan-Hellenic Council, Incorporated (NPHC) comprised of nine historically African American international Greek letter sororities and fraternities was formed on the campus of Howard University. The NPHC is comprised of the following nine organizations (*The Divine 9*): Alpha Kappa Alpha Sorority, Inc. Alpha Phi Alpha Fraternity, Inc., Delta Sigma Theta Sorority, Inc., Zeta Phi Beta Sorority, Inc., Iota Phi Theta Fraternity, Inc., Kappa Alpha Psi Fraternity, Inc., Sigma Gamma Rho Sorority, Inc. Phi Beta Sigma Fraternity, Inc. and Omega Psi Phi Fraternity, Inc. Although a coalition of fraternities and sororities make-up the NPHC, each organization is a distinct social and civic institution with its own constitution
and bylaws with the oldest organization Alpha Phi Alpha fraternity, in its 112th year of existence and the youngest
Iota Phi Theta fraternity in its 55th year. Collectively the NPHC is comprised of over two million members and over nine thousand graduate, alumni and campus based-chapters in forty-seven US States, US territories and international locations. Each organization is spearheaded by national, regional and local leadership that requires a commitment among members to stay socially active in their communities through service, education, civic and social engagement. Except for those members inducted into a graduate chapter, the vast majority of sorority and fraternity members are initially inducted into one of the Divine 9 Greek letter sororities and fraternities while in college. The overwhelming majority of sorority and fraternity members are college graduates, many with graduate and doctoral degrees. Due to the strong historical legacy of sororities and fraternities within the African American community, each member’s commitment to life-long community service and education, and the high degree of networking capacity within each organization, historically African American sororities and fraternities are an excellent medium from which to recruit participants for the proposed study.

V. TECHNOLOGY INFRASTRUCTURE

In November of 2009, Hampton University increased its bandwidth capabilities. Public network services maintained for the University’s Telephony and Internet services are delivered to the entire campus on Cox 100% fiber-optic facilities. Cox Business also maintains internet services with the provision and transport of a 300Mbps connection to the Cox Internet Service Provider (ISP) core. Connectivity is completed on a 1 Gigabit Ethernet interface that will allow for an easy increase of bandwidth if required. Fiber-optic services are also maintained for the University’s Proton Therapy Center. Private Internet Protocol (IP) network are supported by Cox Metro-E services, which extends to all HU external and cyber locations.

The research community is connected to Internet 2 using a DS3 (45) megabyte connection on a 100 megabyte transport. In addition, the research community is allocated 100 megabyte of commodity Internet. On campus Internet services are extended to faculty, staff and students living off campus. The University provides HU@home, a dial-up connection free of charge. A Virtual Private Network (VPN) connection is provided to pre-authorized users consisting of faculty and administrators.

In the summer of 2005, the University implemented wireless communications. The wireless infrastructure consists of 490 access points, providing Internet connectivity throughout the entire campus, including green spaces and waterfront properties. All users of our wireless offerings are required to authenticate on our network, using a University issued username and password. All visitors on our campus must make a formal request for access, in which case they are issued a visitors account for a predetermined period of time. Bradford Campus Manager is a user-centric, network-based solution with integrated identity management, endpoint compliance and usage policy enforcement capabilities. The solution actively monitors and controls network users and devices to provide enhanced security within the network. Through the enforcement of network usage policies, the solution ensures the network is safe and secure.

The Hampton University systems architecture has its data protected utilizing world class enterprise backup software. The policy in place allows the backed up data to remain on and off site. Additionally HU has partnered with disaster recovery and business continuity vendor in the event of a disaster happening on campus, leaving the systems inoperable. The University has 17 multi-media classrooms in place and 10 video teleconferencing (VTC) facilities on campus. The VTC facilities are both IP and ISDN capable. Additionally, the University has five Smartboards placed in academic areas across campus.

a. The Information Assurance and Cyber Security Center

Environment: The Information Assurance and Cyber Security Center at Hampton University is a multidisciplinary center devoted to Information Assurance (IA) Education, Research and training. The center provides program and curriculum development, workshops, multidisciplinary research opportunities, outreach to other HBCU/MI’s and Community Colleges and access to IA research Resources. The goals of the IAC includes: (i) providing students with educational opportunities in Information Assurance and Computer Security, (ii) providing an Information Assurance and Computer Security research environment for faculty, staff and students, (iii) providing Information Assurance and Computer Security resources not only within the University, but also to the local community, including law enforcement, government, business and the public and (iv) providing opportunities for enriching information assurance education across the curriculum.
b. **Data Conversion and Management Lab**

