Elliot R. Dean

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Abstract

Biochemist with a robust background in academic and pharmaceutical research. Proven ability to design and execute complex experiments, coupled with expertise in bioinformatics, data science, and multiple programming languages. Passionate about advancing biomedical research through innovative methodologies and interdisciplinary collaboration. Seeking to contribute my skills to a forward-thinking team where I can drive impactful scientific discoveries.

Education

Stevens Institute of Technology | **Hoboken, New Jersey** **August 2020 – August 2023**
Master of Science (MS), Chemistry | Graduate Certification, Computational Chemistry and Biology

Brookdale Community College | **Lincroft, New Jersey** **September 2021 – August 2023**
Associate of Science (AS), Computer Science

Vanderbilt University | **Nashville, Tennessee** **August 2011 – August 2015**
Bachelor of Science (BS), Neuroscience

Professional Certifications

Google Cloud – Associate Cloud Engineer • Cloud Digital Leader | **Amazon Web Services –** Cloud Practitioner

Technical Skills

Programming Languages – Python • R • HTML • CSS • Java • SQL • JavaScript • Kotlin • XML • C++

Computation – Linux (Ubuntu, Debian, openSuse, Arch) • Macintosh • Virtual Machines • CLI • Git • Machine Learning

Laboratory – Next Generation Sequencing • PCR • Assay Development • ELISA • High-Throughput Screening • LIMS Cell Culture • Protein Expression & Purification • X-Ray Crystallography • Histology • Microscopy • Flow Cytometry

Interdisciplinary – Bioinformatics • Statistics • Cloud Technologies • Graphic Design • High-Performance Computing Network Administration & Architecture • Database Management • Data Visualization • Office Suite Software

Special Projects

Stevens Institute of Technology **January 2023 – Present**

Metagenomics

- Utilized 16S RNA sequencing data to identify bacteria types and concentrations in environmental samples.
- Designed pipelines with open-source software (QIIME, RStudio, Conda) to collect, organize, and process data.
- Conducted population diversity analyses to determine the range of microorganisms in samples.
- Prepared taxonomic and phylogenetic trees for microorganisms of interest.
- Authored a User Guide / Manual for the methods employed, including instructions for multiple operating systems, different data formats, and troubleshooting examples.
- Mentored and supervised undergraduate students involved in the project.

***Ab initio* Development of Novel HIV-1 Integrase Strand Transfer Inhibitors**

- Constructed 19 new drug candidates, with unique side groups, based on current antiviral therapeutics.
- Quantum chemistry methods (single point energy and geometry optimization) were carried out to determine the binding properties of these potential treatments.
- Programs used: General Atomic and Molecular Electronic Structure System (GAMESS), Avogadro, ChimeraX.

Coleccíon — A card matching game written in Java, Kotlin, XML, and CSS. **February 2022 — Present**

- 144 unique playing cards were designed and developed using image manipulation and drawing applications (GNU Image Manipulation Program, LibreOffice Draw and Impress).
- Object oriented approach consists of many classes and interfaces.

Perelman School of Medicine, University of Pennsylvania **November 2015 — July 2019**

- Created large databases of chemicals / compounds, mammalian, insect, and bacterial cell lines, stocks of baculovirus, plasmids, and various reagents, cataloged into libraries, and stored on Google Cloud.
- Managed users of databases – ensured system integrity while allowing for easy and rapid data access.
- Established an online ordering system for services offered by the High-Throughput Screening Core.

Experience

Pfizer | Pearl River, New York **July 2019 — May 2021**

Bacterial Vaccines and Technology Senior Associate Scientist

- Using DNA cloning & sequencing, dozens of constructs with varying mutations (location and type, single and multiple) were developed. Genomics toolkits such as UGENE were employed for primer design and alignment.
- Characterized potential antigens based on thermal stability & ligand interactions via high-throughput assay design with 96 & 384 well layouts. Additional assays, including Octet, qPCR, Bradford, & cell viability were also carried out.
- Introduced new imaging technologies to the group, increasing the range of experiments available.
- Established protocols to design, express, purify, and analyze recombinant proteins in bacterial, insect, and mammalian systems, including: Size Exclusion Chromatography, Ion Exchange, and Affinity Chromatography.

University of Pennsylvania | Philadelphia, Pennsylvania **November 2015 — July 2019**

Department of Microbiology, High-Throughput Screening Core Research Specialist

Department of Biochemistry and Biophysics, Marmorstein Lab

- Worked closely with collaborators worldwide as part of an interdisciplinary project to study age and aging related diseases. Presented data at weekly lab meetings using slideshow / powerpoint software.
- Wrote procedures to be used by the Janus Workstation and other automation equipment to perform cell and enzyme-based assays.
- Microplate washers / dispensers and electronic pipettes were used for advanced liquid handling precision.
- Engineered hundreds of unique baculoviruses using molecular biology methods, including CRISPR gene editing.
- Expressed dozens of proteins of interest using lentiviral vectors, along with transfections in various cell types.
- Tested proteins using multiple primary and secondary antibodies via Western Blotting.

Vanderbilt University Medical Center | Nashville, Tennessee **August 2011 — August 2015**

Department of Cancer Biology, Dr. Ann Richmond Work / Study Student

Department of Pharmacology, Dr. Christine Konradi

- Determined the effect of the $BRAF^{V600E}$ mutation (commonly seen in melanoma cases) via quantification of dozens of senescence and pre-senescence molecular markers.
- Utilized techniques including β-galactosidase staining, bromodeoxyuridine staining, pRB and ppRB protein expression, and visualization of heterochromatic foci in nuclei.
- Participated in studies of B-lymphocytes cultured under various conditions to identify changes in gene expression using qPCR, MTS assays, and NADH assays.

Publications

Song, S., Perez, J. V., Svitko, W., Ricketts, M. D., Dean, E., Schultz, D., Marmorstein, R., & Johnson, F. B. (2019). Rap1-mediated nucleosome displacement can regulate gene expression in senescent cells without impacting the pace of senescence. *Aging Cell*, *19*(1). https://doi.org/10.1111/acel.13061