

# Tal Lorberbaum

Department of Biomedical Informatics  
PH-20, 622 W 168th Street, New York, NY 10032

650-793-2522 | tal.lorberbaum@columbia.edu | www.tal.bio

## EDUCATION

**Columbia University**, New York, NY — 2013 - present (expected May 2017)

Ph.D. in **Physiology and Cellular Biophysics**

*Focus:* Translational Bioinformatics, Clinical Data Mining, Computational Biology

*Concurrent degrees:* M.A. (2015); M.Ph. (2016)

**California Polytechnic State University**, San Luis Obispo, CA — 2008 - 2012

B.S. in **Biomedical Engineering**

*Overall GPA:* 3.46

## RESEARCH EXPERIENCE

**Columbia University**, New York, NY

**Ph.D. Candidate — 2013 - present**

*Doctoral Advisor:* Nicholas P. Tatonetti

*Thesis Committee:* Henry M. Colecraft, Jonathan A. Javitich, George Hripcsak

Computationally integrating biological and clinical data towards modeling and predicting mechanisms of adverse effects of drug-drug interactions

**Research Assistant — 2012 - 2013**

*Principal Investigator:* Andrew R. Marks

Protein crystallography, molecular biology, and biochemistry related to ryanodine receptor (RyR) calcium release channel structure and function

## PUBLICATIONS (\* denotes equal contribution)

**T Lorberbaum**, V Nwankwo, NP Tatonetti.  $\Delta$ QTDb: an explorable database of the effects of drugs on the QT interval. (In preparation)

RD Boyce, E Voss, V Huser, L Evans, C Reich, JD Duke, NP Tatonetti, **T Lorberbaum**, M Dumontier, M Hauben, M Wallberg, L Peng, S Dempster, Y He, A Sena, V Koutkias, P Natsiavas, P Ryan. LAERTES: an open scalable system for linking pharmacovigilance evidence sources with clinical data. *Journal of Biomedical Semantics* (2017) DOI: 10.1186/s13326-017-0115-3

**T Lorberbaum**, KJ Sampson, JB Chang, V Iyer, RL Woosley, RS Kass, NP Tatonetti. Coupling Data Mining and Laboratory Experiments to Discover Drug Interactions Causing QT Prolongation. *Journal of the American College of Cardiology* (2016) 68(16):1756-1764

K Gayvert, E Dardenne, C Cheung, MR Boland, **T Lorberbaum**, J Wanjala, Y Chen, M Rubin, NP Tatonetti, D Rickman, O Elemento. A Computational Drug Repositioning Approach for Targeting Oncogenic Transcription Factors. *Cell Reports* (2016) DOI: 10.1016/j.celrep.2016.05.037

**T Lorberbaum**, KJ Sampson, RL Woosley, RS Kass, NP Tatonetti. An integrative data science pipeline to identify novel drug interactions that prolong the QT interval. *Drug Safety* (2016) 39:433-441

MR Boland\*, A Jacunski\*, **T Lorberbaum\***, J Romano, R Moskovitch, NP Tatonetti. Systems Biology Approaches for Identifying Adverse Drug Reactions and Elucidating Their Underlying Biological Mechanisms. *WIREs Systems Biology and Medicine* (2015) DOI: 10.1002/wsbm.1323

S Vilar, **T Lorberbaum**, G Hripcsak, NP Tatonetti. Improving Detection of Arrhythmia Drug-Drug Interactions in Pharmacovigilance Data through the Implementation of Similarity-based Modeling. *PLOS One* (2015) 10 (6), e0129974

**T Lorberbaum**, M Nasir, MJ Keiser, S Vilar, G Hripcsak, NP Tatonetti. Systems pharmacology augments drug safety surveillance. *Clinical Pharmacology & Therapeutics* (2015) 97 (2), 151-158

S Vilar, E Uriarte, L Santana, **T Lorberbaum**, G Hripcsak, C Friedman, NP Tatonetti. Similarity-based modeling in large-scale prediction of drug-drug interactions. *Nature Protocols* (2014) 9 (9), 2147-2168

## PRESENTATIONS

**T Lorberbaum**, KJ Sampson, RL Woosley, RS Kass, NP Tatonetti. Big Data + Small Experiments: Discovery and validation of drug-drug interactions. *Gordon Research Conference – Drug Safety* (June 26-30, 2016). Podium presentation.