**Environment:** Hampton University’s Data Conversion and Management Lab is a state-of-the-art digital production center that provides a variety of business management services. The DCML was funded by the U.S. Congress through the Department of Defense in 1999 with a $1 million grant and was established as an operating unit of Hampton University. The initial commission in the DCML was for a CAD conversion program (hardcopy to AutoCAD) for a series of Naval Frigates. The Lab has since been awarded another $14,000,000 in contracts and has expanded to include additional contemporary technology services, such as: Data Management Systems & Research, Markup Languages/Data Interactivity, Web Site Development, Development of Virtual Manufacturing Techniques/Reverse Engineering, Technology, Network and Support Services, Development of Virtual Training and Operational Platforms. HU’s Data Conversion and Management Lab has been active since the year 2000 undertaking complex assignments in broad areas of data management. The conversion of legacy data into electronic format is a part of the Lab’s foundation, and the current direction is to maximize our opportunities in the innovative and productive storage, access and utilization of electronic data. One of the significant activities has been the creation of technologies at HU’s Virtual Parts Engineering Research Center for development of military legacy weapons system parts, including reverse engineering and virtual redesign. In addition, HU has been involved in the application of data management techniques in modeling and simulation programs as applied to homeland defense initiatives and in various equipment as well as academic training platforms. **This resource will be utilize to assist AC staff and RIC staff in developing, maintaining HIPAA Compliant Dedicated Servers that house EMR software and patient registry and biobank data.**

VI. **Dissemination Resources**

Hampton University possess several avenues for reaching diverse audiences with the Mid-Atlantic States (North Carolina, Virginia and Maryland) and more broadly throughout the nation. The Administrative core in collaboration with the remaining cores will leverage this unique feature to expand the impact of HU-RCMI PROGRAM.

a. **FM Radio Station:** 88.1 WHOV-FM is a non-profit, non-commercial radio station serving the interest of the Hampton University community, the citizens of Hampton Roads and the surrounding metropolitan areas. WHOV is the first federally licensed educational FM radio station among historically black colleges and universities. WHOV operates on 10,000 watts (e.r.p) — 8000 vertical and 2000 horizontal for 24 hours a day, 365 days a year. Its programming is wide and diverse and includes musical, instructional and informational formats. Its immediate audience includes the faculty, staff and students of Hampton University, as well as adults and professionals, youth, and teenagers living in the Hampton Roads area. The station can be heard on campus in administrative offices, the cafeteria, student center, and all residence halls. The station can also be heard in all the major cities that make up the Tidewater Area, including north of Williamsburg as well as parts of North Carolina and areas of the Eastern Shore in Maryland. WHOV consistently ranks as the area’s #1 college station in this market and was ranked the 12th Best College Radio Station in the nation by The Princeton Review in 2003.

b. **Office of University Relations:** The Office of University Relations is the first point of contact for media outlets. Each year University relations issues dozens of press releases, media advisories and tip sheets reporting university accomplishments, including grants received, new academic programs, conferences and upcoming events and other faculty and student achievements, University Relations also regularly contacts local and regional media representatives about feature stories on campus.

c. **The View from HU:** This is the University’s weekly cable show which highlights the accomplishments of the various academic and research activities of the institution. The 30 minute program is aired three times a week on two local cable channels and one local television station and thus can be seen by audiences in Virginia and parts of North Carolina. Periodically, Core Directors and Center researchers will conduct interviews to provide information on community outreach activities.

d. **Researcher’s Information Forum (RIF)**

The Researcher’s Information Forum (RIF) is designed to create clearer lines of communication between faculty and the offices that directly support their funded research. The RIF is a venue where faculty and staff questions and concerns are addressed by staff in the Office of Governmental Relations, and other colleagues across campus. Although the RIFs were originally a problem resolution tool, faculty and staff are also encouraged to share best practices at the forums. The primary mission of the RIF is to facilitate the successful
pursuit and management of grants and contracts by providing a candid environment for problem resolution, the dissemination of information and the promotion of transdisciplinary research. Previous RIF topics have included Budgeting, International Student Travel, the Federal Government Budget Crisis Impact on Research Universities, Financial Aid, and Purchasing - as related to externally funded projects. The RIF is held from 3 pm to 5 pm, on the second Thursday of every month from September through May.

e. LIBRARY

The William R. and Norma B. Harvey Library is the main library on the HU campus, which was designed to employ spaces and technology to deliver both physical and virtual information resources and services. The library collection contains over 363,206 volumes, more than 900 current periodicals, journals and newspaper print subscriptions, 400 microforms and a U.S. Government Depository collection representing 17% of all U.S. Government publications. The Library currently maintains over 140 electronic databases, of which 43 are aggregates, and provide access to over 11,000 electronic books. Access to the library resources is maximized by the Internet connectivity throughout the library building and campus.

