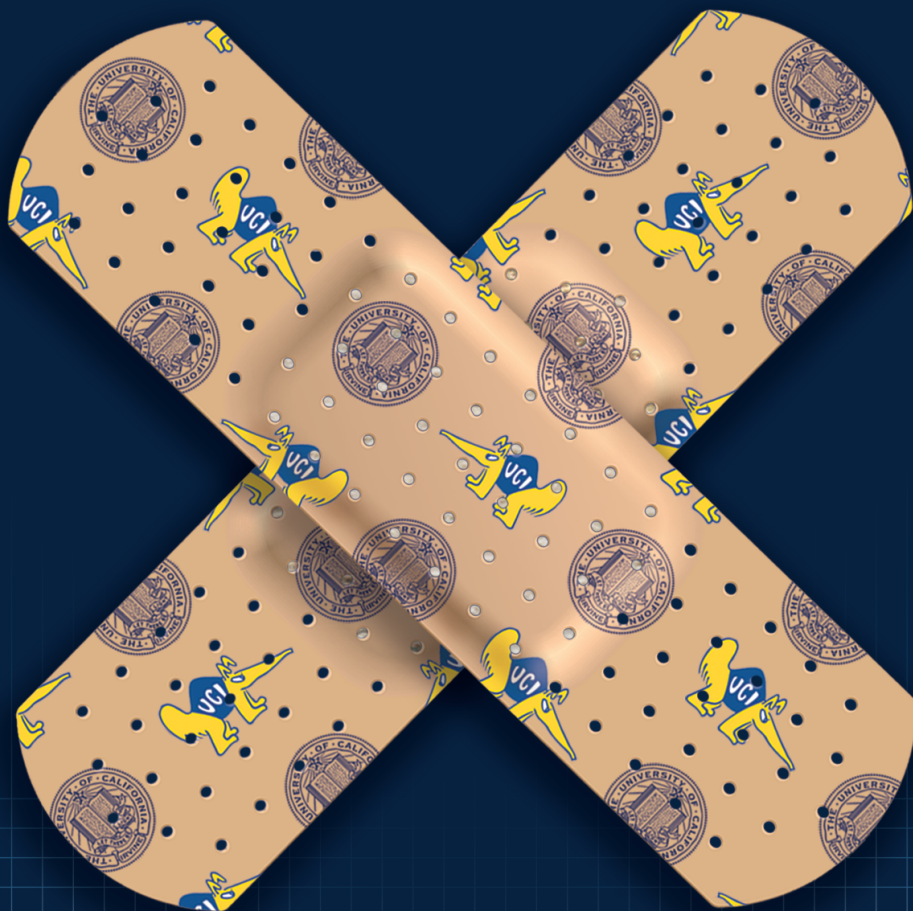


HEALING U

Health Education at UCI



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An exhibit in the
UC Irvine Langson Library
Muriel Ansley Reynolds
Exhibit Gallery

April 2014 - October 2014

Featuring a talk by the
Ralph Clayman
Dean, UCI School of Medicine

Welcome to the UC Irvine Libraries' spring exhibit, *Healing U: Health Education at UCI*.

Healing U showcases the evolution of UCI's innovative health education programs that are revolutionizing how tomorrow's doctors, nurses, public health, and pharmaceutical sciences professionals are being trained, and are shaping the future of healthcare in our community.

The exhibit illustrates the fascinating history of UCI's School of Medicine, the emergence of the Nursing Science Program, and the expansion of the Program in Public Health and the Department of Pharmaceutical Sciences. It portrays the latest medical education tools and techniques, the implementation of evidence-based care, and emerging issues in health and society. The important role of library resources in supporting this learning environment is also highlighted.

We are delighted to have Ralph Clayman, Dean of the UCI School of Medicine, as the featured speaker for our exhibit opening event on April 29, 2014.

I hope you enjoy the exhibit and return to view others in the future.

Lorelei Tanji
University Librarian

Health Education at UCI 1897-2014

Medical education at UCI had two beginnings and many current manifestations. One beginning is when the UCI College of Medicine opened April 5, 1967, but there is also another when several medical schools (founded at the turn of the last century) combined to become a source of medical education in Southern California from 1896-1966. In recent years the programs educating students about health at UCI have grown from a School of Medicine to adding a new Department of Pharmaceutical Sciences and new programs in Nursing Science, and Public Health. The growth of these programs has been encouraged by an awareness of the complexity of solving health issues for both individuals and society.

The need for nursing professionals in California has been acutely felt in California since the late 1980s. The establishment of a professional program at UCI meets an important regional need. The addition of a Master's program in Nursing as well as the recent advent of a Doctoral program in Nursing allows UCI to help create professionals who can operate in today's complex health environment. The Program in Public Health is focused on creating, integrating, and translating population-based knowledge into preventive strategies for reducing the societal burden of human disease and disability through excellence in research, education, and public service. The Department of Pharmaceutical Sciences creates graduates who can combine a broad range of scientific disciplines that are critical to the discovery and development of new drugs and therapies. Their Medicinal Chemistry and Pharmacology (MCP) graduate program is an innovative interdepartmental gateway program leading to a PhD degree in either Chemistry, Molecular Biology & Biochemistry, Pharmacology, or Pharmaceutical Sciences.

Health education has grown and changed as modern educational tools include many ways of bringing photographs, videos, and simulations to learning about diagnosing and treating health problems. Changes in health education include using new methods to analyze and implement research and evaluating evidence to make health decisions. There has also been growth in Translational Science, "fast-tracking" promising research discoveries into clinical trials. Finally UCI's health education does not end with students graduating. The campus shares health information with the public through bulletins, news releases, and classes. The encouragement of open access journals and publishing, the development of UCI and UC digital archives for research papers and experimental data means that the fruits of UCI's vibrant research community are increasingly available to everyone.

Pacific School of Osteopathic Medicine

The journey from the Pacific School of Osteopathic Medicine (PSO) to the UCI College of Medicine is shown using archival documents and photographs to illustrate this unique transition. Before its transformation PSO was oldest continually operating medical school in the Los Angeles area and the second school of Osteopathic Medicine in the US. It was founded in 1896 as the Pacific Sanitarium and School of Osteopathic Medicine (PSO) in Anaheim, CA. Its founders were A.C. Moore, one of the first graduates of osteopathic medicine, and B.W. Scheurer, a medical doctor with German and American training. One of the few kinds of professional training open to women in the early 20th century was the study of Osteopathic medicine, note the third graduating class at PSO.

1. **"Pacific Sanitarium and School of Osteopathy, Anaheim, CA. ca. 1896."** UCI Libraries Special Collections & Archives. California College of Medicine Records [AS-027].
2. **"Matriculation Certificate for Miss Margaret Roberts, Sept 2, 1896."** UCI Libraries Special Collections & Archives. California College of Medicine Records [AS-027].
3. **"Pacific School of Osteopathy Class of June 1899."** UCI Libraries Special Collections & Archives. California College of Medicine Records [AS-027].

This was the 3rd graduating class of Pacific School of Osteopathy (PSO) and as you see women were commonly welcomed as students. PSO awarded the Diplomate of Osteopathy, DO.

4. **"The Pacific College of Osteopathy Clinic reports for the year ending May 1, 1909."** UCI Libraries Special Collections & Archives. California College of Medicine Records [AS-027].

In 1900 the Osteopathic Association of the State of California (OASC) was formed and California recognized the profession. In 1904 the PSO moved to Los Angeles and changed its name to the Pacific College of Osteopathy (PCO) moving into buildings at the corner of Mission and Daly near Los Angeles County General Hospital. With more rigorous academic requirements for licensing PCO increased its curriculum from two to three years and the school begins awarding the Doctor of Science of Osteopathy (D.O.).

College of Osteopathic Physicians & Surgeons

In 1914 LACO and PCO merged to become the College of Osteopathic Physicians and Surgeons (COPS). The curriculum increases to four years. COPS became the most enduring of the California Osteopathic schools. By 1936, the school starts a graduate program that offers masters and doctoral degrees, including PhDs. At the time students learned that Doctors of Osteopathy (DO) could prescribe drugs, do surgery and with the rapid growth in knowledge their philosophic ideas about diet, exercise, and whole body health were beginning to make more sense to MDs.

