

Personal Statement

Yahriel Salinas-Reyes, Fulbright-Garcia Robles Open Study/Research Award Molecular & Systems Bioengineering towards Neuroscience

In the realm of mathematics, the concept of chaos game originally alluded to a method of generating fractals—intricate geometrical patterns that seem to symbolize the fractured nature of reality itself. The intricate dance of numbers, shapes, and chaos mirrors my own journey through life, marked by a tapestry of neurological and neurodevelopmental challenges.

My story is one of resilience, determination, and an unquenchable thirst for knowledge, and has been anything but conventional. From an early age, I grappled with ADHD, PTSD, anxiety, and autism. These neurological conditions, instead of being impediments, have become the driving force behind my academic pursuits. I realized that within the chaos of my mind, there was an unexplored realm of creativity and analytical thinking. However, life had more challenges in store. Hearing loss and a speech impediment made communication a daily struggle. But rather than let these barriers silence me, I embraced the power of written expression. Writing became my voice, a medium through which I could convey my ideas, emotions, and discoveries. As I embarked on my academic journey, I encountered a myriad of obstacles that tested my resolve. Financial challenges loomed large, threatening to derail my dreams of higher education. Yet, I persevered, seeking scholarships and part-time work to support my studies. I also navigated the language barrier, as English is not my first language, and adapted to the demands of college life in a new world. Physical health issues further complicated matters. Sciatica, a debilitating condition, left me bedridden and unable to attend classes. Still, I did not relent. I leveraged technology to engage with coursework remotely, demonstrating my unwavering commitment to my education. In the midst of these personal challenges, I took on the role of the primary caretaker for my mother, who battled severe health issues. This responsibility, while emotionally taxing, underscored the importance of resilience and compassion. It reinforced my belief in the power of empathy and understanding, qualities I have carried into my academic pursuits. The most recent chapter in my life introduced a new set of challenges—adjusting to mental health medications and diagnoses. While the journey to stability has been arduous, it has deepened my empathy for those facing similar struggles and ignited my interest in the intersection of mathematics and mental health. My experiences have shaped my academic journey and my aspirations. I am driven by a passion for fractal mathematics, drawn to the beauty of patterns that emerge from chaos. I see parallels between the complexity of fractals and the human mind, and I am determined to explore these connections. Through these trials, I discovered a profound truth: our stories are woven into the tapestry of science and art. We tell stories to make sense of the world, to illuminate the unknown, and to connect with others. In Mexico, I hope to immerse myself in the rich mathematical heritage of the country, studying under esteemed mentors who can help me unlock new dimensions of fractal mathematics. I envision collaborative research projects that bridge the gap between mathematics and neurodiversity, shedding light on the intricate patterns of the human mind. My story is one of resilience, determination, and an unshakable belief in the transformative power of education. Amid the chaos of life's challenges, I have emerged as a passionate scholar, ready to contribute to the world of mathematics and advocate for the value of neurodiversity. I am eager to embark on this Fulbright journey, where I can explore the marvel of the human spirit, using mathematics as my compass to navigate the intricate patterns of our world. Together, we will write a new chapter in the wondrous story of human ingenuity, science, and nature itself.

Statement of Grant Purpose

Yahriel Salinas-Reyes, Host Country: Mexico, Field: Molecular & Systems Bioengineering

Project Title: Unraveling the Molecular Code of Natural Antidepressants in Grapes

In the ever-evolving world of scientific inquiry, certain moments emerge as profound intersections of human ingenuity, scientific inquiry, and the enigmatic wonders of nature. Encapsulated within this project is one such moment. With a central focus on unraveling the molecular code of grapes to find the compounds responsible for its potential natural antidepressant properties, Yahriel Salinas-Reyes aims to foster innovation in treatments for mental health disorders and conditions. Also encompassed in the project is an investigation into the nature of schizophrenia and the complexities of neuroplasticity, in hopes of advancing understanding of the mental illness. The overarching goal is to address the mounting global health crisis presented by mental health disorders, including depression and schizophrenia, which have surged to an unprecedented global health crisis significantly diminishing the quality of life for millions and placing immense pressure on healthcare systems worldwide.

At its core, the project is driven by the ambition to conduct a comprehensive molecular analysis of grapes, with a particular emphasis on understanding the genetic and molecular mechanisms governing the synthesis of antioxidants. Grapes have garnered scientific interest due to their potential health benefits and their recent recognition as potential natural antidepressants. Yahriel's unique background in aerospace engineering and micro-electro-mechanical systems (MEMS) equips him with the precision and expertise required to delve into the microscopic realm of chromosomes and molecules—an essential prerequisite for unveiling the genetic secrets grapes hold. To fulfill the project's objectives, advanced techniques in molecular biology and biotechnology systems engineering will be employed. The primary goal is to pinpoint the specific compounds within grapes responsible for their potential antidepressant properties, involving their isolation and characterization to illuminate their mechanisms of action within the brain. The aim is to identify practical applications for mental health treatment by comprehending the genetic and molecular foundation of natural antidepressant production in grapes.

