James C. Diggans, PhD

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Relevant Experience

Vice President, Policy & Biosecurity — 5/2025-Present

Twist Bioscience — San Francisco, CA

Manage government affairs, biosecurity, trade compliance and export control-related programs for a $3B public company.

- Lead trade- and export control compliance for the company
- Lead company engagement with the U.S. and other governments
- Direct the company-wide biosecurity program including customer- and sequence screening
- Chair of the International Gene Synthesis Consortium (IGSC) since 2022

Distinguished Scientist, Bioinformatics & Biosecurity — 10/2019-Present

Twist Bioscience — San Francisco, CA

Manage all biosecurity, trade compliance and export control-related programs and research for a $3B public company.

- Direct the company-wide biosecurity program including customer- and sequence screening
- Lead company engagement with the U.S. and other governments on security-related matters
- Lead trade- and export control compliance for the company
- Represent Twist to the Engineering Biology Research Consortium (EBRC), chaired the EBRC Security Working Group 2016-2021; member of the EBRC Steering Committee 2016-2021.

Director, Bioinformatics & Biosecurity — 04/2015-10/2019

Twist Bioscience — San Francisco, CA

Directed all bioinformatics, biosecurity and export control-related programs and research.

- Directed the company's biosecurity program including design and implementation of sequence screening systems. Represent Twist to the International Gene Synthesis Consortium (IGSC) and other government-related biosecurity events (National Academies panels, etc.).
- Lead company engagement with the U.S. and other governments on security-related matters
- Scaled bioinformatics and analysis capability from Twist's 2016 market entry through its 2018 IPO
- Designed and lead implementation and operation of novel algorithms, analysis pipelines and cloud-based distributed computing platforms for NGS and other high-dimensional biological data.
- Designed and managed execution of statistical analyses and machine learning-based approaches to advance research and development goals and improve statistical process control in manufacturing.
- Managed a team of MS and PhD-level bioinformatics staff

Senior Bioinformatics Scientist — 09/2011-04/2015

Veracyte — South San Francisco, CA

Provide technical leadership, mentor staff, develop statistical approaches, build predictive models of disease and subtype diagnoses, design and implement cloud-based analysis pipelines and analyze, visualize, and interpret results from high-dimensional experimental data in thyroid cancer, lung cancer and idiopathic pulmonary fibrosis

- Lead development of corporate strategy and cloud-based implementation (via AWS EC2, EBS and S3) for large-scale RNA-Seq data ingest, storage and analysis pipeline
- Lead internal execution of technical due diligence on $21M acquisition of Allegro Diagnostics
- Supervised bioinformatics scientist and mentor bioinformatics group in genomics, short read sequencing, machine learning, statistics and reproducible computational research best practices
- Presented complex statistical concepts to a broad audience of scientists and non-scientists

Portfolio Manager, Defense Advanced Research Projects Agency (DARPA) 10/2010-09/2011
The MITRE Corporation Mclean, VA
Provided scientific leadership and managerial direction for a $3M portfolio of projects supporting DARPA.

- Led 8-12 PhD-level project leaders; managed all budgeting, staffing and financial reporting
- Briefed senior PhD-level DARPA program managers, working one-on-one with government personnel to assess new technology concepts and technical capabilities; granted top secret security clearance to address emerging security issues

Group Lead, Computational Biology 11/2006-09/2011
The MITRE Corporation Mclean, VA
Managed and mentored 3 PhD-level computational biologists in government-sponsored research.

- Provided weekly briefings to senior personnel at U.S. government defense and national security agencies as a computational biology subject matter expert
- Led a multi-company and multi-agency integration team for an advanced technology demonstration that fused sensor data for tactical chemical and biological defense for the Defense Threat Reduction Agency
- Designed, funded and executed internal research program including development of a high-throughput screening system to detect biosecurity-related concerns in DNA synthesis orders.
- Led modeling and simulation team studying the speed of spread of avian influenza aboard naval vessels

Senior Product Manager, Toxicogenomics 06/2000-11/2006
Gene Logic Gaithersburg, MD
Managed cross-functional teams to deliver web-based bioinformatics applications for target and biomarker discovery

- Managed the design, testing and transition of two new predictive modeling systems from R&D projects to customers in web-based and service-based products

Relevant Skills

- Uni- and multivariate statistics, machine learning and classification, mixed effect modeling, experimental design and hypothesis testing, multiple regression, Markov chain Monte Carlo methods
- Short read (i.e. next generation/NGS) sequencing alignment and variant calling including RNA-Seq
- High-performance/cloud computing via Amazon Web Services EC2, S3, etc.

Selected Publications and Proceedings

- Rose S, …, **Diggans J**. Practical Questions for Securing Nucleic Acid Synthesis. Applied Biosafety. (2024)
- Hoffmann S, …, **Diggans J**, …, Cai Y. Safety by design: Biosafety and biosecurity in the age of synthetic genomics. Cell iScience. (2023)
- Mackelprang R, …, **Diggans J**, …, Friedman D. Making Security Viral: Shifting Engineering Biology Culture and Publishing. *ACS SynBio*. (2022)
- Mackelprang R, …, **Diggans J**, …, Friedman D. Guiding Ethical Principles in Engineering Biology Research. *ACS SynBio*. (2021)
- **Diggans J** and Leproust E. Next Steps for Access to Safe, Secure DNA Synthesis. *Frontiers in Bioengineering and Biotechnology*. (2019)
- Frazer S, …, **Diggans J**, …, Greaves M. Defining the Synthetic Biology Supply Chain. *Health Security*. (2017)

Education

Ph.D. Bioinformatics and Computational Biology
George Mason University, Fairfax, VA
Dissertation: "Biothreat Detection by Random Oligomer-Based Microarray"

B.S., Double Major in Computer Science and Microbiology & Cell Science
University of Florida, Gainesville, FL
Minors: Spanish and Chemistry