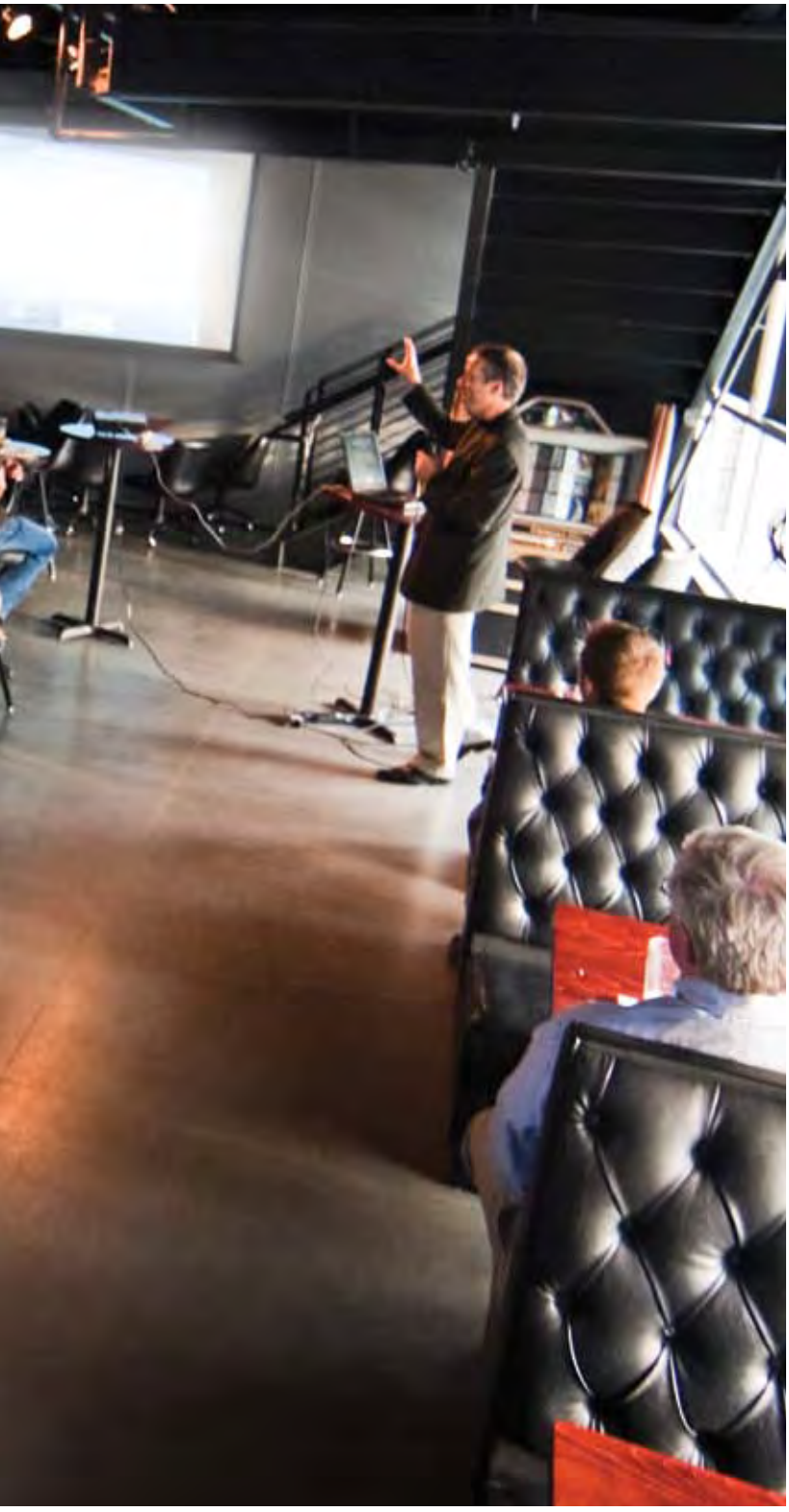
Boosting Science Literacy

by Elizabeth Kumru

It’s an unlikely place to learn about science.



