EXECUTIVE SUMMARY
GLOBAL GENOMICS AND BIOINFORMATICS RESEARCH INSTITUTE
May 24, 2017

Introduction to the Institute

Inova Health System Foundation ("Inova"), The Rector and Visitors of the University of Virginia ("UVA"), and The Rector and Visitors of George Mason University ("GMU") have agreed to partner to create the Global Genomics and Bioinformatics Research Institute (the "Institute") as evidenced by that certain Letter of Intent between Inova and UVA dated August 12, 2016 and a Contribution and Collaboration Agreement to be entered into among Inova, UVA, and GMU. Other Virginia institutions of higher education, including Old Dominion University ("ODU"), Virginia Commonwealth University ("VCU"), Virginia Tech ("Virginia Tech"), and the College of William & Mary ("William & Mary"), and/or private sector parties may partner in the Institute in the future.

Mission of the Institute

The overarching mission of the Institute is to improve the quality of the human condition and its environment. In furtherance of the same, the Institute’s mission shall include:

a) Research focused on generating fundamental knowledge to further the understanding of genetics and functional genomics as these relate to how living systems work and how diseases develop; and pursuing such goals through the insights of integrating a wide array of scientific disciplines, genomicists, functional biologists, biologically focused engineers, bioinformatic genomicists, computer scientists, computational biologists, material scientists and clinician scientists; and

b) Dissemination of discoveries for the public benefit; and

c) Enabling scientific collaborations that have potential to culminate in the commercialization and/or licensing of research.

Areas of Research Focus

The Institute, as determined by its President/CEO and Scientific Advisory Committee, with approval of the Institute Board of Directors will focus on the following five areas of research ("Institute Research"):

Genetics and Genomics
(For example, genetic and epigenetic regulation of the functioning genome, genome engineering, DNA repair mechanisms and regulation, transcriptional specificity of DNA binding proteins, role of DNA repeats in subsequent mutations and disease risk, regulatory
mechanisms in splice variation, RNA editing, RNA determined regulation, regulation of gene expression, regulation of chromosome organization within the nucleus, and chromatin heterochromatin regulation)

**Systems Biology of Disease**  
(For example, genome-wide transcriptional regulation, protein-DNA interactions, translational regulation and protein modification, gene-environment interactions, microbiome and disease, metabolomics, gene-behavior interactions, mechanisms of aging, sub cellular imaging, and integration of anatomic imaging and gene expression)

**Developmental Biology**  
(For example, embryogenesis and genetic regulation of development, protein conformational switches in development and disease, genetic regulation of chromatin folding, neuron-glial interactions in developing brain, gene expression regulation, regulation of asymmetric cell division, and stem cell biology)

**Computational Biology**  
(For example, bioinformatics, large scale data integration, standardization and analytics, mathematical modeling of complex systems, modeling of cellular communication pathways, signal transduction, subcellular imaging algorithms, modeling of drug-gene interactions, analytics to support large scale genomic and proteomic data sets, integration of molecular imaging and genomic/proteomic data sets, integrating applications of machine learning into large scale data sets, natural language processing, and developing curated large scale knowledge bases)

**Bio-Engineering**  
(For example, biomechanical modeling, developing technologies for genomic research, systems utilizing micro circuitry, microprocessors and microfluidics, molecular motors, single molecule tracking, protein modification technology, molecular imaging, micro-system robotics, and *in vitro* microsystems to support growth of 3-D tissue structures)

These Institute Research themes have been approved by the SAC.

**Institute Structure and Governance**

The Institute is a Virginia nonstock corporation that was formed on December 21, 2016 (see Amended and Restated Articles of Incorporation) and will seek 501(c)(3) tax exempt status, as it will be operated exclusively for charitable, scientific or educational purposes. The Institute will have two classes of members: Class A and Class B (the “Members”). Initially Inova, UVA and GMU will be the Class A Members (with the right to approve, among other things, the plan to retrofit the Institute’s Facilities), and Inova, UVA and GMU will be the Class B Members (with the right to approve, among other things, the plan to recruit the Institute’s researchers). The rights and responsibilities of the Members are set forth in the Institute’s Bylaws (the “Bylaws”).

