

# Annual Report

## 2018-2019



**OASIS KGI COMMONS**  
KGI'S FIRST-EVER HOUSING COMPLEX

# Innovation That Puts People First

The Keck Graduate Institute (KGI) branding introduced before the 2018–2019 academic year began made a bold proclamation: Innovators Start Here. It reflects a place where the vision, passion, and commitment of KGI community members drive our efforts and accomplishments. We place people at the forefront, and innovation follows.

Two new human genetics programs launched last fall provide an example. Responding to growing interest and opportunities in the field, KGI created a first-of-its-kind Master of Science in Human Genetics and Genomic Data Analytics (MSGDA) and a Master of Science in Human Genetics and Genetic Counseling (MSGC) that develops innovative, collaborative, caring, and culturally competent professionals. Students are already distinguishing themselves, earning fellowships from the National Society of Genetic Counseling and a summer data science internship at the National Institutes of Health (NIH).

Our partnerships with healthcare organizations and industry continue to promote innovative opportunities for students. In the past year alone, they have led to clinical research experiences at local hospitals for Master of Science in Applied Life Sciences (MS) students, new industry fellowships for Doctor of Pharmacy (PharmD) students, and KGI becoming the first academic partner in Genomenon's new genomics education program.

The startup funds KGI provides faculty researchers advance innovative work with the promise to impact lives. They contributed to Assistant Professor Kiana Aran becoming the first to identify a means to digitally detect DNA without amplification. Startup funds also helped facilitate Associate Professor Rachita Sumbria's study of a potential Alzheimer's treatment and recent NIH grant to expand her research.

This year, we created a Student Success Fund to assist KGI students facing financial roadblocks along their paths to becoming innovators. Alumni and faculty are offering support as well: Our 2018 PharmD graduates are funding professional development scholarships for current students, while Professor Emeritus Ian Phillips established a scholarship for MS students.

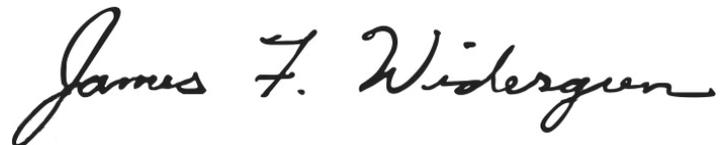
These actions represent the widespread desire at KGI to benefit others—to put people first. It is evident in the PharmD students turning a KGI Free Clinic for underserved area residents from an idea to reality. It can be seen in student and faculty commitments to professional organizations such as the California Society of Health-System Pharmacists, which awarded both its Distinguished Service Award and Student Leadership Award to members of the KGI community.

Programs on the horizon at KGI reflect our dedication to applying innovative thinking to better the health of people and communities. This fall, we started the Master of Science in Medical Device Engineering (MSMDE) program, designed for those with a passion to lead the development of transformative medical devices. And our upcoming Doctor of Occupational Therapy program responds to the demand for professionals who can help an aging population maintain physical health and independence.

Most significantly, we are in the process of establishing the KGI School of Medicine. Among our most ambitious undertakings, it underscores our belief in prioritizing people. The KGI School of Medicine's mission is to advance the knowledge of medicine and improve the health of our communities by preparing clinicians who will redefine quality and compassionate care. We are excited to move forward with our unique vision for medical education, and to continue supporting innovators at KGI.



DR. SHELDON M. SCHUSTER, KGI PRESIDENT



JAMES F. WIDERGREN, CHAIR, KGI BOARD OF TRUSTEES



**DR. SHELDON M. SCHUSTER**  
KGI PRESIDENT



**JAMES F. WIDERGREN**  
CHAIR | KGI BOARD OF TRUSTEES

# Dr. J. Mario Molina Named Founding Dean of the KGI School of Medicine

KGI has appointed Dr. J. Mario Molina as the founding dean of the KGI School of Medicine.

Molina served for 20 years as the Chief Executive Officer of Molina Healthcare, a Fortune 500 company founded by his father in 1980 to provide healthcare to low-income individuals.

Molina's vision for the KGI School of Medicine is to change the approach to healthcare education. The KGI School of Medicine will focus on the intersection of multicultural competency, population health research, and commercial innovation, as it prepares physicians with training and tools to improve the health status of communities where they practice.

"Dean Molina is highly regarded by his colleagues for his vision, passion, expertise, and leadership," KGI President Sheldon Schuster said. "He has an immense amount of experience in serving Southern California communities and we are confident in his ability to develop an innovative medical school for the 21st century."

KGI Board Chairman Jim Widergren added: "I anticipate that Dean Molina will serve as a great role model for the future students of the KGI School of Medicine while building upon the innovative and collaborative culture that currently exists on campus between the Henry E. Riggs School of Applied Life Sciences and the School of Pharmacy and Health Sciences."

Through community partnerships, KGI School of Medicine students will acquire the skills and knowledge necessary to work effectively in the highly diverse communities within Southern California. The aim of the school will be to effect systemic healthcare change—first within the San Gabriel Valley and Inland Empire areas, and then statewide and nationally.

"I am humbled by the opportunity to launch the new medical school at the Keck Graduate Institute and to contribute to advancing patient care and medical education," Molina said. "As I reflect on my professional journey in the U.S. healthcare system, the experiences I have gained confirm both the need and the timely imperative at KGI to transform medical education by providing students with the academic, technology, and self-awareness tools to become compassionate physicians and to advocate for the good health of the communities they serve. I look forward to working with leaders across the campus and to contribute to this great cause."



Molina received a bachelor's degree in chemistry from California State University, Long Beach in 1980 and then earned his medical degree from the University of Southern California in 1984. He performed his

residency in internal medicine at Johns Hopkins Hospital and followed that with a fellowship in endocrinology at the University of California, San Diego.

Prior to joining Molina Healthcare, Molina was a faculty member at USC. He also received a certificate in management from the Anderson School of Business at UCLA.

In 2005, Molina was recognized as one of *Time Magazine's* most influential Hispanics in America. In 2013, Claremont Graduate University—also a member of The Claremont Colleges—awarded Molina with an honorary doctorate.



**DR. J. MARIO MOLINA**  
FOUNDING DEAN | KGI SCHOOL OF MEDICINE

*Modern Healthcare* listed Molina among the 100 most influential people in healthcare. He served on the inaugural board of the Financial Solvency Standards Board of the California Department of Managed Healthcare. Molina also served as a director of Apollo Medical Holdings, Inc., the Aquarium of the Pacific, a member of the Board of Governors of the Huntington Library, and Curator of the Osler Library at McGill University.

