

Jurassic spark: Paleontologist named SOMA's educator of the year

BARBARA GREENWALD
STAFF EDITOR

Picture Lisa Simpson of “The Simpsons” TV show dissecting a cadaver and you’ll begin to understand how Elizabeth Rega, PhD, takes the “gross” out of gross anatomy for first-year students at the Western University of Health Sciences College of Osteopathic Medicine of the Pacific (WesternU/COMP) in Pomona, Calif, where she is an associate professor of anatomy.

Dr Rega received this year’s George W. Northup, DO, Educator of the Year Award, presented annually by the Student Osteopathic Medical Association (SOMA) to an osteopathic medical school faculty member who demonstrates excellence in education. According to her students and colleagues, Dr Rega imparts her knowledge of human structure and function with humor, passion and practicality.

“I am continually amazed by her intellect,” says Laura A. Rush, OMS II, who took Dr Rega’s required gross anatomy class last year, along with other first-year students at WesternU/COMP. “She possesses a seemingly inexhaustible amount of knowledge, compassion and poise—and the patience of a saint. She sets the bar for every course that comes after hers.

“And she really takes the time to get to know all her students. I was one of 220 first-years taking her course, but Dr Rega addressed me by name the second week classes were in session. It blew me away.”

“She’s just a cool lady,” adds Leigh R. Wilson, DO, who graduated in May from WesternU/COMP. “She’s smart and funny and she carries herself well. She’s her own person.”

“When I told Dr Rega that she was COMP’s nominee for SOMA’s educator of the year, she offered jokes about herself for my presentation,” notes Sophia Ghebremicael, OMS III, the president of the SOMA chapter at WesternU/COMP. “She said that if she were a cartoon character, she would be Lisa Simpson—and it fits. She’s only about 5 feet 1 inch, but when she gets in front of the class, she dominates.”

To explain the difference between male and female hips, Dr Rega invented a polelike contraption for students to wear that exaggerated their hip movements when walking. “She ended up putting it on a guy in the class and



Elizabeth Rega, PhD, stands in front of a traveling replica of “Sue” at the Los Angeles County Museum of Natural History in 2000. (Photo courtesy of Dr Rega)

made him walk around wearing pumps,” Ghebremicael recalls. “The whole class was laughing, but it really illustrated the differences between male and female anatomy. When it’s on our boards, we’ll remember.”

For Clinton E. Adams, DO, the dean of WesternU/COMP, Dr Rega is more than just an imaginative teacher with a gregarious personality. “She is multifaceted,” Dr Adams says. “We appreciate her scientific research, her collaboration with colleagues, her community involvement and her work with student groups on campus—the whole way she approaches life.”

Curriculum vitae

Most people would need a science dictionary to read Dr Rega’s résumé, which chronicles a substantial amount of research in physical anthropology and paleontology.

“My whole career has been focused on looking at the bones of animals and people for clues about their lives,” she says. “My initial research measured the biological quality of life in ancient cultures—how people’s physical features reflect their environment and



Elizabeth Rega, PhD (center), plays a patient during a workshop in which students in her musculoskeletal system course practice putting each other in casts.

Placing Dr Rega’s leg in a cast are Laura A. Rush, OMS II (left), and Eric W. Sharp, OMS II, both of the Western University of Health Sciences College of Osteopathic Medicine of the Pacific in Pomona, Calif. (Photo courtesy of Dr Rega)

opathology, Dr Rega was invited to study the largest, most complete and best-preserved *Tyrannosaurus rex* fossil yet discovered, known as Sue. With a group of vertebrate paleontologists, Dr Rega

have healed or are healing, it’s a sign that the animal is functioning well. Sue is old for a T-rex, so of course there would be a lot of lesions accumulated throughout her life.”

This kind of research entails being extremely knowledgeable about the musculoskeletal system, Dr

Rega points out. “Teaching anatomy is not an unlikely job for me. Both paleontologists and osteopathic physicians look at anatomy for clues about pathology in normal structure, and structure is what I teach,” she says.

