



Health Science Immersion Program (HSIP)

Program Snapshot of HSIP Curriculum and Structure

Summer 2019

Location: Cal State LA Campus

Session A: July 7 -13th // Session B: July 14 – 20th



Summer 2019 Health Sciences Immersion Program (HSIP)

In Summer 2019, our Health Science Immersion Program (HSIP) will give high school students an introduction to the research, academic and professional aspects of the health sciences field. Students will hear from science professors, advanced graduate students and experienced health professionals who will deliver comprehensive lectures about their field and their work. Our curriculum will be supplemented by discussions, panels, workshops and a small group project intended to give students a comprehensive experience as they consider their future college and career opportunities. The program will take place on Cal State LA's campus. HSIP will be a transformative, hands-on understanding to your future!

Speaker Presentations/Workshops

Students will hear directly from the professors and graduate students who are researching groundbreaking developments in the health sciences.

Group Collaborative Project

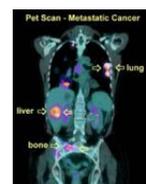
Student will prepare a small group research project and presentation related to a health science topic (neuroscience, human anatomy, cancer

Affinity Mapping Discussions

Students will have comprehensive discussions about how they relate to and perceive the health sciences field.

College Admissions/ Career Pathways

Students will learn about how the health sciences connects to their future goals in college and the professional



General Overview of the Program

- HSIP runs on afternoons for Sunday Orientation and Saturday Presentations and from 9am to 4:20pm on weekdays; morning refreshments and lunch provided on weekdays
- Students will be assigned to 4 – 5 person cohorts led by a junior staff member, who is a current college student; cohorts will develop a 10 - 15 minute group final presentation
- Program takes place in classrooms on Cal State LA's campus; readily accessible for many high school students in Southern CA, including several public transit options (ex. Metrolink)

SUNDAY, JULY 7TH

2:30pm: Program Orientation for Health Sciences Immersion Program

The program begins as all students and their parents meet our staff and board members. We will introduce our organization and the basic structure of our Health Science Immersion Program. We will cover our curriculum and provide an overview of this transformative, upcoming week. The students in our program will be from different backgrounds and perspectives, but for this week we will be brought together as a program. We will review the common program expectations from participants and our HSIP program goals and student outcomes.

MONDAY, JULY 8TH

9:05am – Curriculum Opening: Learning, Teaching and Researching in the Health Sciences

Staff members will deliver a general presentation about the health sciences field that will provide key background to speaker presentations. The basic aspects of the research process from scientific inquiry as well as grant seeking, proposal writing and research team/department structure will be covered. The distinctions between undergraduate and graduate coursework will be noted. A basic overview of different fields in the health sciences will be provided.



9:35am – Affinity Mapping: Why Are We Interested in the Health Sciences?

We want to begin by having our entire program identify why as a group are we choosing to spend a week learning more about the health sciences. Students will consider what specific subjects in science interest them the most, what educational goals and professional aspirations they wish to pursue in the health sciences as well as how public health is envisioned in society. We will utilize a unique discussion style known as “affinity mapping” to create a collective answer to these sets of questions for the class.



Example of Affinity Mapping

**10:20am – What Causes Cancer and Why is it so Difficult to Defeat?
Jamil Momand PhD – Professor of Chemistry, Cal State Los Angeles**

Most families have been touched by cancer, a disease that accounts for about 25% of deaths in the US. The word cancer conjures in our minds tragedy, sadness, indignation; but the reality is more hopeful as new treatments offer the possibility of managing cancer so that it does not dominate our lives. Dr. Momand, a cancer researcher for over 30 years, will present an overview of the molecular underpinnings of cancer and explain why it is so difficult to treat. His talk will end on a hopeful note as he explains how prevention and new treatment strategies are defeating cancer.

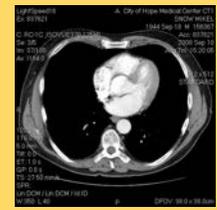


Professor Jamil Momand

11:10 am – Learning to Read CT Scans

Mikel Snow PhD – Professor, USC Keck School of Medicine

Students will learn what computed tomography or CT scans are, as well as their importance to modern medicine. They will then undergo a hands-on session examining a collection of photographs of cross-sections of a human body. These photograph cross-sections give a clear view of anatomical structures that will enhance one's ability to accurately interpret CT images that correlate with each cross-section. Professor Mikel Snow is a longtime faculty member at USC Keck where he has received numerous awards for teaching human anatomy to medical students.