He is a trustee of Johns Hopkins Medicine and served on the Visiting Committee for the Harvard Medical School. He is also a member of the Founders' Council of the United States of Care.

Medical education programs leading to the MD degree in the United States and Canada are accredited by the Liaison Committee on Medical Education (LCME). With Molina now on board as the founding dean, KGI is following the steps necessary to apply for LCME applicant status.

 To learn more about the KGI School of Medicine, visit [kgi.edu/som](http://kgi.edu/som).

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In August 2019, KGI President Sheldon Schuster interviewed KGI School of Medicine Founding Dean Dr. J. Mario Molina on the KGI Podcast. Here is a portion of the interview.



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**Schuster:** Have you given thought to how you want to articulate the mission and vision of the school? What are the major foci that you're going to have?

**Molina:** Our mission is to advance the knowledge of medicine and improve the health of our communities while preparing our clinicians who will redefine quality and compassionate care. That's what we want to do. Our vision is to create a new paradigm of medical education preparing clinicians for the 21st century. So we want to redefine the way we teach and at the same time prepare people that are going to be competent clinicians that are really going to redefine how we look at quality and compassionate care.

This is something that keeps coming up over and over and over again. People want their doctors to care about them and they want them to know about them. Osler said many years ago that sometimes it's more important to know what kind of patient you're treating than what the disease is. I think sometimes that's true, especially in an era of chronic diseases. Now we have people that have diabetes who will have diabetes the rest of their lives. We have people that have autoimmune disorders and they're going to suffer with these things for years and years. It's less about "Are we going to cure someone?" as about, "How are we going to help them deal with their conditions?" That requires compassion.

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You can listen to the entire episode at [kgi.edu/molina-interview](http://kgi.edu/molina-interview)

# KGI School of Medicine

## Mission, Vision, Values

### Mission

Our mission is to advance the knowledge of medicine and improve the health of our communities by preparing clinicians who will redefine quality and compassionate care.

### Vision

Our vision is to create a new paradigm of medical education preparing clinicians for the 21st century.

### Goals

- **COLLABORATION**  
Our graduates will have the ability to work successfully in teams as leaders and effective team members.
- **SCIENCE**  
Our graduates will have the skills to pursue the practical application of new scientific information and technology and apply them to patient care.
- **LEARNING**  
Our graduates will possess the curiosity and skills to pursue new knowledge and skills to refine and improve the practice of medicine over their lifetimes.
- **DISCOVERY**  
Our graduates will have the tools to discover new social and cultural aspects of health.

### Values

- **COMPASSION**  
We have empathy for the suffering of others.
- **CURIOSITY**  
We are inquisitive about patients and innovations in science and medicine.
- **PROFESSIONALISM**  
We respect others and act with honesty and maintain the highest ethical standards in judgement and conduct.
- **HUMILITY**  
We appreciate the limits of our personal knowledge and experience and know when to seek help from others.
- **COMMUNITY**  
We embrace our community and have a self-less concern for the well-being of others.



**DR. MARTIN ZDANOWICZ**  
DEAN | KGI SCHOOL OF PHARMACY AND HEALTH SCIENCES

# Martin Zdanowicz Selected to Lead KGI School of Pharmacy and Health Sciences

Entering its sixth year, the KGI School of Pharmacy and Health Sciences (SPHS) has a new dean. An innovative leader who prioritizes student success and faculty development, Martin Zdanowicz started in the position on August 1, 2019 after spending the last seven years at the University of Miami.

In introducing Dr. Zdanowicz, KGI President Sheldon Schuster said: “Dean Zdanowicz is a respected professional in the field of pharmacy, and his insightful approach to educating the next generation of pharmacists will have profound impact on KGI and the industry. He will move the school forward by creating new and innovative opportunities for our students.”

While in Miami, Dr. Zdanowicz served as the Associate Dean for Health Studies at the University of Miami School of Nursing and Health Studies, where he oversaw programs in public health, health science, and informatics.

Dr. Zdanowicz received a Bachelor of Science in Biology from NYU-Polytechnic, a Master of Arts in biology/physiology from SUNY Binghamton, and a Doctor of Philosophy in Pharmaceutical Sciences (Pharmacology) from St. John’s University.

While completing his doctorate, Dr. Zdanowicz spent 12 years working as a research scientist at North Shore University Hospital-Cornell Medical College in the area of endocrinology and metabolism. In 1996, he assumed a full-time faculty appointment with the Massachusetts College of

Pharmacy & Health Sciences (MCPHS) and served as Chair of Pharmaceutical Sciences and Director of Graduate Studies.

After eight years at MCPHS, Dr. Zdanowicz moved to the South University School of Pharmacy in Savannah, GA, where he served as Chair of Pharmaceutical Sciences. He was promoted to full professor in 2008, with his teaching areas including pharmacology, pathophysiology, and pharmacogenomics.

Dean Zdanowicz received the Trustee’s Award for teaching excellence and was voted pharmacy teacher of the year six times by students at two institutions. He also received the Teacher of the Year award in 2015 from the School of Nursing and Health Studies at the University of Miami.

His current research interests include pharmacogenomics, drug addiction, curriculum development, and active learning techniques. Dr. Zdanowicz holds membership in a number of professional societies. He has also published numerous peer-reviewed articles and four textbooks.

Dr. Zdanowicz assumes leadership of the KGI School of Pharmacy and Health Sciences, which started in 2014 with the Doctor of Pharmacy, a four-year program that graduated its first class in 2018. In August 2018, SPHS added two programs: the Master of Science in Human Genetics and Genetic Counseling (MSGC) and the Master of Science in Human Genetics and Genomic Data Analytics (MSGDA). The first MSGC and MSGDA cohorts will graduate in May 2020.

Dean Zdanowicz is a respected professional in the field of pharmacy, and his insightful approach to educating the next generation of pharmacists will have profound impact on KGI and the industry.

Sheldon M. Schuster | KGI President

# New Master's Degree Program Prepares Students to Engineer Medical Devices

Students interested in medical devices have long found opportunities to learn about them at KGI. Assistant Professor Anna Hickerson has taught the Device and Diagnostic Product Development course for a decade. KGI's Master of Business and Science program offers a concentration in medical devices and diagnostics. And KGI has presented the annual Medical Devices and Diagnostics Symposium for several years.