Concurrently, this research adopts a multifaceted approach to unravel the complexities of schizophrenia, a debilitating and chronic mental disorder characterized by symptoms such as delusions, hallucinations, disorganized speech, and cognitive deficits. At the heart of schizophrenia's enduring enigma are Bleuler's four A's: Alogia, Autism, Ambivalence, and Affect blunting. Extensive research has explored the etiology of schizophrenia, leading to the emergence of three prominent theories: genetic, neurodevelopmental, and neurobiological. Each theory offers a distinct perspective on the origins of this complex disorder, making it challenging to pinpoint a single causative factor. Nonetheless, neurobiological theory has gained prominence due to its comprehensive approach, explaining schizophrenia as a result of abnormal brain dysfunctions or structural anomalies. This theory stands on solid scientific ground, holds promise in guiding treatment strategies, transcends cultural and demographic boundaries, and raises fewer ethical concerns compared to alternative theories. Structural and functional abnormalities in key brain systems (i.e., the prefrontal & medial temporal lobes) play a pivotal role in the manifestation of schizophrenia symptoms that are integral to working memory and declarative memory processes. The disrupted functioning contributes to cognitive impairments and emotional dysregulation in individuals with schizophrenia. In the quest to understand schizophrenia, neuroplasticity—the brain's remarkable capacity to adapt and reorganize itself in

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response to learning, experiences, and environmental changes—emerges as a crucial factor operating at various levels, from synaptic plasticity, where the strength of connections between neurons is modified, to large-scale changes in brain structure and function. In the context of schizophrenia, neuroplasticity offers hope for improving cognitive functioning and overall quality of life for affected individuals. Research has shown that cognitive remediation therapies—which harness neuroplasticity—can lead to improvements in cognitive domains such as memory, attention, and problem-solving, mitigating some of the cognitive impairments associated with the disorder.

This project is founded on the belief that nature holds the key to addressing complex health challenges, including mental health disorders like depression and schizophrenia, and seeks to explore the potential of grapes as a source of natural antidepressants.. One intriguing entry point into the complex world of grape biochemistry is through the study of yeast used in wine production, which plays a pivotal role in the fermentation process, and influences the composition of compounds within grapes. Scientific evidence unveiled that certain molecular compounds in the antioxidants act as natural antidepressants but there lacks initiative to utilize these antioxidant agents in psychiatric institutions and practical methods. By employing advanced techniques such as neuroimaging, fractal geometry, and spectral analysis, the project aims to unveil underlying patterns and causative factors associated with depression and related mental health conditions. The significance of this research extends far beyond the development of new treatments. It encompasses a broader understanding of the intricate relationship between food, biochemistry, and mental health. This knowledge has the potential to inform dietary recommendations that promote mental well-being, potentially reducing the global prevalence of these disorders.

Yahriel, and the research team at the university Tecnológico de Monterrey endeavor to decode the molecular secrets of nature to improve the human condition, particularly for individuals affected by schizophrenia and other mental health disorders. Yahriel's work represents a convergence of scientific rigor, interdisciplinary collaboration, and a profound commitment to the betterment of human well-being. Furthermore, this research holds the potential to strengthen international collaborations between the U.S. and Mexico. By conducting research at Tecnológico de Monterrey, Yahriel can contribute to the exchange of knowledge and ideas between the two countries, fostering a stronger global community which reflects the essence of the Fulbright mission, emphasizing mutual understanding and collaboration between nations. Yahriel Salinas-Reyes' Fulbright-Garcia Robles Open Study/Research Award proposal represents a unique and ambitious endeavor to explore the natural antidepressant properties of grapes. Grounded in the principles of interdisciplinary research, this project not only has the potential to transform mental health treatment but also to deepen our understanding of the brain's plasticity. It is a testament to the power of collaboration and cultural exchange in the pursuit of knowledge and the betterment of human well-being. Yahriel's unwavering commitment to utilizing opportunities to their fullest and to serve as a cultural diplomat, bridging gaps between different fields and nations, promises to unlock the molecular code of nature and take meaningful strides toward a healthier and more fulfilling world for all. Yahriel's proposal represents a remarkable opportunity to weave together science, innovation, and compassion in the quest to decipher the extraordinary truths hidden within the universe's code.


Monterrey, Nuevo León, México
September 28, 2023

Dear Fulbright Program and National Geographic Society,

I am writing to you today with the distinct privilege of welcoming Yahriel Salinas-Reyes as a visiting fellow and proudly assume the role of his research advisor at Tecnológico de Monterrey, in the Molecular and Systems Bioengineering Research Group and the FEMSA Biotechnology Center. This opportunity represents a watershed moment in the pursuit of knowledge and global collaboration. Allow me to express my unwavering confidence in Yahriel's ability to not only excel in this role but to make a transformative impact on the fields of neuroscience, molecular sciences, and systems biotechnology.

In case he's accepted into your programs, Tecnológico de Monterrey stands ready to provide Yahriel with the resources, mentorship, and collaborative environment he deserves to excel in his chosen path. We are unwavering in our conviction that Yahriel's transdisciplinary approach, his unwavering analytical mindset, and his ceaseless thirst for knowledge will not only elevate our research community but also harmonize seamlessly with the mission of the Fulbright Program and National Geographic Society. Together, we shall forge connections, advance knowledge, and safeguard the wonders of our world. Thank you for considering Yahriel's application, and please do not hesitate to reach out to us if you require any additional information or should any questions arise.

