

Healthcare Pathways



State of California



Created for Students by Students

UC Davis Rural PRIME Program - Building Leaders in Rural Healthcare

More than 5 million Californians reside in areas designated as rural. Rural patients have advanced levels of chronic conditions, higher rates of hospitalizations and more cancer deaths. Rural areas in general, offer less access to primary care and a limited ability to access specialized medicine.

The University of California Davis' Rural Programs in Medical Education (UC Davis Rural-PRIME Program) is an innovative program designed to meet rural healthcare needs by preparing students to be physician leaders in underserved communities. With training in public health issues, telemedicine and other technologies, students receive a combined medical doctorate and master's degree in public health, medical informatics (the study of computer applications in medical care), or other health field.

Students share a commitment to primary care, Obstetrics/Gynecology (OB/GYN), general surgery, and emergency medicine in rural areas. They reside and study in these underserved communities alongside local health professionals.

The UC Davis Rural-PRIME program currently partners with four training sites in underserved California communities. The training sites in Truckee, at the Tahoe Forest Health System, in Reedley, at Sierra Kings District Hospital, and in Jackson, at the Sutter Amador Hospital, now instruct groups of advanced students on the use of high-tech videoconferencing, distance diagnostic exchanges, and simulation equipment. A new training site in Redding, at the Shasta Community Health Center, will soon join in mentoring students and providing valuable knowledge of examination techniques, interview skills, and the unique challenges of treating patients in rural populations.



Rural-PRIME Student Tona Rodriguez

Students in the program rotate between departments of pediatrics, OB-GYN, and family practice. They learn practical knowledge from interacting with patients, discussing specific specialized medicine during expert seminars, and training in advanced telecommunication technology. This model of training physicians in non-urban medicine using high-tech tools will allow UC Davis Rural-PRIME graduates to become leaders and advocates who are able to make a big difference in small and underserved communities.

For more information, please visit:

UC Davis Rural-PRIME

http://www.ucdmc.ucdavis.edu/medschool/rural_prime/

Annual Symposium of University of California PRIME programs

<http://www.chancellor.uci.edu/primesymposium/index.php>

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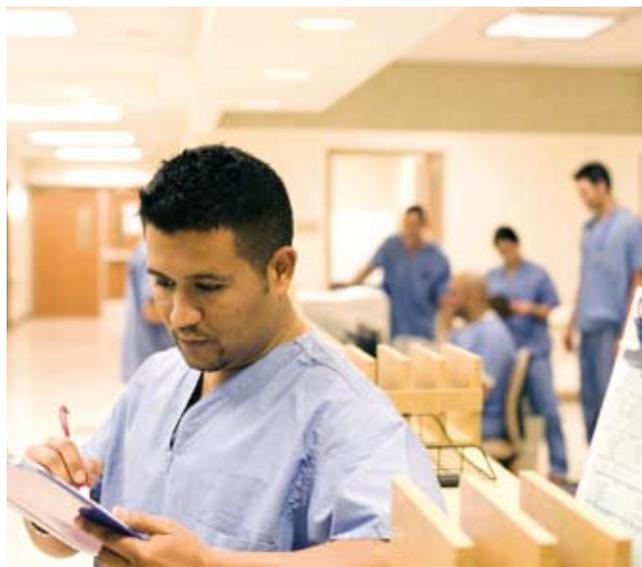
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PRIMARY CARE – Gateway to Health

Primary care emphasizes health education, prevention and wellness, as well as early screening and detection of disease. Primary healthcare providers develop long-term relationships with patients, conduct routine tests and screenings, manage chronic disease, and serve as a starting place for advanced levels of specialized medicine.

With seven million people in California without health insurance, the need for primary care physicians is continuing to rise. California's next generation of primary care professionals will have a large role in the health of our communities in the near future.

Unfortunately, there are fewer practicing primary care physicians and a rising need for services. Community clinics have reported severe shortages of physicians and other healthcare professionals. These are the front lines of the healthcare system.



