

# LEO ZHU

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*MD/PhD candidate for the consideration of etc etc*

## EDUCATION

**University of Toronto Bachelor of Applied Science in Chemical Engineering (9/2014 – 4/2018)** **3.78GPA**  
Ranked top 10 in the class, scored 521 on the MCAT 521 corresponding to the 99<sup>th</sup> percentile, graduated with honors with a minor in bioengineering

**University of Toronto Master's of Applied Science in Chemical Engineering (9/2018 – 8/2020)**

## Honors, Awards, Achievements Professional Experience Publications and Presentations

Nikolaos Mitrousis, Sabiha Hacibekiroglu, Katariina Mamia, Zhengyue Zhu, Beatrice Ballarin, Peter Poon, Vallerie A. Wallace, Yves Sauve, Andras Nagy, Derek van der Kooy, Molly S. Shoichet; **Co-transplantation of RPE and photoreceptors rescues vision in a mouse model of advanced retinal degeneration.** *Invest. Ophthalmol. Vis. Sci.* 2018;59(9):3261.

REX Galbraith Society Final Presentation  
Biozone Fall Symposium  
CsCHE Symposium - Molly  
UNeRD - Molly  
Presentation @ Stats & Control  
How I scored 99th percentile on the MCAT  
Poster & presentation @ SynBio4.0  
Poster @ TC3  
Poster @ BMES

## Teaching Experience Volunteering Experience Other Involvements

## RESEARCH EXPERIENCE

**Multiscale Metabolic Modelling for Predicting Blood Cannabinoid Concentrations (9/2018 - Present)**

- Research project for Modeling & Optimization of Biochemical Networks
- Self-directed project with the objective of obtaining a “rule of thumb” for cannabis metabolism over time.

**Effects of Detergents on the Removal of Gold Nanoparticles from Tumor Tissue (9/2017 – 12/2017)**

- Research project for Biomedical Technologies and Investigations
- Performed experimental design to resolve the color-changing capabilities of gold nanoparticles in confocal microscopy imaging via experimenting with methods of removal

- Practiced the deparaffinization and rehydration of histology slides, tissue permeabilization, silver staining, and hematoxylin & eosin staining; performed data acquisition with Leica microscopy, quantification with color deconvolution through writing macros in ImageJ, and used GraphPad Prism for statistical analysis with Tukey and Bonferroni corrections.

#### **Development and Transplantation of a Bioengineered Construct of the Outer Retina (4/2016 – 8/2016)**

- Lab Assistant, Shoichet Lab at University of Toronto.
- Learned how to perform confocal microscopy, immunohistology, mice handling, cryosectioning, Image J and ANOVA to assist in data collection and analysis, resulting in verification of NaIO<sub>3</sub> models of retinal degeneration, quantification of murine vision over a longitudinal study, and production of end-point retinal morphology figures for future publishing.
- Coordinated schedules with supervisor to allow simultaneous animal testing across different assays and performing experiments during supervisor's absence for successful adherence to experiment timeline.
- Awarded a NSERC USRA award of \$4500, presented at University of Toronto Undergraduate Engineering Research day (8/9/2016) and University of Toronto Canadian Society for Chemical Engineering Symposium (8/16/2016) to a panel of judges to demonstrate effect of number of NaIO<sub>3</sub> injections on retinal degeneration and to show possible amelioration techniques with co-plantation treatments.

#### **Electrical Nerve Stimulation of Post-Tibial Nerve to alleviate Overactive Bladder (10/2015 – 3/2016)**

- Research Group Leader, Yoo Lab at University of Toronto.
- Led a team of 6 students in an independent research project to design and execute an experiment, initiated the review of 16 research papers to begin a literature review, collaborated with peers to create a REB approved study on a cohort of human subjects to ultimately present at Galbraith Society Research Experience Program closing ceremony (3/2016) on the correlations between stimulation frequency and current amplitude for sensory, motor, and pain thresholds of the treatment.

#### **Assessment of King's College Circle to Improve Pedestrian Safety (1/2015-4/2015)**

- Independent student research initiative at University of Toronto.
- Initiated a portfolio on improving the safety and clarity of traffic directions at King's College Circle at the University of Toronto, performed goal setting and vision development with team members, outreached administration and urban planning professors for resources, ultimately publishing a report suggesting a plaza to allow 86,000+ students to safely travel across campus.

#### **Pilot Plant for Glycerol Carbonate Production (9/2017-12/2017)**

- Collaborated with a team of 6 members to create a pilot plant for the production of a Carbon negative solution to produce Glycerol Carbonate from Biodiesel By-Products and Industrial Flue Emissions.
- Presented at Annual Chemical Engineering Exhibition and received award for Best Process Engineering
- Performed company vision setting, plant equipment sizing & layout, process control, environment & safety considerations, economic analyses, and prepared a 45-minute presentation with 3-D visualizations of the plant.