There aren’t any Bunsen burners, microscopes or test tubes in the dimly lit room. The oversized periodic table is absent from the wall. The students are, for the most part, young professionals.

Yet, in this relaxed atmosphere nearly 70 people gather – eager to spend an hour of their time to learn about the science behind weight loss from Dan Anderson, M.D., Ph.D., assistant professor of cardiology at UNMC.

Like a nightclub comedian, Dr. Anderson uses anecdotes and self-deprecating humor to capture and hold the attention of the 21- to 70-year-olds in the audience while he explains the intricacies of cardiovascular disease.

The Slowdown – a chic bar near the Qwest Center Omaha – is the backdrop for UNMC’s newest science literacy program: the Science Café. Here, people gather the first Tuesday of the month to learn about health topics in a face-to-face conversation with a scientist.

The free program, hosted by UNMC, BioNebraska and the Nebraska Coalition for Lifesaving Cures, has become so popular that similar sessions have started in Lincoln.

Amy Recker, executive director, BioNebraska Life Sciences Association, sees this as an opportunity to bring science to the general public in a fun way.

“Most people don’t have direct access to the experts,” she said. “UNMC has led the charge to provide access to the information. It’s been well received by the public.”

A more scientifically literate populace is the goal and the Science Café is the first of UNMC’s three strategic initiatives to be set in motion, said Amber Donnelly, Ph.D., director of UNMC’s cytotechnology program and a member of the science literacy team.

The 17-member team is composed of UNMC faculty and staff, as well as Omaha area community leaders. The K-12 teacher work group is focused on the second project:

UNMC experts inform, entertain at Science Café

Kendra Schmid, Ph.D., has found beauty in numbers. The assistant professor of biostatistics in the College of Public Health can determine a person's facial attractiveness by measuring the geometry of the face.

Through statistics, her software program can rate attractiveness on a scale of one to 10 and determine who's hot. Dr. Schmid's research was featured in a Discovery Channel documentary titled "The Science of Sex Appeal" and on The Oprah Winfrey Show. Her May 5 Science Café presentation, "The Science of Attractiveness," was standing room only.

Sanjay Singh, M.D., is fascinated by the brain's cortex, the gray matter that makes individuals uniquely human. It is there that personalities and emotions reside, he told a packed Science Café audience to rave reviews. Dr. Singh's presentation was so popular it became the first Science Café program offered in Lincoln.

Director of the Nebraska Epilepsy Center and associate professor of neurological sciences, Dr. Singh was recently presented a national award for excellence in teaching by the American Academy of Neurology. His unwavering commitment to improving the lives of epilepsy patients has given them a new lease on life and a future they thought they would never have.

Melissa Helligso, a forensic DNA analyst in UNMC's pathology/microbiology department, says evidence doesn't lie. Over the past 10 years, the UNMC medical technology graduate has done forensic DNA testing on hundreds of criminal cases in Omaha and the surrounding areas.

More than 200 people gathered for her July 7 presentation, "CSI Omaha: the Fact behind the Fiction," and learned that no two people, with the exception of identical twins, have the same DNA blueprint.

James Sorrell, M.D., associate professor of psychiatry, will present the science of psychiatry at the Sept. 1 Science Café in Omaha.

Dr. Sorrell provides consultation services for medical/surgical patients with a focus on clinical services and research in psychiatric aspects of liver disease, HIV/AIDS, oncology and transplantation. At one time he hosted, "Sunday Night Shrink Rap," a weekly call-in show on an Omaha radio station. He now develops telepsychiatry services that will help veterans and civilians on a range of issues from post-traumatic stress disorder to depression and substance abuse.

creation of a centralized online resource for Nebraska's science teachers. The third project, still on the drawing board, is a mobile science lab that will travel to schools across the state.

Brenda Zabel, a 24-year veteran science teacher at Omaha's Westside High School, said the comprehensive Web site would list science competitions and learning opportunities – complete with contact information. The group plans to announce the resource this fall at the Nebraska Association of Teachers of Science conference.