But now students can come to KGI for a master's degree program fully focused on the engineering aspects of medical devices. In fall 2019, the new Master of Science in Medical Device Engineering (MSMDE) program welcomed an inaugural class of five students, which includes two graduates of KGI's Postbaccalaureate Premedical Certificate (PPC) program. Hickerson, who proposed creating the MSMDE program and is serving as its director, projects that 20 to 25 students will eventually enroll each year.

Hickerson explains that the MSMDE program was created in response to industry needs, saying, "We talked to companies about the skill sets they need in entry-level hires. New hires can take a whole year of training to make them productive. With this program, they'll be ready to go."

Designed for students with STEM [science, technology, engineering, and mathematics] backgrounds, the four-semester MSMDE program prepares them to lead the invention, development, and production of cardiovascular, drug delivery, biosensor, and assistive devices. The program's coursework addresses the complete medical device product life cycle, starting with identifying user needs, and incorporates engineering-focused topics such as computer-aided design, manufacturing methods, and quality control.

Like those in other KGI master's degree programs, MSMDE students will complete a capstone Team Master's Project (TMP) to gain industry experience. However, their roles will be directly related to the engineering of medical devices.

Hickerson notes, "The structure is the same as our other TMPs, but the projects will have a need for their specific skills. They may collaborate with students from another KGI program, but their work will involve building devices, creating manufacturing plans, or testing prototypes."

She points to the opportunity to obtain clinical experience as another of the new program's distinguishing features. To better understand the needs of people who use medical devices, MSMDE students will shadow healthcare providers, beginning by observing patients and occupational therapists in a hospital setting.

"What makes our program unique is the clinical experience; the manufacturing, quality, and regulatory-related coursework; and the ability to take business-oriented classes," says Hickerson.

Students in the MSMDE program will also benefit from KGI's brand-new medical and assistive devices lab where they can access prototyping equipment such as 3D printers and laser cutters. The lab also features spaces designed to be conducive to student collaboration on projects.

Hickerson hopes that graduates of the MSMDE program will not only be prepared to excel in engineering roles in industry, but will also share her passion for medical devices.

"A lot of populations are underserved in what is available to them," she says. "I love the idea that these devices can help people meet their medical needs."



**DR. ANNA HICKERSON**  
ASSISTANT PROFESSOR  
PROGRAM DIRECTOR, MS IN MEDICAL DEVICE ENGINEERING



**DR. MIKHAIL MARTCHENKO**  
ASSOCIATE PROFESSOR

# Transmitting New Knowledge of Infectious Diseases

Whether he is focused on identifying a potential therapy or studying pathogens in nature, Mikhail Martchenko is dedicated to treating infectious diseases.

Professor Jim Sterling, a founding faculty member at KGI, says of Martchenko, “I was excited to have Mikhail join KGI as an accomplished biologist focused on drug discovery. His interest in translating his discoveries into commercial applications fits really well with KGI’s culture and mission.”

Through his research, Martchenko discovered that Bithionol, a drug previously approved to treat parasitic worms, could combat the Zika virus and a botulinum neurotoxin. The associate professor in KGI’s Henry E. Riggs School of Applied Life Sciences has also demonstrated that Amodiaquine, a drug used as an antimalarial agent, can be used to treat infectious diseases such as the Ebola virus and anthrax.

“I take old drugs and find new indications, repurposing them to act as host-oriented drugs. If you attack pathogens directly, they mutate and become resistant to drugs, so instead I target host proteins exploited by pathogens. The advantage is that the therapy can block multiple pathogens that exploit the same pathway,” explains Martchenko, who has been investigating host–pathogen interactions since his postdoctoral fellowship at the Stanford University School of Medicine.

In his initial research using Bithionol, Martchenko introduced the drug immediately after infection. Now he is seeking to determine its effectiveness when administered hours later, and whether it can work against all botulinum toxin serotypes. Shield Pharma, the company he and KGI Professor of Innovation and Entrepreneurship Joel West formed in 2014, recently received a one-year Small

Business Innovation Research (SBIR) grant from the National Institutes of Health (NIH) for this purpose.

“We’re doing the proof of concept for the government now. It’s a collaboration with the USDA (U.S. Department of Agriculture) lab in Albany, CA, the most recognized lab in the United States working with botulinum,” says Martchenko, who is monitoring the testing conducted at the USDA laboratory.

At the same time, he is continuing research he began two years ago in a related area: the transmission of pathogens in nature, particularly by insects.

“Scientists have started noticing that wildlife in savannas is dying rapidly because of anthrax. Flies, which feed off the carcasses of infected mammals and spread the disease, are the culprit,” explains Martchenko.

He has developed a model system in his campus lab to examine why flies transmit the disease but don’t die, studying the effects of anthrax toxins on fruit flies. With fellow faculty member Anastasia Levitin, Martchenko is also looking at how other insects communicate disease and recently created the first mosquito laboratory at KGI.

“Having a mosquito lab is a great resource for KGI and can open up other research,” he says, noting his faculty colleagues could also conduct experiments in the space.

A KGI faculty member for six years now, Martchenko anticipates continuing to pursue his two distinct but connected research directions.

“I need the two to balance myself. I need that balance between the academic and applied,” he says.

Having a mosquito lab is a great resource for KGI and can open up other research.  
Mikhail Martchenko | Associate Professor

# Sue Behrens Appointed to Lead KGI Bioprocessing Programs

In late July 2019, KGI President Sheldon Schuster announced Sue Behrens as the George B. and Joy Rathmann Professor in Bioprocessing and Director of the Amgen Bioprocessing Center.

“Dr. Behrens is an innovative leader in the life sciences industry and possesses more than 25 years of global experience in bioprocessing,” Schuster said. “She has tremendous vision for the development of KGI bioprocessing and we know she will develop even more career pathways for our alumni to thrive in industry.”

As part of her new role at KGI, Behrens leads the Master of Engineering in Biopharmaceutical Processing (MEng), an intensive two-year program housed within the Amgen Bioprocessing Center at KGI. The program trains students to become bioprocess engineering professionals employed within the biopharmaceutical industry.

Top employers of KGI’s MEng graduates include Amgen, Atara, Boehringer Ingelheim, Cell Care Therapeutics, Genentech, Gilead, Kite Pharma, Nohla Therapeutics, Sartorius, and Zoetis.

“I am excited to develop the bioprocessing program to train new talent for the biopharmaceutical industry as it continues to grow,” Behrens said. “This is an incredible opportunity to interact with the next generation of bioprocessing scientists and to enhance the collaboration between the industry and academic research.”