5. **"Photograph of College of Osteopathic Physicians & Surgeons, ca. 1930."** UCI Libraries Special Collections & Archives. California College of Medicine Records [AS-027].

COPS expanded and grew with the ability of DOs to see patients in the hospital. This "right to practice" allowed them to place patients into a special wing of the LA County Hospital when they needed more extensive treatments. It also allowed students to see and assist with cases that their instructor wanted them to observe.

6. **"Photograph of College of Osteopathic Physicians & Surgeons students in classroom ca. 1947."** UCI Libraries Special Collections & Archives. California College of Medicine Records [AS-027].
7. **"Photograph of College of Osteopathic Physicians & Surgeons student at desk, ca. 1947."** UCI Libraries Special Collections & Archives. California College of Medicine Records [AS-027].
8.
 - a. **"Syringe. ca. 1948."** California College of Medicine Records [AS-027].
 - b. **"Portable formulation case, ca. 1948."** California College of Medicine Records [AS-027].
 - c. **"Medical Instrument, ca. 1948."** UCI Libraries Special Collections & Archives. California College of Medicine Records [AS-027].

While still focusing on the total health of the body, Osteopaths studied surgical techniques and pharmacology to aid in helping the body back to its normal state. These medical tools were donated by a former faculty member at COPS.

9. **"Osteopathic Oath Plaque."** ca. 1948. UCI Libraries Special Collections & Archives. Forest Grunigen files on the California Osteopathic Association [AS-083].

Osteopathy philosophically looks at the whole patient and their health. Osteopathy as a description of an alternative medical philosophy was created by Dr. Andrew Still in the late 1800s from the roots "osteo" (bone) and "pathos" (suffer). He sought a more holistic approach to curing disease. He believed disease interrupted the flow of blood and nervous impulses but through bone manipulation one can restore the flow and restore health. A modern definition from the American Osteopathic Association says "Doctors of osteopathic medicine emphasize helping each person achieve a high level of wellness by focusing on health education, injury prevention and disease prevention."

Transitioning to California College of Medicine

10. **"Signing the contract agreement which is the first of three steps towards the eventual unification of the COA and CMA."** "COA-CMA sign contract for unification." *The California Clinician* 57 (4) 1961.

This photograph captures the first of the last three steps towards the unification of the California members of the 18,000 member medical and 2,200 member osteopathic professions into a single medical organization. Specifically part of the agreement was for the COPS to remove the word Osteopathic from its name and submit to AMA accreditation. There were also agreement for possessors of the DO degree to have it convert to MD. Prime objectives of the merger was to improve the health services available to the citizens of California and to expand present medical teaching facilities.

As early as 1943, Forest Grunigen, D.O. was elected president of COA on the platform of unifying the osteopathic and allopathic professions in California. Grunigen and his colleagues (Vincent Carroll, D.O., Glen Cayler, D.O., and Dorothy Marsh, D.O.) moved into national professional politics to promote merger of the American Osteopathic Association and the American Medical Association, or at least to obtain permission from the national organizations to enable the state associations to handle the negotiations between the two professions according to their own discretion.

The talks began again in the 1950s with further discussions at both the DO and MD national meetings. Again there was strong opposition but it was thought by some this would create a stronger profession. At the time DOs could prescribe drugs, do surgery and with the rapid growth in knowledge, their philosophic ideas about diet, exercise, and whole body health were beginning to make more sense to MDs.

11. **"Doctor's wives with UC California College of Medicine plaque."** *The Cortex* 1966. Los Angeles : Student Association, College of Osteopathic Physicians & Surgeons.

In 1962, Proposition 22 passes enabling DOs to fall under jurisdiction of the California Board of Medical Examiners. As a result, members of the class of 1962 are granted MD degrees. Prior graduates of the school have their certificates of osteopathic medicine converted to MD degrees. Thanks to political efforts of Senator Stephen Teale, the California State legislature voted to accept California College of Medicine (CCM) as part of the University of California, effective January 1, 1964. This photograph taken in 1966 at the CCM-UC shows how the campus embraced its identity as the newest UC medical school.

Moving to UC Irvine

The CCM became part of UC system with the intention of being another medical school in Southern California. One option considered was for it to be part of the planned UCI campus. The possible pros and cons of various possible sites for the CCM-UC are shown here. Some of the basic requirements of the report were: how to preserve the California College of Medicine's identity, how to allow the school to remain in Southern California, and increasing the proportion of clinical teaching.

12. **"Table 3: Characteristics of most promising sites for CCM."** Alternative locations for the California College of Medicine. Mark S. Blumberg, M.D. Assistant to the Vice President of the University for Administration. University of California, Berkeley. March 27, 1967.
13. **"Go to Irvine."** *The Cortex* 1967. Los Angeles : Student Association, College of Osteopathic Physicians & Surgeons.

1896 Pacific Sanitarium and School of Osteopathic Medicine (PSO) established in Anaheim

14. **"Scholarship and agreement between Lynn R. Foree and The Pacific School of Osteopathy and Infirmary, September 1, 1900."** UCI Libraries Special Collections & Archives. California College of Medicine Records [AS-027].

1904 Pacific School of Osteopathy (PSO) moves to LA and become Pacific College of Osteopathy (PCO)

15. **"The Pacific School of Osteopathy term report blank, ca. 1904."** UCI Libraries Special Collections & Archives. California College of Medicine Records [AS-027].

1905 Los Angeles College of Osteopathy (LACO) established

1914 LACO and PCO merge to form College of Osteopathic Physicians & Surgeons (COP&S)

16. **"College of Osteopathic Physicians & Surgeons emblem."** *The Cortex* 1956. Los Angeles : Student Association, College of Osteopathic Physicians & Surgeons.

Proposition 20 passed in CA, allows separate Osteopathic Licensing Board

17. **"Letter to American Osteopathic Association from Theodore Roosevelt, December 13, 1917."**
UCI Libraries Special Collections & Archives. California College of Medicine Records [AS-027].
18. a. **"35th Annual Tournament of Roses Pasadena California, New Year's Number."** A.
Vaillancourt, artist. *Pasadena Star-News*, 1924.

b. **"College of Osteopathic Physicians & Surgeons Rose Parade entry Alice in wonderland."**

"Osteopathic College. The beautiful story of Alice in Wonderland was revived in the float of the Los Angeles College of Osteopathic Physicians and Surgeons, one of the striking entries. Those who rode were Miss Edna Miller, Miss Lillian Armour, Miss Norma Plantico, Miss Leotia Flower, J.G. Painter, Gordon Hatfield, J.C. Humphrey, Ray Huff, William Bell, F.M. Hildreth, and K.E. Palmer.

UCI College of Medicine

CCM-UC became the UCI College of Medicine officially on April 5, 1967. There were many news articles and editorials in the papers about Orange County's first medical school. At the time much of the discussion was around how physicians would get their training and the anticipated growth of Orange County's need for health care. Dr. Warren L. Bostick was the first dean of the UCI College of Medicine (COM). The new school allowed the new dean to explore a new approach to medical education and medical training. The, un-built at the time, Medical School was sited on a 122-acre site on the western edge of campus. To prevent an interruption in education, classes were continued to be taught at the CCM-UC buildings in Los Angeles while the Orange County General Hospital was used as the UCI College of Medicine training hospital.

19. **"Medical Benefit for All."** *Daily Pilot* (Newport Beach, CA) April 18, 1968.
20. **"The State's Eighth Medical School: University of California, Irvine."** Warren L. Bostick, M.D., Dean UCI College of Medicine. *California Medicine* 109 (3) 1968.
21. **"Aerial view of an architectural model of UCI California College of Medicine Medical Sciences 1 building, ca. 1968"** University of California, Irvine, Communications Photographs [AS-061].

This architectural model was placed on the ground at the site of the future medical school. You can see the intersection of California Ave and Bridge in the background and the UCI campus buildings in the far distance. Medical Sciences contained the classrooms and laboratories for first and second year medical students arriving in Winter 1969.