Heart CT Scan

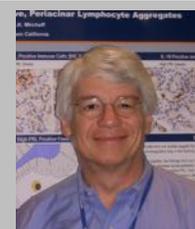
12:15pm – “The World of a PhD Graduate Student” – Graduate Student Lunchtime Panel

A panel of UCLA molecular biology and other PhD graduate students will speak to the program about how they arrived at their current position. This includes the academic pathways that lead to their current positions, and how their research interests were developed. They will discuss the procedures of conducting research and serving as teaching assistants as graduate students. Panelists will come from different years and provide alternative perspectives. The panel will cover the work/life balance dilemma presented to graduate students and how their typical weeks look like. The panelists will then conclude by discussing what potential career pathways they believe could await them.

1:20pm — Researching Chronic Disease and Formulating Treatment

Austin Mircheff, PhD – Professor, USC Keck School of Medicine

Professor Austin Mircheff will deliver a lecture related to his lab's recent research on chronic, immune-mediated inflammatory diseases, one associated with the eye (dry eye disease) and one associated with the joints (osteoarthritis). He will also speak toward how researchers systematically approach disease mechanisms to formulate new methods for treating diseases. Professor Mircheff is a longtime professor at USC Keck School of Medicine.



Professor Mircheff

2:10pm – “Career Choices in the Health Sciences and Preparing for Them”

Thomas Landefeld, PhD

Students will gain an initial exposure to the numerous professions and vocations that embody the health sciences field. While many students aspire to be a nurse or doctor, one of the first steps in good career preparation is refining these vague missions into specific goals. Professor Thomas Landefeld will begin by presenting an overview of specific health science career pathways open to students. This includes covering high-demand professional roles in the health science, such as physicians,



Professor Thomas Landefeld

dentists, physician assistants, pharmacists, etc.. There will then be an introduction to different types of doctors, e.g. allopathic physician, osteopathic physician, chiropractor, etc. and medical specialists who serve in the fields, e.g. orthopedist, neurosurgeon, endocrinologist, pediatrician, etc. Academic roles such as becoming a professor or entering science education will also be covered. The presentation will then discuss how students can prepare academically for different career pathways as well as financial and professional considerations. Dr. Landefeld is a longtime Professor of Biology and Pre-Health Advisor at California State University, Dominguez Hills and is author of the book Mentoring and Diversity: Tips for Students and Professionals.

3:10pm – Myers Briggs Strengths Assessment

During the week before their HSIP session, students will receive a take home version of the Myers-Briggs assessment, which is the world’s leading personality traits examination. It will take about 20 minutes to complete and the results will be revealed during this session. During this session a trained leadership consultant will help students interpret their results and understand what comparative strengths and skills they possess. They will then learn about how this relates to what type of future leader they might make in the classroom and workplace. This will help students understand what type of job positions they might find the most satisfying and component in undertaking.

The Myers-Briggs™ Type Indicator			
(The Keirsey Temperament Sorter)			
E	S	T	J
Extroverted (Expressive)	Sensing (Observant)	Thinking (Logic-Minded)	Judging (Scheduling)
I	N	F	P
Introversed (Reserved)	Intuition (Introspective)	Feeling (Friendly)	Perceiving (Probing)

4pm – Introduction to Group Research Projects

At program orientation each cohort will have received their cohort assignments as well as their research topic assignment. They will be assigned to one of three topics (human anatomy, neuroscience or cancer research). During this session, the cohorts will discuss the general science research article handed out to all groups and a specific introductory research article specific to their cohort topic. After spending the first half of the session discussing these articles, students will receive the group presentation break down worksheet and their next topic article.

WEDNESDAY, JULY 10TH

9:10am – Group Collaborative Work

Students will discuss the two topic related research articles provided the day before, as well as the group presentation breakdown worksheet. Cohort leaders will assign each student in their cohort a specific role related to the group presentation. There will then be a brief follow up assignment that instructs students on how to begin preparing the group presentation.



9:45am – Neuroscience Basics: An Intro to Neuroscience Research
Megan G. Massa – PhD Graduate Student, UCLA



From worms to birds, mice to humans, neuroscience research leverages the power of organisms at all levels to gain a deeper and more thorough understanding of the nervous system and diseases that afflict it. And as neurotechnology continues to advance at an ever-increasing rate, what tools and models scientists use depend on the scientific question being investigated. This introductory talk aims to lay the groundwork for future conversations about neuroscientific inquiry. We will briefly cover the levels of research (basic, translational, clinical), what types of models and techniques are typically employed, and what considerations one must take to weigh the pros and cons of each type of study. Students should leave well-armed to tackle future discussions with research scientists.