Sincerely,



Dr. José González-Valdez

Director of Outreach and Research Diplomacy
School of Engineering and Sciences
Tecnológico de Monterrey, Campus Monterrey
Telephone: +52(81)10409773
E-mail: jose_gonzalez@tec.mx



FULBRIGHT

Fulbright U.S. Student Program

Applicant Name: Mr. Yahriel Salinas-Reyes Pronouns: He/himAward Cycle: 2024-2025Permanent Residence: Des Moines, IA, United States

U.S. Armed Forces: _____

Award Information

Award Country/Countries: MexicoAward Name: Fulbright-Garcia Robles All Disciplines - Open Study/Research AwardAward Type: Study/Research Award Creative/Performing Arts: NoDegree Level: Master's Field: Interdisciplinary Studies

Program Information

Project Title: Unraveling the Molecular Code of Natural Antidepressants in Grapes

Abstract/Summary of Proposal:

This innovative research endeavor seeks to decode the genetic and molecular pathways behind grape antioxidants, potentially revealing natural antidepressant qualities. Led by Yahriel Salinas-Reyes, an aerospace engineer with a growing interest in neuroscience and molecular sciences, this project embodies the fusion of human ingenuity and nature's enigma.

What: The project seeks to conduct an exhaustive molecular analysis of grapes, focusing on chromosomes and molecules, to identify specific compounds responsible for potential antidepressant properties. It aims to comprehend the genetic and molecular foundation of natural antidepressant production in grapes.

Where: The research will take place at a prestigious institution specializing in neuroscience and biomedical data science, supplemented by a Fulbright-National Geographic Award for international study, broadening the global perspective of the research.

Why: This project addresses the escalating global health crisis posed by mental health disorders, including depression and schizophrenia. These conditions significantly diminish millions' quality of life and strain healthcare systems worldwide. Unlocking the potential of grapes as natural antidepressants offers innovative treatments and a deeper understanding of genetic factors contributing to mental health disorders. Yahriel's unique aerospace engineering background equips him with precision and expertise essential for microscopic research.

In summary, this research project bridges diverse fields to unravel nature's mysteries, contributing to global mental health solutions. Yahriel's interdisciplinary approach promises groundbreaking insights into the brain's complexities, fostering a healthier world for all.

Host Region: Tecnológico de Monterrey, MexicoAffiliation 1: Tecnológico de Monterrey, Dr. José Valdez, Center of Molecular and Systems Bioengineering

Affiliation 2: _____

Affiliation 3: _____

The proposal includes graduate degree enrollment: Yes Grant Length (Months): _____The proposal involves activities that may require a medical license to practice: NoThe proposal may involve clinical training and/or patient care/contact: No



Host Country Engagement: *How the applicant plans to engage with the host community and share their own culture and values while abroad.*

As a Fulbright-National Geographic Award recipient, cultural exchange is paramount. My commitment to being a cultural ambassador and sharing my culture and values is deeply rooted in my diverse background. Here are my plans:

Language Exchange: Actively engage in language anthropology and exchange, fostering communication and respect for the local culture.

Cultural Workshops: Organize workshops on the rich cultural gems of the U.S., Mexico, and El Salvador, covering cuisine, music, art, and history.

Collaborative Research: Seek interdisciplinary research opportunities with local scholars to promote cultural exchange.

Community Outreach: Volunteer in initiatives like environmental conservation, education, and healthcare, benefiting the host community.

Cultural Celebrations: Participate in and organize cultural festivals, sharing traditional dances, music, and customs.

Artistic Expression: Create art reflecting the fusion of cultures, conveying messages of unity and diversity.

Plans Upon Return to the U.S.: *The applicant's career and/or educational plans after completing the Fulbright grant.*

Upon my return, I plan to:

Pursue PhD plans in Neuroscience and Biomedical Data-Science, advancing my research odyssey.

Aim for academic and research leadership in neuroscience, pioneering treatments for mental health disorders.

Foster interdisciplinary collaboration, merging engineering precision with neuroscience to unravel the human brain's mysteries.

Dedicate myself to mentoring emerging & engaging scholars and scientists in STEM.

Engage in global research collaborations, promoting cross-cultural exchanges and contributing to the global scientific community.

Advocate for mental health awareness, reducing stigma, and enhancing access to services globally.

In summary, my return to the U.S. marks the start of an impactful journey, applying my Fulbright experiences to advance neuroscience, mental health, and global well-being.



Applicant Information

Applicant Date of Birth: 11/11/2000 Former Name: _____

Sex: M City of Birth: Des Moines Country of Birth: United States

Race/Ethnicity: Hispanic

Permanent Address

Street: 1709 E Walnut St

City: Des Moines State: IA Postal Code: 50316-3655

Country: United States of America Mailing same as Permanent? Yes

Current Mailing Address

Street: _____

City: _____ State: _____ Postal Code: _____

Country: _____

Telephone Numbers

Cell: +1 515-314-4160 Home: _____ Work: _____

Email

Primary: yahrielsreyes@gmail.com Alternate: yahriels@iastate.edu

Emergency Contact

First Name: Sonia Last Name: Reyes

Street: 1709 East Walnut Street,

City: Des Moines State: IA Postal Code: 50316

Phone Number: +1 515-313-3934 Email: soniareyes@y7mail.com

Relationship to Applicant: Mother

Marital Status: _____ Number of Dependents: _____

Dependent Information

First Name	Last Name	Age	Sex	Relationship to Applicant



Academic Information

U.S. Institution Applying Through: At Large

The applicant began their baccalaureate degree at a community college: Yes

The applicant identifies as a first-generation college student: Yes

Institution 1	
Name: Iowa State University	
Location: Ames, IA, United States	Attended From: Aug 2019
Type of Degree: BS	Attended To: Dec 2023
Major: Aerospace & Aeronautical Engineering	Received/Expected: Dec 2023
Minor: U.S. Latinx Studies	