Prior to joining KGI, Behrens served as the Senior Director for Process Engineering at Integrated Project Solutions (IPS) in Blue Bell, PA. Within that role, she developed innovative and cost-effective solutions for complex research and manufacturing facilities within the life sciences industry.

Before the five years she spent at IPS, Behrens held progressive leadership positions with Merck & Co., Inc. for 20 years. Starting her career in technical operations supporting large-scale fermentation operations, she held positions of increasing responsibility in research and development, as well as capital team leadership.

Subsequently, she oversaw sterile process technology and engineering functions at Merck’s largest site, including the launch of four new products. She also led Merck-Schering Plough’s biologics science integration

efforts. Ultimately, as Senior Director, Biologics Manufacturing Science & Commercialization, Behrens provided biologics manufacturing technology leadership at multiple development and manufacturing sites worldwide.

Behrens earned a PhD in Chemical Engineering from the University of California, Berkeley, and a Bachelor of Science in Chemical Engineering from the University of Michigan.

She maintains affiliations with the International Society of Pharmaceutical Engineers, Women in Bio, and BioProcess International organizations.





**DR. SUE BEHRENS**  
GEORGE B. AND JOY RATHMANN PROFESSOR IN BIOPROCESSING  
DIRECTOR, AMGEN BIOPROCESSING CENTER



**DR. RACHITA SUMBRIA**  
ASSOCIATE PROFESSOR,  
BIOPHARMACEUTICAL SCIENCES



**DR. KIANA ARAN**  
ASSISTANT PROFESSOR,  
MEDICAL DIAGNOSTICS AND THERAPEUTICS

# KGI Professors Rachita Sumbria and Kiana Aran Conduct Innovative Research

Could Enbrel, a drug approved for rheumatoid arthritis, prove to be the answer to treating Alzheimer's disease? That's what KGI Associate Professor of Biopharmaceutical Sciences Rachita Sumbria has been seeking to determine, and the results from an initial study supported by a grant from the Alzheimer's Association were promising.

Now Sumbria will be able to expand her study as the principal investigator on a \$1.9 million Research Project Grant (R01) recently awarded by the National Institutes of Health. She will collaborate with the University of California, Irvine, which will supply the necessary animal facilities.

"Inflammation is a key player in Alzheimer's, but the anti-inflammatories that have been tested previously, such as Ibuprofen, failed in clinical trials because they didn't make it into the brain or had side effects," says Sumbria. "Nobody has been able to use Enbrel as a therapy for Alzheimer's because the molecule is large. A modified version can get into the brain rather than just acting in the blood and target inflammation in the brain."

Over the next five years, Sumbria will test the brain-penetrating version of Enbrel with a variety of mouse models to determine whether the previous positive data can be replicated. Sumbria will also use different doses of the brain-penetrating Enbrel to assess which is most effective. She will document both therapeutic changes and adverse effects of the drug, and seek to pinpoint the optimal time in the progression of Alzheimer's to target the disease.

Like Sumbria, KGI Assistant Professor Kiana Aran is working toward another scientific breakthrough, becoming the first to combine the power of CRISPR's nucleic acid targeting with the ultra-sensitivity of graphene, making it possible to digitally detect DNA without amplification. Researchers have found multiple applications for the CRISPR (Clustered

Regularly Interspersed Short Palindromic Repeats) gene editing technology since it came into use by the scientific community.

"The innovation is to bring the two together as a capture mechanism. Our system does not use amplification; instead, it relies on CRISPR's genome-searching capability and graphene's sensitivity," explains Aran, who led the research team responsible for the work described in the paper "CRISPR-Chip: A CRISPR-based Graphene-enhanced Field Effect Biosensor for Electronic Detection of Unamplified Target Genes," which was published in the journal *Nature Biomedical Engineering* on March 25, 2019.

Aran's novel system immobilizes the CRISPR complexes on the surface of graphene-based transistors. These complexes search a genome to find their target sequence and, if the search is successful, bind to its DNA. This binding changes the conductivity of the graphene material in the transistor, which detects the change using a handheld reader developed by Aran's industry partner, San Diego-based Cardea Bio.

"What Kiana does is an application we hadn't thought about before—that no one thought about before. It shows the potential of a graphene biosensor that no one knew was even possible," says Brett Goldsmith, Cardea's chief technology officer and cofounder. "To detect DNA without amplification is so shocking, so futuristic. This will skip several generations of technology development."

Research reported in this publication was supported by the National Institute On Aging of the National Institutes of Health under Award Number R01AG062840. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

# A Resilient Residency Shows Her Capacity For Care

As a Postgraduate Year One (PGY-1) pharmacy resident at the Kaiser Permanente Fontana Medical Center, Susan Schroeter, PharmD '18, feels she is exactly where she wants to be professionally. She hopes to practice pharmacy in a hospital setting, ideally in ambulatory care, and the residency program is helping to expand her clinical skills and knowledge.

Schroeter is completing multiple rotations—in critical care, oncology, infectious disease, ambulatory care, drug education, and several other areas—and interacting with a variety of healthcare providers at Kaiser Permanente to optimize patient care. The residency also incorporates a yearlong research project that will culminate in Schroeter presenting her work focused on oral chemotherapy and barriers to medication adherence.

“I knew a residency would push me beyond what I thought I was capable of doing,” she says.

Schroeter, who held an ambulatory care pharmacy internship at Kaiser Permanente’s Riverside Medical Center during her time as a student in the KGI School of Pharmacy and Health Sciences, was one of only two residency recipients selected from a pool of 110 applicants.

“I feel lucky to have been chosen. I’m not sure what differentiated me from the others, although a preceptor here mentioned that I displayed a lot of ‘grit’ during the interview, and that impressed her,” says Schroeter.

She demonstrated that same grit when she transformed herself from an underprivileged student at Cerritos Community College into a quality assurance professional at the healthcare company Baxter International. Her determination was evident again when

she returned to the KGI Doctor of Pharmacy program shortly after giving birth.

Schroeter showed similar resolve when her father suffered a heart attack during her second year at KGI. She realized he needed a healthcare advocate after he ended up with several medications, adverse effects, and an irreversibly damaged heart.

“Many people don’t have the healthcare knowledge to be an advocate and figure out the best therapy. Pharmacists are medication experts who are able to bridge the gap and do this kind of management,” says Schroeter.