22. a. **"Doctors at graduation"** *The Cortex* 1968. Los Angeles : Student Association, College of Osteopathic Physicians & Surgeons.
- b. **"UCI's 3rd commencement June 15, 1968."** UCI Libraries Special Collections & Archives. University of California, Irvine, Communications Photographs [AS-061].

While the medical student were still being educated at the Los Angeles campus of UC CCM, the Class of 1968 doctors experienced graduation on campus with the other UCI students. You can see the (now Langson) Library and the UCI Gateway building in the background as the graduation was held in the large park at the center of campus.

- 23 a. **"UC Irvine graduates 99 new doctors."** *Orange County Register*, June 3, 2013.
- b. **"Natalie Chen celebrates upon learning she has been accepted to the radiology residency program at the Kaiser Permanente Los Angeles Medical Center."** Photograph by Steve Zylius, University Communications. From "The day they became doctors: Graduating medical students learn where they'll serve their residencies." <http://news.uci.edu/features/the-day-they-became-doctors-2/>.

The most recent class of 99 UCI MDs graduated in 2013. Medical students receive information about when they will spend their residencies on "Match Day" (National Resident Matching Program) on March 15, 2013, This will be the next step for most of them in their medical education. They will then graduate with the other UCI students at the June graduation.

24. **"Orange County Medical Center I to UCI Medical Center Hospital transition."** *The Cortex* 1978. Irvine CA: Student Association, College of Medicine.

A teaching hospital was always intended to be part of the UCI College of Medicine (UCI-COM). The Orange County General Hospital (OCGH), built in 1963, was identified as the best possibility for supporting the UCI-COM. However the OCGH was not designed as a teaching hospital. With the funds from the sale of the Osteopathic unit at the LA County General Hospital, the funds that had been part of the California Osteopathic Association (COA), and donations, a fundraising effort was organized in 1974 to build a hospital on the UCI campus. Plans were eventually shelved to develop an on-campus hospital in favor of purchasing Orange County Medical Center and it was renamed UC Irvine Medical Center in 1976. The construction of a new hospital was started in 2005.

UC Irvine Douglas Hospital

The University of California, Irvine Douglas Hospital, named after M.A. Douglas, was opened in 2009 as the most state-of-the art hospital in the region. The seven-story, 482,428-square-foot facility replaces the original hospital building, which was built in 1963. UC Irvine Medical Center has 449 licensed beds and is the principal clinical facility for the teaching and research programs of the UC Irvine School of Medicine. The initial 15 operating rooms were 50 percent larger than those used previously with four more operating rooms being added in 2011.

25. **"Photograph of UC Irvine Douglas Hospital as the last girders are added."** Under Construction Fall 2006. UC Irvine, University of California, Irvine. *New University Hospital: transforming health care, one patient at a time*. Topping Out Edition. Fall 2006. Health Sciences Advancement. 2006.
26. **"Architectural drawing of UC Irvine Douglas Hospital, ca. 2005."** <http://www.evc.uci.edu/mhi/Content/UCIMC.htm>.
27. **"UC Irvine Douglas Hospital, ca. 2010."** rgroup global.

Educating Physicians

Educating physicians has had to evolve with changing treatments and understandings of human physiology but also with the need to face the challenges of operating in a modern complex health care system. Doctors are trained not only to treat patients but to also understand how to choose the right treatment based on the most recent published evidence of effectiveness, furthermore they need to prepare for life-long learning as new treatments are being explored all the time. The rapidly changing nature of how to access and use the most current information has also impacted how to teach that information. Physicians has an increasing array of sources and tools that they can use at the patient's bedside or from mobile devices anywhere they need information. Today, the School of Medicine has 26 departments and 560 faculty members who are involved in teaching, providing medical care and conducting research for health challenges facing the 21st century. The school also has approximately 620 resident physicians and 45 programs accredited by the American College of Graduate Medical Education. One hundred and four medical students are admitted for the Class of 2017.

28. **"Digital notes, outlines and diagrams downloaded onto iPads aid students during lecture courses in the UC Irvine School of Medicine."** Photograph. Steve Zylius, University Communications. <http://news.uci.edu/press-releases/white-coat-ceremony-marks-start-of-imeded-initiatives-second-year/>.

The iMedEd Initiative, UCI's innovative medical education iPad program, was started in 2010. Incoming UC Irvine medical students receive fully loaded iPads, putting at their fingertips all the information they need to study or review. As part of the iMedEd Initiative, the UCI medical school developed a comprehensive, iPad-based curriculum, which includes tablet-based learning and portable ultrasound clinical training – and continues to lead in adapting emerging technologies for all aspects of classroom and clinical training. They were the first in the nation to employ a completely digital, interactive learning environment for entering students. The IMedEd Initiative has been recognized as a 2013-2015 Apple Distinguished Program.

29. **"Conceptual framework of factors influencing first-year medical students' career choice."** Kimberly L. Clinite, et al. Primary care, the ROAD less traveled: What first-year medical students want in a specialty. *Academic Medicine* 88 (10), 2013.

Medicine like many other professions has many specialties. This paper researched how students begin to choose an area of specialization as they start on the long road to professional practice.

30. **Teaching Medical Professionalism.** Edited by Richard Cruess, Sylvia Cruess and Yvonne Steinert. New York: Cambridge University Press, 2009.
31. **The Changing Face of Medical Education.** Penelope Cavenagh; S J Leinster; Susan Miles. Oxford ; New York : Radcliffe Pub., 2011.
32. **Transforming Medical Education for the 21st Century: Megatrends, Priorities and Change.** George R. Lueddeke. London: Radcliffe Publishing Ltd., 2012.

1936

COP&S starts graduate program offering Master's and Doctoral degrees

33. **"Brochure for Graduate Program for Surgeons at College of Osteopathic Physicians and Surgeons."** 1943. College of Osteopathic Physicians and Surgeons. 50:33.
34. **"Osteopathic Technique Course."** 1947. UCI Libraries Special Collections & Archives. California College of Medicine Records [AS-027]. Box 76.

1943

Forest Grunigen Leads California Medical Association (CMA) and California Osteopathic Association (COA) merger discussions - Not accepted by AMA or AOA

35. ***The Merger : M.D.s and D.O.s in California.*** Sybille Reinsch, Michael Seffinger, and Jerome Tobis. Bloomington, IN : Xlibris Corp, 2009.

1961

CMA/COA merger - COP&S renamed California College of Medicine (CCM)

36. **"Letter from Dorothy J. Marsh, President of the California Osteopathic Association to Members of the Board of Trustees of the College of Osteopathic Physicians and Surgeons, May 24, 1961."** UCI Libraries Special Collections & Archives. California College of Medicine Records [AS-027].

1962

CCM accredited by AMA - California Proposition 22 passed limited power of Osteopaths

37. **"California College of Medicine logo."** *The Cortex* 1962. Irvine CA: Student Association, College of Medicine.

1964

Jan. 1 State Legislature accepts CCM as a part of the UC - UC Irvine is dedicated

38. **"Affiliation agreement between the Regents of the University of California and the California College of Medicine, March 31, 1965."** UCI Libraries Special Collections & Archives. California College of Medicine Records [AS-027].

1968

CCM-UC relocated to UC Irvine Campus on a 122-acre site on the western edge of campus - Orange County General Hospital is used as UCI-CCM training hospital - Dr. Warren Bostick is named the first dean

Nursing Education

The UCI Program in Nursing Science is one of the youngest of the UC Nursing programs, established in 2005 and accepting its first class in 2007. The UCI Program in Nursing Science is the recent result of the many changes in nursing and nursing education in California. The popular image of nurses is at odds with what their current profession actually entails. Nurses are a key element of health care today and educating students in the principles of evidence-based nursing is an important goal.

Beginnings of Modern Nursing

Arguably the first modern nurse, Florence Nightingale laid the foundation for modern nursing with the establishment on July 9, 1860 of her nursing school at St. Thomas' Hospital in London. She was a prodigious writer and educator in her efforts to spread medical knowledge. Her 1859 book "Notes on Nursing" served as the cornerstone of the curriculum at the Nightingale School though it was written specifically for the education of those nursing at home. She was a pioneer in the graphical representation of health statistics and was elected the first female member of the Royal Statistical Society for her work.

