Ignacio Blanco

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EDUCATION

UNIVERSITY OF MICHIGAN, ANN ARBOR — **Ann Arbor, Michigan**
PhD in Chemical Engineering. GPA: 4.0 — May 2026

STANFORD UNIVERSITY — **Stanford, California**
Bachelor of Science in Chemical Engineering. GPA: 3.5 — June 2021

RESEARCH EXPERIENCE

PhD Candidate | Claudia Loebel's Lab — **Ann Arbor, Michigan**
October 2021-Now

- Developing a modeling technique for diffusion in hydrogels for drug delivery method.
- Gaining familiarity in metabolic labeling, FRAP, AI, ML and tissue culture work.

VA PALO ALTO HEALTH CARE SYSTEM | NEPHROLOGY DEPARTMENT — **Stanford, California**
Research Assistant — February 2020-Current

- Proposed and executed novel changes in urea kinetics equations to optimize the amount needed for patients to be under hemodialysis by considering patients anthropometrics, partial ability to urinate and their laboratory urea results.
- Developed applications in App Store and Android that used the developed algorithm that calculates the optimal time needed for a patient to be in hemodialysis, which are now available and officially published in JNAS

KRUPP GRANT RECIPIENT | Joerg Lahann's Lab — **Karlsruhe, Germany**
Research Assistant — May 2021-July 2021

- Developed a Machine Learning method for an RNA sequencing library on 4 ex-vivo tissue cultures and one in-vivo culture of cancer tumors to assess the effectiveness of the tissue cultures to assimilate to in vivo environmental conditions.

MONICA MILLER WALSH GRANT 2x RECIPIENT| NAMPUMA NAKI — **Playa Samara, Costa Rica**
Research Assistant — January 2021-July 2021

- Wrote a 150-page book about the evolution and specific placement of sharks in Costa Rica, explaining why there are more than 30% of the world's species present in the country, and exploring the issues that they traverse while being in Costa Rica- one of the top 5 countries that exports and supports shark hunts.

Honors Thesis Project | Gerald Fuller's Lab — **Stanford, California**
Student Research Assistant — August 2019-Current

- Proposed novel methods to evaluate the desiccation instabilities of polymer solutions such as PEG, Dextran and PVA.
- Directed and developed protocols in a self-built shadowgraph to explain the behaviour of the "Mexican Hat Instability" , an instability that occurs in medically-used polymers.
- Developed experiments to evaluate the effects of surface tension, rheological properties and pinning effects on these instabilities. The goal of the results for these experiments is to suppress these polymer instabilities in industrial purposes
- Developed Python and MATLAB program for computational analysis using the shadowgraph imaging analysis along with Machine Learning techniques to detect the properties of the drop according to its instability formation
- Gained familiarity in rheology

Bio-X Undergraduate Scholar| BYERS EYE INSTITUTE — **Stanford, California**
Student Research Assistant — June 2018- June 2020

- Developed data analysis methods through ImageJ and Python to optimize the quantization of thousands of immunohistological samples, which were key to understand the effect that the different bio-gel samples had on wound-healing recovery.
- Gained proficiency in the manipulation of immunohistological assays, tissue culture systems, western blots, SDS pages, staining techniques for fluorostaining and confocal readings.
- Directed all the ex-vivo samples in the lab and assisted with in-vivo studies.
- Engineered a system to track light sensitivity in wound healing analysis. For this, a micro-environment with lights was developed which projected light systematically to ex-vivo tissues inside an incubator.
- Developed a 3D printable trephine that can be used to perform keratotomies in in-vivo studies
- Developed a 3D printable device that allows ex-vivo corneas from organ cultures to reobtain their size and get accurate readings in an Ocular Corneal Tomography.