Institution 2	
Name: Iowa State University	
Location: Ames, (no region), United States	Attended From: Jan 2021
Type of Degree: Master's, Not specified	Attended To: Dec 2023
Major: *Concurrent Master's of Engineering & Science with Aerospace	Received/Expected: Dec 2023
Minor: Micro-electro-mechanical-systems (MEMS)	

Institution 3	
Name: Des Moines Area Community College	
Location: Des Moines, IA, United States	Attended From: Aug 2017
Type of Degree: Transfer Credit	Attended To: May 2019
Major: Liberal Arts (Undecided)	Received/Expected: May 2019
Minor: U.S. Latin American Studies	

Institution 4	
Name:	
Location:	Attended From:
Type of Degree:	Attended To:
Major:	Received/Expected:
Minor:	

Institution 5	
Name:	
Location:	Attended From:
Type of Degree:	Attended To:
Major:	Received/Expected:
Minor:	

Previous Fulbright Grant

Has the applicant previously participated in a Fulbright U.S. Student Grant? No

Year: _____ Grant Category: _____

Country or Countries: _____



Current and Prior Scholarships, Grants or Fellowships

Grant 1:	
Country:	Year:
Grant 2:	
Country:	Year:
Grant 3:	
Country:	Year:
Grant 4:	
Country:	Year:

Partnership Organization Participation

Org 1:	
Engagement:	
Org 2:	
Engagement:	

Extracurricular Activities & Achievements

Honors, Fellowships, Scholarships, Awards

1	NASA Micro-G Neutral Buoyancy Experiment Design Teams Challenge, 2022
2	Ronald E. McNair Post-Baccalaureate Achievement Program Fellowship, 2021-2022
3	SURF Scholar at Stanford University & California Institute of Technology, 2021-2022
4	The Barry Goldwater Scholarship and Excellence in Education Foundation Finalist, 2021-2022
5	State of Iowa Youth Advisory Council Community Leadership Award, 2020, 250 Service Hours
6	CBS News Interviewee of Global Latino Leaders: Hispanic Heritage Month, 2020
7	Undergraduate Research Certificate, 2019-2020, IINSPIRE-LSAMP National Science Foundation
8	CIRT National Design & Construction Competition Back-to-Back Champion, 2019-2020,

Extracurricular/Community Engagement Activities

1	Multi-lingual Storyteller & Multi-cultural Educator, 2022-2023, Educational Non-Profit
2	Association of Iowa Latinx Professionals (AILP), 2019-2022, STEM Outreach Chair
3	Community Advisor & Multi-cultural Ambassador, 2019-2023, Equity & Inclusion Non-Profits
4	Co-founder, STEM Outreach Program for Underprivileged Youth, 2018-2023
5	Dept. of Human Rights: State of Iowa Youth Advisory Council, 2017-2021, Youth-Lobbyist
6	Co-Founder and Science Education Advocate, Latinx Student Association, 2019-2023
7	Outreach and Education Coordinator, 2019-2023, STEM Outreach & Mentorship Program,
8	Student Representative, College of Engineering Council, 2020-2021

Publications, Exhibitions, Performances, Presentations

1	"Exploring Bio-Processing & Devices in Micro & Nanoscience," 2023, NCUR STEM Conference
2	"Bioprocessing in Wine Yeast for Mental Health Treatments," 2023, STEM Symposium
3	"Modern Design Methodology & Design of Aerospace Systems," 2023, Senior Capstone Project
4	"Quantum Tunnelling Composites: Analytical Monte Carlo Model & Navier-Stokes," 2023
5	"Understanding the Mathematical Language -The Code- of the Universe," 2021, TEDx Talk
6	"Characterizing Damping Mechanisms in Piezoelectric Wind-Energy Harvesters," 2023
7	"Kirigami-Inspired Design of Paper-Based MEMS Devices for Aeronautical Applications," 2022
8	"Synthesizing Meta-Stable Particles & High-Efficiency MEMS Sensors and Nanodevices," 2021