## **ASSETS**

**Proficient in** NMR analysis, chromatography analysis (gas, TLC, paper), FACS/Flow Cytometry analysis, Hemocytometer, Immunohistology, Confocal Microscopy, Cryostating/Microtoming, transgenic mice handling, Aspen Plus, Aspen Dynamics, Fluoview, Image J analysis and coding, Microsoft Office, C, MATLAB, Virtual DJ, Serato, Facebook Marketing, LAS X, PCR, Southern/Western Blotting, English, Mandarin, Slack, Microsoft Teams

**Skilled in** piping construction, Photoshop, InDesign, Visio, Control Systems Designer, R, Slack, ANOVA,

**Familiar with** AutoCAD, GraphPad Prism, Project Management with Gantt Charts,

**Trained in** chemical & biology lab safety, animal handling safety

## **LEADERSHIP**

**Orientation Package Chair, UofT Engineering Society (3/2015-9/2015)**

- Managed budget of \$55000, negotiated with suppliers to lower costs by 20%
- Organized the assembly of 1200 Orientation Packages and created distribution logistics, collaborated with marketing and sponsorship chairs to increase total package contents by 30%.
- Created ad hoc reports for Orientation Chairs to improve transparency, created regular presentations to all Orientation Week volunteers, created transition reports to assist future position.

**Outreach Chair, UofT Engineering Society (3/2016-9/2016)**

- Utilized pipeline marketing to contact 100+ companies to collect \$2,000 for Sponsorship.
- Generated list of contact information using LinkedIn to increase sponsorship partners by 200%
- Communicated regularly with orientation chairs, charity, marketing, social media, food & beverage, and nightlife committees to organize sponsorship deals.

**Founder/President, University of Toronto Electronic Music Community (1/2017 - 4/2019)**

- Engaged student community via ticket raffles, dance meet-ups and lessons, DJ tutorials, sponsoring campus events, and event meet-ups, ultimately increasing club size to 621 members (40% increase)
- Organized independent music event "Down the Rabbit Hole" with multiple artists, created multiple posts across social media platforms to continuously boost the event, engaged 10,000 netizens, reaching 120% of expected ticket sells, ultimately resulting in a profit of \$607.95 for the event.
- Organized music event "RESET" at local club with multiple artists in collaboration with Canadian Asian Students Society, resulting in a net profit of \$427.00 and engagement with 3,100 netizens.
- Organized charity event to raise \$415 for Covenant House Toronto to assist underprivileged youth
- Phase Shift, Organized independent music event "Phase Shift" with multiple artists, created multiple posts across social media platforms to continuously boost the event, and engaged 16,200 netizens for a final attendance of 100 guests, matching predicted sales.
- Organized music event "Fyre Fest II" at a local venue with two stages and 10 DJs, created multiple posts across social media platforms to continuously boost the event, planned the logistics for both physical wristband selling and online EventBrite tickets, and engaged 15,300 netizens for a final sale of 300 tickets, realizing a profit of \$1745.05

**Vice President, Sigma Chi Fraternity, Beta Omega Chapter (4/2017-4/2018t)**

- Organized and led weekly meetings with an executive team of 11 members, regularly checked in to ensure organized progress, participated in every committee to ensure proper inter-committee integration, communicated with campus representatives to collaborate on events.
- Balanced multiple projects and delegated tasks to team members to maximize efficient operations.
- Accepted to Horizons 2017 Leadership Development Summit under a \$2,700 scholarship, Awarded 2<sup>nd</sup> highest GPA award (\$750 value).
  - o Write about horizons leadership training
  - o --> AAR, other elements of leadership

**Social Media Chair, Sigma Chi Fraternity, Beta Omega Chapter (1/2017-Present)**

- Created marketing posters and videos to engage community, increased Instagram followers by 40%, Facebook followers by 50%, utilized social media marketing techniques to promote events as well as promote brand image.
- Pioneered a Welcoming Event at the University of Toronto through creating marketing materials, continuously making posts on social media to promote the event, and street promotions, leading to a total estimated attendance of 1,200 attendees, a 70% increase from past events, and a net profit of \$2,500.

