JOSHUA TIMMONS

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EDUCATION

Northeastern University – Boston, MA **B.S. Biology; Minor Economics**
GPA: 3.69 September 2012—August 2016
Courses: Applied Econometrics, Math for Economics, Statistics and Software, Bioinformatics Programming, Bioinformatics Methods 1, Fundamentals of Computer Science 2, Biological Electron Microscopy, Biochemistry, Genetics & Molecular Biology, Cell & Molecular Biology, Organic Chemistry 1, Organic Chemistry 2.
Awards: Advanced Research and Creative Endeavor Award, Above and Beyond CEP Award, University Honors Program Distinction, Northeastern National Merit Scholarship, UPS Foundation National Merit Scholarship.
GRE: Verbal 166 (>97%), Quantitative 168 (>95%), Analytical Writing 6.0 (>99%).

EXPERIENCE

Synthetic Biology Software **Lattice Automation Inc.**
Software Engineer July 2016—Present
Building tools for synthetic biology with Javascript, Java, C#, Python, MongoDB, and GraphQL. Ideated and developed an assembly engine for automated and optimized vector assembly planning with DowDupont via yeast homology recombination. Build both the front-end (Angular2) and back-end (.NET/C#). Prototyped an automated MoClo wizard with Java and Vaadin. Designed and built a synthetic biology platform using Node.js, ReactJS, and SCSS. Created a MongoDB database, setup static code analysis (ESLint) and continuous integration testing (CircleCI) and wrote a wiki for developer onboarding. Developed numerous features for the platform: folder navigation, linear and circular sequence viewers, restriction digest and ligation algorithms, and algorithms for assembly optimization problems. Automated deployment to AWS Elastic Beanstalk (server) and AWS S3 and CloudFront (client).

Neuro-Oncology Research **Beth Israel Deaconess Medical Center and Harvard Medical School**
Research Assistant July 2014—August 2018
Carried out statistical modeling for multiple publications, including a Phase I Metronomic Temozolomide study and literature review of survival statistics in patients with Spinal Cord Glioblastoma. Performed atomistic Molecular Dynamics simulations to determine the effects of external electric fields on the structure and dynamics of tubulin. Ran simulations on a custom-built, GPU-accelerated workstation, AWS compute clusters, and an IBM Blue Gene/Q supercomputer at the University of Toronto. Investigated Glioblastoma multiforme and an emerging treatment modality: TTFields (alternating electric fields). Designed and implemented a 3D image processing workflow for patient MRI segmentation in MATLAB saving >100 hours per patient FEA model. Created an algorithm for generating electrode models matching TTFields using inverse deformation fields and principal component analysis. Researched, designed, and implemented a study determining the influence of Substance P on the immunogenic response of C57BL-6 mice to B16-BL6 melanoma.

PUBLICATIONS

1. **Timmons, JJ**, Preto, J, Tuszynski, JA, & Wong ET. (2018). Tubulin's response to external electric fields by molecular dynamics simulations. *PLoS One.*
2. **Timmons, JJ**, Zhang, K., Fong, J, Lok, E, Swanson, KD, Gautam, S, & Wong, ET. (2018). Literature Review of Spinal Cord Glioblastoma. *Am. J. Clin. Oncol.*
3. Ortiz, J, Carr, SB, Pavan, M, McCarthy, L, **Timmons, JJ,** & Densmore, DM. (2017). Automated Robotic Liquid Handling Assembly of Modular DNA Devices. *J. Vis. Exp.*
4. **Timmons, JJ**, San, P, Lok, E, Bui, K, & Wong, ET. (2017). End-to-End Workflow for Finite Element Analysis of Tumor Treating Fields in Glioblastomas. *Phys. Med. Biol.* & *ANA 2017*
5. Patnaik, A, *et al.* (2017). Cabozantinib eradicates advanced murine prostate cancer by activating anti-tumor innate immunity. *Cancer Discov.*
6. Wong, ET, **Timmons, JJ**, Callahan, A, O'Loughlin, L, Giarusso, B, & Alsop, DC. (2016). Phase 1 study of low-dose metronomic temozolomide for recurrent malignant gliomas. *BMC Cancer.*

TECHNICAL SKILLS

Languages: Competent with JavaScript, C#, Python, Java, MATLAB, R, Golang. Experience with TCL, Perl.
Frameworks & Databases: ReactJS, AngularJS, .NET, GatsbyJS, Apollo, MongoDB, MySQL, Matplotlib.
Software and Services: Amazon Web Services, Google Cloud Platform, Adobe Illustrator, Sketch, NAMD, VMD, Benchling, Linux.
Biology: Transmission electron microscopy, scanning electron microscopy, Western Blot, ELISA, PCR, tissue culturing, Gibson assembly, restriction digest, DNA electrophoresis, DNA purification, transformation.