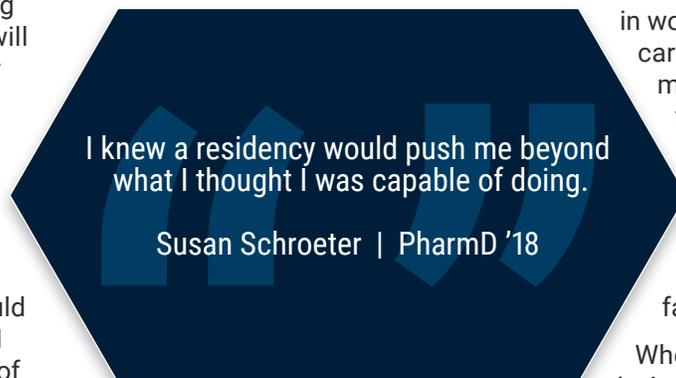
“That’s why I’m interested in working in ambulatory care, where I can closely monitor patients, observe their progression, and make an immediate impact. Because of my personal experience, I consider every patient like a family member.”

When her residency ended in August of 2019, Schroeter applied for permanent

positions with the goal of staying on at Kaiser Permanente.

No matter what she does or where she goes, KGI Assistant Professor of Clinical Sciences David Ha is certain she will be successful. He served as Schroeter’s faculty advisor and observed her work during her final pharmacy practice rotation as a KGI student.

Ha says of the alumni speaker at KGI’s 2019 Commencement, “Susan is one of the best students I’ve ever worked with. She’s one of the greats. She’s able to communicate effectively and develop relationships across disciplines. She’s just very genuine and very good at demonstrating that. She garners trust and collaboration almost instantaneously. She’s able to sway hearts and minds, and she leads by example.”





SUSAN SCHROETER  
ALUMNA | PHARM D '18



VIRIDIANA MURILLO  
STUDENT | MSGDA '20

# From a New Graduate Program to a National Institutes of Health Internship

Over the course of five weeks, Viridiana Murillo, MSGDA '20, increased her confidence and skill in using the R programming language, which she first learned in her Master of Science in Human Genetics and Genomic Data Analytics (MSGDA) program at KGI. She made significant headway in studying the cellular diversity and evolutionary origins of the immune system, part of a larger effort to develop a new method to predict the immune cell types encoded in a genome. She met Dr. Francis Collins, the physician and geneticist who led the International Genome Project and now serves as the director of the National Institutes of Health (NIH).

Murillo, a member of the inaugural class of KGI's MSGDA program, was still only halfway through the brand-new NIH Graduate Data Science Summer Program. She is one of just 12 students nationwide that the NIH selected for the 10-week internship program held in Bethesda, MD. Murillo is the only student from California and the only Latina to participate.

"It's a great honor and privilege to be here. I'm doing research and learning alongside world-class scientists at one of the most prestigious biomedical research centers in the world," says Murillo, who is being mentored by Dr. John O'Shea in the Molecular Immunology and Inflammation Branch of the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) at the NIH. "Being at the NIH also provides me with a unique perspective on the resources, databases, and other tools that are available here."

The NIH internship enables graduate students to gain mentors in the field while learning how to use their computational skills to address questions in biomedical research that have an impact on society. In addition to research, the program incorporates leadership and professional development; weekly seminars; boot camps on using web services for data analytics; and opportunities to mentor undergraduate and high school students also interning at the NIH.

"The reason I was interested in the program was that I would gain the foundation to become a resilient scientist. It would complement what I'm learning through the MSGDA by further developing my research, computational, and communication skills, both written and verbal," says Murillo. "This would equip me with the necessary

skills and professional network to prepare for any career path in genomics and genomic data science that I choose."

Murillo arrived at the NIH with a clear idea about her career path within healthcare. But the internship she calls "a dream come true" has broadened her perspective.

"My desire is to continue to grow professionally and to help clinicians and patients understand the molecular mechanisms of complex diseases, with an emphasis on critically ill pediatric patients," says Murillo. "Now that I'm at the NIH, I realize there are so many possibilities I didn't think of or know existed that would allow me to fulfill my goal. I will take advantage of every opportunity available to me during my time here. I truly am here to learn."

It's a great honor and privilege to be here. I'm doing research and learning alongside world-class scientists at one of the most prestigious biomedical research centers in the world.

Viridiana Murillo | MSGDA '20

# Regulatory Affairs Rap Artist

Lawrence Maddela, MBS '18, PPC '17, has a way with words, whether he is drafting a submission to the U.S. Food and Drug Administration (FDA) or the lyrics to hip-hop music. He has shown his skill in both during his clinical and regulatory affairs development program at Edwards Lifesciences, the world leader in heart valve and critical care monitoring technologies.

Maddela's writing contributed to approval of the company's PASCAL transcatheter valve repair system in Europe. He also created a rap music video about Edwards that its CEO presented at an all-employee meeting.

"It was one of the best days of my life. I've been rapping for over a decade now, and this was the culmination," says Maddela.

He got his start in music as a young child, playing the piano. Maddela later realized he had a talent for writing rhymes and began recording and performing rap music.

Meanwhile, he was on track to follow his father into medicine. A premedical student at the University of California, Los Angeles, Maddela gained exposure to a medical center environment at UCLA Health and won an award for a song he composed there. Then he headed to KGI for the Postbaccalaureate Premedical Certificate (PPC) program.

When Maddela decided to stay at KGI for the Master of Business and Science (MBS), he ended up discovering a field he preferred to medicine and learning about Edwards.

"I paid close attention to the classes I liked and realized clinical and regulatory affairs was most exciting to me," says Maddela.

"Regulatory is very language-based. We're the communicators. We're liaisons between our coworkers and the FDA."

Maddela also explains his attraction to the rotational program at Edwards, saying, "I like the technology. We're really innovative and all about the patient. We're able to do therapy without surgery. It's minimally invasive, and the recovery time is so much better. Heart disease is rampant, so the impact we make is tremendous."

So far, Maddela has completed a regulatory affairs rotation and turned his attention to clinical affairs. His work includes conducting analyses that compare standard operating procedures at Edwards to those in six other countries.

