Shady El Damaty, M.Sc. | Ph.D. Candidate

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Advocating for and contributing towards a harmonization of equitable scientific advancement with social transformation in order to sculpt a more peaceful, just and collaborative global culture.

Education & Training

- **Georgetown University** — Washington, DC
  Ph.D. Neuroscience — *2013 - 2020*
  - **Dissertation:** *Pattern Classification of Cognitive, Emotional and Social Factors Underlying Violent Outcomes in Adolescents*
  - **Qualifying Exam:** *A Balancing Act: Lexical System Design & Communication Rate Capacity*
  - Principal investigator on National Institute of Justice (NIJ)-funded dissertation grant to study impact of community violence on brain maturity to predict future antisocial behavior and generate augmented youth violence-prevention metrics.
  - Research assistant on NIH/NIAA-funded R01 on neurocognitive developmental factors predicting early onset of substance use in adolescence.
- **Drexel University, School of Biomedical Engineering** — Philadelphia, PA
  M.Sc. in Biomedical Science — *2011 - 2013*
  - **Master's Thesis:** *Cohort-Selective Gamma Rhythms Support Hierarchical Visual Processing During Word Recognition*
  - Independent study in mathematical neuroscience on neural field modeling for design and guiding of implantation of deep-brain stimulation electrodes.
  - Research assistant in neurosurgical epilepsy research unit. Developed and fielded software for visualization of electrode placement and spectrographic analysis of signals recorded directly from the human brain.
- **University of Rochester** — Rochester, NY
  B.Sc. in Neuroscience — *2007 - 2011*
  - Research assistant in bio-organic chemistry lab. Designed synthetic pathway using cytochrome P450 as a regioselective catalyst to synthesize three novel derivatives of the notoriously chemically delicate anti-malarial drug, artemisinin.

Active Fundings & Grants Awarded

Pattern Classification of Neurocognitive & Socio-Emotional Developmental Factors Underlying Violent Outcomes in Adolescents

National Institute of Justice — U.S. Department of Justice: Office of Justice Programs
Award Amount: $150,000 — 2016-CX-0019-R2
Funding Active: 2016 - *Present* — DUNS# 049515844

Grants Submitted

- Modeling Developmental Deviations in Social, Emotional and Cognitive Factors Underlying Violent Outcomes in Adolescence

  Harry Frank Guggenheim Dissertation Research Fellowship
  Award Amount: $20,000
  Status: Submitted 1 Feb 2019, Pending Decision

- Tracking Internal Affective States with Functional Magnetic Resonance Imaging During Emotional Film Viewing for Determining Bio-social Health & Cognitive Emotional Development

  Medical Center Graduate Student Organization Student Research Grant Program
  Award Amount: $5,000
  Status: Submitted 19 Apr 2019, Pending Decision

Teaching Experience & Materials

- **Summer Coding & Brain Imaging Camp** — Georgetown University Medical Center
  Course Instructor — *May 2017 - Aug 2017*
  - FreeSurfer Summer Workshop
- **Core Foundations in Neuroscience I** — Georgetown University Medical Center
  Graduate Teaching Assistant — *Aug 2017 - Jan 2018*
  - Guided Tutorial on the Biophysical Foundations of Neural Electrophysiology
- **Drugs Brain & Behavior** — Georgetown University Medical Center
  Graduate Student Instructor — *16 February 2017*
  - Injury & Recovery of the Central Nervous System
- **Drugs Brain & Behavior** — Georgetown University Medical Center
  Graduate Student Instructor — *26 March 2015*
  - Injury & Recovery of the Central Nervous System
- **Core Foundations in Neuroscience I** — Georgetown University Medical Center
  Graduate Teaching Assistant — *Aug 2014 - Jan 2015*
  - Biohysical Foundations of Neural Electrophysiology
  - Introduction to CNS Motor Systems
  - Introduction to Cognitive Neuroscience
- **Aerospace Summer STEM Camp** — NASTAR Center
  Graduate Student Instructor — *Jun - Aug 2012*

Consulting Experience & Materials

- **Empathy as a Pedagogical Tool** — Deedly
  Contracted Neuroscience Expert — *Feb 2019*
  El Damaty, S. Primer on Literature Supporting Empathy for Enhancing Pedagogy.
- **Rewiring the Brain for Peace** — Alliance for Peace
  Cognitive Neuroscience Research Associate — *Jan 2017 - Jun 2018*
  El Damaty, S. Methods Development & Ethical Issues. Published online. Nov 2017.