- 39. **"1856 carte de visite of Florence Nightingale."** H. Lenthall. Florence Nightingale Museum, London: Hedgerow Publishing, Ltd. On loan from Ellen M. Lewis RN, MSN, FAAN.
- 40. **Notes on Nursing: What it is, and What it is Not.** Florence Nightingale. London: Harrison and Sons, 1859. On loan from Ellen M. Lewis RN, MSN, FAAN.
- 41. **"Nursing cap."** On loan from Ellen M. Lewis RN, MSN, FAAN.

A nurse's cap was a part of the nurse's uniform introduced early in the history of the profession. The cap's original purpose was to keep hair in place and present a modest appearance. Since Florence Nightingale used the cap it became a universally recognized symbol of nursing. The use of nurse's caps disappeared in the late 1980s with the near universal adoption of "scrubs."

Ellen said "I wore the cap as a student nurse (1958- 1961) in Wisconsin and as a practicing nurse up until 1970. We wore the cap as required uniform going to and from dormitory to the hospital or any time we attended an event that required students to be in uniform."

- 42. **"Early State University of Iowa nursing students studying, ca. 1910."** University of Iowa, College of Nursing.
- 43. **"Group of Nurses, ca. 1950."** Courtesy of Ellen Lewis RN, MSN, FAAN.
- 44. **"Save his life... and find your own. Be a Nurse."** 1943. U.S. Office of War Information, 1943. Image courtesy of the University of Minnesota Libraries.

World War II increased the need for nurses to enlist and support field hospitals. It was promoted as a meaningful profession for a young girl.

Nursing in the Popular Media

Nurses have been depicted in popular culture as more than members of the health care team. They are personified as matrons, angels, helpers, and many other stereotypes. To many girls the profession of nursing was attractive as both a status job and as a chance to do meaningful work. Many girls read popular nurse novel series like Sue Barton and Cherry Ames, which provided positive role models. Film, television and advertising more often continued the portrayal of nurses unrealistically. Nurse's professional work was not often accurately portrayed nor their importance to modern healthcare. Even today nurses are not always shown in a positive light. These images may be impacting the continuing shortage of nurses, reduce trust in nurses, and prevent men from entering nursing.

45. ***Sue Barton, Senior Nurse.*** Helen Dore Boylston. Frontispiece by Major Felten. Boston: Little, Brown, and Co., 1937.
46. ***Saving Lives: why the media's portrayal of nurses puts us all at risk.*** Sandy Summers and Harry Jacobs Summers. New York: Kaplan, 2009.
47. ***"Where Are All the Nurses?"*** Adapted from "Portrayal of nursing in the media." A presentation by Allison Mentink, Christine Ostendorf, and Jessica Gums. University of Wisconsin - Eau Claire.
48. ***"Hotlips Houlihan, MASH."*** The Picture Desk.
The character of "Hotlips Houlihan," played by Loretta Swit, was inspired by the real-life Korean Mobile Army Service Hospital (MASH) head nurse "Hotlips Hammerly," from El Paso, Texas.
49. ***"Real Nurses vs Fictional Nurses."*** Adapted from "Portrayal of nursing in the media." A presentation by Allison Mentink, Christine Ostendorf, and Jessica Gums. University of Wisconsin - Eau Claire.

Modern Nursing and Evidence Based Education

"Nursing Practice is incredibly complex. Over the past 60 years, the transfer of responsibilities to nursing from medicine has been incredible. I think society doesn't typically recognize that."
Patricia Benner RN, PhD, professor at UC San Francisco

Modern nursing has changed as healthcare has become more complex and technology dependent. Modern nurses are responsible for much of the day to day treatment and care of patients. The introduction of evidence-based practice into nursing education allows current methods to be constantly assessed and evaluated. Nurses need to learn the best practices when they graduate and then relearn the best practices as new knowledge and methods are found.

50. **"Nurse working with IVs."** American Mobile Healthcare.
51. **StuNurse.com.** Edition 29 September 2013.
52. **Nurse past present and future: The Making of Modern Nursing.** Edited by Kate Trant and Susan Usher. London: Black Dog, 2010.
53. **I Wasn't Strong Like This When I Started Out: True Stories of Becoming a Nurse.** Edited by Lee Gutkind. Pittsburgh : In Fact Books, 2013.
54. **Evidence-Based Practice in Nursing and Healthcare: A Guide to Best Practice.** Bernadette Melnyk and Eleen Fineout-Overholt. Philadelphia: Lippincott Williams and Wilkins, 2005.

1974 Fundraising to build hospital at UCI

1976 Plans are shelved to develop an on-campus hospital and the Orange County General Medical Center is purchased becoming the UCI Medical Center

1978 The four-story six-unit Medical Sciences Building is completed, providing space for research laboratories, teaching facilities, and administrative offices

55. **"Medical Sciences Buildings A-D."** University of California, Irvine, Communications Photographs [AS-061].

1985 Nursing Research Program established at UCI Medical Center

1989 College of Medicine Strategic Planning Committee recommends that an academic nursing program be established at UCI by 2000

1990

The Office for the Advancement of Nursing and Allied Health is established in the College of Medicine

56. **"Letter from Dr. James H. Fallon to Ellen Lewis May 9, 1993."** Courtesy of Ellen M. Lewis, RN, MSN, FAAN.

The College of Medicine agreed that a nursing program and ultimately a School of Nursing is highly desirable and part of the strategic planning process but resources for new programs were scarce.

Building on her experience as the director of nursing services at the UC Irvine Medical Center in the 1980s, and project director for the California Strategic Planning Committee for Nursing in the '90s, Ellen Lewis formulated a plan to help overcome California's serious shortage of nurses with bachelor's degrees. From that effort came the foundations of nursing science at UCI.

1993

The College of Medicine opens the Medical Education Center in J. Edward Berk Hall - a state-of-the-art student training center to teach medical students clinical skills in a setting that mimics an actual clinical environment

1995

UCI Post-Master Family Nurse Practitioner (FNP) program started

57. **"Family Nurse Practitioner Education Program."** Department of Family Medicine, UC Irvine College of Medicine.

The Department of Family Medicine in the College of Medicine offered a program for MSN (those with a Master's in Nursing) to join a one year Post Master's certificate program. The purpose of the program was to prepare the graduate "to assume responsibility for the primary ambulatory health care needs of family members in collaboration with physicians and other health care professionals" and to be able to take the national certification exam.

2001

UC Irvine Medical Center Library was renamed the Forest J. Grunigen Medical Library

58. a. **Photograph of GML.**

UC Irvine Medical Center Library was renamed the Forest J. Grunigen Medical Library in honor of Dr. Grunigen's work as a School of Medicine alumnus, supporter and friend. Dr. Grunigen was a leading voice in bringing the California College of Medicine into the University of California System, and then to its present home at the University of California, Irvine, in 1967.

- b. **Forest J. Grunigen.**

2003

Proposal for College of Health Sciences, established in 2004, comprises the Program in Nursing Science; the Department of Pharmaceutical Sciences; the Program in Public Health, which includes the Department of Population Health and Disease Prevention; and the long-established School of Medicine - Aims to create new opportunities at the scientific frontier of many research fields to enhance the quality of education and research. Program in Public Health (PPH) is established

2004

Dr. Alberto Manetta, senior associate dean of education, develops the Program in Medical Education for the Latino Community (PRIME-LC) program

59. **"PRIME-LC Students."**

The Program in Medical Education for the Latino Community (PRIME-LC) was created to meet the unique needs of the Latino community and is a dual-degree program in the UC Irvine School of Medicine, offering a MD and a master's degree to its graduates. The combined five-year medical degree/master's program includes second and third-year Chicano/Latino studies courses. The program is designed to help physicians in training think carefully and critically about the social determinants of illness and health, the social and cultural lives of Latinos in California, the culture of biomedicine in which they train and work, and how assumptions of biomedical culture influence patient treatment and outcomes.

Nursing Education at UCI

The need for nursing professionals in California has been acutely felt in California since the late 1980s. The growth in California's population without an increase in opportunities for nursing education created an on-going shortage of professional nurses in California throughout the 1990s. The establishment of a professional program at UCI meets an important regional need. In addition the complexity of nursing has grown and students need to have the opportunity to improve and refine their skills after obtaining an RN degree. The addition of a Master's program in Nursing as well as the recent advent of a Doctoral program in Nursing allows UCI to help create professionals who can operate in today's complex health environment.

