



“The mind cannot forget what the hands have learned.™”

IN THIS ISSUE

Featured Educator: Penny Perkins-Johnston, PhD	1 & 2	What's New	4
2013 Meetings and Events	3	Grant Opportunities	4
2013 Professional Developments	3	Did you know?	4

FEATURED EDUCATOR

Penny Perkins-Johnston, PhD *Teaching Muscles in Motion*

In 2004, anticipating the expanding interest in the physical well-being of the American population, and in support of the Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity, California State University, San Marcos (CSUSM) began a rigorous B.S. program in Kinesiology—the science of movement.

Options within the degree program include Physical Education, Applied Exercise Science, and Pre-Physical Therapy, all related by the common thread of understanding origins,

insertions and actions of muscle groups.

Designed to prepare students for a wide variety of careers in the areas of rehabilitation, wellness, and fitness education, the Cal State, San Marcos Kinesiology program attracts college-age students, as well as individuals interested in a career-change, including those in the military. For these kinesiology students, a comprehensive knowledge of human anatomy is essential for their future

success. In fact, more than half of this year's students will go on to careers that incorporate body manipulation techniques. In order to employ these skills properly, they must know exactly how the body works and moves. In 2005, Dr.

Penny Perkins-Johnston designed and taught the first Human Anatomy and Physiology course offered at CSUSM. Originally, the course included pre-nursing and Kinesiology majors combined, but it was soon recognized that Kinesiology majors need more experience working with the musculoskeletal system.



Initially, Perkins-Johnston taught kinesiology by incorporating cat dissections to show how muscles, bones and ligaments create movement, but found that the method wasn't adequate for teaching the complex dynamics of human anatomy. "Quadrupeds don't have the same muscles as humans, so you are not able to see the exact same structures in dissection."

She explains, "Dissection is good for some things and we work on cadavers later in the program. But you can't use dissection for a lasting and realistic understanding of skel-

QUARTERLY
Volume 3, Issue 1
Spring 2013

© 2013 Zahourek Systems, Inc.
The ANATOMY IN CLAY®
Newsletter is a quarterly
publication. All rights reserved.
1-800-950-5025
1-970-667-9047
2198 W. 15th Street
Loveland, CO 80538 USA
info@anatomyinclay.com
www.anatomyinclay.com



GSA Contract Holder
Award Schedule Contract
GS02F0098Y



CONTINUED ON PAGE 2

Do you have your own success story? Share it with us on our [Facebook](https://www.facebook.com/anatomyinclay) page or email us at: info@anatomyinclay.com



CONTINUED FROM PAGE 1

etal muscle structures - especially their origins, insertions and actions."

However, when introduced to the ANATOMY IN CLAY® Learning System at Human Anatomy and Physiology Society (HAPS) conference in 2009, the professor knew she had found a solution to this dilemma. She immediately ordered the system and has been using it ever since. She now owns twenty-four MANIKEN® Models that serve a full lab course of forty-eight students, each working on half a model.

Certain about her decision to use the system to teach muscle movement, she enthusiastically shares, "Right away I knew that hands-on learning and the ability to see how the muscle fibers actually work would be valuable to my students. The clay lets them visualize different aspects and motions that each type of muscle controls."

Students have the option to work in an open lab or check out the MANIKEN® models for studying at home. For this reason, the professor created a series of clay-building exercises organized by functional groups of the body.

The students first study the muscles of the head which include the complex muscles of facial expression, and muscles of mastication. Next, they build the musculature of the neck, chest, back (including the details of the deep back muscles), and the arms and legs. There are a total of nine exercises where students are asked to construct a specific muscle group. Because of the flexibility of the program, not all students work on the same muscle group at the same time.

In order to accommodate this varied schedule, Dr. Perkins-Johnston created templates listing various muscles that the students are required to learn. To ensure that they are building correctly, she asks the students to photograph their work on the MANIKEN® models and send her the images via email. She evaluates these visuals by a pre-defined rubric using criteria such as accuracy, neatness and the proper placement of origins, insertions and actions.

"The main benefit of this clay building system is that it shows students just what the muscle is like. By building the muscle out of clay, they remember it. And when they take exams, or move to higher levels of study, the memory of it is stored in their visual association cortex."

In addition to creating visual template exercises, Dr. Perkins-Johnston is creating a video series to show proper muscle building using clay. The films will also feature individuals performing "the action", specifying the movements that muscles employ. In fact a demonstration video and "Hands-on" workshop for A&P instructors will be presented at the annual (HAPS) conference in Las Vegas in May 2013.

One of the students involved in the video project, Jeren Marquecho-Riley a Physical Therapy major attests to the learning system's benefits: "It has definitely helped me do better on tests. I am taking a biomechanics class right now where we are studying acceleration and trying to figure how long neural actions last. The clay-building has really helped me understand the integration of muscles and their relationship to human physiology."

Agreeing with Jeren's assessment, Dr. Perkins-Johnston notes that there is great disparity with what you see in a book and what the body is really like. "Nothing in the world can teach deep back muscles like the ANATOMY IN CLAY® system. It really gives a much greater, feel - literally - for something that would otherwise be indecipherable, and it makes origins, insertions and actions much more concrete."