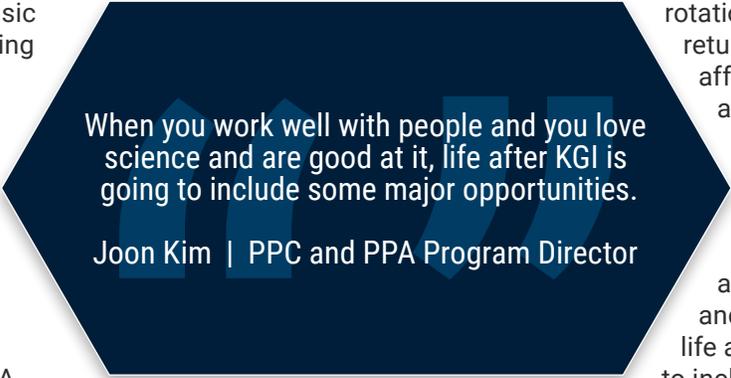
For his third and final rotation, Maddela will return to the regulatory affairs team, which has already offered him a job when his two-year program ends.

"When you work well with people and you love science and are good at it, life after KGI is going to include some major opportunities," says Senior

Director and Instructor of Postbaccalaureate Programs Joon Kim, noting how Maddela's KGI education introduced him to new ways of using the life sciences to help people that suited his outgoing personality and creative nature.

Expressing that creativity through rap continues to be part of Maddela's experience at Edwards. Currently, Maddela is working on a video on clinical trials with the company's marketing team.

"Whether I'm writing submissions to the FDA or writing rhymes for an audience, I like the freedom to write with power and conviction to convey a message and tell a story," says Maddela.



When you work well with people and you love science and are good at it, life after KGI is going to include some major opportunities.

Joon Kim | PPC and PPA Program Director



LAWRENCE MADDELA  
ALUMNUS | MBS '18, PPC '17

# Year in Review

## July 2018

### **WASC Reaffirms KGI's Accreditation for Eight Years; SPHS Receives Accreditation**

KGI President Sheldon Schuster announced that the Western Association of Schools & Colleges Senior Colleges and Universities Commission reaffirmed KGI's accreditation for eight more years. KGI's School of Pharmacy and Health Sciences also received full accreditation by the Council for Pharmacy Education.

### **KGI Announces Plans for New Medical School**

KGI announced plans for a new School of Medicine to meet the increasing demand for primary care physicians in Southern California. A generous donor's transformational gift to KGI funded the first phase of the school, which included the recruitment and hiring of the founding dean.

### **KGI and the Riggs Family Announce the Establishment of the Henry E. Riggs School of Applied Life Sciences**

KGI announced the naming of its School of Applied Life Sciences as the Henry E. Riggs School of Applied Life Sciences. The naming recognized a transformative gift from Mrs. Gayle Carson Riggs and the Riggs Family in honor of President Henry E. "Hank" Riggs, who shepherded the school from idea to institutional plan to launch, and served as KGI's president for seven years.



## August 2018

### **Innovators Start Here: KGI Unveils New Brand**

Unveiling a new brand and logo, KGI celebrated the innovation and collaboration that leads to career pathways within healthcare and the applied life sciences. The tagline "Innovators Start Here" embodies the entrepreneurial spirit of its students, faculty, and staff, while also honoring KGI's forward-thinking alumni around the world.



### **KGI Welcomes PharmD Class of 2022 at White Coat Ceremony**

The KGI School of Pharmacy and Health Sciences (SPHS) celebrated its new students as more than 65 members of the Class of 2022 participated in the annual White Coat Ceremony. The formal ceremony recognized them as members of the fifth class of KGI's SPHS and as members of the pharmacy profession.



### **After Gaining Accreditation, KGI Welcomes First Cohort in New Genetics Programs**

The first students in two brand-new master's degree programs in human genetics arrived at KGI. Their enrollment signaled that the academic programs passed critical milestones, including the most important: approval by the necessary accrediting bodies.

## September 2018

### Research Leads to Implications for Pathogenesis of Cerebral Microbleeds

Led by KGI faculty members and a former KGI research associate, the results of a new study published in *Frontiers in Cellular Neuroscience* may have implications for the pathogenesis of cerebral microbleeds.

### KGI School of Pharmacy and Health Sciences Partners with Profusa, Inc. for Fellowship Program



The KGI School of Pharmacy and Health Sciences partnered with Profusa, Inc., to offer two 2-year PharmD Industry Fellowships in Medical Affairs. The fellowships provided an opportunity to learn the skills and experiences necessary to excel as a pharmacist in Medical Affairs, a key function in any biotechnology company.

### Graphene-Based Biosensor Identifies Circulating Biomarkers of Aging

The results of a study illustrate the impact of a graphene-based biosensors in identifying the circulating biomarkers of aging. KGI Assistant Professor Kiana Aran authored the study in collaboration with UC Berkeley Professor Irina Conboy and Nanomedical Diagnostics.

## October 2018

### Hearst Foundations Grant Supports KGI School of Medicine



The Hearst Foundations awarded a grant of \$250,000 to Keck Graduate Institute in support of crucial steps in the current phase of the KGI School of Medicine planning and development. The grant builds on the momentum provided by the transformational gift KGI received in July 2018 to initiate the KGI School of Medicine's first phase.

### Kudo Selected as CSHP Distinguished Service Award Recipient; Nguyen Earns Student Leadership Award

Balancing leadership roles with three student organizations, full-time coursework, and an internship led KGI PharmD student Jennifer Nguyen to win the Student Leadership Award by the California Society of Health-System Pharmacists (CSHP). Adjunct Associate Professor Daniel Kudo was likewise honored with the Distinguished Service Award from CSHP.



## November 2018

### KGI Study Examines the Furnishing of Naloxone by California Pharmacists

A study by faculty at the KGI School of Pharmacy and Health Sciences and collaborators with the UC San Francisco's Department of Family and Community Medicine investigated California pharmacists' furnishing of naloxone without a prescription two years after legislation was implemented.

### KGI Announces Plans for Doctor of Occupational Therapy Program

During its October 2018 meeting, the KGI Board of Trustees unanimously approved to move forward with the creation of a Doctor of Occupational Therapy program housed within the KGI School of Pharmacy and Health Sciences. The proposed program will see significant overlap with courses in the Henry E. Riggs School of Applied Life Sciences and would be able to capitalize on KGI's partnerships with healthcare institutions for clinical placements for field work experiences.

## December 2018

### KGI School of Pharmacy and Health Sciences Hosts 4th Annual Shark Tank App Competition

On December 12, the KGI School of Pharmacy and Health Sciences hosted its fourth annual Shark Tank App Competition, featuring 10 teams of PharmD students pitching their pharmacy related apps to a panel of judges and asking for fictitious seed funding, similar to the popular television show Shark Tank.