Nursing Education Program Shortage

"The nursing shortage poses an immediate and significant threat to the health of the people of California and the nation. An inadequate supply and the inappropriate use of registered nurses jeopardize both the current and future quality of life for California residents." *begins a 1990 report to the California Legislature.*

It was recognized in the late 1980s that there was a growing gap between the number of nurses graduating and the needs of healthcare. At the time nursing school both public and private were so full that qualified students were turned away from programs every year. A 1990 RN Special Advisory Committee report and a 1993 UCI report from the Office of Nursing and Allied Health estimated that future needs for nurses would not be met if there were not more public school programs for nursing. There was also a strong need to programs for RNs to obtain Masters and doctoral degrees. Master's certificate programs were especially needed for licensing Family Nurse Practitioners and Geriatric Nurse Practitioners. By 2000 it was estimated there would be major gaps in the number of nursing masters and doctoral students graduating in order to meet the growing demand for nursing research and leaders of nursing education programs.

In the late 1980s and early 1990s as many as 30% of qualified students were not able to enter a nursing program for lack of space. This growing crisis in graduating enough RNs for the expected California population growth led legislators and educators to try and find a solution. Even with some increases in funding the problem continued to grow. In 2007 64% of qualified applicants to nursing school were turned away, with a lack of nursing faculty to teach them the primary reason.

60. a. ***Meeting the Immediate and Future Needs of Nursing in California: A Report to Legislature.*** RN Special Advisory Committee 1990. Sacramento : RN Special Advisory Committee, 1990.
- b. ***"Applicant Pool, Fall 1989 (Figure 3)."*** *Nursing Education Program Survey California 1990.* RN Special Advisory Committee. Chico, CA : The Survey Research Center, 1990.

61. **"Where have all the nurses gone?"** UC Irvine, University of California, Irvine. *New University Hospital: transforming health care, one patient at a time*. Topping out edition. Winter 2008. Health Sciences Advancement. 2008.
62.
 - a. ***Status of Nursing in California***. UCI Health Sciences Office of Nursing and Allied Health. August 1993.
 - b. **"Comparison of projected FTE RN supply and requirements for California by educational preparation – December 31, 2000."** *Status of Nursing in California*. UCI Health Sciences Office of Nursing and Allied Health. August 1993.

UCI Program in Nursing Science

This letter officially established the UCI Program in Nursing Science. Plans for a UCI nursing program had been pursued since the early 1990s but the resources to start a new program were not available. This established Orange County's first new undergraduate nursing program in 40 years. The other driving force was a recently completed University of California internal study of future health science workforce needs and what the UC could do to help meet them. One conclusion was to support a new undergraduate program at UCI and to expand or add more graduate programs throughout the state.

63. **"Michael Gottfredson letter to Thomas Cesario Aug. 31, 2006."** Courtesy of Ellen M. Lewis RN, MSN, FAAN.
64. **"32 Nursing Science Students Enroll in New Program."** University of California, Irvine. *New University Hospital: transforming health care, one patient at a time*. Topping out edition. Fall 2006. Health Sciences Advancement. 2006.
65. **"Ellen Olshansky and the three C's."** University of California, Irvine. *New University Hospital: transforming health care, one patient at a time*. Topping out edition. Winter 2008. Health Sciences Advancement. 2008.
66. **"Delivering Nursing Care."** University of California, Irvine. *New University Hospital: transforming health care, one patient at a time*. Topping out edition. Winter 2008. Health Sciences Advancement. 2008.
67.
 - a. **"UCI Nursing Science Undergraduate students."**
 - b. **"UCI Nursing Science Graduate students."**

Nursing Science Community Outreach

The Program in Nursing Science in collaboration with the existing SOS-El Sol Wellness Center established Orange County's first nurse-managed clinic in downtown Santa Ana. This innovative collaboration allows expansion of the Center's current services and lets student pursuing their Master's degree (becoming a Nurse Practitioner) to gain hands-on experience in community based healthcare at the clinic. It also allows the chance for undergraduates and Nursing faculty to create opportunities for interdisciplinary nursing research. Other outreach education opportunities have included the establishment of the Center for Women's Health and community health outreach projects.

68. **"A cure for healthcare."** UC Irvine feature press release Feb 12, 2012. <http://news.uci.edu/features/a-cure-for-healthcare/>.

Camille Fitzpatrick, clinical professor of nursing science, left consults with Alex Vasques, a nursing graduate student at SOS-El Sol Wellness Center.

Professional Degrees in Nursing Science

"I entered this program because I value the role of being a nurse and treating and educating patients in a healthcare setting. It's a blending of the heart of nursing and medical science, with a focus on wellness, prevention, and education." Taryn Tanner, M.S. student in the Family Nurse Practitioner concentration.

The growing UCI nursing program is starting to meet the need for registered nurses with Bachelor's degrees. A B.A. is growing requirement by employers to help meet the demands of modern technology in health care. A need for nurse practitioners (MNP) is also beginning to be met by the Master's degree nurse practitioner specializations. In Fall 2013 the first Ph.D. candidates were accepted in the Nursing Science Program.

69. **"Nursing science program readies for the future of healthcare."** UC Irvine feature press release May 17, 2011. <http://news.uci.edu/features/nursing-science-program-readies-for-future-of-healthcare/>.
70. **"UCI Nursing Science Program descriptions for B.S., M.S. and Ph.D."**

There are currently 3 degrees offered by the UCI Program in Nursing Science: B.S., M.S. and Ph.D. To practice in California a nursing student must pass the state R.N. licensing exam.

Nursing Science Graduates

71. a. **"Inaugural nursing class with Ellen Olshansky, founding director of the Program in Nursing Science."** University of California, Irvine. *New University Hospital: transforming health care, one patient at a time*. Topping out edition. Winter 2008. Health Sciences Advancement. 2008.
- b. **"UC Irvine Program in Nursing Science recognition ceremony June 14, 2013 Class of 2013."**

2005 The UCI Program in Nursing Science is established

72. **"Nurse Anteater."** Charlene Platon.

This is an original drawing by nursing student Charlene Platon, Class of 2012. It is significant because it is used on the Nursing Program website, and some of their promotional materials. It is becoming recognizably associated with this program.

2006 Program in Public Health, undergraduate degree program began enrolling students

2007 UCI Program in Nursing Science accepts first undergraduate class - Program in Public Health establishes Department of Population Health & Disease Prevention

2009 Program in Public Health launches Master's program in Public Health - The program "will train future practitioners to help reduce the burden of disease and disability in culturally diverse communities in Southern California and around the world" - an initial class of 16 students studied with faculty while pursuing a two-year degree with an emphasis in environmental health, epidemiology, or sociocultural diversity and health

73. **"Understand and Improving Health: Master in Public Health."** UC Irvine Program in Public Health.

2010 Medical Education building opens - Department of Pharmaceutical Sciences awards first bachelor's degrees to 9 students

A \$40.5-million, 65,000-square-foot Medical Education building opens on the UC Irvine campus that includes the UC Irvine Health Medical Education Simulation Center. UC Irvine Health School of Medicine adopts an iPad-based curriculum. The school becomes one of the first in the nation to build a completely digital, interactive learning environment for the entering class of 2010.

74. a. **"Medical Education Building opening commemorative tee-shirt."**
- b. **"Medical Education Building, ca. 2010."** rgroup global.

2012

Department of Pharmaceutical Sciences enrolls 679 undergraduate and 8 graduate students

2013

Program in Nursing Science launches a New PhD Program in Nursing Science

75. a. **"Letter from Rachael Goodhun, Chair Coordinating Committee on Graduate Affairs to Larry Pitts, M.D. Provost and Executive Vice President Academic Affairs, Feb 9, 2012."** Courtesy of Ellen M. Lewis RN, MSN, FAAN.
- b. **"Fall 2013 Nursing Science Ph.D. Candidates: Anne Rendeiro, Jennifer Peterson, Michelle Chan."**

The graduates of the UC Irvine Nursing Science Ph.D. Program will be equipped to advance the science of nursing as well as to address the critical shortage of nursing faculty with Ph.D. degrees. The program aims to prepare nurse scientists with expertise in clinical-translational research methods to develop new knowledge that will enhance the health of individuals, groups, communities, and populations.