2013 MEETINGS AND EVENTS

- NSTA STEM
St. Louis, MO
May 15 - 17
www.nsta.org



- HAPS
Las Vegas, NV
May 25 - 29
www.hapsweb.org



- Wyoming ACTE
Casper, WY
June 10 - 14
www.wacte.net



- National HOSA
Nashville, TN
June 26 - 28
www.hosa.org



- American Association of Clinical Anatomists
Denver, CO
July 9 - 13
www.clinical-anatomy.org



- Texas Career Education Conference
Houston, TX
July 14 - 17
www.texascareereducationconference.com



- High Schools That Work
Charlotte, NC
July 17 - 20
www.sreb.org/hstwtw



- Ohio ACTE
Columbus, OH
July 31 - August 2
www.ohioacte.org



- Pilates Method Alliance
Fort Lauderdale, FL
October 9 - 12
<http://www.pilatesmethodalliance.org>



- NSTA Regional Conferences
Portland, OR
October 24 - 26
Charlotte, NC
November 7 - 9
Denver, CO
December 12 - 13
www.nsta.org



- Future Farmers of America
Louisville, KY
October 30 - November 2
www.ffa.org



- Texas CAST
Houston, TX
November 7 - 9
www.statweb.org



- NABT
Atlanta, GA
November 19 - 23
www.nabt.org



- National ACTE
Las Vegas, NV
December 5 - 7
www.acteonline.org



ANATOMY IN CLAY® Professional Developments

Reignite your Health Science and Anatomy Instruction with Engaging, Interactive, Hands-on Teaching!

Seattle, WA Bellevue College
May 10 - 11

Denver, CO Studios at Overland Crossing
June 21 - 22

Orlando, FL Winter Park Tech, Avalon
July 25 - 26

Zanesville, OH Zane State College
September 27 - 28

Denver, CO Studios at Overland Crossing
October 10 - 11

Program Description. Our accredited Professional Developments provide educators and administrators with practical strategies created to enhance critical thinking and retention in your health science classroom. The goal: Explore anatomy from the inside out! Through hands-on methods in 3D construction, attendees will experience an overview of: terminology, muscle and bone identification, body systems, effective clay manipulation, and classroom management techniques. Join thousands of educators across the country in transforming your classroom into a successful, inspiring environment guaranteed to keep your students' interest.

Registration Fees/Information. Fee for a 2-day workshop is \$350.



WHAT'S NEW? STEM + ART = STEAM

Recently, many educators across the nation are advocating that the STEM fields (Science, Technology, Engineering, and Math) address the profound contribution that Art can bring to learning—expanding the acronym to become STEAM. For the ANATOMY IN CLAY® Learning System, already in use by STEM programs nationwide, this focus on the “art” component makes perfect sense. Students apply STEM disciplines in myriad ways when working with our learning system

--experiencing first-hand bioengineering, biomechanics, and other science principles. They also engage in art through the act of sculpting body components out of clay. Besides boosting student enthusiasm, studies prove that combining arts with other standard subjects correlates to improvements in math and reading scores, better cognition, attention, reading fluency, and working memory.

GRANT OPPORTUNITIES

Northrop Grumman Corporation. Through its Contributions Program, Northrop Grumman Corporation provides financial assistance to accredited schools focused on improving education with a specific emphasis on STEM disciplines. The grant amounts vary based on budgetary requirements. Applications are accepted on a rolling basis. The company also offers a Matching Gifts for Education Program for up to \$1000.

[Contributions Program](#)
[Matching Gifts for Education Program](#)

The NEA Foundation. The NEA Foundation’s Student Achievement Grants support K-12 public school educators who bring new ideas and practices to strengthen teaching and learning, preparing students for bright and rewarding futures. Grant award amounts available are \$2,000 and \$5,000. Applications are reviewed three times per year, and may be submitted any time. If you require your application to be reviewed for a specific notification date, then you must submit by the posted deadline. See website for dates and further details.

<http://www.neafoundation.org/pages/nea-student-achievement-grants/>

DID YOU KNOW?

The First Anatomical Theater was built at the University of Padua in Padua, Italy in 1594. It was designed by Hieronymus Fabricius, (1537–1619), professor of surgery and anatomy at the time. Located in the Palazzo del Bo, the anatomical theater was constructed to host over 200 students. Its elliptical, inverted cone shape with six concentric tiers allowed onlookers to easily view the dissections of corpses placed on the table at the center of the theater.

Noted scholars who closely observed the anatomical lessons here included English Physician William Harvey (1578 - 1657),

who first completely described the circulatory system; Italian Anatomist Giovan Battista Morgagni (1682 - 1771), father of modern anatomical pathology; and Italian Anatomist Antonio Scarpa (1747

- 1832), author of groundbreaking observations on the Ganglions of the Nerves, and the structure of the organs of hearing and smell.

Attesting to the significance of this architectural masterpiece and



Caption: Palazzo Bo, Anatomical Theater
Image by Massimo Pistore for University of Padova
Source: <http://www.unipd.it/archivio-immagini>

anatomical model, many centers of study and research were erected across Europe that emulated the Padua method. Amazingly,

apart from a few 18th century modifications, and long and careful restoration work, the theater is well preserved and open to visitors today.