Professional Experience

Employer 1		
Employer Name: Microscale & Interfacial Fluid Physics Laboratory		
Location: Ames, IA, United States	Employed From: Aug 2021	
Job Title: Aerospace Undergraduate Researcher	Employed To: Current	
Type of Work: Experimental Aerospace Research	Employment Type: Full time	
Employer 2		
Employer Name: California Institute of Technology		
Location: Pasadena, CA, United States	Employed From: May 2021	
Job Title: Undergraduate Research Assistant	Employed To: Aug 2022	
Type of Work: Interdisciplinary Research	Employment Type: Full time	
Employer 3		
Employer Name: Stanford University		
Location: Stanford, CA, United States	Employed From: May 2021	
Job Title: Undergraduate Research Assistant	Employed To: Aug 2021	
Type of Work: Interdisciplinary Research	Employment Type: Full time	
Employer 4		
Employer Name: Boeing Aerospace		
Location: Ames, IA, United States	Employed From: Aug 2021	
Job Title: Research Excellence in Engineering Fellow	Employed To: Aug 2022	
Type of Work: Aerospace Engineering Research	Employment Type: Full time	
Employer 5		
Employer Name: Soft Materials & Matter Transport Research Group		
Location: Ames, IA, United States	Employed From: Aug 2019	
Job Title: Undergraduate Researcher, Systems Engineer	Employed To: May 2022	
Type of Work: Interdisciplinary Research	Employment Type: Full time	
Employer 6		
Employer Name: Iowa State University of Science & Technology		
Location: Ames, IA, United States	Employed From: Aug 2019	
Job Title: Information Technology Specialist & Data Scientist	Employed To: May 2023	
Type of Work: Information & Computer Systems	Employment Type: Part time	
Employer 7		
Employer Name: Iowa State University Dept of Residence		
Location: Ames, IA, United States	Employed From: Aug 2020	
Job Title: Residential Advisor & Honors Community Leader	Employed To: May 2022	
Type of Work: Residential Advisor	Employment Type: Full time	
Employer 8		
Employer Name: DARPA: Recycling at the Point of Disposal (RPOD)		
Location: Ames, IA, United States	Employed From: Aug 2022	
Job Title: Researcher & Experimental Systems Engineer	Employed To: Aug 2023	
Type of Work: Research DARPA Funded	Employment Type: Full time	



Experience Abroad

Host Country Experience

Has the applicant ever been to the host country? Yes

Experience 1:	Will be visiting Mexico upon Graduation from Undergraduate Degree in December 2023.
Experience 2:	Will be visiting Mexico upon Graduation from Undergraduate Degree in December 2023.
Experience 3:	Will be visiting Mexico upon Graduation from Undergraduate Degree in December 2023.
Experience 4:	Will be visiting Mexico upon Graduation from Undergraduate Degree in December 2023.

Applicant plans to live or complete an extended visit (4 weeks or more) in the host country prior to the grant start date: No

Explanation of why the applicant will be in the host country:

Other Experience Abroad

Has the applicant ever been outside the U.S. other than the host country? Yes

Experience 1:	Duration (Weeks): 2	Purpose Abroad: Family Visit
Dates Visited: 12/2022-12/2022		
Country/Countries: El Salvador		
Experience 2:	Duration (Weeks):	Purpose Abroad:
Dates Visited:		
Country/Countries:		
Experience 3:	Duration (Weeks):	Purpose Abroad:
Dates Visited:		
Country/Countries:		
Experience 4:	Duration (Weeks):	Purpose Abroad:
Dates Visited:		
Country/Countries:		
Experience 5:	Duration (Weeks):	Purpose Abroad:
Dates Visited:		
Country/Countries:		

Additional Comments Regarding Experience Abroad:

As a triple citizen of the USA, Mexico, and El Salvador, Yahriel embodies internationalism and cross-cultural sensitivity. His diverse background & experiences abroad shape his research interests and commitment to global collaboration positions him as a bridge-builder between cultures, valuable in anthropology and interdisciplinary research. His pursuit of universal truths, "The Code." Yahriel's triple citizenship showcases his global outlook, making him a valuable asset for global society.



Language Self-Evaluation

Language 1: Spanish Self-assessed level: Superior/Distinguished (native or near native)

Is this language relevant to the proposed grant? Yes

Is a Foreign Language Evaluation being submitted for this language? Yes

The applicant has learned or plans to learn this language through:

Spoken at Home, Formal Study, Mother Tongue, Self-Study,

Amount of time the applicant has spent in formal study and/or studying or living in a country where the language is spoken:

I am a native Spanish speaker and have spent 4 years of formal study of the Spanish Language in high school. Spanish is spoken in the home.

What the applicant is doing now and plans to do to bring their language facility to an acceptable level by the time a grant would begin:

N/A

Language 2: _____ Self-assessed level: _____

Is this language relevant to the proposed grant? _____

Is a Foreign Language Evaluation being submitted for this language? _____

The applicant has learned or plans to learn this language through:

Amount of time the applicant has spent in formal study and/or studying or living in a country where the language is spoken:

What the applicant is doing now and plans to do to bring their language facility to an acceptable level by the time a grant would begin:



Language 3: _____ Self-assessed level: _____

Language 4: _____ Self-assessed level: _____

Critical Language Enhancement Award (optional)

Applicant is applying for a Critical Language Enhancement Award: _____

Critical Language to Study: _____

Number of years of formal college-level study: _____

Applicant intends to complete their Critical Language Enhancement Award through:

Applicant's Language Study Plan:

Expected impact of additional language study on the applicant's Fulbright project and future career or academic goals:

**Signature**

By signing below, the applicant agrees to the following:

1. I have read and understood all instructions accompanying this application, including the section on Eligibility on the Fulbright U.S. Student website;
2. To the best of my knowledge, the information provided in my application is true, correct, and complete;
3. I understand that any misrepresentation or omission may be cause for withdrawing a recommended status or grant award, in the event I am awarded a grant;
4. I understand that this application and supporting materials will be shared with persons involved in the National Screening Committee review process and with the staff at the U.S. Department of State, Fulbright Commission, and U.S. Embassy in the country(s) to which I am applying, and others who are responsible for administering the Fulbright Program or involved in the selection process;
5. I agree to accept, as a condition of my award, such placement as is made for me in an educational institution abroad;
6. I agree to keep my supervisory agency informed of my whereabouts and academic progress, and to prepare such reports, both progress and terminal, covering my experience while under the grant as may be requested by my supervisory agency;
7. I understand that in case I fail to maintain a satisfactory record, or in case my conduct is considered prejudicial to the best interest of the international educational exchange program, my award may be withdrawn and payments terminated;
8. I understand that all Fulbright program grants are subject to the Policies of the Fulbright Foreign Scholarship Board;
9. Once submitted, I will no longer have access to any part of the application or supporting materials, including Recommendations/Evaluations.