Peer-Reviewed Publications

- Darcey, V. L., **El Damaty, S.**, Rose, E. J., Fishbein, D. H., VanMeter, J. W. (2016). *DHA status is related to prefrontal cortex-mediated impulse control in adolescents.* The FASEB Journal, 30, 407-3.
- **El Damaty S.**, Martin, K., McQuaid G., Darcie, V.L., Rose, E.J., Fishbein, D.H., and VanMeter, J.W. *Altered Resting State Functional Connectivity Predicts Adolescent Drug Use.* [in prep]
- Viacava, K.R. **El Damaty S.**, Stevens, B.W., Rose, E.J., Fishbein, D.H., and VanMeter, J.W. Awareness of Alcohol Advertising and Limbic-Frontal Activations During an Emotional Counting Stroop Task in Adolescents. [internal review]
- **El Damaty**, S. Wahedi L., and VanMeter, J.W. Modulating Bargaining Behavior in the Ultimatum Game Using Subliminal Affective Visual Primes. [in prep]
- **El Damaty, S.** and Maguire, J. *A Neural Architecture for Unsupervised Temporal Pattern Recognition.* NIPS. 2016. [rejected, resubmitting]
- Zhang, K., **El Damaty, S.** and Fasan, R. (2011) *P450 Fingerprinting Method for Rapid Discovery of Terpene Hydroxylating P450 Catalysts with Diversified Regioselectivity.* J. Am. Chem. Soc., 133 (10), pp 3242–3245.

Invited Seminars

- El Damaty, S. *Tracking Post-Pubertal Lifespan Trajectories with Neuroimaging.* Kennedy Krieger Institute at Johns Hopkins University. Baltimore, MD. Jul 2018.
- El Damaty, S. *Multimodal Cartography of the Striatum.* University of Melbourne. Melbourne, Australia. Jun 2018.
- El Damaty, S. *Multimodal Cartography of the Striatum.* Deakin University. Melbourne, Australia. Jun 2018.
- El Damaty, S. *Multimodal Cartography of the Striatum.* Melbourne Children's Research Institute. Melbourne, Australia. Jun 2018.
- El Damaty, S. *Neuroimaging for Predictive Sociodemographics: Violence Prevention.* Cognitive Neuroscience Workshop. Universidade Federal do Rio Grande do Sul. Porto Allegre, Rio Grande do Sul. Feb 2018.

Conference Papers & Presentations

El Damaty, S., Fishbein, D.H., and VanMeter, J.W. *Estimating Brain Maturation in Developing Adolescents with Multicontrast MRI.* Organization for Human Brain Mapping. Rome, Italy. Jun 2019.

El Damaty, S., Fishbein, D.H., and VanMeter, J.W. *Multi-scale Intrinsic Functional Connectivity of the Striatum in Developing Adolescents.* Organization for Human Brain Mapping. Singapore, Singapore. Jun 2018.

- El Damaty, S., Fishbein, D.H., and VanMeter, J.W. *Painting Dynamic Cartograms of the Developing Striatum with Resting State fMRI from the Adolescent Development Study.* Flux Satellite Conference: Big Data Little Brains. Chapel Hill, NC. May 2018.

El Damaty, McQuaid G., S. Martin, K., Darcie, V.L., Fishbein, D.H., and VanMeter, J.W. *Intrinsic Functional Connectivity of the Striatum in Developing Adolescents.* Computational Cognitive Neuroscience. New York, NY. Sep 2017.

- Viacava K.R., El Damaty S., Stevens B.W., Leiser J., Rose E.J., Fishbein D.H. VanMeter JW. *Awareness of Alcohol Advertising and Limbic-frontal Activations During an Emotional Counting Stroop Task in Adolescents.* Society for Neuroscience. Chicago, IL. Nov 2016.
- El Damaty, Shady & Martin, Kelly & McQuaid, Goldie-Ann & Darcie, Valerie & Rose, Emma J.L., & Fishbein, Diana and John Vanmeter. *Functional Connectivity Predicts the Emergence of High Violence Proneness in Developing Adolescents.* Flux Congress. St. Louis, MO. Sep 2016.
- Vanmeter, John & El Damaty, Shady & Martin, Kelly & McQuaid, Goldie-Ann & Darcie, Valerie & Rose, Emma J.L. and Fishbein, Diana. *Adolescent Substance Use Predicted by Pre-use Differences in Functional Connectivity.* Flux Congress. St. Louis, MO. Sep 2016.
- Darcie, Valerie L., & El Damaty, Shady, Fishbein, Diana, Rose, Emma J., and John Vanmeter. *DHA Status is Related to Prefrontal-Cortex Mediated Impulse Control in Adolescents.* Experimental Biology. San Diego, CA. Apr 2016.
- El Damaty, Shady & James Maguire. *Temporal Pattern Recognition with a Time Delay Neural Network. 30th Annual Machine Learning Conference at the New York Academy of Science.* New York, NY. Mar 2016.
- El Damaty, Shady & Wahedi, Laila and John Vanmeter. *Priming Behavior in the Ultimatum Game with Subliminal Affect.* Society for Neuroscience. Chicago, IL. Oct 2015.