“I have to give the osteopathic medical profession a lot of respect,” Dr Rega adds. “DOs get the connection between structural deficiencies and chronic ill health. They understand how flat feet cause back problems, for example, and they know to look at a patient’s gait for clues to what’s wrong with that patient’s hips, knees and feet.

“I am certainly on board with osteopathic principles and practice. We all need to support further research regarding their precise mechanisms of action.”

Classroom magic

“The common perception is that anatomy is one of those courses med students have to take, but most physicians don’t remember what they learned,” notes Craig B. Kuehn, PhD, one of Dr Rega’s colleagues in the department of

“One of Dr Rega’s strengths is that she gets into the *why* and *how* of human anatomy instead of just the *what*.”

—Dr Kuehn

social structure. Later, I got into fossils and paleopathology.”

Dr Rega earned her PhD in biological anthropology at the University of Chicago, where she worked as a teaching assistant in the anatomy lab of the university’s Pritzker School of Medicine. There, she taught alongside world-renowned “dinosaur hunter” Paul C. Sereno, PhD, who discovered several new dinosaur species on several continents.

Because of her experience in pale-

is analyzing the pathologies of Sue’s skull and postcranial skeleton, along with those of other T-rex specimens.

“I’m looking at the bony markers of disease,” she says, noting that her theories about Sue’s pathology go against the assumption that this animal was sick.

“I don’t believe that Sue can be characterized as unhealthy,” Dr Rega explains. “Just because you see a load of lesions on an animal, it doesn’t mean that the animal is sick. If the lesions

Family within a family

Elizabeth Rega, PhD, who recently was named the George W. Northup, DO, Educator of the Year by the Student Osteopathic Medical Association, is not the only paleontologist teaching anatomy at an osteopathic medical school.

With their training in structure-function relationships, paleontologists are uniquely suited for teaching future physicians, Dr Rega points out.

"The osteopathic medical profession is especially friendly to us because DOs concentrate on form, and osteopathic medical schools rely on instructors who understand form," says Dr Rega, an associate professor of anatomy at the Western University of Health Sciences College of Osteopathic Medicine of the Pacific (WesternU/COMP) in Pomona, Calif. "The connection between osteopathic medical schools and paleontologists is big."

For example, five paleontologists teach anatomy at the New York College of Osteopathic Medicine of New York Institute of Technology in Old Westbury, and four paleontologists teach anatomy at the Ohio University College of Osteopathic Medicine in Athens. Paleontologists are also on staff at the Kirksville College of Osteopathic Medicine of A.T. Still University of Health Sciences and the Midwestern University/Chicago College of Osteopathic Medicine in Downers Grove, Ill.

anatomy at WesternU/COMP. "One of Dr Rega's strengths is that she gets into the *why* and *how* of human anatomy instead of just the *what*, which forces her students to move beyond rote memorization. She attacks anatomy from a functional perspective."

According to Dr Kuehn, Dr Rega brought a fresh approach to WesternU/COMP's gross anatomy course. Instead of beginning with a lecture and then going into the lab, her students go

Field to classroom

Dr Rega belongs to the Society of Vertebrate Paleontology, as do several of her colleagues from other osteopathic medical schools. "We are a 'sub family' within the osteopathic family," Dr Rega notes. "We enjoy the same feelings of camaraderie and distinctiveness that osteopathic physicians enjoy."

At the society's meetings, Dr Rega and her colleagues get together to compare notes on how to teach anatomy, often drawing from their experiences in the field. To liven her anatomy lectures, Dr Rega often incorporates anecdotes about her research expeditions to locales such as Jamaica, the former Yugoslavia and Valley of the Gods, Utah.

True to her training, Dr Rega never hesitates to plunge into anatomy lab activities.

"I'm not at all passive in the lab," she says. "I'll come up to different tables and ask students what they're looking at. When they're using their hands, they learn much more than if they were just sitting there listening."

"Dr Rega does a great job in explaining how the body develops in a way that you really remember," says Sophia Ghebremicael, OMS III, the president of the SOMA chapter at WesternU/COMP. "She's a great teacher."

—Barbara Greenwald

to lab first, take a quiz, and then hear a lecture.