### Team Master's Project Findings on Artificial Intelligence Published in Journal

The findings of a Team Master's Project from the 2017-18 school year were published in the December 6, 2018 edition of the Drug Information Association's Journal *Therapeutic Innovation & Regulatory Science*. The Team Master's Project was titled "Artificial Intelligence and Advanced Technologies for Regulatory Intelligence" and was conducted in conjunction with global pharmaceutical company Eli Lilly and Company.



## January 2019

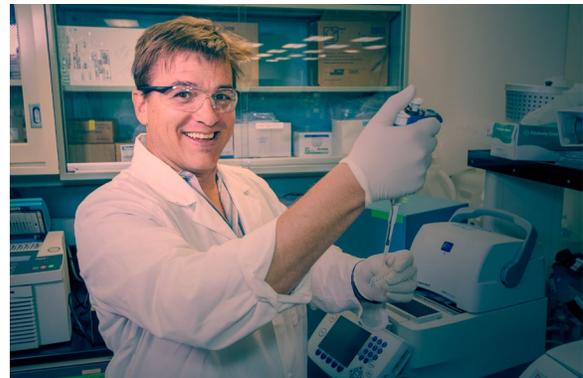
### Student's Research Effort Earns her Publication Credit in Scientific Journal

Abrar Al Maghribi, MS '18, simply needed some research experience when she asked to work in the lab with Rachita Sumbria, an assistant professor at KGI. A student in KGI's Postbaccalaureate Premedical Certificate program at the time, Al Maghribi never imagined she would become the coauthor of an article in *Molecular Pharmaceutics*, a highly regarded scientific journal.



### Professor's Genetically Encoded Sensor Helps Researchers Understand Cell Quiescence

KGI Associate Professor Alex Zamboni spent several years developing a genetically encoded sensor to identify the lifecycle phase of individual living cells in real time. Now he has been able to validate that the sensor works.





### **KGI Community Celebrates the Life of Dean Kathy Webster**

On Jan. 9, 2019, the KGI community celebrated the life of Kathy Webster, the founding dean of the KGI School of Pharmacy and Health Sciences, who passed away in December 2018 after a brave battle with cancer.

A visionary leader and a genuine innovator in higher education, Kathy was named founding dean in 2013 and successfully led the school from candidate to accredited status. Her incredible energy and dedication made her vision for the school's future a reality.

Kathy constantly encouraged KGI's faculty, staff, and students to enrich the community. Events such as PharmCAMP, Drug Take Back Day, and the NAMI Walk for Mental Health have built KGI's culture of service and support in lending a helping hand to Claremont and other local communities.

She also devoted her pharmacy career to the development of student pharmacists. Prior to KGI, she served at the University of Maryland Eastern Shore, University of the Incarnate Word, and Campbell University. Throughout her academic career, Kathy was instrumental in the development and accreditation of several pharmacy programs. As the KGI community

celebrated her life, they reflected on her impact on student pharmacists across the nation.

During the Celebration of Life event in January, KGI President Sheldon Schuster shared a note he received from Ralph Saroyan, who was Kathy's first faculty advisor at the University of the Pacific, where she began studying pre-pharmacy at the age of 18. She earned her Doctor of Pharmacy degree from Pacific in 1978.

Ralph wrote: "Toward the end, she shared her struggles with me personally and her goals were to get the School accredited and graduate the inaugural class, both of which she accomplished. She had to leave this earthly life with a smile on her face knowing that she met those goals. We will all miss her; yet, we will all keep special memories of how she touched our lives."

In an effort to honor Kathy's legacy and the impact she made in pharmacy education, KGI created an Endowed Chair in her name. Future deans in the KGI School of Pharmacy and Health Sciences will receive the prestigious recognition of carrying her name and legacy forward as KGI continues to build on the foundation she set.

### **Professor Publishes Study of Pharmacy Students and Entrepreneurship**

KGI Professor Sally Huston believes entrepreneurship is essential for the pharmacy profession to progress, and for pharmacists to embrace new opportunities and roles in an evolving field. Her research results on this topic appeared in the November 2018 issue of the *American Journal of Pharmaceutical Education*.



### **KGI Signs Articulation Agreement with Arizona State University and Whittier College**

KGI expanded its list of articulation agreements to 25 institutions, helping prospective students to make a seamless transition into the master's programs within the Henry E. Riggs School of Applied Life Sciences. The most recent additions to the list are Arizona State University and Whittier College.



### **Two KGI Students Awarded Public Health Genetics and Precision Medicine Fellowships**

Students Jacob Comeaux and Jennifer Rios of KGI's inaugural Master of Science in Human Genetics and Genetic Counseling program were selected for the competitive Public Health Genetics and Precision Medicine Fellowship awarded by the National Society of Genetic Counselors professional organization.



## **February 2019**

### **Minerva Undergraduate Students Gain Research Experience at KGI**

Two Minerva Schools at KGI undergraduate students Corey Orndorff and Vy Tran spent the summer as members of KGI Assistant Professor Travis Schlappi's research team designing and developing a low-cost medical device able to diagnose urinary tract infections in less than an hour.



## **March 2019**

### **Healthcare Report Findings Support KGI's Vision for School of Medicine**

The findings of the California Future Health Workforce Commission make it clear: The medical school that KGI plans to establish is sorely needed. The report noted how particular regions of the state, including Inland Empire communities close to KGI's Claremont campus, face the greatest shortages of healthcare professionals, especially primary care physicians.

### **CRISPR-Chip Enables Digital Detection of DNA Without Amplification**

Researchers have found multiple applications for the CRISPR (Clustered Regularly Interspersed Short Palindromic Repeats) gene editing technology since it came into use by the scientific community. KGI Assistant Professor Kiana Aran is the first to combine the power of CRISPR's nucleic acid targeting with the ultra-sensitivity of graphene, making it possible to digitally detect DNA without amplification.

### **KGI Students Share Expertise in Rare Neurological Disease Special Report**

In an exciting opportunity to showcase their development in the field, six KGI students from the School of Pharmacy and Health Sciences and the Henry E. Riggs School of Applied Life Sciences contributed articles in the fifth annual Rare Neurological Disease Special Report released earlier in March.



**April 2019**

### **A Leader in Class and on the Court**



For most students, undertaking the KGI Postbaccalaureate Premedical Certificate (PPC) program is enough of a challenge. But Corinne Bogle, PPC '19, decided she would continue playing for the Claremont-Mudd-Scripps women's basketball team during the program.