2014

Health Education at UCI

76. **"2014 Health Education at UCI Statistics graphic."**

Not yesterday's Health Sciences: Evidence Based Practice, Clinical Translation, and Pharmaceutical Science

With the growth in evidence and new forms of treatments the literature in biomedical and clinical research has expanded to hundreds of thousands of scholarly articles per year. New methods to analyze and implement this research has changed health education by focusing on evaluating the evidence from medical research to make better healthcare decisions. With the advent of evidence-based medicine in the 1990s doctors became better equipped to evaluate how new treatments could be compared to those currently in use. This use of evidence-based practice in all health disciplines has spread and students are expected to find and use tools to ensure that the most effective treatments are applied. The analysis and use of research has grown to include new promising research discoveries being "fast-tracked" to clinical trials in what is now called Translational Science, literally translating discoveries to new treatments and diagnostic tools. Finally students in the Department of Pharmaceutical Sciences are being prepared to develop the therapeutic agents of the future.

Evidence-Based Practice

Today doctors cannot solely rely on what they were first taught in medical school. For many years the definition of a good medical professional was how much experience they had. The quality of treatment was based on "Expert-opinion Medicine (EOM)." The authority of EOM is based more on the doctor's years of clinical experience than searching the literature to find and appraise the evidence. An experienced doctor was assumed to be better at dealing with medical issues compared to a new doctor who had less practice but lots of book knowledge. For the modern physicians the skills needed to find potentially relevant studies quickly and reliably, and to apply sound research findings to patient care have become as essential as skills with a stethoscope. A 21st century clinician who cannot critically read and analyze a clinical research study is as unprepared as one who cannot take a blood pressure measurement or examine the cardiovascular system.

The term "evidence-based medicine" is relatively new. Investigators from McMaster's University began using the term during the 1990s. EBM was defined as "a systematic approach to analyze published results as the basis for clinical decision making." Then in 1996 the term was more formally defined by Sackett et. al. The focus is on making choices in clinical practice. Which test would be best to find out more about a condition? Which treatment would be the most effective for this patient? The answers to these questions depend on the practitioner's knowledge, skills and attitudes, the research evidence and the patient's concerns, expectations and values. Evidence-based practice is about trying to improve the quality of the information on which health care decisions are based. The Evidence-based medicine pyramid illustrates the quality of various types of research evidence. The higher up on the pyramid, the stronger the evidence as a basis for a clinical decision.

77. ***Evidence-Based Medicine: How to Practice & Teach EBM.*** David L. Sackett, et al. New York : Churchill Livingstone, 1997.

78. a. **"Evidence-Based Medicine Pyramid."**
- b. **"Medline-Indexed Articles Published Per Year, 1950-2010."**
79. ***How to Read a Paper : the Basics of Evidence-Based Medicine.*** Trisha Greenhalgh. London: Wiley-Blackwell, 2010.

Evidence-Based Practice in Action

EBP helps practitioners to avoid “information overload” but, at the same time, to find and apply the most useful information. The UCI Health Sciences (HS) Librarians have played a vital role in implementing the EBM curriculum in all levels of medical education. Since 1996, EBM instruction has been integrated into the medical school curriculum. The HS Librarians have collaborated with senior faculty teaching medical students, residents, and fellows EBM skills. The goal is to help students direct their own learning when faced with clinical uncertainty. The introduction of EBM skills to our medical students in particular during their clinical clerkships provides them an opportunity to practice this paradigm and reinforces the use of evidence in making patient-care decisions.

The exercise illustrates this process:

- The practitioner identifies emerging information needs and converts them into focused clinical questions.
- They select and search the most appropriate information sources for their type of question.
- They appraise the evidence/findings.
- They apply the evidence to decision making for their patient’s care being aware of the patient’s concerns, expectations and values.
- The practitioner evaluates the patient’s outcome and their own performance.

80. a. **“EBM Steps/Process diagram.”**

b. **“EBM Case Study.”**

Reference: Cummings P (1994). “Antibiotics to prevent infection in patients with dog bite wounds: a meta-analysis of randomized trials.” *Annals of Emergency Medicine* 23:535–540.
Evidence-based practice workbook: bridging the gap between health care research and practice / based on workshops presented by Paul Glasziou, Chris Del Mar ; Janet Salisbury. Oxford : Blackwell/ BMJ, 2007, 2nd ed. (p15, Case study 2: dog bite).

81. ***The Patient History: Evidence-Based Approach.*** Lawrence M. Tierney and Mark C. Henderson. New York: Lange Medical Books, 2005.

Department of Pharmaceutical Sciences

The Department of Pharmaceutical Sciences educates by exposing students to a broad range of scientific disciplines that are critical to the discovery and development of new drugs and therapies. Founded as a program in 2003, the department offers an interdisciplinary curriculum of biology, chemistry and pharmacology for students interested in careers in the booming drug development and biotechnology industries or in pharmaceutical research.

The development of small molecule therapeutic agents for the treatment and prevention of diseases has played a critical role in the practice of medicine for many years. In fact, the use of natural extracts for medicinal purposes goes back thousands of years; however, it has only been in the past half century or so that searching for new drugs has found itself in the realm of science. Developing the therapeutic agents of the future will involve the same basic science disciplines that have always been at the core of drug discovery, namely, structural biology to provide information about the target biomacromolecules; chemistry to design and synthesize the drug candidates; and pharmacology to determine the effects of the interaction between drug and target.

The Pharmaceutical Sciences undergraduate program is intended for those Department students interested in graduate degree programs, professional degree programs such as pharmacy, medical, or dental school, or professional positions in the pharmaceutical or biotechnology industry. The Medicinal Chemistry and Pharmacology graduate program is an innovative interdepartmental gateway program leading to a PhD degree in either Chemistry, Molecular Biology & Biochemistry, Pharmacology, or Pharmaceutical Sciences. In a 2010 survey of PhD programs, Academic Analytics ranked the Medicinal Chemistry and Pharmacology Gateway Program and Graduate Program in the top ten in the nation.

82. a. ***An Introduction to Pharmaceutical Sciences : Production, Chemistry, Techniques and Technology.*** Jiben Roy. Oxford ; New York : Biohealthcare, 2011.

b. ***Essentials of Pharmaceutical Chemistry.*** Edited by Donald Cairns. London ; Chicago : Pharmaceutical Press, 2012.
83. ***Towards Drugs of the Future : Key Issues in Lead Finding and Lead Optimization.*** Edited by C.G. Kruse and H. Timmerman. Amsterdam : IOS Press, 2008.

Translational Research

Educating students to turn insights into breakthroughs. Translational research is scientific research that helps to make findings from basic science useful for practical applications that enhance human health and well-being. It is practiced in fields such as environmental and agricultural science, as well as the health, behavioral, and social sciences. In medicine, nursing, pharmaceutical science, and public health students are taught how to “translate” findings in basic research quickly into practice and meaningful health outcomes. This has been attempted particularly in medicine with translational medicine, research that aims to move “from bench to bedside” or from laboratory experiments through clinical trials to point-of-care patient applications. The Institute for Clinical and Translational Science (ICTS) is the lynchpin of UC Irvine’s clinical research efforts which encompass more than 1,000 studies managed by hundreds of faculty and staff members.