How can you make a difference? Choose to be a Primary Care Provider! Do you have what it takes to rise to the challenge and make a difference in your own community? If so, many career opportunities are available in family medicine, general internal medicine, pediatrics, and Obstetrics/Gynecology (OB/GYN). A great deal of support is also available to help you reach your career goals.

Many colleges, universities, and hospitals have partnered to train medical students by starting new educational programs and innovative clinical training sites to promote mid-level primary health careers. Programs expose students to the wide variety of health professions, including primary care.

The California Primary Care Association represents more than 600 not-for-profit clinics and community health centers. They provide training, educational events, and an online employment resource for professionals statewide. Please visit the California Primary Care Association at <http://cliniccareers.cPCA.org/index.cfm>.

Additional support can be found for primary care providers who serve in areas designated as health profession shortage

areas (HPSA) or medically underserved areas/medically underserved populations (MUA/MUP). To learn more about shortage designation areas, please visit http://www.oshpd.ca.gov/HWDD/Shortage_Designation_Prog.html.

Loan repayments, scholarships, and other opportunities are also available to providers who wish to serve in these areas. Please visit the following for more information:

National Health Service Corps (NHSC)/State Loan Repayment Program (SLRP)
<http://www.oshpd.ca.gov/HWDD/SLRP.html>

Health Professions Education Foundation
<http://www.oshpd.ca.gov/HPEF/SchlrsHP.html>





What is your background and how did you become interested in healthcare?

I was born in South America and grew up in the San Francisco Bay Area. There were many aspects of medicine that peaked my interest early on in my life. Our family had no health insurance and many times, just like other first- or second-generation Americans, I would accompany my family to doctor visits at free clinics and act as a translator. It was there that I noticed the difference between doctors that communicated well and those that did not. It was clear to me that the “art” of medicine was equally as important as the science since the better the communication, the more likely patients will follow directions and receive follow-up treatment.

What are your experiences and education in medicine?

My desire to become a doctor came early on in my life. I was first exposed to direct patient care as a “candy-striper” or hospital volunteer while in high school. After community college, I enrolled at UC Davis to study exercise physiology.

I attended UC Irvine, in a joint graduate degree program which combines a medical doctorate degree with a master’s degree in business administration. The MBA program focused on information technology. One of the applications of this training was the ability to work on projects that combine technology and healthcare for vulnerable populations such as migrant farm workers.

As a medical resident and later as a faculty attending physician, I helped with medical missions to Mexico and Peru. As an undergraduate student I had the good fortune of gaining experience in health policy and health data with the Office of Statewide Health Planning and Development. These varied exposures helped mold my perspectives on healthcare delivery in addition to the science/art of medicine.

I completed my residency at the Long Beach Memorial Family Medicine Residency Program following medical school, and stayed on as a faculty member. Currently, I see patients in the California Central Coast and still serve as a clinical faculty for several medical schools. Teaching is very important to me and I will always include it in my priorities. I also continue to be a part of many professional organizations.

“Be sure to protect yourself against the ‘anti-mentors’ who tell you that your path is too difficult or your goals are not realistic.”

What do you say to students looking to enter medical school?

My advice would be to know when to ask for help and how to learn from others. Relying purely on course work and grades is a sure way to NOT get into medical school. You must strive to be more well-rounded. Many applicants to medical school have excellent grades, which is still critical to success, but you must still show the admissions committee that you understand what you are getting yourself into and that you have a purpose for wanting to become a physician.

Admission officials may only have your experiences on paper (such as the personal statement on the application) to make decisions about your future. You can show your inspiration and dedication to the field by listing your evidence-based experience in research or other clinical studies. These experiences come in handy when you are interviewing and also in filling out the various essays that you may be required to write on your secondary applications to medical school.

How do you help students become leaders and professionals in their own community?

Throughout medical school and during residency at Long Beach Memorial Family Medicine, I have always wanted to help others – both patients and fellow students.