### **Aponte-Ubillús Launches BioMarin Career through PhD Program**

The Master of Bioscience degree Juan José Aponte-Ubillús earned at KGI in 2013 set the foundation for his career in biotechnology. But KGI's Cooperative Awards Student Training PhD program made him the industry scientist he is today. Aponte-Ubillús, who earned his PhD in 2018, is employed as a scientist at BioMarin, a world leader in biopharmaceuticals for rare genetic diseases.



### **Four PharmD Students Transform KGI Free Clinic from Dream to Reality**

Samantha Garcia, Monique Macias, Huy Truong, and Melissa Vu represented KGI at the Student National Pharmaceutical Association regional competition, and won the Prescription of Service category with their proposal of the KGI Free Clinic. They then set their sights on implementing the idea that greatly affected the underserved community.

## May 2019

### **KGI Community Celebrations 251 Graduates in 18th Annual Commencement Ceremonies**

KGI capped a memorable 2018-2019 academic year with its 18th Annual Commencement Ceremony on Saturday, May 18 at the Sheraton Fairplex Conference Center, featuring 251 graduates and more than 1,400 attendees.



### **KGI is the First Participant in the Genomenon Genetics Education Program**

KGI became the first academic partner in a new genomics education program launched by Genomenon, creator of the Mastermind genomic search engine providing search results from the full-text database of 6.5 million genomic-focused scientific articles.

### **Students See Medicine in Action Through Partnership with Pomona Valley Hospital Medical Center**

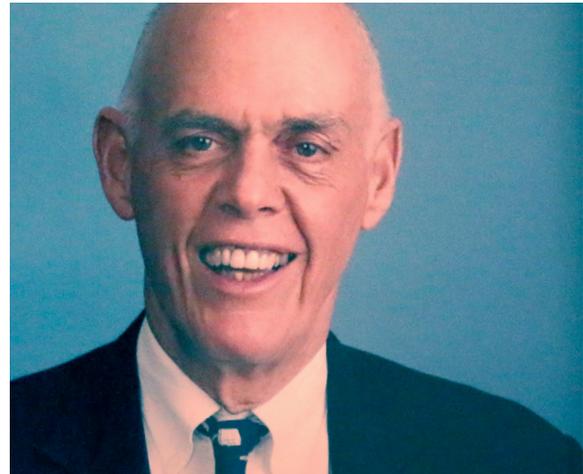


Two Master of Science in Applied Life Sciences students, Ryan Elshimali and Amelia Huynh, shadowed a physician at Pomona Valley Hospital Medical Center in a new partnership that expands the relationship between KGI and the healthcare institution, which already serves as a pharmacy practice rotation site for KGI's PharmD students.

## June 2019

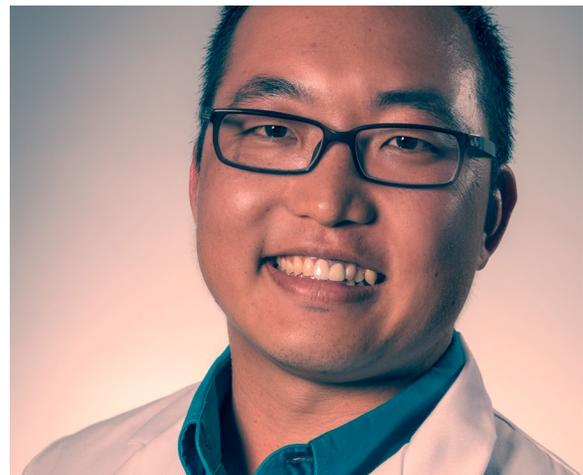
### **KGI Community Mourns the Loss of Trustee Emeritus Stanford Phelps**

KGI shared the news that Trustee Emeritus Stanford N. Phelps passed away on June 6, 2019 at the age of 84. Stan was a tremendous colleague and friend to the KGI community. He served on the Board of Trustees for many years and was a significant benefactor toward the success of KGI.



### **Chris Lim Named First Recipient of Harvard-Affiliated Clinical Informatics Internship**

Chris Lim, PharmD '20, is the first and only pharmacy student in the nation selected for a pharmacy clinical informatics summer internship with the Division of Clinical Informatics, an academic and research group affiliated with the Department of Medicine at Harvard Medical Faculty Physicians at Beth Israel Deaconess Medical Center in Boston.



## July 2019

### First Residents Move In to Oasis KGI Commons

As KGI shifts to a residential campus with its first-ever housing complex, Oasis KGI Commons opened its doors in July with the first residents moving in. The complex provides an apartment community featuring contemporary amenities and a staff dedicated to student success.

Within Oasis KGI Commons, there is 10,000-square feet of classroom space and a Medical and Assistive Device Lab for KGI's Master of Science in Medical Device Engineering program. The complex also features the Gayle Carson Riggs Student Center, fitness center, meditation room, and pool.

Apartment units are available for KGI students, Claremont Graduate University students, and The Claremont Colleges' faculty and staff. More information is available at [oasisclaremont.com](http://oasisclaremont.com).





KECK GRADUATE INSTITUTE (KGI) WAS FOUNDED IN 1997 AS THE FIRST HIGHER EDUCATION INSTITUTION IN THE UNITED STATES DEDICATED EXCLUSIVELY TO EDUCATION AND RESEARCH RELATED TO THE APPLIED LIFE SCIENCES. KGI OFFERS INNOVATIVE POSTGRADUATE DEGREES AND CERTIFICATES THAT INTEGRATE LIFE AND HEALTH SCIENCES, BUSINESS, PHARMACY, ENGINEERING, AND GENETICS, WITH A FOCUS ON INDUSTRY PROJECTS, HANDS-ON INDUSTRY EXPERIENCES, AND TEAM COLLABORATIONS.

A MEMBER OF THE CLAREMONT COLLEGES, KGI EMPLOYS AN ENTREPRENEURIAL APPROACH AND INDUSTRY CONNECTIONS THAT PROVIDE PATHWAYS FOR STUDENTS TO BECOME LEADERS WITHIN HEALTHCARE AND THE APPLIED LIFE SCIENCES. KGI CONSISTS OF FOUR SCHOOLS: THE HENRY E. RIGGS SCHOOL OF APPLIED LIFE SCIENCES, THE SCHOOL OF MEDICINE, THE SCHOOL OF PHARMACY AND HEALTH SCIENCES, AND THE MINERVA SCHOOLS AT KGI.

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