### **CURRICULUM VITAE**

Date: November 14, 2022

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#### Date & Place of Birth: January 4, 1962 Kingston, PA, USA

#### **Education:**

1983	Physics	B.S.	California Institute of Technology,
			Pasadena, CA
1984	Physics	M.S.	University of California, Los Angeles, CA
1990	Theoretical Particle Physics	Ph.D.	University of California, Los Angeles, CA

#### **Postdoctoral Training:**

1990-1992	Postdoctoral Fellow, Experimental Particle Physics, University of California, Los Angeles, CA
1992-1994	Staff Scientist, Molecular Genetics and Genomics, The Salk Institute for Biological Studies, La Jolla, CA
1994-1996	Research Associate, Genomics and Bioinformatics, Stanford Human Genome Center, Palo Alto, CA

#### **Academic Appointments:**

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2018- present Henry Pickering Walcott Professor of Computational Biology and Bioinformatics; Chair, Department of Biostatistics; Director, Harvard Health Data Science Center, Harvard TH Chan School of Public Health <u>Research Activities:</u> Development of methods in network medicine and systems biology aimed at understanding the multifactorial drivers of human health and disease, identifying disease subtypes and new therapeutic interventions, and exploring differences between the sexes in

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disease etiology and response to therapy; development of open-source software tools supporting research and clinical applications. <u>Activities</u>: Founding Director/Co-Director, SM Program in Computational Biology and Quantitative Genetics (CBQG); Director, BD2K T32 Training Grant; Director T32 Cancer Training Grant; Founding Co-Director and Executive Committee, Joint Biostatistics and Bioinformatics T32 Training Grant; Director, Harvard Quantitative Biomedical Research Center.

2005- present Professor of Biostatistics and Computational Biology, Department of Data Science, Division of Computational Biology, Dana-Farber Cancer Institute; Professor of Cancer Biology, Department of Cancer Biology, Dana-Farber Cancer Institute <u>Research Activities:</u> Application of genomic technologies and integrative computational analysis to model cellular systems with an emphasis on understanding of human cancers and other diseases; development of open-source software tools supporting research and clinical applications.

 2005- 2018 Professor of Computational Biology and Bioinformatics, Department of Biostatistics, Harvard TH Chan School of Public Health <u>Research Activities:</u> Application of genomic technologies and integrative computational analysis to model cellular systems with an emphasis on understanding of human cancers and other diseases; development of open-source software tools supporting research and clinical applications.
 <u>Activities</u>: Founding Director, SM Program in Computational Biology and Quantitative Genetics (CBQG); Director, BD2K T32 Training Grant; Founding Co-Director and Executive Committee, Joint Biostatistics and Bioinformatics T32 Training Grant.

- 2008- 2018 Director, Canter for Cancer Computational Biology, Dana-Farber Cancer Institute <u>Research Activities:</u> Integrative approaches to data analysis focused on clinical and translational applications and linking clinical and laboratory data in support of basic research; creation of software tools and systems to support research; overall analytical support for investigative research activities for all Dana-Farber Investigators.
- 2007 present Adjunct Professor of Bioinformatics, Boston University Activities: Mentoring PhD student thesis research.
- 2003-2005 Professor, Chemical Engineering, University of Maryland <u>Activities</u>: Mentoring PhD student thesis research.

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2002 - 2006 Investigator, The Institute for Genomic Research <u>Research Activities:</u> Development and implementation of technology and strategies, including computational methods and software tools,

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necessary for functional analysis of the human and other genomes. Analysis of human gene expression in colon tumors using microarrays, rodent models of heart, lung, blood and sleep disorders and gene expression in Arabidopsis. Director of the TIGR Gene Index Project, providing freely available databases and software to estimate gene content in more than 100 organisms.

- 2000- 2005 Professor, Department of Biochemistry, The George Washington University <u>Activities</u>: Instructor in various courses, curriculum committee for Genomics.
- 1998 2005 Lecturer, The Department of Biostatistics, The Johns Hopkins University <u>Activities</u>: Instructor in the Masters In Biotechnology Program
- 1997 2001 Associate Investigator, The Institute for Genomic Research <u>Research Activities</u>: Development and implementation of technology and strategies, including computational methods and software tools, necessary for functional analysis of the human and other genomes. Analysis of human gene expression in colon tumors using microarrays, rodent models of heart, lung, blood and sleep disorders and gene expression in Arabidopsis. Director of the TIGR Gene Index Project, providing freely available databases and software to estimate gene content in more than 50 organisms.
- 1997 Assistant Investigator, The Institute for Genomic Research <u>Research Activities:</u> Development and implementation of technology and strategies, including analytical methods and software tools, necessary for functional analysis of the human and other genomes.
- 1994 1997 Research Associate, Stanford Human Genome Center Stanford University <u>Research Activities:</u> Project leader for development and implementation of a transposon-mediated strategy for large-scale genomic DNA sequencing including development and implementation of laboratory protocols, analytical methods, computer software, and instrumentation. Mapping, sequencing, and annotating regions of human chromosomes 4 and 21.
- 1992 1994 Staff Scientist, The Salk Institute for Biological Studies
   <u>Research Activities:</u> Development of improved methods for DNA
   sequencing, combinatoric strategies and devices for screening large
   libraries, simulation and optimization of single pass sequencing
   strategies including genome sequence sampling. Project director for the
   STS content mapping of chromosome 11. Development of methods and
   software tools to support genome mapping.