Dr. Mario San Bartolomé: Page 4

Biotechnology Careers in California



Biotechnology is a term describing a wide variety of science including agriculture, biomaterials, medicine, engineering, genomics, veterinary sciences, marine sciences, and environmental sciences. Biotechnology involves the manipulation of biological processes. In healthcare, understanding the molecular basis of disease can lead to innovative therapies, safer vaccines, and cheaper, more accurate diagnostic testing methods. How does this industry create jobs for California?

Biosciences (including plant, animal, human, and environmental activities) employed 1.2 million people in the United States in 2004 and generated an additional 5.8 million related jobs.

A wide variety of jobs exist in the field from biologists and chemists to laboratory workers and computer programmers. This research-intensive industry requires a skilled workforce from all education levels. Jobs are created when a patented product, procedure, or test is successful. Jobs can be found at testing labs, research institutions, universities, and private companies.

From the start, California has set the pace for innovation and currently has more biotechnology companies than any other state. The San Francisco and San Diego areas are biotechnology hot spots. Throughout California, a wide variety of biotechnology jobs can be found at a variety of education levels.

EXAMPLES OF BIOTECHNOLOGY JOBS BY EDUCATION LEVEL

<u>Occupation</u>	<u>Average Annual Salary</u>	<u>Education/ Training Levels</u>
Biochemist/Biophysicist	\$91,582	Doctoral degree
Microbiologist	\$78,416	Bachelor's/Doctoral degree
Biological Scientist	\$69,742	Bachelor's degree
Production Planner	\$43,100	Bachelor's degree
Laboratory Assistant	\$46,800	Associate degree/certificate
Laboratory Support	\$31,960	High school diploma

For more information on biotechnology occupations in California, please visit:

<http://www.labormarketinfo.edd.ca.gov/?pageid=136>

...*“Dr. Mario San Bartolomé” (continued from page 3)*

I tell students to have a frame of thought beyond positive thinking. Move past positive thinking and use thoughts and action to make things happen. Look for opportunities. If one door closes, look for another.

What I hope to foster and protect, is that feeling of optimism and professionalism. That feeling you have in your 20's and 30's which drives you to make the health profession better and improve the overall system to serve patients. It begins there, and I intend for the effects of these efforts to lead to our society having even better and more professional physicians.

What is your advice for students interested in healthcare careers?

Students should surround themselves with success and become the most motivated person they know. You become what you think about, so fill your head with becoming an excellent M.D. or healthcare provider and you can make positive changes in your community. Know when to ask for help and how to learn from others. Be sure to protect yourself against the “anti-mentors” who tell you that your path is too difficult or your goals are not realistic.

Preparing for an Early Start: Biotechnology Careers

Advances in biotechnology directly influence the healthcare industry in the diagnoses of disease, medicines used for treatment, and the monitoring of chronic conditions. Examples include vaccine development, genetic-based treatments, and diagnostic innovations. Industry developments require a new workforce capable of detailed research and analysis, knowledge of scientific procedures, and detailed reporting. Start preparing early for this exciting field.

While in high school, focus on biology, chemistry, physics, computer science, and mathematics. Many high schools offer a specific curriculum for the biotechnology sciences.

Some of the skill sets you can learn while in high school include:

- Standard lab operating procedures
- Safety and documentation procedures
- Pipetting and micro-pipetting
- Cell cultures and DNA isolation
- Protein and gel analysis
- VIS and UV spectrophotometry
- DNA synthesis and sequencing
- On-the-job career training through job-shadowing and internships



California Community Colleges, California State University, University of California, and private colleges have introduced majors featuring biotechnology-related programs. These programs include biochemistry and molecular biology, bioinformatics (information technologist), laboratory and biomedical equipment technologies, medical engineering, and industrial / manufacturing engineering. These areas of study may require a solid foundation in organic chemistry, microorganisms, medical and bio-ethics, statistics, physiology, and genetic study.