**Internal Communications Coordinator, BioZone Council (1/2019 - Present)****Social Media Coordinator, Laboratory for Metabolic Systems Engineering (4/2019-Present)**

## INTERESTS

**Musical Performance & Composition - Violin (9/2006 – Present)**

- SKULE Orchestra Concertmaster (9/2015 – 4/2016), All Nationals Honors Ensemble (2013), All Eastern Orchestra (2013), New York Conference All State Orchestra 3<sup>rd</sup> chair (2012)
- Created experimental solo compositions to expand knowledge of music theory and performance

### **Athletic Achievement (9/2011- Present)**

- New Dragons Dragon Boat Team (9/2016-7/2018)
  - o 3rd place, Canada Dragon Boat Championships 2017, U24 Open Division
  - o 4<sup>th</sup> place, Canada Dragon Boat Championships 2017, University Mixed Division
  - o 2<sup>nd</sup> place, Club Crew World Championship 2018 in Open 2000m and 200m
- Weightlifting (9/2012 - Present)
  - o Created and followed regimented training sessions based on hypertrophy and strength training
  - o Mentored novice weightlifters by hosting two training sessions weekly

### **DJ Entrepreneurship: ZhuKeeper (11/2014 – Present)**

- Utilized pipeline marketing to negotiate and contact clients to generate a ROI of 12.7
- Experimented with graphic design to design mixtape covers and promotion posters
- Headlined for events with more than 1200 attendees to promote a social atmosphere
- Created a social media following of 351 through advertising via Facebook, Instagram, and Mix Cloud, resulting in performance for high profile clients including Top Shop, Steam Whistle Brewery, Shangri-La
- Garnered 295 votes for Ilesoniq DJ competition

## **ORGANIZATIONS**

### **Model United Nations (9/2010 – 4/2018)**

- Secretariat (CNYMUN 2013, 2014).
- Manager, Rio Olympics Crisis Committee (UTMUN 2016), 30 Years' War (SSICSIM 2017)
  - o Planned and executed simulated crises to direct debate based on crisis director's background guides and historical research
  - o Led and involved a committee of 20 participants to actively participate in completing missions
  - o Coordinated simulations with crisis moderator to ensure proper timing
  - o Utilized various media and graphics to present information in a clear and concise fashion.
- Moderator, Lebanese Civil War (UTMUN 2017)
  - o Directed the direction of debate and ensured whole committee participation
  - o Coordinated simulations with crisis manager to ensure proper timing
- Moderator, Ontario Model World Health Organization 2018
- Moderator, North American Model United Nations 2018 Colombian Congress

## **AWARDS**

**NSERC USRA (5/2016) – NSERC, \$4500**

**Dean's List (4/2015, 4/2016, 4/2017, 4/2018)**

**Highest GPA Award (4/2019) - Sigma Chi Fraternity, \$1000**

**2nd Highest GPA Award (4/2017) – Sigma Chi Fraternity, \$750**

**Horizons Leadership Development Summit (7/2017)- Sigma Chi Fraternity, \$2700**

**2nd Highest GPA Award (4/2018) – Sigma Chi Fraternity, \$750**

**NSERC Create M3 (9/2018) – NSERC, \$15000**

## **VOLUNTEERING**

### **St. Felix Center (8/2016-5/2018)**

- Optimized food handling and plating to increase initial service speed by 40%, optimized dishwashing system to eliminate downtime during operation, worked with peers to create 100+ meals a day under strict time constraints.
- Assisted staff in cooking and serving for struggling economically families, mentored new volunteers to quickly adjust to work pace.
- Served as liaison between St. Felix Center and campus groups to increase community engagement

**Mount Sinai Hospital (5/2017-5/2018)**

- Elective Outpatient Surgery Unit – observed surgeries in urology with fertility and andropause directors, practiced intubation, laparoscopy, and suturing on dummies, acquired insight into surgical logistics, provided post-op care for patients with refreshments and amenities, assisted and provided care for patients with mental disabilities, attended seminars conducted by fellows as an ultrasound model.
- Information Desk – directed patients and families to desired locations in a rapid yet friendly manner, updated directory with new information, assisted patients with wheelchair transport and calling taxis, assisted EOPS ward clerk in unit paperwork, interpreted for mandarin speaking families.

## **WORK EXPERIENCES**

**MCAT Instructor, Kaplan (12/2017 – Present)**

- Hired for receiving a 521 (130/128/132/131) on the MCAT on 8/18/2017, correlating to 99th percentile
- Coordinated with senior instructors in teacher training sessions, trained to utilize socratic teaching technique in the classroom.

**Teaching Assistant, University of Toronto (9/2018 - Present)**

- TA, APS111/112
- TA, CHE222

**Host & Food Handler, Fifth Social Club (5/2018-7/2018)**

- Interacted with clients to provide them with refreshments throughout the night
- Worked with a team of bussers to ensure proper utensil distribution and accordance to health codes

**Campus Manager, One Class (2/2016 – 6/2016)**

- Expanded enrollment as with an internship in Business Development, convinced students to sign up with marketing materials, utilized online marketing to hire student note-takers, resulting in increasing enrollment by 20%.

**Independent Contractor (5/2018-9/2018)**

- Performed housing restoration and renovation via painting walls, rewiring electrical cables, replacing drywalls, lawnwork, floor replacements, and general cleaning

**Instructor, Top Knowledge Univeristy of Toronto (8/2019 - 8/2020)**