

THE UNIVERSITY OF IOWA COLLEGE OF PUBLIC HEALTH

INSIGHT

Spring 2014



ONE HEALTH

Exploring the intersection of animal, human, and environmental health.



FROM THE DEAN

THE IDEA THAT the health of animals, people, and the environment are closely interrelated isn't necessarily new. What is new, however, is the unprecedented growth of the human population, expansion into previously undeveloped areas, and changing climates and conditions that affect the habitat of animals and insects. All of these factors mean that people are increasingly being exposed to new pathogens carried by our furry, scaly, and winged friends.

In fact, the CDC estimates that about 75 percent of emerging and re-emerging diseases are either zoonotic (spread between humans and animals) and/or vector-borne (carried from infected animals to others through insects).

In this issue, we take a closer look at One Health—the concept recognizing that the health of humans is connected to the health of other animals and the environment. One Health brings together experts in human and veterinary medicine, environmental and public health, and related disciplines to strengthen collaboration and communication on these issues.

In our own college, Christine Petersen, DVM, PhD, associate professor of epidemiology, brings her veterinary medicine expertise to zoonotic diseases such as Chagas' disease and leishmaniasis. We're also proud to work with Iowa State University to offer Master of Public Health programs for veterinarians to further build their knowledge of the animal-human health intersection.

We take a look at other public health challenges in this issue, including how alumnus Stephen Streed is leading the charge to reduce health care acquired infections in a hospital system, how a class in occupational safety prepares students to prevent workplace injuries, and what researchers are doing to study the air quality near frac sand mining operations.

The range of public health issues our students, faculty, and alumni tackle each day is truly impressive. Share where your work has taken you by sending us a note at cph-communications@uiowa.edu.

Warm regards,



Going Viral

Christine Petersen's interest in infectious diseases transmitted between animals and humans is catching on.

InSight is published twice a year for alumni and friends of the University of Iowa College of Public Health.

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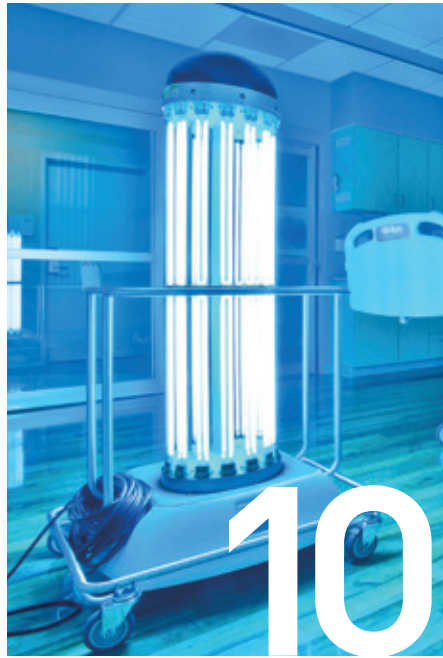
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Fracking Comes to the Heartland

CPH researchers are working with communities to study air quality near frac sand mines.



Shining a Light on Infection Prevention

CPH alumnus Stephen Streed discusses how hospitals use a range of methods to control health care-associated infections.



Hazard Reduction

Students engage with local businesses to improve workers' health and safety.

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GOING VIRAL



Christine Petersen's interest in infectious diseases transmitted between animals and humans is catching on.

BY KEITH POEHLMAN

Christine Petersen, DVM, PhD, was just four years old when her grandmother predicted she would be a veterinarian. “She found me coaxing feral kittens out of the bushes at her hog farm,” Petersen says. “I figured [a veterinarian] was someone who worked with and helped animals, and that sounded good to me.”

But it wasn't until Petersen was a veterinary student at Cornell University that she realized she could use her training to help not just animals, but to improve the well-being of humans, too.

Today, she's an associate professor of epidemiology in the UI College of Public Health, where she conducts research on the prevalence and prevention of diseases that can be transmitted between animals and humans. Known as zoonotic diseases, these illnesses are spread directly between animals and humans, or indirectly through the work of mosquitoes or other vectors.