"Students will tune out if you don't engage them," Dr Rega points out. "By organizing the gross anatomy course in a different way, I'm taking them out of their comfort level. Now they have to prepare for their lab—which they never did before—because there is a reward for doing so. By inserting a quiz between the lab and the lecture, I'm pressing them into studying every day, which

makes their exams easier for them."

Dr Rega's reorganization also ensures that students will be more engaged in their lectures, Dr Kuehn says, because they will already understand a good deal of the subject matter by the time they get to the lecture.

Dr Rega credits paleontologist R. Eric Lombard, PhD, of the Pritzker School of Medicine, with mentoring her in becoming a teacher. Dr Lombard, who was recently named one of six inaugural members of the University of Chicago Academy of Distinguished Medical Educators, directed the university's gross anatomy lab when she was a student there.

"Dr Lombard showed me that the ability to teach isn't a natural personality trait—it's a learned trait," Dr Rega says. "He is an accomplished researcher in the fields of human anatomy and evolutionary biology, but he always went over his notes before class and he always illustrated his lectures."

Dr Rega illustrates her lectures with cartoons, pictures of well-known athletes and marked-up photos of various body parts belonging to her 5-year-old son, Darwin. She even used an image of an obstetric ultrasound from when she was pregnant to demonstrate basiscranial bone formation.

"Humans are neurobiologically trained to respond better to pictures," she says.

One of her most creative teaching techniques is to use animated characters in her lectures. As a consultant on human and primate anatomy to both The Walt Disney Co and Sony Pictures Imageworks, Dr Rega works to keep the movement and structure of both animal and human characters realistic.

"When I worked on Disney's *Pocahontas*, I helped to create a realistic facial and body structure for an American Indian character," she notes. "The challenge in working on Disney's *Mulan* was creating the right body pro-

portions and movement for a girl dressed up as a boy.”

“The magic of Dr Rega is that she loves to re-create movement, which helps students understand how structure relates to function,” Dr Adams says. “She knows how to bridge the gap between the conceptual thinking of an anatomist and that of a clinician.”

Spirit of collaboration

In and out of the classroom, Dr Rega is a team-builder, Dr Adams observes. She used a peer-based learning model in coordinating the school’s musculoskeletal system course last year, he points out. Dr Rega trained a small group of volunteers to be facilitators for the rest of the class. Then she broke the class down into small groups and

let the facilitators lead their classmates in analyzing clinical-based scenarios.

“There were former podiatrists, chiropractors and other healthcare professionals in many of these groups, and

to earn a bachelor’s degree from Pitzer and a DO degree from WesternU/COMP in seven years. She is also developing a similar program with California State University, San

“Dr Rega engages all her students by making every class interactive.”

—Rush

they already knew a lot about the musculoskeletal system,” Dr Adams says. “They all taught each other.”

“Dr Rega engages all her students by making every class interactive,” says Rush, who took the course. “One day, she brought in a Pilates instructor at lunch. We not only got

to take a Pilates class, but we learned more about the musculoskeletal system. “She also set up a workshop in which we practiced putting each other in casts. After an eight-hour day of intense lectures on bone lesions, we got to relax and put casts on our friends.”

to take a Pilates class, but we learned more about the musculoskeletal system. “She also set up a workshop in which we practiced putting each other in casts. After an eight-hour day of intense lectures on bone lesions, we got to relax and put casts on our friends.”

“When we were voting on who to nominate from WesternU/COMP, we asked ourselves, ‘Which professor really touched our year here?’” Ghebremicael recalls. “What made Dr Rega stand out is that she affected every aspect of our lives.”

“In college and medical school, you have plenty of instructors, but not a lot of people who have a passion for teaching,” Dr Wilson adds. “Dr Rega always put things in a bigger context. And it’s obvious that she is a caring person.

“For me, it wasn’t anatomy class that I loved—it was her. She just made me want to be in school.” *AOA*



Students at the Western University of Health Sciences College of Osteopathic Medicine of the Pacific in Pomona, Calif, participate in a Pilates class during lunch hour. The students take a musculoskeletal system course taught by Elizabeth Rega, PhD, who arranged the workout so the students could learn about the musculoskeletal system in a unique way. (Photo courtesy of Dr Rega)