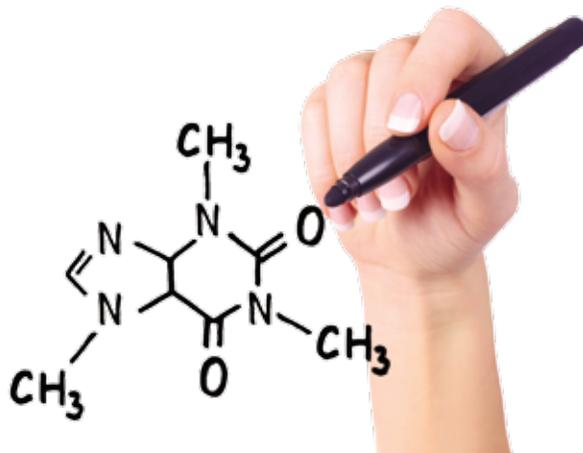
There are many jobs in both the business and science sides of this fast growing industry. The variety of jobs and challenges in this field are changing constantly, as are the skill sets required. Find your way by preparing for your future in biotechnology today!

For more information, please visit:

California Community Colleges - Biotechnology Regional Centers:
<http://www.cccbitech.org/list.html>

California State University Program for Education and Research in Biotechnology:
<http://www.calstate.edu/csuperb/>

University of California Biotechnology and Genomics programs:
<http://www.universityofcalifornia.edu/research/biotech.html>



SPOTLIGHT: Laboratory Health Science Careers



Laboratory health professionals often work out of view, but they care for patients on a daily basis by performing critical detection and diagnostic tests using the latest scientific tools and specialized equipment. They perform vital healthcare procedures, such as identifying viruses and infections, and are experts in advanced specimen collection and processing. They also perform essential identification of cancerous growths and blood disorders. Experts in these medical technologies are integral for a correct medical diagnosis and in planning a patient's treatment.

Many specialized programs exist within California Community Colleges, the California State University, the University of California, and private colleges. These unique programs challenge students while providing training and guidance toward a solid foundation in computer science, biology, and chemistry.

Graduates find a wide variety of high-tech career options. For those practicing in the field, certification and state licensing options are available throughout California for medical technologists, medical laboratory technicians, and phlebotomy technicians.

Clinical Laboratory Roles, Duties, and Salary Ranges

Cytotechnologist (CT)	Prepares and examines cells in tests such as pap smears for signs of cancer. Median income range: \$68,500 to \$70,500 annually.
Histologic Technician (HT) or Histotechnician	Performs advanced preparations of body tissue for slides from biopsies. Median income range: \$41,400 to \$50,100 annually.
Histotechnologist (HTL) or Histologist	Performs advanced specimen collection and processing, electron microscopy, and lab supervision. Median income range: \$29,600 to \$45,700 annually.
Medical Technologist (MT) or Clinical Laboratory Scientist (CLS)	Performs full range of lab tests and is able to communicate technical information. Median income range: \$37,600 to \$50,300 annually.
Medical Laboratory Technician (MLT) or Clinical Laboratory Technician (CLT)	Performs analysis of routine lab tests using microscopes and other specialized equipment. Median income range: \$24,700 to \$38,300 annually.
Phlebotomy Technician	Draws blood samples for testing and assists in detection and diagnosis of disease. Median income range: \$19,500 to \$27,300 annually.

For more information, please visit:

www.ascp.org/Membership-Communications/ASCP-Student-Handbook.aspx

www.labsarevital.com

www.labtestsonline.org

<http://www.bls.gov/oco/ocos096.htm>

<http://www.techniciansalaries.com/index.html>



Sugar and Salt - How Much is Too Much?



The school day comes too early - and seems to end late in the evening. Surrounded by packaged foods, restaurants and convenience food outlets, eating a balanced diet can be a struggle. Is this a health disaster waiting to happen?

A common theme to health guidelines is to reduce sodium intake and cut back on calories from processed sugar. Salt and sugar are used heavily by manufacturers to flavor and preserve foods of all types. How do we know how much is too much?

