

Career Opportunities

Biomedical and Health Informatics

ONE OF THE LESSER KNOWN FIELDS in biomedical science, biomedical and health informatics, holds tremendous opportunity. According to the U.S. Department of Labor, this emerging field is experiencing a 49 percent growth in demand for trained individuals to become researchers, administrators, consultants, educators and specialists. Medical informatics professionals can get involved in issues as diverse as genetic testing and genomics, how physicians keep track of information on patient care, how they keep track of H1N1 and how researchers can find grants, funding opportunities and collaborators.

Started in the 1960s, biomedical and health informatics is a multidisciplinary field that combines health sciences with information technology to solve problems in health care delivery, clinical and medical decision making, biomedical and health sciences research and health education. Evan Pankey, who received his MMSc from Harvard Medical School in 2009, is a research architect in the Informatics Solutions Group at Children's Hospital Boston. Members of his team come from diverse academic backgrounds ranging from health care to business to computer science — and even literature. "Throughout my medical education I was always interested in research, but I wanted to see it have a tangible output," he says. "There's always publication, but I wanted more."

At the beginning of his fourth year of medical school, Pankey did an internship in medical informatics at Massachusetts General Hospital. Though he did subsequent clinical rotations, that experience, combined with previous science and research internships, set his course.

The son of a pediatrician, Pankey was always surrounded by the medical practice. "As a young child I was involved in an asthma study at Johns Hopkins that sparked an interest in medicine and research. There are so many questions in health care," says the Baltimore native. His father did community-based pediatrics, and Pankey recalls, "I went to work with him a lot."

At the beginning of his sophomore year of high school, Pankey moved to Kansas City with his family. During the summer after he graduated, and the two after his freshman and sophomore years of college, he worked on a study of a smoking-cessation program in that city. "I learned a lot about the science of smoking and smoking cessation, and the behavioral aspects of a large program," he says. As a pre-med psychology major at Rice University, he was "always interested in understanding human psychology toward improving health."

Biomedical and Health Informatics incorporates that with information technology. "I've never been a techie, but I'm interested in technology for what problems it can solve," Pankey explains. "Combining information technology with an understanding of human behavior, there's an inexpensive way to solve a lot of medical problems." He cites as an example a study (Hospital Elder Life Program of Hebrew Senior Life under Sharon Inouye, MD) that showed it was possible to reduce delirium among hospitalized elderly patients by up to 40 percent. When patients were admitted, they were evaluated, and evaluators filled out electronic forms recommending particular interventions that involved exercise and time spent with volunteers. Teams were assigned to each patient

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CAREER OPPORTUNITIES ALLIED HEALTH

MEDICAL SHOWS HAVE always been popular on television, and the focus is usually on the doctors and nurses (specifically, on their love lives, but that's another story.) What most of us watching don't realize is that the majority of the characters in the background — from the woman in scrubs handing sterilized instruments to the handsome surgeon during a lifesaving operation to the men who go in to clean up the operating room later — represent the important roles of people in the allied health professions.

According to Earlene Avalon, MPH, PhD, director of nursing diversity initiatives at Children's Hospital Boston and former assistant dean of allied health at Bunker Hill Community College, allied health incorporates the majority of medical professions outside nursing and clinical medical practice. Avalon says, "There's a lot of media attention on nurses and doctors. However, if that's not your interest, there are other health care professions you can pursue that do not require you to attend nursing or medical school." Specific jobs within the field include surgical technologist, emergency medical technician (EMT), medical imaging technologist, central processing, respiratory therapist, medical coding specialist and phlebotomy technician.

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Student Profile

Maria Alexandra Artunduaga, MD

THE MOTIVATION DRIVING MARIA Alexandra Artunduaga, MD, from her native Colombia to study in the United States was multifaceted. She was inspired by her physician parents, a long line of women in her family who bucked societal norms to pursue careers instead of remaining homemakers, a sister who was born with cerebral palsy, and countless numbers of children born with facial deformities into a society without the resources to care for them.

During her last year of medical school in Colombia, Artunduaga saw more than 100 children with congenital deformities such as cleft lip/palate and microtia (small ears) while doing a medical rotation in a county hospital. Influenced by years of watching her sister struggle with being different, she decided she wanted to help children like these by becoming a pediatric reconstructive surgeon. Because there are few reconstructive surgeons in Colombia, and no training for craniofacial surgery, she applied to several postgraduate research fellowship programs in the United States.

Since 2007, Artunduaga has been at Harvard Medical School working on an independent research project to establish a genetic basis for microtia, which is more prevalent in Latin America than other parts of the world. She is working with 500

subjects from Ecuador, Colombia, Italy and the U.S. At the same time, she is conducting a twin study. "When I came to the lab I had no previous research experience," she says. "It was a great risk for them to hire me, but the people I work with are very supportive."

During her first year at Harvard, Artunduaga presented her public health survey at the New England Science Symposium. "It was very challenging to me, because it was the first time I was presenting in English," she says. "It was important, because in science, your presentation skills are vital."

She says being a part of BSCP has helped her since she arrived. "Having Dr. Nilton Medina as a role model is inspiring. The BSCP mentoring approach is fundamental for our professional development. As a minority, I am very thankful for that."

In 2010, Artunduaga will apply to residency programs in surgery in the United States. Her ultimate goal is to return to Colombia to practice and continue research.

"I feel very passionate about what I do," she says. "All these kids are left behind because they look different. My aim is very high, and I'm probably idealistic. However, doing what I am doing is a novel way of giving back to society." ■



MARIA ALEXANDRA ARTUNDUAGA, MD

CAREER OPPORTUNITIES

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based on the recommendations. When the plans were followed, patients had less delirium than those without similar plans.