Signature: Yahriel Salinas-Reyes

Statement of Grant Purpose

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response to learning, experiences, and environmental changes—emerges as a crucial factor operating at various levels, from synaptic plasticity, where the strength of connections between neurons is modified, to large-scale changes in brain structure and function. In the context of schizophrenia, neuroplasticity offers hope for improving cognitive functioning and overall quality of life for affected individuals. Research has shown that cognitive remediation therapies—which harness neuroplasticity—can lead to improvements in cognitive domains such as memory, attention, and problem-solving, mitigating some of the cognitive impairments associated with the disorder.

This project is founded on the belief that nature holds the key to addressing complex health challenges, including mental health disorders like depression and schizophrenia, and seeks to explore the potential of grapes as a source of natural antidepressants.. One intriguing entry point into the complex world of grape biochemistry is through the study of yeast used in wine production, which plays a pivotal role in the fermentation process, and influences the composition of compounds within grapes. Scientific evidence unveiled that certain molecular compounds in the antioxidants act as natural antidepressants but there lacks initiative to utilize these antioxidant agents in psychiatric institutions and practical methods. By employing advanced techniques such as neuroimaging, fractal geometry, and spectral analysis, the project aims to unveil underlying patterns and causative factors associated with depression and related mental health conditions. The significance of this research extends far beyond the development of new treatments. It encompasses a broader understanding of the intricate relationship between food, biochemistry, and mental health. This knowledge has the potential to inform dietary recommendations that promote mental well-being, potentially reducing the global prevalence of these disorders.

Yahriel, and the research team at the university Tecnológico de Monterrey endeavor to decode the molecular secrets of nature to improve the human condition, particularly for individuals affected by schizophrenia and other mental health disorders. Yahriel's work represents a convergence of scientific rigor, interdisciplinary collaboration, and a profound commitment to the betterment of human well-being. Furthermore, this research holds the potential to strengthen international collaborations between the U.S. and Mexico. By conducting research at Tecnológico de Monterrey, Yahriel can contribute to the exchange of knowledge and ideas between the two countries, fostering a stronger global community which reflects the essence of the Fulbright mission, emphasizing mutual understanding and collaboration between nations. Yahriel Salinas-Reyes' Fulbright-Garcia Robles Open Study/Research Award proposal represents a unique and ambitious endeavor to explore the natural antidepressant properties of grapes. Grounded in the principles of interdisciplinary research, this project not only has the potential to transform mental health treatment but also to deepen our understanding of the brain's plasticity. It is a testament to the power of collaboration and cultural exchange in the pursuit of knowledge and the betterment of human well-being. Yahriel's unwavering commitment to utilizing opportunities to their fullest and to serve as a cultural diplomat, bridging gaps between different fields and nations, promises to unlock the molecular code of nature and take meaningful strides toward a healthier and more fulfilling world for all. Yahriel's proposal represents a remarkable opportunity to weave together science, innovation, and compassion in the quest to decipher the extraordinary truths hidden within the universe's code.



Monterrey, Nuevo León, México
September 28, 2023

Dear Fulbright Program and National Geographic Society,

I am writing to you today with the distinct privilege of welcoming Yahriel Salinas-Reyes as a visiting fellow and proudly assume the role of his research advisor at Tecnológico de Monterrey, in the Molecular and Systems Bioengineering Research Group and the FEMSA Biotechnology Center. This opportunity represents a watershed moment in the pursuit of knowledge and global collaboration. Allow me to express my unwavering confidence in Yahriel's ability to not only excel in this role but to make a transformative impact on the fields of neuroscience, molecular sciences, and systems biotechnology.

In case he's accepted into your programs, Tecnológico de Monterrey stands ready to provide Yahriel with the resources, mentorship, and collaborative environment he deserves to excel in his chosen path. We are unwavering in our conviction that Yahriel's transdisciplinary approach, his unwavering analytical mindset, and his ceaseless thirst for knowledge will not only elevate our research community but also harmonize seamlessly with the mission of the Fulbright Program and National Geographic Society. Together, we shall forge connections, advance knowledge, and safeguard the wonders of our world. Thank you for considering Yahriel's application, and please do not hesitate to reach out to us if you require any additional information or should any questions arise.

Sincerely,

Dr. José González-Valdez

Director of Outreach and Research Diplomacy
School of Engineering and Sciences
Tecnológico de Monterrey, Campus Monterrey
Telephone: +52(81)10409773
E-mail: jose_gonzalez@tec.mx

Campus Monterrey
Eugenio Garza Sada 2501
64849, Monterrey, N.L., México
Tel: 52/81 83582000

Personal Statement

Yahriel Salinas-Reyes, Fulbright-Garcia Robles Open Study/Research Award Molecular & Systems Bioengineering towards Neuroscience

In the realm of mathematics, the concept of chaos game originally alluded to a method of generating fractals—intricate geometrical patterns that seem to symbolize the fractured nature of reality itself. The intricate dance of numbers, shapes, and chaos mirrors my own journey through life, marked by a tapestry of neurological and neurodevelopmental challenges.