SALT

Salt is found in foods naturally and contains essential nutrients, sodium and chloride, which help regulate blood pressure and promote healthy muscle and nerve function. Sodium (salt) use at the table makes up only 6% of the sodium in our diet, while processed foods account for 77%.

A diet high in sodium increases the risk of having high blood pressure, a major cause for heart disease and stroke. Most of the salt we eat comes in processed foods and from restaurants, but can also be found in the most common places in surprisingly high amounts. Many breakfast foods, frozen or canned lunch and dinner entrees, and condiments contain high amounts of sodium.

SUGAR

Just as with salt, sugar is everywhere. Many prepared foods are loaded with sugar. Food labels have many names for the sugar content, such as glucose, sucrose, fructose, and maltose.

Sugar does not provide any essential proteins, minerals or vitamins – only energy from “empty calories.” In order for our bodies to process excessive amounts of sugar, minerals and enzymes are used heavily, which can cause problems with blood sugar levels. When unable to convert all the sugar into energy, our bodies convert the sugar to fat and store it.

CAUTION! THESE FOODS ARE LOADED!

	<u>HIGH SODIUM (SALT) CONTENT</u>	<u>HIGH SUGAR CONTENT</u>
Breakfast:	cereals, fruit juice-drinks	cereals, fruit juice-drinks
Lunch:	canned soup, frozen meals	sodas and energy drinks
Dinner:	pizza, cheese, ham and processed meats	pasta sauces
Condiments:	spices, salad dressings, sauces, mayo	ketchup
Snacks:	chips, cakes, cookies, doughnuts	cakes, cookies, doughnuts

UNDERSTAND WHAT YOU EAT – “DON’T SUPERSIZE ME!”

With so many foods and drinks containing high amounts of sugar and sodium, it is easy to consume more than we need. A 12-ounce soda is the equivalent of 10 teaspoons of sugar! A single serving bag of potato chips (1.75 oz.) has up to 550 mg of sodium! That’s 23% of the recommended daily allowance (2,400 mg). Remember, unhealthy foods are not labeled as such.



You can avoid the types of foods that contribute to heart disease, diabetes, cancer, and other health problems by making incremental changes to your daily routine, such as limiting the number of juice-drinks and sodas consumed. Inspect nutrition labels and be aware of the number and size of single servings. Limit portion sizes at every meal. Remember to eat smart, exercise, and make good diet decisions every day. Become a student of good health for your future!

For nutrition information and dietary guides, please visit:

http://www.nutrition.gov/nal_display/index.php?info_center=11&tax_level=1&tax_subject=389

New Healthcare Workforce Resources Online

Calendar of Events X



An online Calendar of Events is now available. The calendar will highlight upcoming health workforce related career fairs, job training workshops, conferences, and other events throughout California.

Scholarship Listing



A searchable list of approximately 100 scholarships is also available online. The listing includes all scholarship details, including application deadlines.

The Calendar of Events and scholarship listing are available at the HWDD web site:
http://www.oshpd.ca.gov/HWDD/HCTP_resources.html

Distribution List X



To join our contact distribution list and receive monthly communications from HWDD, please provide your complete contact information to Kevin Romero, Health Careers Training Program Coordinator, at kromero@oshpd.ca.gov.



Additional Loan Repayment Funds Now Available X



An additional \$200 million in funding by the American Recovery and Reinvestment Act funding is now available for the National Health Service Corps (NHSC) Loan Repayment Program (LRP). This program provides \$50,000 to clinicians for two years of service at an approved site in a health professional shortage area.

Don't hesitate! Applications are being accepted now through September 30, 2010 or until funds are expended.

For more information on eligibility and service commitment, please visit:
<http://www.nhsc.hrsa.gov/loanrepayment/>

Healthcare Pathways

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Send us your ideas, letters, announcements, or stories today! Announcements of scheduled events to be published must be mailed to our editorial office at least three months in advance. Be sure to include your name, address, and telephone number on all correspondence. The *Healthcare Pathways* editorial staff reserves the right to edit all material.



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