ONE HEALTH

Petersen is part of a growing number of health and environmental science experts who believe that the health of humans is connected to the health of animals and the environment, a concept known as One Health.

According to Petersen, interest in One Health has been fueled by an increasing number of global outbreaks of relatively new infectious diseases.

The Centers for Disease Control and Prevention (CDC) notes that “approximately 75 percent of recently emerging infectious diseases affecting humans are diseases of animal origin.” Just some of these diseases include West Nile virus and the Severe Acute Respiratory Syndrome (SARS).

Petersen points to the 1999 West Nile virus outbreak as a milestone in the study of zoonotic diseases. That year the head pathologist at the Bronx Zoo in New York suspected that the dead birds at her facility had succumbed to the same virus that was causing severe inflammation of the brain—encephalitis—in people.

Evidence showed that humans were catching the virus from bites by mosquitoes that had also bitten infected birds. In spite of this, a CDC official disputed any possible link between humans and birds suffering from the virus.

BRINGING DOWN WALLS

That official's statement was reflective of a wall that Petersen says has existed for decades between the fields of human medicine and veterinary medicine. But with each new emerging infectious disease outbreak, she has witnessed more and more professionals from these fields working together on zoonotic diseases rather than on their own.

“Biology does not divide us,” she says. “It brings us together. We have artificially divided ourselves into these fields. It's myopic to look at them separately.”

Petersen's microbiology professor at Cornell, Dr. Gordon Campbell, understood this long before the One Health field came into being.

“He taught Health with a big H,” she says, by stressing that animal health couldn't be fully understood without factoring in the health of humans, plants, and the environment. He also encouraged his students to take part in exchange programs to observe veterinarians in developing countries.

INTEREST IN ONE HEALTH HAS BEEN FUELED BY AN INCREASING NUMBER OF GLOBAL OUTBREAKS OF RELATIVELY NEW INFECTIOUS DISEASES.



CENTERS FOR DISEASE CONTROL
AND PREVENTION



STUDYING TRANSMISSION

While an exchange student in Kenya in 1999, Petersen saw firsthand the devastation that can be brought on by an infectious disease. At that time, fully one out of every ten Kenyans was infected with HIV.

Later, she did her dissertation at Harvard University on how the tropical parasite *Trypanosoma cruzi* causes heart muscle cells to stop working and has led to heart failure among people and dogs in Latin America, an illness known as Chagas' disease. The parasite is transmitted to animals and people by so-called assassin bugs, also known as triatomine bugs or kissing bugs.

Petersen found that the rate of transmission of Chagas' disease is particularly high among poorer South Americans because they often live in one-room houses that they share with pets and, unfortunately, assassin bugs.

Before joining the University of Iowa faculty in 2013, Petersen was an associate professor in the Department of Veterinary Pathology at Iowa State

University, where she studied leishmaniasis. The disease causes painful sores and attacks the liver, spleen, and lymph nodes in both humans and dogs. It's spread by sand flies that bite humans after biting infected dogs.

Her work on leishmaniasis led her to establish an ongoing collaboration with Mary Wilson, MD, a professor in the Department of Internal Medicine and Microbiology at the UI Carver College of Medicine, who has also done extensive research into the disease.

In 2012, Petersen gave a lecture on leishmaniasis in association with the One Health Commission, an organization made up of human, animal, plant, and ecosystem health professionals who collaborate to bring about better health for people, domestic animals, wildlife, plants, and the environment. During her talk, Petersen demonstrated the effect the environment can have on human and animal health by showing that as global temperatures have risen, so has the number of places sand flies now call home.

HELPING ANIMAL AND HUMAN HEALTH

Petersen's current research includes her ongoing study of leishmaniasis as well as examining animal vaccine safety and performing collaborative work to prevent infectious diseases in animal shelters.

Although Petersen's love of animals led her to become a veterinarian, she ultimately feels that she can champion the cause of animal health by working within public health.

"As a veterinarian working directly in a public health field, I can specifically measure my impact in aiding both people and animals," she says. "It's part of the veterinary oath to protect public health. I take that oath to heart."