My story is one of resilience, determination, and an unquenchable thirst for knowledge, and has been anything but conventional. From an early age, I grappled with ADHD, PTSD, anxiety, and autism. These neurological conditions, instead of being impediments, have become the driving force behind my academic pursuits. I realized that within the chaos of my mind, there was an unexplored realm of creativity and analytical thinking. However, life had more challenges in store. Hearing loss and a speech impediment made communication a daily struggle. But rather than let these barriers silence me, I embraced the power of written expression. Writing became my voice, a medium through which I could convey my ideas, emotions, and discoveries. As I embarked on my academic journey, I encountered a myriad of obstacles that tested my resolve. Financial challenges loomed large, threatening to derail my dreams of higher education. Yet, I persevered, seeking scholarships and part-time work to support my studies. I also navigated the language barrier, as English is not my first language, and adapted to the demands of college life in a new world. Physical health issues further complicated matters. Sciatica, a debilitating condition, left me bedridden and unable to attend classes. Still, I did not relent. I leveraged technology to engage with coursework remotely, demonstrating my unwavering commitment to my education. In the midst of these personal challenges, I took on the role of the primary caretaker for my mother, who battled severe health issues. This responsibility, while emotionally taxing, underscored the importance of resilience and compassion. It reinforced my belief in the power of empathy and understanding, qualities I have carried into my academic pursuits. The most recent chapter in my life introduced a new set of challenges—adjusting to mental health medications and diagnoses. While the journey to stability has been arduous, it has deepened my empathy for those facing similar struggles and ignited my interest in the intersection of mathematics and mental health. My experiences have shaped my academic journey and my aspirations. I am driven by a passion for fractal mathematics, drawn to the beauty of patterns that emerge from chaos. I see parallels between the complexity of fractals and the human mind, and I am determined to explore these connections. Through these trials, I discovered a profound truth: our stories are woven into the tapestry of science and art. We tell stories to make sense of the world, to illuminate the unknown, and to connect with others. In Mexico, I hope to immerse myself in the rich mathematical heritage of the country, studying under esteemed mentors who can help me unlock new dimensions of fractal mathematics. I envision collaborative research projects that bridge the gap between mathematics and neurodiversity, shedding light on the intricate patterns of the human mind. My story is one of resilience, determination, and an unshakable belief in the transformative power of education. Amid the chaos of life's challenges, I have emerged as a passionate scholar, ready to contribute to the world of mathematics and advocate for the value of neurodiversity. I am eager to embark on this Fulbright journey, where I can explore the marvel of the human spirit, using mathematics as my compass to navigate the intricate patterns of our world. Together, we will write a new chapter in the wondrous story of human ingenuity, science, and nature itself.

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IOWA STATE UNIVERSITY

Unofficial Transcript

Iowa State University

Current Student Information

SALINAS-REYES YAHRIEL

Curr/Major: AER E

College: Engineering

Unofficial Undergraduate Transcript

Iowa State University

FALL 2019 SEMESTER

TRANSFER CREDITS ACCEPTED FROM

DES MOINES AREA COMM COLL-WEST (DMACC)

YEARS OF ATTENDANCE: 2017-2019

HIST 221	4.0	
HIST 222	4.0	
MATH 165	5.0	R
POL S 215	3.0	
SP CM 212	3.0	
SPAN 201	4.0	
SPAN 202	4.0	

TECHNICAL CREDITS ACCEPTED

EGT 0V01	3.0
EGT 0V02	3.0

TRANSFER CREDITS ACCEPTED FROM

ADVANCED PLACEMENT EXAMS

DATE OF ATTENDANCE: SPRING 2019

SPAN 101P	4.0
SPAN 102P	4.0
TOTAL TECHNICAL CREDITS	6.00
TOTAL TRANSFER CREDITS	41.00

ADMITTED AS A SOPHOMORE

ADMITTED TO DEGREE PROGRAM IN AER E

FALL 2019

AER E 160H	HONORS AER ENG PROB	3.0	A-	H
CHEM 167	ENGNRS GENERAL CHEM	4.0	A-	
ENGL 150	CRITCL THINK&CMUNIC	3.0	T	
ENGL 250H	HONORS WRI,ELE COMP	3.0	B+	H
ENGR 101	ENGINEERING ORIENTN	R	S	
ENGR 104	LEAD PROGRM ORIENTN	1.0	S	
HON 121	FIRST-YR HONORS SEM	1.0	S	H
LIB 160	INFORMATN LITERACY	1.0	S	
MATH 165	CALCULUS I	4.0	A-	
MUSIC 113	JAZZ ENSEMBLE	1.0	X	

	TERM:	Cred Hrs	Qpts	GPA	Trnsf Hrs
		14.0	50.36	3.60	41.00
	CUM:TOT HRS	56.0	14.0	50.36	3.60
				3.60	41.00

SPRING 2020 SEMESTER

AER E 161H	HONOR NUM&GRPH TCNQ	3.0	A	
AER E 192H	HONOR AEROSPC SEMNR	R	S	H
ENGR 105	LEAD PROGRM SEMINAR	1.0	S	
HON 290H	SPECIAL PROB HONORS	2.0	S	H
MATH 166	CALCULUS II	4.0	A	
PHYS 221H	HONORS-CLASSIC PH I	5.0	A	H