10:50am – “Bench to Bedside: Translating Science into Medicine”
Amy Yu – PhD/ MD Graduate Student, UCLA



Amy Yu

Many scientific discoveries are made in laboratories every day, but scientists and doctors alike must work together to turn those discoveries into real treatments for patients. The evolution of scientific knowledge into practical, targeted treatments is a complex process, fraught with its unique challenges and conflicts. Amy Yu, a student in both medicine and research, will discuss this evolution from the perspectives of both the researcher and the doctor, highlighting how their roles differ but converge on the one goal of helping patients. She will cover how basic biology and chemistry is applied towards new treatments, imaging techniques, and diagnostics that empower doctors and allow patients to live longer and better lives.

11:45am – Medical School Student Panel Lunchtime Talk

Several medical students from the UCLA Geffen School of Medicine will speak about their journey to medical school and what motivated them to take this path. They will discuss their educational experience based on their current year and their expectations toward future years of education and residency. There will be a discussion about the work/life balance of their field as well as challenges that young medical professionals face. Panelists who are pursuing their MD alongside another program such as a PhD will discuss their dual experience.



1:05pm – “How to Build a Brain: Lessons From the Fruit Fly”
Bryce Bajar – PhD/ MD Graduate Student, UCLA

The human brain is complex: it has over 10 billion cells and over 10 trillion connections called synapses. How is something so complicated built during development? The fruit fly has been very useful in addressing this question because its brain is relatively simple and surprisingly similar to our own. In the fruit fly, Bryce Bajar investigated how periodic neural activity occurs as connections form in the brain. In this presentation we will discuss how this newfound phenomenon could be an important part of our understanding of brain development.

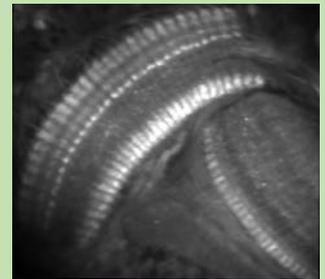


Image of Fly Brain

2:00pm – “Healthcare Policy and Your Life - Understanding Why It Matters”

Walter Zelman, PhD – Professor and Director of Health Science, Cal State LA

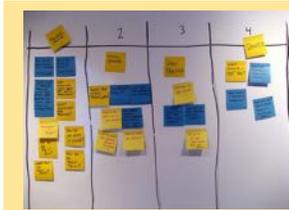
From our experience eating at a restaurant to gaining access to basic medical services, health care policy defines many core aspects of our lives. Whether we realize it or not, a complex myriad of local, state and federal policies determine how individuals and communities in our nation access healthcare and live their lives. In a discussion-based speakership, Professor Walter Zelman will challenge students to consider the core values of the American health care system. Topics will include how policy options can address the large number of Americans who are uninsured, as well as how health policy directly affects the lives of students and their local communities.



Health grades are one of many everyday aspects of Public Health Policy

2:50pm – College Admissions Workshop

Our staff and an elite college admissions counselor will deliver a joint presentation over how students can present their own personal narratives and accomplishments to excel in a holistic admissions process. This includes on how to leverage HSIP and other extracurricular activities to highlight your personal motivations toward learning. The workshop will highlight the significant advantages of the UC system. It will also explore out of state options for college such as the Ivy Leagues which often accept more extensive, holistic applications. In these private school applications, many students can achieve outsized results with a strong personal statement, supplemental essays, in-person alumni interviews and letters of recommendation. The workshop will also explore how college admissions can be applied to students looking to pursue their education and career in the health sciences.



3:50pm: Mid-Program Affinity Mapping

Students will hold small group discussions with their cohorts reflecting on the past several days. They will seek to answer several questions. How has your perspective of the health sciences field changed over the past four days? Based on your exposure to the numerous speakers, what do you think are the necessary skill sets that needed for success in the health science field? These will then be shared with the group in our second program-wide affinity mapping session.

FRIDAY, JULY 12TH 2019

9:10am – Microfluidics and the Development of Point-of-Care (POC) Diagnostic Devices Frank Gomez, PhD - Professor of Chemistry, CSULA

Professor Frank Gomez's presentation will reflect his area of expertise in microfluidics and specifically in the development of point-of-care (POC) diagnostic devices (glucose sensors, etc.). His research draws biochemistry, chemistry, biology, engineering, and physics students and those interested in the health sciences (and related fields) given the importance of home-based healthcare monitoring. Professor Gomez is a Professor of Chemistry in the Department of Chemistry and Biochemistry at California State University, Los Angeles.