**T Lorberbaum**, KJ Sampson, RL Woosley, RS Kass, NP Tatonetti. Identifying novel drug interactions using data science: Drug Interaction Prediction Using Latent Signals and EHRs (DIPULSE). *Gordon Research Conference – Drug Safety* (June 26-30, 2016). Poster presentation.

**T Lorberbaum**, KJ Sampson, RL Woosley, RS Kass, NP Tatonetti. Discovering new drug-drug interactions using data science and systems pharmacology: Applications to drug-induced Long QT Syndrome. *Gordon Research Seminar – Drug Safety* (June 25-26, 2016). Podium presentation.

**T Lorberbaum**, KJ Sampson, RL Woosley, RS Kass, NP Tatonetti. Identifying novel drug interactions using data science: Drug Interaction Prediction Using Latent Signals and EHRs (DIPULSE). *Data Science Day @ Columbia University* (April 6, 2016). Poster presentation.

**T Lorberbaum**, NP Tatonetti. Hybrid feature clustering for predicting and explaining novel drug-drug interactions that prolong the QT interval. *AMIA Summit in Translational Bioinformatics* (March 21-23, 2016). Podium presentation.

TJ Callahan\*, **T Lorberbaum\***, A Yahi\*. Improving user engagement and insight through Contextualized Quantified Self. *AMIA Annual Symposium* (November 14-18, 2015). Podium and poster presentations.

**T Lorberbaum**, NP Tatonetti. Can Big Data tell us what clinical trials don't? *AAPS Annual Meeting and Exposition* (October 25-29, 2015). Podium presentation.

**T Lorberbaum**, M Nasir, MJ Keiser, S Vilar, G Hripcsak, NP Tatonetti. Augmenting pharmacovigilance using chemical systems biology: Modular Assembly of Drug Safety Subnetworks (MADSS). *Columbia Data Science Institute Symposium* (April 1, 2015). Poster presentation.

**T Lorberbaum**, M Nasir, MJ Keiser, S Vilar, G Hripcsak, NP Tatonetti. Improving drug safety surveillance using chemical systems biology. *AMIA Summit in Translational Bioinformatics* (March 23-25, 2015). Podium presentation.

## TEACHING EXPERIENCE

Co-Instructor: Drug Development - Basic Science to Clinical Applications (PSLG6003), Columbia University, 2015

Teacher's Assistant: Biochemistry, Molecular & Cell Biology I (BCHMG6300), Columbia University, 2014

Teacher's Assistant: Biomedical Engineering Design (BMED212), Cal Poly, 2010 - 2012

## PROFESSIONAL SERVICE

**Reviewer**, AMIA Summit in Translational Bioinformatics, 2014 - 2016

## SELECTED AWARDS AND HONORS

**Training Grant Recipient** — Awardee for competitive Training Program in Computational Biology and Bioinformatics, National Institute of General Medical Sciences, 2015-2016 (T32GM082797)

**Finalist, AMIA Student Design Challenge** (*The Human Side of Big Data – Facilitating Human-Data Interaction*) — Awarded 2nd place out of 16 applicants for Contextualized Quantified Self visualization, AMIA Annual Symposium, November 2015

**Featured Publication** — Translational Bioinformatics Year in Review, AMIA Joint Summits on Translational Science, March 2015 and March 2016

**Dean's List** — Fall 2008, Winter 2009, Spring 2009, Fall 2009, Spring 2012

## **RELATED AND PROFESSIONAL EXPERIENCE**

**WELL**, New York, NY, 2014 - 2015

Prototyped a crowdsourced health platform connecting researchers and volunteers as part of IE@Columbia Program. Developed business plan, implemented iPhone app using HealthKit and Amazon Web Services, and regularly presented to Columbia University business faculty and angel investors

**Innovation and Entrepreneurship @ Columbia**, New York, NY, 2015

Competed for entry and accepted into cross-University program that develops and leverages ideas for new ventures. Received training from faculty members, alumni, and industry mentors to develop a fundable, high-potential business plan

**Product Design Engineer** at **Proof of Concept, LLC**, San Luis Obispo, CA, 2011

**Field Toolkit:** Designed and built a toolkit for Stryker Endoscopy to optimize the standardized field-testing of endoscopic equipment. Maximized functionality, aesthetics, marketability, and ease-of-use while reducing price to a fraction of alternatives