Julia Cluceru

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Education

- **University of California - San Francisco** — San Francisco, California
  Ph.D. in Pharmaceutical Sciences and Pharmacogenomics — *Sept. 2015 – 2020 (exp)*
- **University of North Carolina - Chapel Hill** — Chapel Hill, NC
  B.A. Mathematics, B.A. Chemistry, GPA 3.53 — *Sept. 2009 – May 2013*

Research Experience

- **University of California - San Francisco** — San Francisco, CA
  Ph.D. Candidate - Lupo Lab — *April 2017 - Present*
  - **Data processing and cleaning**: Automated batch processing and statistics retrieval for magnetic resonance imaging (MRI) data to increase efficiency and reproducibility for UCSF Radiology [some code available on github.]
  - **Statistical analyses**: Discovered novel MR imaging predictors for distinguishing recurrent high-grade brain tumor from treatment injury using statistics for clustered data in R.
  - **Machine learning**: Designed and implemented machine learning experiments to predict tumor pathology from MR imaging parameters. Expected performance of models was estimated using 5-fold cross-validation. *Publication pending.*
  - **Current dissertation work**: Implementing convolutional neural networks (CNN) to distinguish recurrent high-grade tumors from treatment-induced damage.
  - **Other projects**:
    - **MR contrast classifier**: CNNs to classify MRI anatomy and contrast for easy and reproducible retrieval of relevant scans. Achieved 94% accuracy, working toward optimziation and deployment.
    - **Drug brain penetration modeling**: Comparing machine learning models to the BDDCS drug classification system to predict whether drugs will penetrate the blood-brain barrier.
  - **Selected coursework**: Neuro-Oncology, Advanced Neuroimaging, Intro to Magnetic Resonance Imaging, Computational Pharmacology, Machine Learning (Ng - Stanford), Statistical Learning (Hastie, Tibshirani - Stanford), Deep Learning Part I II (Howard - USF), CS231n (Li - Stanford, *in progress*)
- **University of North Carolina** — Chapel Hill, NC
  Research Assistant - Bautch lab — *Sept. 2011 - Aug. 2013*
  - **Data collection**: Cultured, imaged, and manually quantified embryonic mouse stem cell angiogenesis
  - **Data analysis**: Discovered novel associations among endothelial cell morphological parameters and Flt-1 (VEGFR-1) gene (see publications)
- **University of North Carolina** — Chapel Hill, NC
  Research Assistant - McLaughlin Lab — *Sept. 2010 - June 2011*
  - **Data collection and analysis**: Designed and filmed fluid dynamics experiments for support of the project "Settling dynamics of solid spheres in viscous stratified fluids: the entrainment dominated regime"
- **Columbia University** — Lamont-Doherty Earth Observatory, Palisades, NY
  NSF REU Fellowship - McManus Lab — *Summer 2011*
  - **Data collection and analysis**: Calculated the CaCO3 content of ocean floor cores to discover a major oceanic circulation change during a historic global warming period

Skills

- **Programming languages**: Proficient: R, python, git, Linux environment; Some experience: Matlab, HTML, CSS; Learning: SQL
- **Selected package familiarity**: pandas, numpy, fast.ai, pytorch, scikit-learn, randomForestSRC, randomForest, multgee, lmer
- **Analysis**: Data wrangling, imputation, machine learning, applied statistics, clustered data
- **Image Processing concepts**: Fourier transform, wavelet transform, normalization, SIVIC

Publications

- **Nesmith JE, Chappell JC, Cluceru JG, Bautch VL.**: "Blood vessel anastomosis is spatially regulated by flt-1 during angiogenesis", Development. 2017 Mar 1;144(5):889-896.
- **Chappell JC, Cluceru JG, Nesmith JE, Mouillesseaux KP, Bradley VB, Hartland CM, Hashambhoy-Ramsay YL, Walpole J, Peirce SM, Mac Gabhann F, Bautch VL.**: "Flt-1 (VEGFR-1) coordinates discrete stages of blood vessel formation", Cardiovasc Res. 2016 Jul 1;111(1):84-93
- **Walpole J, Chappell JC, Cluceru JG, Mac Gabhann F, Bautch VL, Peirce SM.**: "Agent-based model of angiogenesis simulates capillary sprout initiation in multicellular networks", Integr Biol (Camb). 2015 Sep;7(9):987-97

Distinctions & Honors

- **University of San Francisco Deep Learning Diversity Fellowship**: Two thousand five hundred dollar scholarship awarded to exceptional applicants that contribute to the diversity of the field.
- **National Institute of General Medical Sciences Ruth L. Kirschstein National Research Service Award (NRSA) Predoctoral Institutional Research Training Grant (T32)**: Fellows receive 23,844.00 for research-related expenses.
- **Pi Mu Epsilon Math Honors society**: Inducted in 2013
- **Dean's List**: Appeared on 7 out of 8 semesters at UNC-CH
- **Test scores**: MCAT: 36 - 97th percentile; PCAT: 442 - 99th percentile; GRE: 166 - 94th percentile; SAT: 2260 - 99th percentile

Teaching Experience

- **Julia Cluceru Tutoring** — San Francisco, CA; Stamford, CT; Madrid, Spain; Chapel Hill, NC
  Test Preparation and Academic Tutor — *2006 - Present*
  - **Test Preparation**: MCAT, GRE, SAT, SAT II, ACT, SSAT, ISEE verbal reasoning and mathematics
  - **Mathematics**: Elementary math, algebra, geometry, pre-calculus, calculus, AP statistics, AP Calculus
  - **Science**: Elementary, middle and high-school chemistry, biology, physics. AP and college level organic and inorganic chemistry, general biology.
  - **English as a Second Language**: Middle-school level ESL tutoring
- **Tutor Corps** — San Francisco, CA
  Test Preparation and Academic Tutor — *Dec. 2015 - pres.*
- **UCSF School of Pharmacy** — San Francisco, CA
  TA - Drugs of the Central Nervous System — *Spring 2016*
- **Greenwich Education Group** — Greenwich, CT
  Test Preparation and Academic Tutor — *Aug. 2014 - Sept. 2015*

Presentations & Posters

- **Invited speaker, "The association of MR imaging parameters with pathology of recurrent high grade glioma and treatment-induced effects"**: InSight Symposium, Stockton, CA., Feb. 2019
- **The association of MR imaging parameters with pathology of recurrent high grade glioma and treatment-induced effects**: Society for Neuro-Oncology, New Orleans, LA, USA, Nov. 2018 Link to: SNO Poster 2018
- **Combining anatomic, metabolic and physiologic MR imaging parameters to distinguish between recurrent high-grade glioma and treatment-induced effects**: International Society for Magnetic Resonance Imaging (ISMRM), Paris, June 2018
- **Hidden secrets of bulk tissue: Understanding glioma through meta-analysis of transcriptional data**: Quantitative Biosciences Consortium Retreat Poster Session, Nov. 2016
- **Piecing Together Ocean Circulation Changes: How the North Atlantic Circulation Changed from MIS 6 to MIS 5e. NSF REU Poster Session**: Columbia University Lamont Doherty Earth Observatory, Aug. 2011