TWO DEGREES, ONE HEALTH

Combined degree programs offer training in both public health and veterinary medicine.

Today, public health veterinarians can be found in a wide variety of organizations, including the food industry; local, state, federal, and international health agencies; as well as many colleges and universities.

The University of Iowa and Iowa State University now offer joint Master of Public Health (MPH) degree programs for veterinarians and veterinary students who would like to combine it with their Doctor of Veterinary Medicine degree (DVM) to pursue a career in One Health.

MPH FOR PRACTICING VETS

The idea for an MPH program for veterinarians came about largely due to the work of a few veterinarians doing research at Iowa State University's Center for Food Security and Public Health, who were also pursuing a public health degree at the University of Iowa.

"After a number of fellows graduated from the MPH program, we decided that there was an unmet need for a distance-based program for this professional group," says Mary Aquilino, College of Public Health associate dean for MPH and undergraduate programs.

The MPH program is available to veterinarians who have a DVM degree and features two separate two-week institutes, one at the University of Iowa the first summer, and the second at Iowa State University the following summer.

"We have a great collaborative relationship with the faculty at ISU's College of Veterinary Medicine, and some of their faculty have adjunct appointments in the College of Public Health," says Aquilino. "It also is very feasible to work with another Iowa regent university in terms of administrative coordination and the proximity of our campuses."


COMBINED DVM/MPH DEGREE

In order for students to become involved in the DVM/MPH dual degree program, they must be accepted into the DVM program at Iowa State University. Providing public health training for current and future veterinarians is still a relatively recent opportunity.

"There are few U.S. programs that offer combined DVM/MPH degrees, and even fewer distance-based MPH programs for practicing veterinarians," says Aquilino. "We now have graduates throughout the world, many in public health leadership positions in governmental, non-governmental, and academic settings."

Aquilino has seen growing interest both in the MPH for practicing veterinarians program and the combined DVM/MPH degree program.

"I think both of these MPH options are extremely important as we learn more about the intersection of human and animal health—the One Health concept," she says. "Veterinarians are in a unique position to be effective public health care professionals in a world concerned with zoonotic infectious diseases, food security, bioterrorism, and environmental health."

 For more information, visit cph.uiowa.edu/mph.



MARK MARTURELLO



FRACKING COMES TO THE HEARTLAND

CPH researchers are working with communities to study air quality near frac sand mines.



BY TONY CRAINE

Buried just below the surface of wide stretches of the Midwest lies a natural resource that has only recently skyrocketed in value: silica sand. In the past decade it has played a major role in hydraulic fracturing or “fracking,” a drilling process that has helped the United States hit what many observers consider to be a domestic natural gas jackpot.

While fracking has ignited controversy because of its potential to taint water supplies near gas and oil wells, the environmental impact of extracting silica sand is not well understood. With mining companies poised to launch operations in northeast Iowa, concerned citizens there have called upon University of Iowa researchers to investigate.

Since about 2005, fracking has flourished in the United States. Energy companies using the technique have unlocked vast stores of natural gas and oil previously believed to be unreachable because they were embedded in shale rock and limestone. Fracking, a high-pressure application of water, chemicals, and silica sand (also known as “frac sand”), creates fissures in the rock, releasing the trapped gas and oil. The frac sand is essential because it infiltrates the cracks and keeps them propped open. One well can require hundreds or even thousands of tons of frac sand.

Constantly hungry for more of the sand, the burgeoning fracking industry has quickly spawned extensive sand mining outposts in Wisconsin, Minnesota, and Illinois. But when mining companies set

their sights on deposits in Allamakee and Winneshiek counties in northeast Iowa, residents formed citizen-action groups and got in touch with David Osterberg, a member of the outreach team of the Environmental Health Sciences Research Center (EHSRC) based in the College of Public Health.

“Frankly, they’re very worried,” says Osterberg, clinical professor of occupational and environmental health. He says a key concern is crystalline silica.