PRESENTATIONS AND PUBLICATIONS

JOURNAL OF THE AMERICAN SCIENCE OF NEPHROLOGY — **Stanford, California**
Research Participant| Co-author — *March 2021*

- CO-AUTHOR in paper: Perspective: Barriers to Reducing Hemodialysis Time and Frequency in Patients with Residual Kidney Function

STEM CELL TRANSLATIONAL MEDICINE — **Stanford, California**
Research Participant| Co-author — *January 2019*

- CO-AUTHOR in paper: Corneal Wound Healing Effects of Mesenchymal Stem Cell Secretome Delivered within a Viscoelastic Gel Carrier. Article ID: SCT312441
- Front Page Article in the Stem Cell Research Cover for 2019's edition

ACTA BIOMATERALIA| EL SEVIER — **Stanford, California**
Research Participant| Co-author — October 2019

- Co-Author in paper: Characterizing the impact of 2D and 3D culture conditions on the therapeutic effects of human mesenchymal stem cell secretum on corneal wound healing in vitro and ex vivo. Article ID: 3153965

CURRENT EYE RESEARCH — **Stanford, California**
Research Participant| Co-author — January 2021

- Co-Author in paper: 3D Printable, Modified Trephine Designs for Consistent Anterior Lamellar Keratectomy Wounds in Rabbits. Article ID: 33474996

CYTOTHERAPY — **Stanford, California**
Research Participant| Co-author — October 2019

- Co-Author in paper: Effect of mesenchymal stromal cells encapsulated within polyethylene glycol-collagen hydrogels formed in situ on alkali-burned corneas in an ex vivo organ culture model Article ID: 33752960

ASSOCIATION FOR RESEARCH IN VISION AND OPHTHALMOLOGY(ARVO) — **Vancouver, Canada**
Research Presenter — *March 2019*

- ARVO is a highly selective sight-therapeutics conference that brings expert leaders from around the globe to discuss the future of ocular therapeutics.
- Accepted to present and publish my abstract under the annual ARVO research portfolio my research on the effects of mesenchymal stem cells encapsulated with crosslinked collagen carrier gels on alkali burns in a corneal organ culture model.
- Developed opportunities for collaboration with professors from the University of Illinois, Chicago and University of Washington.

BIO-X FELLOWSHIP RESEARCH PRESENTATION FORUM — **Stanford, California**
Research Presenter | Presentation with Distinction — August 2018

- Presented my research on the effect of mesenchymal stem cells secreted factors in viscoelastic gel carriers on alkali burns expressed in a cornea-organ culture model.
- The presentation received the highest award distinguishment out of 500 presentations by undergraduate, graduate, and medical students due to its thoroughness and high-quality and high-impact research.

CO-CURRICULAR ACTIVITIES

STANFORD UNIVERSITY IT — **Stanford, California**
Technical Operations Management Assistant — April 2019 – April 2020

- Installation and support of more than 600 hardware devices and their software on campus.
- Assisting with service provisioning upon request and co-lead the annual renovation of1/3 of all the hardware on campus.
- Implemented identified technical remediation to ensure the security of the service.
- Development technical and operational documentation to keep track of all the software troubleshoot progress.

STANFORD GLOBAL DEVELOPMENT ASSOCIATION (SGDA/KIDA) — **Stanford, California**
Co-founder — September 2018-June 2019

- Co-Developed a Stanford group along with the Stanford Institute for Economic Policy Research that aims to create a community for undergraduate and graduate students interested in working to help the developing world.
- SGDA had over 200 participants within 10 weeks, and it created a space suitable for networking opportunities to connect Stanford students with NGOs around the world to address issues in health, education and governance
- Connected students to summer-internship opportunities, developed connections with the Knight-Henessy Scholars and brought professors from all around the country to talk about urging factors in the areas of public policy and global health

THE UNIVERSITY SCHOLARS LEADERSHIP SYMPOSIUM AT THE UNITED NATIONS — **Bangkok, Thailand**
Awardee and Presenter — August 2018

- Built up connections with UN-sister arms such UN Women, UNHCR, and Humanitarian Affairs chapter.
- Participated in discussions and presented in areas of global health, forced labor, forced migration, forced marriage, and education and economic inequalities

- Connected to more than 100 scholars from around the world as well as with professors, which were key connections for funding SGDA development, from prestigious universities such as Cambridge University (UK), University of Sidney (Australia), and National University of Singapore (Singapore).

SKILLS AND INTERESTS

• **Languages:** Fluent in English and Spanish; B1 Level in German, and A1 Level in French

• **Computational Skills:** Some experience with Kotlin, Reactive, Swift, Java, C, MATHEMATICA, TensorFlow, PyCharm, Jupiter, Adobe Media Pro, and C++, proficiency in MATLAB, Python, Microsoft Excel, and PowerPoint

• **Interests:** Tennis, piano, traveling and Latin-American dance