09/21/23 211 INTR U.S. LATINO ST 3.0 A

	Cred Hrs	Qpts	GPA	Trnsf Hrs
TERM:	15.0	60.00	4.00	0.00
CUM:TOT HRS 74.0	29.0	110.36	3.81	41.00

FALL 2020 SEMESTER

TRANSFER CREDITS ACCEPTED FROM
IOWA WESTERN COMMUNITY COLLEGE (IWCC)

DATE OF ATTENDANCE: SUMMER 2020

PHYS 232 4.0

PHYS 232L 1.0

TOTAL TRANSFER CREDITS 5.00

AER E 261 INTRO PERFRMNC&DSGN 3.0 B-

C E 274 ENGINEERING STATICS 3.0 C- R

HON 321L HOW & WHY WE COUNT 1.0 S H

HON 321N ENTREPRENEURSHIP 1.0 S H

MAT E 273 PRIN MATRLS SCI&ENG 3.0 C

MATH 265 CALCULUS III 4.0 B

	Cred Hrs	Qpts	GPA	Trnsf Hrs
TERM:	13.0	31.02	2.39	5.00
CUM:TOT HRS 94.0	42.0	141.38	3.37	46.00

SPRING 2021 SEMESTER

AER E 362 AEROSPC SYS INTEGRT 3.0 B+

E M 324 MECHAN OF MATERIALS 3.0 C

MAT E 490C INDEPENDENT STUDY 2.0 A

MATH 267 DIFF EQ & TRANSFMS 4.0 A

US LS 323C TOP LAT AM RACE,CLS 3.0 A

	Cred Hrs	Qpts	GPA	Trnsf Hrs
TERM:	15.0	51.99	3.47	0.00
CUM:TOT HRS 109.0	57.0	193.37	3.39	46.00

FALL 2021 SEMESTER

AER E 310 AERODYNAM I:INCMPRS 3.0 C+

AER E 321 FLIGHT STRUCT ANALY 3.0 B+

AER E 494 MAKE TO INNOVATE II 2.0 A

M E 231 ENGR THERMODYNAMICS I 3.0 B

M E 345 ENGINEERING DYNAMICS 3.0 B-

U ST 301 MCNR:INTRO TO RES I 2.0 A-

	Cred Hrs	Qpts	GPA	Trnsf Hrs
TERM:	16.0	49.33	3.08	0.00
CUM:TOT HRS 125.0	73.0	242.70	3.32	46.00

SPRING 2022 SEMESTER

AER E 311 AERODYN II:CMRPSBL 3.0 A

AER E 322 AEROSPC STRUCTR LAB 2.0 B+

AER E 344 AERODYN&PROPULS LAB 3.0 A

AER E 351 ASTRODYNAMICS I 3.0 A-

AER E 355 AIRCRFT FLI DYN&CTL 3.0 C+

AER E 361 COMP TECHNQ AER DSN 3.0 F R

	Cred Hrs	Qpts	GPA	Trnsf Hrs
TERM:	17.0	48.66	2.86	0.00
CUM:TOT HRS 139.0	90.0	291.36	3.24	46.00

FALL 2022 SEMESTER

AER E 331 FLGHT CONTROL SYS I 3.0 B

AER E 361 COMP TECHNQ AER DSN 3.0 B+ #
AER E 421 ADV FLIGHT STRUCTRS 3.0 B
C E 274 ENGINEERING STATICS 3.0 C+ #
ENGL 309 PROPOS&RPRT WRITNG 3.0 A-
HSP M 383 WINE&SPIRITS HSP M 2.0 NP <

	Cred Hrs	Qpts	GPA	Trnsf Hrs
TERM:	15.0	45.99	3.07	0.00
CUM:TOT HRS	151.0	99.0	3.36	46.00

SPRING 2023 SEMESTER

AER E 301 FLIGHT EXPERIENCE R F
AER E 411 AERO VEHIC PROPULSN 3.0 C-
AER E 452 INTRO SYS ENG&ANALY 3.0 A
AER E 461 MOD DESIGN METHODOL 3.0 D+
AER E 490B IND STDY PROPULSION 3.0 A
STAT 305 ENGINEERING STAT 3.0 B-

	Cred Hrs	Qpts	GPA	Trnsf Hrs
TERM:	15.0	41.01	2.73	0.00
CUM:TOT HRS	166.0	114.0	3.28	46.00

Cumulative Summary

166.0	114.0	373.35	3.28
TOTAL HRS	ISU CUM HRS	ISU CUM QPTS	ISU CUM GPA

End of Unofficial Undergraduate Transcript

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Unofficial

Unofficial

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Date Displayed September 21, 2023 04:37 AM

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EXPLANATION OF SPECIAL SYMBOLS:

- R - GRADE SUPERSEDED BY A LATER GRADE
- # - COURSE REPEATED
ONLY THE MOST RECENT GRADE USED IN CUMULATIVE TOTALS
- < - COURSE TAKEN UNDER PASS-NOT PASS OPTION
- * - GRADE FOR PREVIOUS INCOMPLETE
NOT INCLUDED IN TERM TOTALS
- H - HONORS COURSE
- N - GRADE NOT YET REPORTED

UNOFFICIAL TRANSCRIPT

Iowa State University