BIOGRAPHICAL SKETCH

NAME: Nicholas Giangreco

eRA COMMONS USER NAME (credential, e.g., agency login): 14654270

POSITION TITLE: Quantitative Translational Scientist

EDUCATION/TRAINING:

INSTITUTION AND LOCATION	DEGREE (*if applicable*)	Completion Date MM/YYYY	FIELD OF STUDY
University of Rochester	BS	5/2014	Biochemistry
Columbia University	PhD	11/2021	Cellular, Molecular, and Biomedical Studies

Personal Statement

I have led and contributed to precision medicine research as a PhD trainee and currently in the pharmaceutical industry. My PhD thesis work led to multiple publications including a database of pediatric-specific adverse drug effect signals aligning with dynamic physiological processes during child development. I led the data science efforts to develop an interpretable and robust machine learning algorithm that led to hypothesized biological mechanism for a fatal, idiopathic graft dysfunction after heart transplant surgery.

1. Giangreco NP, T. N. (2022a). A database of pediatric drug effects to evaluate ontogenic mechanisms from child growth and development
2. Giangreco NP, Elias JE, T. N. (2022b). No population left behind: Improving paediatric drug safety using informatics and systems biology
3. NP, G. (2022). Alterations in the kallikrein-kinin system predict death after heart transplant
4. NP, G. (2021). Plasma kallikrein predicts primary graft dysfunction after heart transplant

Positions and Honors

Positions and Employment

2023–	Computer Science Advisor, MindArch Health
2021–	Quantitative Translational Scientist, Regeneron Pharmaceuticals
2016–2021	Systems Biologist, Columbia University
2014–2019	Cancer Bioinformatician, NHGRI

Other Experience and Professional Memberships

2018–2018	Bioinformatican, Genetic Leap
2021–2021	Bioinformatician, DNAnexus

Honors

2018–2018	Outstanding Contribution to Methodological Research at OHDSI symposium
2022–2022	Travel Award to AMIA conference

Contribution to Science

1. Side effects are significant safety concerns in pediatric drug treatment but are rarely captured during clinical trials and are severely underreported post-market. Moreover, variations in metabolism and physiology as

children grow and develop complicate detection of drug safety signals across child development. We developed a novel machine learning approach for identifying ontogenic-mediated adverse event mechanisms. We then made a database of 500,000 drug safety signals, called KidSIDES, freely available and browsable by a web application.

   a. Giangreco NP, T. N. (2022a). A database of pediatric drug effects to evaluate ontogenic mechanisms from child growth and development
   b. Giangreco NP, T. N. (2021). Evaluating risk detection methods to uncover ontogenic-mediated adverse drug effect mechanisms in children
   c. Giangreco NP, Elias JE, T. N. (2022b). No population left behind: Improving paediatric drug safety using informatics and systems biology

2. Primary graft dysfunction (PGD) is the leading cause of early mortality after heart transplant. Pre-transplant predictors of PGD remain elusive and its etiology remains unclear. A novel, patented machine learning algorithm identified pre-transplant level of KLKB1 is a robust predictor of post-transplant PGD. Our algorithm enabled the hypothesis that upregulation of coagulation cascade components of the kallikrein-kinin system (KKS) and downregulation of kininogen prior to transplant were associated with survival after transplant.

   a. NP, G. (2022). Alterations in the kallikrein-kinin system predict death after heart transplant
   b. NP, G. (2021). Plasma kallikrein predicts primary graft dysfunction after heart transplant

A. Research Support

Completed Research Support

R35GM131905 Nicholas Tatonetti 2019-2024
Data-driven drug discovery: investigating the molecular mechanisms of safety and efficacy
Prescription medicines are an essential component of modern medicine, however, while these medicines work well for some patients, they cause dangerous side effects in others. The lack of diversity in clinical trials means that these effects may disproportionately affect minorities and underrepresented patient populations. Using the electronic health records, I propose to investigate the reasons for adverse drug reactions in patients of different ages, sexes, genders, and ancestries.
Role: Investigator