Wahedi, Laila & El Damaty, Shady and John Vanmeter. *Priming Emotions to Dissociate Affective Contributions to Decision Making in the Ultimatum Game.* Organization for Human Brain Mapping. Honolulu, HI. Oct 2015.

Awards & Honours

Georgetown Medical Center Graduate Student Research Day 1^{st} Place Presentation 2017
Georgetown Graduate School of Arts & Sciences Travel Award 2017,18
Georgetown Medical Center Graduate Student Organization Travel Award 2017,18
National Science Foundation Modeling Developmental Change Travel Award 2017
Georgetown Graduate School of Arts & Sciences Travel Award 2015
New York Academy of Science Graduate Student Trainee 2014-2017
Assocation for the American Advancement of Science Graduate Student Trainee 2014-2017
Georgetown University Medical Center NIH T32 Graduate Training Fellow 2013-2015
Drexel University Dean's Fellowship 2011-2013
German Academic Exchange Service RISE Professional Internship (*did not accept*) 2013
Meliora Weekend Student Showcase 2010
1^{st} Place SURF Oral Presentation Competition 2010
Summer Undergraduate Research Fellowship 2010
University of Rochester Chemistry REU Program 2009
McNair Post-Baccalaureate Achievement Program 2008-2011

Skills & Certifications

Grant Writing & Management

- 5 years of experience writing, revising and submitting government and foundation grants
- Have served as reviewer on student-run study sections

Project Management

- Establishing timelines & adaptively shifting to meet milestones
- Budget management, projection & balancing
- Personnel organization, mentoring & task delegation
- Quality control & productivity monitoring
- Conflict resolution & team management
- Performance reviews & progress reports

Experimental Design & Execution for Human Subjects Research

- Neuropsychological testing in both child & adult participants, including but not limited to: IQ testing, cognitive and perceptual experiments, mental health screeners, parent interviews
- Design, validation & fielding of cognitive neuroscience experiments
- Experienced in participant recruitment from high-risk (high violence/poverty) neighborhoods
- Experienced in building bridges with community leaders for engagement in research & dissemination of results.

High Performance Scientific Computing & Programming

- 20,000+ lines of UNIX shell code
- 10,000+ lines of MATLAB code for neural network, signal processing & statistics
- 2,500+ lines of python code
- Adept in R statistical programming language
- Adept in C++
- Adept in HTML/Java for web design & development
- Knowledgeable in XPP for dynamical systems models
- Knowledgeable in NEURON for biophysical models of neuron dynamics
- Extensive experience in UNIX system administration
- Built, fine-tuned and fielded high performance compute cluster from basic components
- Knowledgeable in cloud computing services (Google, Amazon, Digital Ocean)
- Experienced in working with large databases (20TB+), including but not limited to: processing, archiving, distribution, sharing and versioning.
- Highly proficient in database management, version control and infrastructure for collaboration and data distribution using datalad, cloud services and git

Statistical Analytic Skills

- Completed two course certifications on design and power analysis for longitudinal studies
- General Linear Model (GLM) and related derivatives, including mixed effects models
- Regularized regression models & predictive algorithms
- Time series analysis
- Data reduction & projection into low dimensional spaces

Neuroimaging Techniques

- Operation of Siemens Prisma magnetic resonance scanner (3 Tesla)
- Design and quality control of magnetic resonance pulse sequences for human brain
- Safety training certification for magnetic resonance imaging of human participants
- Experienced in EEG data collection and analysis
- Experienced in electrocorticographic data acquisition with Neuralynx and signal processing
- Experience collecting and analyzing physiological cardiovascular measurements

Graphic Design & Data Visualization

- Proficient with Inkscape & Illustrator
- Extensive experience working with custom color palettes, 3d renderings, and reduction/projection of high dimensional data for concise yet interpretable data visualization