84.
 - a. **“Making research relevant: Institute for Clinical & Translational Science is committee to transforming ideas into medical reality.”** *UCIrvine News* 2/23/14 <http://news.uci.edu/features/making-research-relevant/>.
 - c. **“A New Accurate Tool for Telling Apart Low-Risk Prostate Cancer from High-Risk Prostate Cancer.”** UC Irvine Institute for Clinical and Translational Science Lay summary of the publication: “An Accurate Prostate Cancer Prognosticator Using a Seven-Gene Signature Plus Gleason Score and Taking Cell Type Heterogeneity into Account.” Xin Chen, et al. *PLOS* 7 (9), 2012.
 - d. **“2014 Translational Research Day at UC Irvine.”**

Program in Public Health

UCI is involved in promoting the larger view of how health and society meet by reframing and answering questions that emerge with new societal challenges. The Program in Public Health (PPH) was established in 2003 to provide institutional focus for existing academic strengths in various sub-disciplines of public health, and to facilitate well-grounded education and innovative research in emerging aspects of the field. UC Irvine is uniquely positioned to take full advantage of rapid progress in the molecular sciences, informatics and communication, global environmental assessments, occupational health, human behavior, policy analysis, international relations, and clinical and translational sciences. The Program in Public Health is focused on creating, integrating, and translating population-based knowledge into preventive strategies for reducing the societal burden of human disease and disability through excellence in research, education, and public service. The undergraduate program which started accepting students in 2006 enrolls 1,200 students and graduates 500 students a year.

School of Public Health

In coming years, the Program will expand to become a School of Public Health. When established, the UC Irvine School of Public Health will be the third School dedicated to public health within the UC System, the youngest of which was established more than 50 years ago (UCLA). UC Irvine's School will be distinctive in its situation. UCI is the largest research university in the sixth most populous county in the United States, and more than 30% of residents in our county community are foreign born with more than 35 different languages spoken at homes. The proposed School's vision is to be the leading academic resource for research, education at the baccalaureate and graduate levels, and outreach service in suburban settlements where emphasis is placed on the sociocultural diversity and global context of public health.

85.
 - a. **"Proposal for a Graduate Program in Public Health at the University of California, Irvine, April 2001."** Program in Public Health proposal 2001.
 - b. **"School of Public Health: Transitioning from Program to School of Public Health."** proposal Aug 30 2013.
 - c. **"Faculty spotlight: Dr. Oladele Ogunseitan."** *GHREAT newsletter* Winter Quarter 2014.
86. ***Microbial Diversity: Form and function in prokaryotes.*** Oladele Ogunseitan. Malden, MA : Blackwell, 2005.

Research and Education in Green Materials (REGM)

The program spearheads the research and education components to transform our current toxic material society into a green material society. The goal of the Research and Education in Green Materials (REGM) is to transform the research education of a new cadre of graduate students trained to approach materials science, toxicology, environmental engineering and technologies, and the social sciences through selective engagement in interdisciplinary collaboration. The program focuses on innovative solutions to problems arising in the interface of manufacturing systems, toxic materials uses, consumer preferences and concerns, and government regulatory policies. The program will be positioned to address toxicity risks associated with new materials and emerging technologies. REGM is a 3 campus cooperative research focus (institute) between UCI, UCR and UCD.

87. **Research and Education in Green Materials (REGM).** <http://greenmaterials.publichealth.uci.edu/sites/greenmat.soceco.uci.edu/files/u4/UC-IDR-%20TSRTP-Green%20Materials.pdf>.
88. ***Green health: An A-Z Guide.*** Oladele Ogunseitan, et al. Los Angeles: Sage, 2011.

Geological Hazards and Disasters Research Group

This research group in Public Health addresses natural hazards and disasters from a global perspective, with emphasis on earthquakes. Earthquakes are a major threat to public health globally and locally in California. The group focus on defining the potential for large earthquakes, and working collaboratively on developing forecasts, hazard models and effective responses. Result are applied to disaster preparedness planning, structural design, land-use planning, seismic risk assessment and public education about earthquake hazard.

89. a. **Geological Hazards and Disasters Research Group.** http://publichealth.uci.edu/ph_docs/geohazards_disasters_research.
- b. **"Measuring Faults."** http://publichealth.uci.edu/ph_docs/geohazards_disasters_research.

Department of Population Health and Disease Prevention

The Department of Population Health & Disease Prevention was established in 2007 to advance the collaborative interdisciplinary mission of public health research and education. The mission of the Department of Population Health and Disease Prevention is to create, integrate, and translate population-based knowledge into preventive strategies to reduce the societal burden of human disease and disability through excellence in interdisciplinary research, education, and service. New sources of funding for research and education are emerging, including the translational science initiative of the National Institutes of Health, to support this ecological paradigm of public health. The Department of Population Health & Disease Prevention is the home department of all undergraduates in Public Health.

The societal challenges facing health care and the burden of diseases at the community, national, and international levels have increased the demand for experts capable of researching, developing, and implementing programs to prevent disease and to improve population health. There is a need to nurture new leaders in public health through research and training on risk factors that render people vulnerable to diseases in their communities, and the development of strategies for preventing disease by separating risk factors from specific vulnerable populations.

In 2013 UC Irvine lecturer/researcher Brandon Brown, Ph.D., and public health grad student Melissa Nasiruddin published a paper (and podcast) in the journal *Emerging Infectious Diseases* that advocates using the popular topic of “zombies” to educate the movie going masses about re-emerging infectious diseases such as rabies and neurological conditions such as Alzheimer’s and Parkinson’s. Public Health Graduate students Kyle Chen, Monique Halabi and Alexander Dao also worked on the paper.

90. a. **UCI researchers suggest capitalizing on popularity of zombies to raise public health awareness.** <http://news.uci.edu/briefs/researchers-advocate-use-of-zombies-to-raise-public-health-awareness/>.
- b. **“How to Identify.”** adapted from “Zombies—a pop culture resource for public health awareness.” Melissa Nasiruddin, et al. *Emerging Infectious Diseases*. 19 (5), 2013.

Global Health Research, Education and Translation (GHREAT).

The Global Health Research, Education and Translation (GHREAT) Program was established by the Program in Public Health following the successful NIH Fogarty International Center for Advanced Studies in the Health Sciences for a Global Health Framework Program. Under the leadership of Professor Brandon Brown, UC Irvine GHREAT is committed to promoting global health awareness and developing a comprehensive global health research, education, and training program. Since the establishment of GHREAT, demand from undergraduates, graduate students, and faculty members to conduct global health research at UC Irvine and foreign countries have grown rapidly.

91. **"GHREAT newsletter Winter Quarter 2014."**
92.
 - a. **"Global Health Research, Education and Translation (GHREAT) Project map."** <http://ghreat.uci.edu/globalhealth/about>.
 - b. **"Selected GHREAT Projects from around the world."**

Visual Medicine and Learning

Medical education has always included learning how the human body works so it can be repaired or healed. The understanding what is under our skin has evolved with new imagining tools. Our health sciences students can now examine the appearance and structures of the human body in in three dimensions and exquisite detail. The traditional static anatomy texts have been supplemented with video and computer programs that let learning take new forms. Technologies such as simulation devices, smartphones, and personal electronics allow medical information to be used and manipulated at the point of need. The UCI Libraries has been at the forefront of providing these specialized databases and tools as well as supporting the devices that physicians are now using.

Anatomy Tools

Originally the only way physicians could learn about what was inside the human body was to observe during surgery and dissection. Eventually published anatomical diagrams allowed physicians to study the arrangement of muscles and organs at their leisure. Medical education for doctors and nursing still includes anatomy as a basic learning tool. Innovation in computerized three-dimensional images allow students to learn by traveling through the human body from any direction and focus in on the section of interest in extreme detail.

93. a. **"Tabulae sceleti e musculorum corporis humani."** Bernard Siegfried Albinus (1697-1770) [anatomist]. Jan Wandelaar (1690-1759) [artist]. *Dream Anatomy*. Michael Sappol. Bethesda, MD : U.S. Dept. of Health and Human Services, National Institutes of Health, National Library of Medicine ; Washington, D.C. , 2006.
- b. **"STAT!Ref Anatomy TV."**

Video Tools

Visual learning has always been at the heart of medical education. Students learn by seeing how to do a physical examination, comparing images of different symptoms to the patient's body in front of them, or seeing a living process presented as a moving image. All of these tools support nurses and physicians learning how to respond to problems in living bodies.

94. a. **Bates' visual guide to physical examination.** Wolters Kluwer Health/Lippincott Williams & Wilkins, 2014.

Bates' Visual Guide delivers 8 hours of head-to-toe and systems-based physical examination techniques. Rather than the older method of having to go to the library to view or check-out videotapes, the current UCI Libraries subscription provides online delivery of content allowing users to view the videos from any web-accessible device.