10:05am – Making a World Class Difference for Others While Making Dentistry Fun Jack Von Bulow, Dentist and Owner of Temple City Dental Care

Dr. Jack Von Bulow is a Dentist and the founder of Temple City Dental Care. Dr. V is a longtime weekly columnist and has written for various San Gabriel valley newspapers (currently, Arcadia Patch.com); he is also the author of three books, *Can We Smile* (2003) *Molar Jockey Memoirs* (2007) and *The Most Interesting Dentist in the World* (2018). In this talk, Dr. Von Bulow will cover his personal journey into Dentistry and his vision of total dental health; he'll share how a journey that began for a kid in the 10th grade (and the first in the family to attend college) led to a career that became a calling on his adopting a vision that extended beyond the confines of the office. Dr. V will share why looking and listening for fun, following your passion, and serving patients, co-workers, and the community like family can make all the difference in being happy, staying young, and being fulfilled. Today, being a dentist can mean transforming and saving lives. Who knew the masterpiece smile you would create would be your own?



Dr. Jack Von Bulow, DDS

11:00am – *Why Health Scientists Study Animal Anatomy to Develop Cures for Human Diseases*

Michael Bordy, PhD - Lawyer, Former Science Academic, Impact Internships Board Member

During this hour long presentation, Dr. Michael Bordy will deliver a presentation regarding research in health sciences into animal anatomical structures and their implications for the development of medical drugs for human patients. Dr. Bordy will speak about his own past research at the University of Kansas and Johns Hopkins regarding the effects of various hormones upon Sertoli and Leydig cells in rats. He will then explain some of the scientific, ethical and professional procedures that scientists undertake before conducting research on animals.



**Michael Bordy,
PhD**

11:45am – Undergraduate College Life & Science Research Lunchtime Panel



A panel of undergraduates who have engaged in research as part of a science lab team will speak about their experiences both as researchers and college students. The panel of undergraduates will elaborate on some of the challenges and rewards they have encountered in college. This includes their course of study, student life and development as individuals. They will then discuss their research projects from finding a mentor and developing a proposal toward the actual research process. They will discuss general tips and advice for high school students considering their future in college.

1:05pm – *Fixing the Mind through the Body: Critical Considerations of Exercise Science Interventions for Depression*

Caitlin Clarke, PhD – Adjunct Professor, Cal Poly Pomona



In the moment of “#selfcare”, exercise science research often promotes exercise as a potential alternative or combined treatment option for mental illnesses including depression and anxiety. Indeed, the combination of the American College of Medicine's promotion of the Exercise is Medicine program and the World Health Organization's decision to list depression as the top priority for 2017, addressing mental illness through exercise sounds like an ideal solution. But is it really that simple? Exercise science research articles can be difficult to comprehend, so how can we better understand what the research says? This presentation will address how we can critically evaluate exercise science research publications from a sociological perspective. To do so we must ask questions such as, "who are the research participants and are the subject samples representative of the larger population?". This presentation will dive into these questions in an attempt to help students learn how to read scientific research with a critical eye.

2:10pm – Stress Management and Emotional Resilience: Measuring and Researching Our Emotional Well-being

Kristine Fish, PhD – Professor, Cal Poly Pomona

Professor Kristine Fish will deliver a presentation relating to her work as co-director of the Mind and Heart Research Lab for Integrated Well-Being. She will discuss stress management and emotional resilience as two particular foci of her research. The talk will also explore heart rate coherence and the role it plays in our overall well-being. The presentation will then conclude with how these topics can potentially relate to careers in Corporate Health Promotion. Kristine Fish is a Professor of Health Promotion in the Kinesiology and Health Promotion Department at Cal Poly Pomona.



Mind and Heart Lab for Integrated Well-Being

3:05pm – Final Affinity Mapping Session

We will begin this session by reviewing Monday's Affinity mapping charts to see what our initial perception of the health sciences were at the beginning of this week. How have your goals and ambitions changed since the start of the program? What did you find most compelling about the professors, students and health professionals who served as speakers? How has your general perception of the health sciences field changed? We will conclude by having students discuss within their cohorts what they think they would now like to pursue in college and their careers as they consider their futures.

3:55pm – Group Presentation Preparation Session

During the day your staff cohort leaders assembled the 1-2 slides from each student into a collective powerpoint presentation. Each group will now review and rehearse their 10 - 15 minute group presentation where each student will speak for around 2-3 minutes. The presentation will be an overview of the material learned from research articles related to the cohort's assigned topic. The presentation will be a casual way of sharing student learning during HSIP with friends and family.

Saturday July 13th, 2019

2pm – Final Presentation and Program Conclusion

Parents, board members and speakers will return to witness what students have learned in their cohort projects throughout the week. After cohorts deliver their group presentations, staff and board members will speak about their impressions on how students have developed during HSIP. A keynote address will be provided by a community member. Students will then be awarded their program completion certificates and HSIP will conclude. Students and parents are invited to stay to chat with our team after we formally conclude. Food will be served.

Final scheduling and sequence of speakers is subject to change. Please contact us at info@impactinternships.org if you have questions about HSIP curriculum.