The Institute will be governed initially by a five-person board of directors (the “Institute Board” or the “Board”), with powers and duties as more fully described in the Bylaws. The initial Board
will consist of Dr. Deborah Crawford, Dr. John Niederhuber, Dr. Richard Shannon, Todd Stottlemyer, and Dr. David Wilkes. The Institute will have a President/CEO whose duties will include the day-to-day oversight of the Institute and the primary management liaison with the Institute Board. The initial President/CEO will be Dr. John Niederhuber. The Institute will have a Scientific Advisory Committee (“SAC”), initially consisting of two representatives appointed by Inova, two representatives appointed by UVA, and one representative appointed by GMU. The initial SAC membership will consist of Dr. Deborah Crawford, Dr. John Deeken, Dr. John Niederhuber, Dr. Stephen Rich, and Dr. Margaret Shupnik. The SAC will serve as the peer review body for the Institute to vet and recommend to the Institute Board the necessary space needs for Institute Research, as well as to recommend to the Institute Board the prioritization of Institute Research efforts and the necessary researchers who will need to be recruited for the benefit of the Institute, as more fully described below.

In addition, the Institute is expected to have an External Advisory Committee (“EAC”) comprised of nationally and internationally recognized scientific leaders with appropriate content expertise to be chosen by the Members. The EAC will serve in a consulting capacity to the Institute Board to periodically evaluate the Institute’s research enterprise and resources and to provide strategic direction for its continued growth. The parties will work together to determine the composition and duties of the EAC and the timing for appointment of initial members.

**Institute Facilities**

The Institute will enter into a master lease for Building C and related space (the “Institute Research Laboratories”) on the former ExxonMobil campus in Falls Church, Virginia, including the vivarium (the “Institute Vivarium”), and the biorepository (the “Institute Biorepository”) both to be located in or proximate to Building C (the Institute Research Laboratories, the Institute Vivarium, and the Institute Biorepository being collectively the “Institute Facilities”).

**Recruitment of Researchers – Profiles**

Candidates who will engage in Institute Research must have a PhD, MD, or MD/PhD, and at least 10 years of research experience, as well as a history of exceptional publications and extramural funding, in one or more of the Institute Research focus areas described above, with commercialization experience. Incumbents will be expected to run an extramurally funded research laboratory in which post docs, graduate, and undergraduate students will play major roles. It is expected that candidates will have significant external funding at the time of recruitment.

The recruitment plan will initially focus on attracting exemplary mid-career, tenure eligible Associate or Full Professor investigators with two or more NIH research project grants (RO1) and a team of four-six researchers. Recruiting top talent will confirm the Institute’s position as a leading institution in the field of genomics and bioinformatics, and will be catalytic in attracting additional talent.

The vetting process for the recruitment plan will require approval of the Institute’s President/CEO, the SAC and the Board, as well as approval of the academic institution(s) (UVA,
Evidence of Funding Commitments

The Members will enter into a Contribution and Collaboration Agreement under which they will commit, among other things, to the following:

- **Retrofitting Cost** – UVA and Inova commit to contribute approximately $45 million each to retrofitting the Institution Facilities and GMU commits to contribute $1 million to retrofitting the Institution Facilities which, with the Commonwealth funding of $20 million, represents a $111 million total estimated budget for retrofitting the Institute Facilities. The Commonwealth portion will be funded through UVA, which will transfer Commonwealth funds to the Institute immediately upon receipt unless otherwise required by the Commonwealth.

- **Recruiting Cost** – Inova commits to contribute $16 million to funding Institute recruiting costs, UVA commits to contribute at least $4 million to funding Institute recruiting costs, and GMU commits to contribute $4 million to funding Institute recruiting costs which, with the Commonwealth funding of $8 million, represents at least a $32 million total budget for recruiting Institute researchers. The Commonwealth portion will be funded through UVA, which will transfer Commonwealth funds to the Institute immediately upon receipt unless otherwise required by the Commonwealth. The Institute will also welcome collaborative recruitment efforts involving VCU, Virginia Tech, ODU, and William & Mary.

Development of Institute Business Plan

The agreements among the Members and the organizational instruments of the Institute are intended to address arrangements for funding and implementation of the Institute’s development phase encompassing (a) the retrofitting of the Institute Facilities and (b) commencement of the Institute’s recruiting plan (collectively, “Phase I”). Immediately upon the commencement of Phase I, the Members and the Institute shall work to develop a comprehensive business plan and budget for the Institute’s operating phase (“Phase II”). As part of Phase II planning, the Members shall further develop the Institute’s governing agreements and instruments as mutually agreed by the Members and approved by the Institute’s Board.

Reporting Requirements

Item 478.20 is silent as to any reporting requirements, but VRIC is required to make a report to the Governor and the Chairmen of the House Committee on Appropriations and the Senate Finance Committee by November 1 of each year. The Institute will work with VRIC regarding appropriate metrics. Higher education institutions are already tracking and reporting certain
research information to the state. The Institute Higher Education Members desire to coordinate those reporting requirements with any reporting on Item 478.20 so as to be efficient and minimize duplication and administrative efforts.