- b. **McGraw-Hill's AccessMedicine.** New York, N.Y. : McGraw Hill, [2001-].

AccessMedicine has a unique collection of more than 250 examination and procedural videos, patient safety modules, audio files, and animations that feature complicated concepts presented in terms students can understand, including videos illustrating fundamental medical concepts drawn from the key medical textbook, *Harrison's Principles of Internal Medicine*.

- c. **Journal of visualized experiments : JoVE.** Cambridge, MA : MYJoVE Corp., 2006-.

JoVE, the Journal of Visualized Experiments, is the world's first peer reviewed family of scientific video journals. Established in 2006, *JoVE* publishes scientific research in a visual format to help researchers overcome two challenges; poor reproducibility and the time and labor intensive nature of learning new experimental techniques. For students using *JoVE* allows understanding of methods, data analyses and results more clearly. Some of the current journals in the *JoVE* family include: *JoVE: Clinical and Translational Medicine*, *JOVE: Neuroscience*, and *JoVE: Immunity and Infection*.

Katchy, A., Williams, C. "Profiling of Estrogen-regulated MicroRNAs in Breast Cancer Cells." *J. Vis. Exp.* (84), e51285, doi:10.3791/51285 (2014).

95. a-b. **VisualDx : visual diagnostic decision support.** Rochester, NY : Logical Images, Inc.

VisualDx is a database that provides instant access to specialist knowledge at the point of care via mobile device, merging medical images with concise clinical text. Includes more than 16,000 images representing over 900 visually identifiable diseases, drug reactions, and infections. Images and key clinical information on all relevant diagnoses are presented for a quick side-by-side comparison to the patient. It is a diagnostic decision support system designed by clinicians to aid medical professionals in the diagnosis of visually identifiable diseases.

96. **"The doctors can see you now: Google Glass tried out in UCI program."** *Orange County Register* Jan 2, 2014. Business section. <http://www.ocregister.com/articles/glass-595753-medical-garson.html>.

One of the latest tools for visual learning is Google Glass, a "wearable" computer-interface built into a pair of eyeglasses. The user can use voice commands to search databases, bring up web-sites, and record and play video. Drs. Les Garson and Zeev Kain, anesthesiologists at UC Irvine were able to participate in a unique program using the Google Glass device with an integrated medical app designed specifically for use in hospitals. The goal is to explore the potential for enhancing patient care in the operating room environment. The resident anesthesiologists were able to watch and hear what each other were doing and view vital patient data from areas not immediately adjacent to the operating rooms. The ability for live streaming audio and video functionality could lead to fundamental improvements in the delivery and cost of healthcare.

OC Register- Dr. Patrick Hu, anesthesiologist, glances around UCI Medical Center hands-free with Google Glass. Vital patient data from the operating room and more can be shared via Google Glass. The device has tremendous implications for patient care.

Medical Education Simulation Center

The Medical Education Simulation Center (MESC) mission is to provide state-of-the-art health care education and research using simulation technology to promote superior clinical care and patient safety by delivering quality immersive education to healthcare professionals and the community. UC Irvine MESC is a 3,000-square-foot facility that provides telemedicine and simulation based education programs and Continuing Medical Education (CME) courses for thousands of healthcare providers each year. The center includes a full-scale operating room, emergency room trauma bay, obstetrics suite and critical care unit. In 2012-2013 the center held over 612 sessions and trained 4,612 participants.

97. a. **"Medical Education Simulation Center."** Irvine, CA : UC Irvine College of Medicine, 2013.
- b. **Simulation photograph 1.**
- c. **Simulation photograph 2.**
- d. **Simulation Tools: snippers, butterfly needle, arm tie, spreaders.**

Bringing Health Information and Learning to Orange County

UCI's health education does not end with students graduating. The campus shares health information with the public through bulletins, news releases, and classes. The campus also has a role in the continuing education of health professionals and offers a full range of classes for physicians to remain current. Finally, UCI is an important biomedical research institution and we are continuing to find new ways for scientific research papers to be available to all who have access to the WWW. The encouragement of Open Access journals and publishing and the development of UCI and UC digital archives for research papers and experimental data means the fruits of UCI's vibrant research community are increasingly available to everyone.

Open Access Journals

Open access publishing's goal is to provide the full contents of the published record of research and scholarly discourse in a freely accessible, fully searchable, interlinked form. Establishment of this access would vastly increase the accessibility and utility of research literature, enhance productivity, and catalyze integration of the disparate communities of knowledge and ideas.

Sharing research information for free. UCI health researchers have several ways to make their research information and peer-reviewed research papers available to everyone in Orange County. Researchers can not only share their papers but also make the data they have collected available to other researchers to build on. The Federal government and a growing number of journal publishers support "open access" to research.

98. a. **"Open Access Policy for the Academic Senate of the University of California Adopted 7/24/2013."**
- b-c. **"UCI Open Access Policy: Understand it at the UCI Libraries."** UC Irvine Libraries.

Western Journal of Emergency Medicine

A UCI open access journal with articles deposited in the UC archive space, Western Journal of Emergency Medicine is managed online using submission software and peer review tools built into the UC archive. This allows editors to collaborate from multiple locations. In addition the published journal and articles are available to everyone who has access to the Internet. One of the founder editors, Mark I. Langdorf, is pictured here in a poster made for the Grunigen Medical Library highlighting how different medical faculty support and use the medical collection at UC Irvine.

99. a. **Western Journal of Emergency Medicine.** 13 (3), 2012.
b. **"National Library Week Poster with Mark I. Langdorf, MD. Professor of Clinical emergency medicine, 2012."** UC Irvine Libraries.
100. **"UCI Departments Who Deposit their Publications into or Use UC's eScholarship Electronic Archive."**
101. **"Derivation of High Purity Neuronal Progenitors from Human Embryonic Stem Cells."** Gabriel Nistor, et al. *PLOS One* 6 (6), 2011. "PLOS article and PLOS logo." <http://www.plosone.org/article/info:doi/10.1371/journal.pone.0020692>.

Since its founding in 2000, *PLOS* rapidly evolved into a driving force in the Open Access (OA) movement, which seeks to make the results of all scholarly research accessible to everyone. Reflecting the organization's roots within the academic community, concerned researchers urged scientific and medical publishers to make research literature available for distribution through free online public archives.

Continuing Medical Education (CME)

Aspiring physicians spend four years in medical school and three to five years in residency training. For the rest of their careers they rely on continuing medical education as one of their support systems. Continuing medical education (CME) is made available for practicing physicians here at UC Irvine and those working in the Orange County area. Physicians rely on accredited CME as one of the support systems that helps them continuously improve their practice and care of patients. Accredited CME programs like that at UCI are designed to teach physicians strategies for translating new knowledge into action, either in the physicians performance in their practice or improving patient outcomes. CME for credit at UCI is supported through CME live activities, CME self-study materials, or regularly scheduled series, such as "Grand Rounds." The teaching faculty is drawn both from the University community as well as from the Orange County community at large in order to maximize the effectiveness of the learning activities.

- 102. a. **"Sample CME Course."**
- b. **"Physicians Doing Continuing Medical Education Self-Study."**

UC Irvine Consumer Health Education

UC Irvine Health education opportunities and efforts extend to the surrounding Orange County community. Being a health information resource for Orange County and educating consumers for better health. Through articles, news releases, consumer health classes UCI spread the information needed for everyone to have better understanding of their health. UC Irvine Health offers dozens of classes, seminars, and support groups to help you live well. Take a class, join a group or attend a lecture, and allow UC Irvine Health to be your partner in well-being.

- 103. a. **UC Irvine Health: Helping you live well.** Winter 2013-2014.
- b. **"10 Ways to Avoid a Stroke: Stroke prevention starts with you."** *UC Irvine Health: Helping you live well.* Winter 2013-2014.
- c. **"Education Connection."** *UC Irvine Health: Helping you live well.* Winter 2013-2014.
- d. **UC Irvine Health news releases;** "Newborns at UC Irvine Medical Center get red beanies, head start on heart health," "Q&A: How do clinical trials help cancer patients?," "Say no to measles (and yes to vaccination)," "Bevacizumab prolongs survival in advanced cervical cancer, UC Irvine Health-led trial finds."