CRYSTALLINE SILICA AND SILICOSIS

A fine dust that is the byproduct of the mining process, respirable crystalline silica is known to cause silicosis, an incurable scarring of tissue in the lungs that can lead to severe shortness of breath and, eventually, death. Silica exposure has also been linked to other diseases, such as emphysema, tuberculosis, lung cancer, and some immune-system ailments.

The U.S. Occupational Safety and Health Administration describes occupational exposure to crystalline silica as “a serious threat” to some 2 million American workers in mining and other industries. But very little is known about the impact of ambient exposure to the dust; that is, exposure to residents of communities surrounding the mining operations. To date, no conclusive evidence has been found

Researcher will try to identify particles with diameters that range from 2.5 to 10 micrometers and determine if any of the particulate matter includes crystalline silica. Crystalline silica smaller than 4 micrometers is the type most likely to reach the alveoli of the lungs and cause silicosis.



that demonstrates that sand mining leads to silicosis in people living in surrounding communities. But silicosis has been identified in farm animals living downwind of sources of crystalline silica.

The citizens’ groups convinced the supervisors of Allamakee and Winneshiek counties to impose 18-month moratoria on frac sand mining until they’ve had a chance to consider development of local mining regulations and to assess the impact of mining on the region, which has an economy that depends heavily on tourism and second-home construction.

PHOTOS: WISCONSIN CENTER FOR INVESTIGATIVE JOURNALISM



STUDY SPARKS NEW INVENTIONS

After establishing contacts with several fledgling efforts to monitor air quality around frac sand operations in Wisconsin, the EHSRC procured a \$125,000 grant from the National Institute of Environmental Health Sciences in September 2013 to conduct a year-long air-quality study that will unify those projects and generate new research. Led by Peter Thorne, director of the EHSRC and professor and head of occupational and environmental health, the study funds UI researchers to develop novel methods for sampling and monitoring air around mining operations.

Tom Peters, associate professor of occupational and environmental health, is directing

the exposure-assessment portion of the research, which includes real-time monitoring of air affected by mining-related activities, development of low-cost detectors for long-term monitoring, and collection of particles through air sampling.

Ryan Grant, a graduate student in biomedical engineering, is working on the real-time monitoring leg, beginning with constructing and deploying a detection device that sits near railroad tracks that service frac sand operations.

“We’re inventing ways to associate airborne particle concentrations with events in the environment,” Peters says. “For example, when a train goes by, the sound from the train triggers a camera to take a picture, so we’re able to get an idea of whether it’s a sand train. Then it monitors the particulate matter levels in the air.”

They will try to identify particles with diameters that range from 2.5 to 10 micrometers and determine if any of the particulate matter includes crystalline silica. Crystalline silica smaller than 4 micrometers is the type most likely to reach the alveoli of the lungs and cause silicosis.

EXTENDING EFFORTS

Other components of the study lend support to ongoing work. Patrick O’Shaughnessy, professor of occupational and environmental health, will extend current air-sampling efforts by conducting modeling of air conditions, extrapolating the Wisconsin data, for example, to determine how air-quality levels might change

at the as-yet-undeveloped Iowa mine locations.

And Liz Swanton, a master’s student in the Department of Community and Behavioral Health, will develop training videos to teach public health department personnel how to employ standardized air-monitoring methods that will keep communities informed of whether their local mines are complying with standards.

“Mining permits require you to apply dust-suppression techniques to minimize fugitive emissions,” Peters says. “Some people do, some people don’t. There is no monitoring to check.” The low-cost monitors that the team develops will provide a way to check inexpensively. The video training will also ensure a continuing flow of reliable data.

MAKING IT PUBLIC

All the data will come together into a risk assessment led by Thorne that will inform the public about the levels of exposure and the risks to public health. These findings will be presented at workshops, where UI researchers will advise stakeholders, including policymakers, mining industry representatives, citizens’ groups, and academic institutions.

Peters, who has worked on projects with national impact, takes pride in how the work he and his colleagues do on this study will have long-term local benefits.

