Elan Ness-Cohn, Ph.D.

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Summary

- Computational Biologist with translational drive and proven track-record of cutting-edge software & research publications in top academic journals
- Collaborative leader with a diversity of perspective – *e.g.* math & science literacy, wet & dry lab experience, and educational & business pragmatism – versed in bridging cross-disciplinary communication gaps
- Strategically minded analyst – backed by strong data science skills – adept at executing diligence & communicating results to wide audiences

Experience

Entrepreneurial Fellow – Chicago Biomedical Consortium (CBC) – Chicago, IL 2022–date

Opportunity Diligence:

- Diligencing early-stage therapeutic proposals for $250K grants to accelerate translational biomedical innovation across Chicago's flagship Universities; led initial/full diligence on 3+ projects & assisted on 4+ projects
- Conducting a Microbiome landscape analysis of 105+ companies, 470+ assets, and 170+ indications to strategize the competitive positioning of a bacteria-based therapeutic platform; presented results from top 2 indications to 30+ industry & venture partners to assess interest & gain insight on execution

Scientific Consulting:

- Advising 20+ academic groups on translational & commercial implications of early-stage proposals, guiding programs towards more attractive positions with de-risked milestones for future investment
- Built-out and analyzed an internal Chicago faculty database of over 160+ members and 20+ success metrics to actively seek-out promising faculty for award funding

Project Management:

- Spearheading development of a platform technology's investment theses defining the competitive landscape, current & future positioning, budget & resource allocation, and clinical/regulatory strategy
- Managing timelines, budgets, and personal working across multiple external partners to advance pre-IND data package of a myeloid cancer therapeutic
- Directed application triage for external partners in Chicago – Women in Bio (WIB)/Portal Innovations – to identify 5 finalists for the WIB 8.0 start-up challenge.

Ph.D. Candidate – Braun Lab, Northwestern University – Evanston, IL 2017–2022

Multi-Disciplinary Collaboration:

- Led 5 collaborative projects leveraging inter-disciplinary expertise in circadian biology and applied math; resulted in 3 oral podia, 7 posters at the national & international stage, and 3+ first author publications in high profile academic journals including *Science* and *Bioinformatics*

Software Development:

- Developed a suite of 3 open-source software packages for optimizing the design and analysis of *omic time-series experiments for chronotherapeutic application with over 6K+ downloads and ∼30 hours/month usage

Team Management:

- Mentored 11+ graduate and 2 undergraduate students in various computational research and data management techniques; led to the development of 1 software package and accompanying manuscript

Teaching/Communication:

- Designed an *Intro to Data Science Lab Course* and taught 5 grad and 2+ undergrad level courses in Cell Biology, Bioinformatics, Biostatistics, and Data Science; resulted in procurement of graduate level teaching certificate

Undergraduate Research Assistant – MIT – Cambridge, MA 2015–2017

- Jaenisch Lab: *Engineering Human Pluripotent Stem Cells With Insulin Reporter to Model Type 1 Diabetes*
- Kim Lab: *Regulation of Stress Physiology & Longevity by the EIF3 Tanslation Inititation Complex in C. Elegans*

Education

Northwestern University – Ph.D. (Biomedical Research) – *Evanston, IL* 2022

MIT – B.Sc. (Biology), Concentration (Education) – *Cambridge, MA* 2017

- **Honors:** Senior Thesis - Boit Prize for Engineering Writing

Computational & Technical Skills

Programming: R • Python • Bash • R Shiny • LaTeX • git • SQL • HPC (SLURM)
Machine Leaning: Tidymodels • Keras • Tensorflow
Data Mining: statistical analysis • dimensionality reduction • clustering • visualization
Modeling: dynamical systems • topological analysis • toy model development
Research: algorithm & pipeline development • inter-disciplinary collaboration • software development
Laboratory: CRISPR/Cas-9 genome editing • plasmid design • molecular cloning • qPCR
Languages: English • Hebrew

Software (Highlights)

Fasano-Franceschini Test – R Package

An open-source implementation of the Fasano and Franceschini test – a 2-D Kolmogorov-Smirnov (KS) two-sample test

R Package Website: [Link]

TimeCycle – R Package

A non-parametric method that leverages results from dynamical systems theory and algebraic topology to test whether a dynamical variable (gene expression) exhibits cycling dynamics

R Package Website: [Link] • **Video Tutorial:** [Link]

TimeTrial – R Shiny Web Application

An interactive software suite that enables circadian researchers to perform head-to-head comparisons of four leading cycle detection methods using both synthetic and biological data

R Shiny Synthetic Data: [Link] • **R Shiny Biological Data:** [Link] • **Video Tutorial:** [Link]

Additional work can be found on my GitHub profile: github/nesscoder

Select Publications

[1] **Ness-Cohn, Elan** and Rosemary Braun. TimeCycle: Topology Inspired MEthod for the Detection of Cycling Transcripts in Circadian Time-Series Data. *Bioinformatics*, 2021.

[2] **Ness-Cohn, Elan**, Ravi Allada, and Rosemary Braun. Comment on "Circadian rhythms in the absence of the clock gene Bmal1". *Science*, 372(6539), 2021.

[3] **Ness-Cohn, Elan**, Marta Iwanaszko, William L Kath, Ravi Allada, and Rosemary Braun. TimeTrial: An interactive application for optimizing the design and analysis of transcriptomic times-series data in circadian biology research. *J Biol Rhythms*, 35:439–451, 2020.

[4] Sophia B. Gibson, **Ness-Cohn, Elan**, and Erik C. Andersen. Benzimidazoles cause lethality by inhibiting the function of Caenorhabditis elegans neuronal beta-tubulin. *International Journal for Parasitology: Drugs and Drug Resistance*, 20:89–96, 2022.

[5] Douglas J. Cattie, Claire E. Richardson, Kirthi C. Reddy, **Ness-Cohn, Elan**, Rita Droste, Mary K. Thompson, Wendy V. Gilbert, and Dennis H. Kim. Mutations in nonessential eIF3k and eIF3l genes confer lifespan extension and enhanced resistance to ER stress in caenorhabditis elegans. *PLoS Genetics*, 12(9):e1006326, 2016.

Additional work can be found on my Google Scholar profile: googleScholar/Ness-Cohn