"It takes a strong inclination to get exposure [to the field]," Pankey concedes. Boston

is a particularly good place for informatics, because all the Harvard teaching hospitals have programs, as do Tufts and Boston University. But there are informatics programs all over the country. "It's really branching out," Pankey notes. You can find

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Where Are They Now?

Michelle Hamlet, PhD

THE SCIENCE BUG FIRST HIT

Michelle Hamlet, PhD, in her tenth grade biology class, “when you scrape your cheek cells and look at them under a microscope.”

But, she says, it wasn't until an undergraduate biology professor at Georgetown “took me under her wing and encouraged me to pursue that interest” that she really began to consider a career in science. Today she is the training program coordinator at the National Human Genome Research Institute in Bethesda, Maryland.



MICHELLE HAMLET, PHD

“I didn't think I could do research,” Hamlet says of her early college days. “I didn't do well in math class or on standardized tests.” She graduated from Georgetown with a French major and biology minor, then received an MS in zoology from Howard University, where she “learned what it meant to do research.”

Hamlet, who grew up in Auburn, Massachusetts, returned to her home state to earn her PhD in developmental biology at Harvard. In 1996, during her third year of school, she attended her first of several BSCP conferences — three as a student and two as an advisor. “What really struck me was the opportunity to network... to see colleagues who were where I was, who were just ahead or just behind me who looked like me. That was critical — to be able to interact with people with whom I shared common interests on many levels,” she recalls. At

around the same time, Hamlet helped form the Minority Biomedical Students at Harvard group, which she says was “inspired by BSCP in terms of the kinds of activities we did.” Coming back to conferences as an advisor (she will return in February) may be “even more rewarding, because it gives me a chance to give back to the organization that helped me very much.”

After she received her PhD, Hamlet completed a postdoctoral program at Saint Jude Children's Research Hospital in Memphis. She joined the National Human Genome Research Institute, she says, because “I really felt strongly I could have more impact in a position where I could recruit others to do science research. But I do miss the bench sometimes.”

Hamlet has advice that may surprise students interested in biomedical science careers: “learn how to write, and write well.” In her current position, she looks through thousands of applications for summer internships, and she says a poorly written personal statement can disqualify an applicant. She also advises students to take as many courses as possible outside their majors, and learn basic bioinformatics skills. Of course, she says, “following your passion really is critical. You're not going to do well if you're not doing something you love.” ■

the Alternative Careers panel at the 2010 Biomedical Science Careers Student Conference. He says BSCP was meaningful to him as a student because, “You're getting mentorship from their program, and you're also giving back at the same time.” ■

ALLIED HEALTH

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Becoming qualified for a career in any of these areas often requires a one-year program or associate's degree. Usually, Avalon explains, an internship or practicum is incorporated into the program, and colleges often help students with job placement. Currently, the health care job market is “really good,” especially for respiratory therapy, medical imaging and medical coding.

Avalon advises interested students to look first at state-funded schools, such as local community colleges. These are apt to offer better financial aid packages, and they have more flexible schedules. There are several schools in Massachusetts that offer allied health programs (see www.mass.edu/campuses/phecampuses.asp for a complete list), or you can look online for others throughout the country. Students should also look to the professional association of the career they are interested in pursuing, such as the Association of Surgical Technologists. These organizations provide lists of colleges that offer the major.

Avalon, who first became involved with BSCP in 1992 as a high school student in Dorchester, Massachusetts, will serve as a student advisor and moderate a nursing panel at the February 2010 BSCP conference. ■

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information on programs and the field at www.amia.org/informatics-academic-training-programs and www.amia.org/inside.

Pankey, who was a BSCP student while he was in medical school, will be a speaker on

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Save the Dates

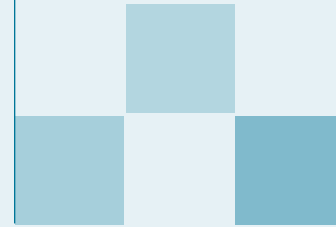
New England Science Symposium

Sunday, February 28, 2010
Joseph B. Martin Conference Center at
Harvard Medical School
77 Avenue Louis Pasteur, Boston

For more information, go to [www.
NewEnglandScienceSymposium.org](http://www.NewEnglandScienceSymposium.org)
(deadline for submitting abstracts has
passed, but registration to attend is
still open).

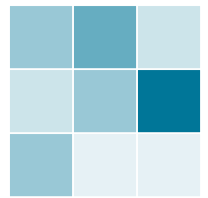
Evening of Hope

Thursday, April 29, 2010
The Fairmont Copley Plaza, Boston
6:00 p.m. Reception
7:00 p.m. Dinner and Awards Ceremony



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Summer Opportunities

The Harvard Catalyst/Harvard Clinical and Translational Science Center Program for Faculty Development and Diversity in the Office for Diversity and Community Partnership at Harvard Medical School is accepting applications for year two of the Summer Clinical and Translational Research Program for college sophomores, juniors and seniors and the Visiting Research Internship Program for first- and second-year medical students. For more information, contact Vera Yanovsky, program coordinator, at (617) 432-1892 or vera_yanovsky@hms.harvard.edu. You can also direct questions to pfdd_dcp@hms.harvard.edu or visit www.mfdp.med.harvard.edu/Catalyst. Application submission deadline for both programs is February 5, 2010. Notification of program acceptance is March 31, 2010. ■

Project Success places underrepresented minority and disadvantaged high school students living in Boston or Cambridge, Massachusetts, in Harvard research sites where they complete paid, mentored summer research projects, attend science and career development seminar series and enhance their speaking and writing skills. Application deadline for summer 2010 is February 12. For an application and further information, please contact Dr. Sheila Nutt, director, educational outreach programs, at (617) 432-4634 or sheila_nutt@hms.harvard.edu. ■