“This is a unique, regional issue,” he says. “It’s the first time I’ve been on a project with this degree of community participation. It’s been fun.”

COMMUNITY PARTNERSHIP



LIZ SWANTON, who graduated this spring with an MPH degree, has been working “to cement the partnership” between the EHSRC and Trempealeau County, Wisc., where the researchers are conducting a demonstration project to evaluate community exposures to respirable crystalline silica using community volunteers.

Read more about Swanton’s important role in the project, which she calls “community engagement at its best” and “an equally beneficial partnership” online at cph.uiowa.edu/insight.





CPH alumnus Stephen Streed discusses how hospitals use a range of methods to control health care-associated infections.

SHINING A LIGHT ON INFECTION PREVENTION

PHOTO: TRU-D AT LEHIGH VALLEY HEALTH NETWORK, COURTESY OF LUMALIER.

BY CINDY HADISH



Keeping patients safe from health care-associated infections (HAIs) is a major part of every hospital's mission, and recent data from the CDC show that progress is being made nationally. However, there's still room for improvement: On any given day, about 1 in 25 U.S. hospital patients acquires an infection while receiving medical care, adding up to about 722,000 infections in 2011, the CDC reports. About 75,000 patients with HAIs died during their hospitalizations.

CPH alumnus Stephen Streed (MS in Preventive Medicine and Environmental Health '75) has worked in the field of hospital epidemiology for more than 35 years. With new challenges always on the horizon, he sees the front lines of infection control as a battle zone that calls for both tried-and-true techniques and cutting-edge technology.

Streed embraces both approaches as system director of epidemiology/infection prevention at Lee Memorial Health System in Fort Myers, Fla. Keeping infections at bay in Lee Memorial's four hospitals requires vigilance not only from Streed's staff of 11, but the entire workforce of 15,000.

CURRENT CHALLENGES

"There's been quite a movement toward environmental hygiene," Streed says of the cleaning and sanitation processes used in infection control. "It's become more important now than in the past."

Patients are now most likely to get infections at the site of surgery and in the lungs, as well as in the bloodstream, the urinary tract, and the gut. The most common germs causing HAIs are *C. difficile*; *Staphylococcus aureus*, including MRSA; *Klebsiella*; *E. coli*; *Enterococcus*; and *Pseudomonas*.

Infection control experts like Streed have led recent improvements in managing many of these bugs in hospitals. As one infection control method, Streed says health care workers are able to screen patients for the presence of MRSA. Patients who carry MRSA can be given daily baths with an antibacterial soap called chlorhexidine gluconate. The antiseptic has been shown to reduce the risk of hospital infections in patients, Streed says.

C. difficile, which causes severe diarrhea, remains at high levels, according to the CDC. The elderly, especially those who take antibiotics, are most at

PATIENTS ARE NOW MOST LIKELY TO GET INFECTIONS AT THE SITE OF SURGERY AND IN THE LUNGS, AS WELL AS IN THE BLOODSTREAM, THE URINARY TRACT, AND THE GUT.

risk. *C. difficile* can be difficult to control since spores from infected patients are released into the environment and can last weeks or even months, “like tiny seeds waiting to germinate,” Streed says. Additionally, several years ago a mutation resulted in a more pathogenic strain.

THE NEW AND THE OLD

One of the newest sanitation methods capturing attention, as well as praise, from Streed and his colleagues are portable units that emit ultraviolet (UV) light. The devices work in about 15 minutes to sterilize nearly everything in the room where they are positioned.

Most of the UV radiation that reaches the Earth is ultraviolet A, Streed explains, the type that causes sunburn. The UVC rays used in the technology disrupt microorganisms’ DNA, causing them to die. Because the wavelength does not penetrate, its use doesn’t deteriorate plastics or other materials. “There are very few downsides,” he says.

One issue, however, is cost; the devices range from \$30,000 to \$100,000, but Streed compares that to the expense of a serious post-operative wound infection at \$50,000 or more. “So the investment upfront is worth it,” he says.