"It was a real eye-opener for me to learn how much is out there," she said. "There's a nature preserve near Albion and study programs on the geology and biology of the Panhandle. I had no idea these were available."

UNMC has been at the forefront of science literacy for more than a decade with such programs as the eighth-grade science meet, summer workshops for the state's elementary through high school science teachers and Mini-Medical School, which offers the public an in-depth look at various health issues.

But, other than curiosity, why should anyone care about science?

Simply put: science is omnipresent. Start your car. Get a flu shot. Call a friend on your cell phone. Without science and technology,

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Amber Donnelly, M.D.

none of these activities would exist. Society evolves based on the discoveries made by scientists, engineers and medical researchers.

Scientific issues – from global warming to genetically engineered food to emerging diseases – are debated publically. Yet, a recent study shows that middle and high school students in the United States are falling behind in life sciences.

"Part of UNMC's mission is to ignite the spark for learning, educate the public and promote health science education to meet the growing workforce shortage," Dr. Donnelly said.

Back at the Slowdown, conversations overlap and jukebox music blares from wall-mounted speakers. People order drinks while others line up for free pizza, courtesy of the Nebraska Coalition for Lifesaving Cures.

When 7 p.m. rolls around, the chatter dies down. Everyone's attention is on Dr. Anderson, who begins with a story about one of his patients who had a heart attack.

"This man, who was just a little older than me, was lying in a hospital bed after his attack. His young children stood there, crying, 'Daddy, don't die.'

"I had children the same age. I was overweight, ate junk food and rarely exercised. I knew then I had to make a change," he said.

His epiphany turned into a lifestyle change dedicated to healthy foods and exercise. He shed 50 pounds five years ago and has kept it off.

"Your main arteries are like a garden hose. Imagine how the water pressure is cut when you park a car on the hose. That's what a heart attack is like. The heart tissue dies and you never get it back," he said.

With a doctorate in molecular biology, Dr. Anderson looks for ways to detect heart disease at an early stage. "Inflammation seems to be the root cause of many diseases. We need to get that under control. Simple aspirin decreases factors, but we don't know why."

"Obesity; hypertension, diabetes and high cholesterol all lead to heart disease. We need to get these under control and lead healthier lifestyles," he said.

"Weight loss as well as the medical management of these other risk factors improves your quality and length of life."

Research will help improve the management and treatment of cardiovascular disease, he said.

"We each have the ability to significantly improve our risk of developing cardiovascular disease. The question is: Will you do what you know is right?"

In his PowerPoint presentation, Dr. Anderson shows the attentive audience pictures of clogged blood vessels and points to a build-up of cholesterol.

"Was that the french fry you ate in 1997?" he asks.

web extra

Find Science Café information and experts at www.unmc.edu/sciencecafe

True or false?

Scientific theories are just ideas about how something works.

Answer:

False. In science, the word "theory" means an idea has considerable evidence behind it and has endured attempts to disprove it. This is one of the most commonly misunderstood aspects of the nature of science, largely because the word "theory" has a different colloquial meaning. A theory must be extensively tested or confirmed and it must continue to survive attempts to disconfirm its predictions in order to win and keep such a title. Otherwise, it is more properly called a hypothesis.

Omaha Science Media Project:

UNMC partners with UNL, school district and media

by Jo Giles

Viruses change so rapidly it can be difficult for the researchers who study them. That may be why many high school teachers find it a challenge to explain virology. A unique partnership between UNMC, the Center for Biopreparedness Education (a joint endeavor between Creighton University and UNMC), the University of Nebraska - Lincoln, Omaha Public Schools (OPS), media companies and Northwestern University in Chicago hopes to make a difference.

A journalist joined a team of teachers, students and UNMC researchers this summer to help them create multimedia projects about infectious disease, HIV, pandemic disease and juvenile diabetes. OPS will use the audio and video segments in a pilot curriculum program next spring to teach other students about viruses. The project, funded by the Sherwood Foundation, could become a model for schools nationwide.