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1990 - 1992	Postdoctoral Fellow, Department of Physics
	University of California, Los Angeles
	Research Activities: Research in particle physics, field theory and
	phenomenology. Founding member of the Antiproton Experiment
	(APEX) collaboration that set the world's best experimental limit on the
	lifetime of the antiproton.

- 1987 1992 Visiting Lecturer, Department of Physics University of California, Los Angeles
- 1984 1996 Physics Instructor, Southern California Science Institute New College of California
- 1983 1990 Teaching Fellow, Department of Physics University of California, Los Angeles
- 1983 1990 Research Fellow, Department of Physics

   University of California, Los Angeles
   Thesis Supervisor: E.T. Tomboulis
   Research Activities: Research in elementary particle physics,
   mathematical physics, field theory focusing on the development of twodimensional gauge field theory models and the construction of associated string theory models.

## Nonacademic Employment

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- 2011-2014 Co-Founder, CEO and Board Chairman, Genospace LLC <u>Activities:</u> Genospace provides software solutions to operationalize precision medicine through the integration of clinical and genomic data and its presentation to clinical and research users in an intuitive format.
- 2014-2017 Co-Founder and Board Chairman, Genospace LLC <u>Activities:</u> Genospace provides software solutions to operationalize precision medicine through the integration of clinical and genomic data and its presentation to clinical and research users in an intuitive format. In January 2017, Genospace was sold to the Hospital Corporation of America to support research and to acquire our world-leading solution for clinical trials matching.

## Hospital or Affiliated Institution Appointments:

2003 - 2005	Adjunct Professor, Department of Biostatistics Bloomberg School of Public Health, The Johns Hopkins University
2005- present	Professor, Department of Biostatistics and Computational Biology Dana-Farber Cancer Institute
2014- present	Professor, Channing Division of Network Medicine, Brigham and Women's Hospital

## Hospital and Health Care Organization Service Responsibilities:

- 2005- present Primary research areas are computational and system biology focused on the integration of diverse data types to provide insight into biological processes that drive human disease phenotypes. Department of Data Science, Division of Computational Biology, Dana-Farber Cancer Institute
- 2014- present Research at the interface of systems biology and pulmonary disease, exploration of how sex and gender affect disease risk, development of methods to better handle sex differences in systems approaches, and advising faculty in their research and the Director in setting directions for future work. Channing Division of Network Medicine, Brigham and Women's Hospital

## Major Committee Assignments:

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1994	National Laboratory Genome Project Visit Review Panel, DOE
1995	Caltech/BAC Library Construction Site Visit Review Panel, DOE
1996-1998	Bioinformatics Grant Review Panel, DOE
1997-2001	Grant Review Panel, DOE
1997	Hollander Fellowship Review Panel, DOE
1997	Five-Year Program Advisory Committee, NCRR
1997	Cancer Chromosome Anatomy Project program Steering Committee, NCI
1998	National Laboratory Functional Genomic Review Panel, DOE
1998	Full-Length cDNA Library Construction and Sequencing Advisory,
	Committee, NCI
1998	Functional Genomics Panel, Welcome Trust
1998	Genomics Grant Review Panel, NSF SBIR
1998	Special Program in Tropical Disease Research Review, UNDP/World
	Bank/WHO
1999-2000	Low-Dosage radiation Grant Review Panel, DOE
1999	Bioinformatics Review Panel, NSF
1999	Special Emphasis Review Panel, NHLBI
1999	Microarray Working Group Advisory Panel, NIDCR
1999	Special Emphasis Review Panel, NIMH
1999	Plant Biology Review Panel, NSF
1999-2007	Board of Directors, MGED
2000	Grant Review Panel, NIDA SBIR
2000	Plant Biology Review Panel, USDA
2000	Plant Biology Review Panel, NSF
2000	Exceptional Chromosome Regions Working Group, DOE
2000	Working Group on US Scientific Interactions, NSF
2000-2006	Genome/GCAT study section, NIH
2000-2003	PGA Coordinating Committee, HHLBI
2000-2003	PGA Bioinformatics Committee, NHLBI
2000-2003	i OA Diomiormatics Commute, WILDI

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