Machines that spray hydrogen peroxide vapors provide even better “killing” effects, according to tests, Streed says, but are more complicated to use, requiring air returns to be blocked and air scrubbers to remove residual hydrogen peroxide.

Another basic form of infection control—hand hygiene—is garnering renewed attention.

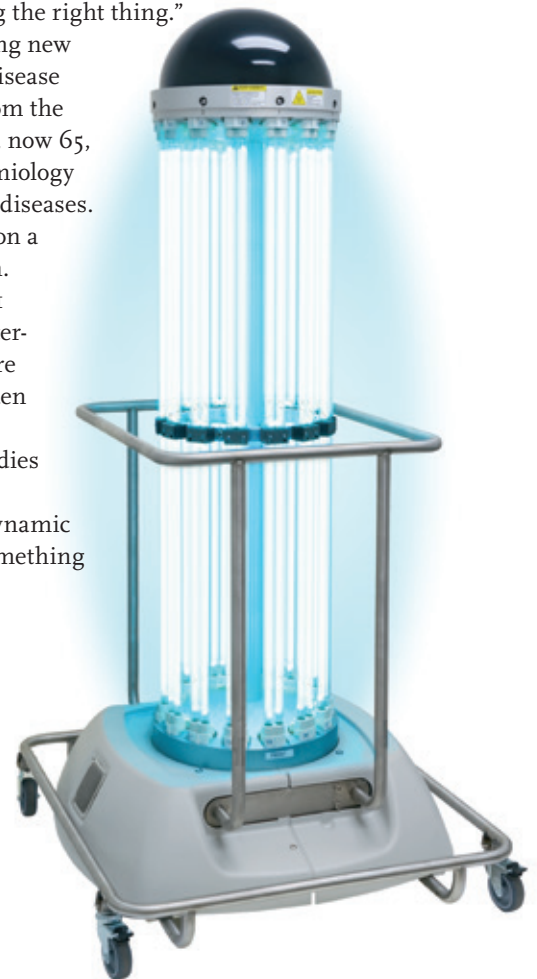
“It’s not taken for granted at all,” Streed says, noting that Lee Memorial has brought its hand-hygiene compliance rates to above 90 percent, while the national norm is 60 to 70 percent. Education on proper hand washing with soap and water and using alcohol-based hand sanitizer is important, as is making supplies readily available for health care workers, visitors, and patients.

A DYNAMIC FIELD

Hospitals have added impetus under recently modified Medicare rules that withhold payment for providers that perform at lower levels of efficiency, based on outcomes that include patient satisfaction, complications, and readmission rates. Centers for Medicare and Medicaid Services now withholds a certain percentage of their Medicare reimbursements to hospitals pending performance evaluation. Better performers eventually receive full payment, while underperformers do not; in effect, underperformers are penalized, Streed explains, “so there are financial incentives to doing the right thing.”

Much has changed—including new guidelines, technologies, and disease strains—since he graduated from the UI, which is what keeps Streed, now 65, excited about the field of epidemiology and his role battling infectious diseases. In fact, he’s currently working on a doctoral degree in public health. To Streed, the 2009-2010 H1N1 pandemic demonstrated the interconnectedness of our health care system, and he wanted to broaden his own understanding of the system through formalized studies leading to a DrPH degree.

“This is still a moving and dynamic field,” Streed says. “There is something new almost every day.”





Hazard Reduction

Students engage with local businesses to improve workers' health and safety.

BY DEBRA VENZKE

LAST FALL, IOWA CITY RESIDENT EMILY MAXWELL suffered a serious injury while working at a local restaurant. "...a large pot of hot oil spilled all over my left arm, jawline, ear, neck, chest, stomach and back," she wrote in a guest opinion for the *Iowa City Press-Citizen*. "Following the accident, none of my coworkers called 911. Everyone was afraid, and no one knew what to do."

The burns, most second- and third-degree, covered 15 percent of her body. Now recovering from her injuries, Maxwell encourages restaurant owners to check their businesses for hazards and train their employees on how to handle emergencies.