Relevant to the research proposal described, below are electronic resources from Harvey Library supporting the sciences (Math, Chemistry, Biology, Physics, Engineering, Environmental, Computer Science and General Science). The list contains a combination of full text electronic journals (FT), , and (AI). The library offers a robust Interlibrary Loan program with which faculty and students can request copies of journal articles that we do not have paid access to:

- **Full text electronic journals (FT):** ACS Publications - American Chemical Society journals, Annual Reviews - summaries of top research for the year in Biomedical, Physical and Social Sciences, BioOne – Full text Biology Journals, EBSCO EJS (Electronic Journals Service) - access over 400 ejournals Harvey Library subscribes to, Institute of Physics Journals - Current journals published by IOP plus perpetual access to Archives 1874 – 1993, Nature Online – full text of Nature Magazine back to 1950, ScienceDirect College Edition - fulltext scholarly journals in Health & Life Sciences, Physical Sciences, and Social & Behavioral Sciences, ScienceOnline (Science Magazine)

- **Partially full text aggregated journal article collections (PT):** Computers & Applied Sciences Complete - via EBSCOhost - academic journals, professional publications computing and applied sciences, Environment Complete - via EBSCOhost - fulltext articles in ecosystem ecology, energy, natural resources, marine & freshwater science, pollution & waste management, environmental technology & law, SCOPUS - index of articles from 14,200 peer-reviewed titles from scientific, technical, medical and social science literature

- **Electronic journal articles indexes (AI):** Biological Abstracts - via EBSCOhost - collection of bibliographic references to life science journal literature, Biological Sciences - via Proquest - article abstracts and citations biological sciences, INSPEC - via EBSCOhost - world’s leading bibliographic database covering the fields of physics, electronics, computing, control engineering and information technology. Includes over 8 million records taken from 3,400 technical and scientific journals and 2,000 conference proceedings from 1969 to the present, MathSciNet - via American Mathematical Society - comprehensive database covering the world’s mathematical literature since 1940, SCIFINDER SCHOLAR - access a wide diversity of research from many scientific disciplines, including biomedical sciences, chemistry, engineering, materials science, agricultural science, and more.
Hampton University Equipment

1. Hampton University Proton Therapy Lab
   a. Chemical fume hood
   b. biological safety cabinet (tissue culture hood)
   c. CO2 incubator
   d. Refrigerator freezer
   e. 2 x minifuges
   f. Waterbath
   g. Thermocycler
   h. Shakers and stirrers
   i. Lab benches
   j. Inverted microscope

2. Hampton University Cancer Research Center
   a. Life technologies Personal Genome Machine (PGM™)
   b. Ion One-touch ES
   c. QuantStudio™ 7 Flex system accommodates the interchange of a 96-well, 96-well Fast, 384-well, or TaqMan® array card block.
   d. Biological Cabinet (tissue culture hood)
   e. Agilent Bioanalyzer
   f. Eppendorf Robotic Liquid Handling System
   g. Eppendorf Centrifuge 5804-R
   h. Eppendorf Centrifuge 5424
   i. Vortexers
   j. Invitrogen Flurometer
   k. Dry bath incubators
   l. Isotemp hot plate and stirrer
   m. ABI PCR System 9700 (96 and 384 well)
   n. Eppendorf mastercycler
   o. Waterbath
   p. 4°C refrigerators
   q. -20° freezers
   r. -80 ° freezer
   s. CO2 Incubators
   t. Inverted microscopes x 2
   u. Beckman Coulter Ultracentrifuge
   v. Minifuges
   w. PCR hood
   x. Microplate reader
   y. Millipore Milli-Q water purification system
   z. Coulter counter
   aa. Guava® easyCyte Flow Cytometer

3. HU Skin of Color Institute
   a. Fluorescence Microscope with camera
   b. Centrifuges
   c. Freeze Dryer
   d. Carbon Dioxide Incubators
   e. Biological Safety Cabinets
   f. Tissue Culture Hoods
   g. Inverted Phase Contrast Microscopes
   h. MyECL Imager for imaging gels and blots
   i. UV/VIS Spectrophotometer
   j. Coulter cell counter
k. Microplate reader
l. Eppendorf microcentrifuges
m. Electrophoresis units for the resolution of DNA/RNA and protein bands
n. RT-PCR
o. Thermocycler
p. 2x -80°C freezers
q. 6 refrigerator/freezers
r. Autoclave
s. Milli-Q Direct 8 water purification system
t. Nanodrop
u. Cytation 3 imager
v. iCycler

4. Zebradish lab
a. Confocal microscope
b. Fluorescent microscope
c. Biological Safety Cabinet
d. CO2 incubator
e. Microplate reader
f. 2x -80°C freezers
g. 6 refrigerator/freezers
h. Fluorescent microscope