SAFER WORK SITES

Maxwell is one of an estimated 3 million private industry employees in the U.S. who experience a nonfatal workplace injury or illness each year. College of Public Health students taking the course Occupational Safety gain skills to help prevent such injuries. The class is one of the required courses in the industrial hygiene training program, which prepares graduate students to recognize, evaluate, and control occupational and environmental hazards to prevent diseases and injuries.

"Industrial hygiene looks at chemicals, radiation, noise, the sort of things you need monitors to do assessments with," says instructor Renée Anthony, assistant professor of occupational and environmental health. "But with occupational safety, we're looking at things like fire and electrical safety; driving and traffic safety; preventing slips, trips, and falls; knife safety in restaurants—the whole gamut of preventing injury and traumatic injury at the work site."

While regulations are important, so is education. As an example, Anthony points out that most people don't know where the nearest fire extinguisher or first aid kit is at their workplace.

"One of the take home messages for this class is: No matter where you are working, don't presume that somebody's taking care of you. You need to know your rights and how to protect yourself."

COMMUNITY CONSULTATIONS

The first week of the occupational safety class is spent reviewing case studies, such as the 1911 Triangle Waist factory fire in New York City that killed 146 workers, along with more recent national and local incidents, big and small.

To gain practical field experience, Anthony has students complete a semester-long, community-based project. "The assignment is for the student to identify a small, local business like a coffee shop or mom-and-pop auto repair business that probably doesn't have safety and health expertise. They then talk to the owner to see if they would be interested in having the student conduct a safety consultation and work out an agreement as to what they can do."

The students ask the owners questions about what workers are exposed to, where injuries have occurred, and what safety concerns they have in order to develop a safety plan. They also create an emergency evacuation plan for the site.

"The students are required to work with the owner so the plan will be something they can really use," says Anthony. "The students are learning as they're going and bring topics back to the class. The interventions they focus on are varied, depending on the business."

This spring, students worked with food service, health care, manufacturing, and a variety of other service sites.

“I chose a real estate business that manages several apartment buildings in the area,” says Deirdre Green, a second-year master’s student in the industrial hygiene program. “I’ll give them some safety expertise for their main office, which has about six workers.”

WORKING WITH PEOPLE

At the end of the semester the students deliver presentations on their projects, plus develop a safety-themed public service announcement (PSA) in a PowerPoint or video format.

“Depending on student interest, it could be a training module specific for their consultation site or be intended for a general audience. It has to focus on one specific task or behavior change, such as winter safety, fire safety at home, or how to minimize slips, trips, and falls for the elderly at home. Students select a topic based on known risk factors at work or in the community at large combined with something that they want to become an expert on,” says Anthony.

Green decided to create a PSA on space heater safety. “I thought it could tie into my safety consult,” she explains. “It’s something they could recommend to residents of their buildings, how to safely use space heaters and prevent fires.”

Anthony says the class gives students great hands-on experience. “We cover all the different types of hazards in class, but now they have to recommend ways to reduce these hazards in a real setting. Hopefully, they learn that while there are rules and regulations, rules alone don’t prevent injuries. There’s a whole additional layer of ‘How do we prevent injuries when we know what the hazard is?’ Working with people is really the way you get that done.”



The Din of Dining Out

Student Deirdre Green’s project on noise exposure in restaurants provides a sound research experience.

DEIRDRE GREEN spent a lot of time in restaurants last year, but she wasn’t there to sample the food. Instead, she sampled the noise.

Green, who graduated with an MS degree in industrial hygiene in spring 2014, worked with faculty member Renée Anthony to develop her master’s thesis research project, which focused on evaluating the personal noise exposure of restaurant workers in downtown Iowa City.

“There are more than 4 million restaurant workers in the country, but there’s no good knowledge about their long-term risk of hearing loss,” says Anthony. “Noise, to a restaurant, is good—noise sells food. When it gets too loud, customers can leave, but workers can’t.”