5. Minority Men’s Health Initiative Lab
a. Nanodrop 8000
b. Luminex MagPix System for multiplex ELISA
c. Thermocycler
d. Microcentrifuge
e. Centrifuge
f. Freezers
g. Refrigerator
h. water purification system
i. incubators
j. tissue culture hood
k. fume hood
l. pH meter
m. scale
n. digital tube revolver
o. biosafety cabinet
p. waterbath
q. microwave

6. Biological Sciences-The department of Biological Science is located in DuPont Hall it has eight teaching laboratories and Research laboratories which house the following instruments:
a. Fluorescence Microscope
b. Centrifuges
c. Freeze Dryer
d. Gel Documentation System
e. Carbon Dioxide Incubators
f. DNA Sequencing Apparatus
g. DNA Hybridization Chamber
h. Siemens 101 Transmission Electron Microscope
i. LEOL Scanning Electron Microscope
j. Nanodrop
k. Autoclave
I. Biological safety cabinets
m. Fume hoods
n. Incubators
o. Light and inverted microscopes
p. Western Blot Apparatuses
q. Gel electrophoresis apparatuses
r. Scales, pH meters, and other lab equipment
s. PCR machines
t. Microplate reader
u. Vacuum pumps
v. Cytospin

7. Chemistry Lab
a. Cary 50 BIO UV-VIS Spectrometer with Dell Optiplex 745 workstation
b. Beckman 640B UV-VIS Spectrometer
c. Metrohm Ion Chromatograph 861 with Dell Optiplex GX 270 Workstation
d. Shimadzu Gas Chromatograph GC-17A FID/ECD and MPC workstation
e. Varian FTIR 1000 Scimitar Series with Dell Optiplex 755 Workstation
f. Varian Graphite Furnace Atomic Absorption Spectrometer SPECTRA AA220 with GTA 110 and Dell workstation
g. Agilent 500 Ion Trap LC/MS
h. Varian 720ES Inductively Coupled Atomic Emission Spectrometer Dionix 5000 Ion Chromatograph
i. Student Learning Center outfitted with 13 Dell Optiplex computers (GX 270)
j. Computational Chemistry Laboratory outfitted with 20 Dell Optiplex computers (GX 620)
k. Mobile Student Learning Center outfitted with 15 Dell Inspirons and Latitudes
l. CHEM PQS Server for Computational Chemistry
m. Beckman Coulter Allegra x-22 Centrifuge
n. FotoDyne Convertible Camera Station
o. GeneAmp 9700 PCR system
p. Jasco Fourier Transform Infrared FTIR 4200 with IRT-3000 IR Microscope and Optiplex 755 Workstation
q. Leica CME Microscope (2)
r. VWR Vistavision Microscope with camera
s. 400 MHz JEOL Nuclear Magnetic Resonance Spectrometer with Auto sampler and Dell Precision 390 Workstation and APC UPS 3000XL
t. TA instruments TGA 2050 Thermogravimetric Analyzer with DSC 2920
u. BAS Electrochemistry workstation to include Rotating Disc Electrode RDE 2 with cell and Dell Dimension workstation
v. Shimadzu Spectrofluorometer RF-5301PC
w. Dell Opti -plex 755 for NMR Data Storage and network access

8. Pharmacy/ Pharmaceutical Sciences
a. Biological Safety Cabinets
b. Humidified CO₂ incubators
c. Inverted Phase Contrast Microscope
d. AMG EVOS™ FL Fluorescence Microscope
e. MyECL Imager for image gels and blots
f. Biorad Gene Pulser MX Cell Electroporation system
g. UV/VIS Spectrophotometer
h. Coulter Multisizer II cell counter
i. Packard Fluorescence and Absorbance Microplate Reader
j. Synergy H1 Hybrid Microplate reader
k. Ultracentrifuge, centrifuges, microcentrifuges, refrigerated centrifuges and microcentrifuges
l. Electrophoresis units for the resolution DNA/RNA and protein bands
m. Western blot apparatus and Trans-blot turbo transfer system
n. Kodak Dental Film developer Dark room
o. RT-PCR
p. PCR
q. Packard Tri-Carb Liquid Scintillation Counter
r. Two liquid nitrogen tanks, -80°C freezers and six refrigerator/freezers
s. Autoclaves
t. Milli Q Direct 8 water purification system
u. Novocyte flowcytometer
v. GUAVA personal Flow Cytometer
w. Glove Box
x. Rotavapor
y. HPLC
z. Mass Spectrometer
aa. Peptide Synthesizer
bb. Fisher Scientific Sonic Dismembrator
c. Glass Oven B-585 Kugelrohr
dd. Rotary Evaporators
e. Varian Mercury Plus 300 MHz NMR Spectrometer
ff. Varian Gas Chromatograph CP-3800 with CP-8410 auto injector
gg. Beckman Coulter UV/Visible Spectrophotometer DU-80
hh. Shimadzu FT-IR Spectrophotometer Prestige-21