JUSTIN TORNER

EVALUATING EXPOSURES

Green, originally from Downers Grove, Ill., received her undergraduate degree in occupational safety from Iowa State University. For her master's project, she placed dosimeters on workers in two different styles of restaurant—full service (those that provide sit-down service and typically have a bar) and counter service. Six restaurants participated.

"I went back six times in the fall and six times in the summer and took daytime measurements on a variety of workers—hostesses, waiters, bartenders, and cooks," says Green. "I evaluated the data for each worker's actual exposure, what types of sound levels restaurant workers are exposed to, and if there's a difference in exposure by day of the week, season, job title, or restaurant type."

While her initial results show that all the workers' noise exposures fell within Occupational Safety and Health Administration regulations, "noise exposures exceeded non-regulatory recommendations, indicating that even during daytime hours at restaurants, workers might be exposed to noise that can affect their hearing later in life," Green notes. "Cooks had a louder exposure than the other restaurant workers, and full-service restaurants had higher exposures than the counter-order style of restaurant."

PROTECTING PEOPLE

Green says she learned a lot by designing her own project under Anthony's guidance. "It gave me the skills to get out there and communicate with people,

as well as how to put together a grant. I was able to take what I learned and apply it to real life. That was the most exciting part of my project—being able to execute a project in the public and in an area that I enjoy."

For Green, industrial hygiene is an ideal fit. "It's a combination of public health and engineering, which is really appealing to me. There's the opportunity to tailor the degree to what you want to do. Public health is one of those fields where you can put your degree to use. I enjoy the idea of protecting people and learning the most effective ways to do that."

Green plans to continue her work by pursuing a doctoral degree in occupational injury epidemiology.



HUANGYUYING ZHENG

CLEARING THE AIR IN CAFOS

Dust and gasses that accumulate in concentrated animal feeding operations (CAFOs) can pose a serious respiratory health risk to workers, yet research indicates that few wear protective masks on a regular basis. A better—and more cost-effective—way to reduce worker exposure may be to install a ventilation system to control contaminants in a facility, according to Renée Anthony, assistant professor of occupational and environmental health.

In a study published in the *Journal of Occupational and Environmental Hygiene*, the researchers developed and ran computer simulations of various air pollution control systems currently on the market to evaluate their effectiveness in agriculture buildings. Using real-time room concentrations of dust, ammonia, carbon monoxide, and carbon dioxide from a sample swine farrowing facility

during the winter months, the model examined operation costs and how effectively the systems removed contaminants.

“Producers indicated that the per-pig cost has to be low in order to be viable,” says Anthony. “We were surprised at the number of ventilation options that reduced hazards at well below \$1 per pig.” Anthony said this is less than what it might cost to provide respirators and training for workers throughout the year. The researchers are now testing systems in an actual swine farrowing facility to determine if they get similar results in the field.

One contaminant that was still difficult to control in each simulation was carbon dioxide. Anthony says it might be possible to reduce carbon dioxide concentrations by changing the heater in the farrowing rooms, which she plans to test in the future.

Ag Equipment Crashes Unexpectedly Common in Urban Areas

Crashes with agricultural equipment are unexpectedly common in urban areas and near towns and cities, according to research from the Great Plains Center for Agricultural Health in the College of Public Health.

The research analyzed agricultural equipment crashes collected from nine Midwest Departments of Transportation from 2005–2008. Crash zip code was assigned as urban or rural (large, small, and isolated) using Rural–Urban Commuting Areas. Crash proximity to a town was estimated with geographic information system technology. The researchers estimated the odds of crashing in urban versus rural zip codes and across rural gradients, and estimated mean distance (miles) from a crash site to a town.

“Although approximately one-third of agricultural equipment-related crashes occur near town, these crashes are thought to be a rural problem,” says Karisa Harland, study author and researcher in the Department of Occupational and Environmental Health. “This research further illustrates the need for education among all roadway users, increased visibility of agricultural equipment, and the development of complete rural roads to increase road safety and prevent agricultural equipment-related crashes.”

“PHOTOVOICE HAS BEEN SHOWN TO BE EMPOWERING WITH YOUTH,” SAYS WOODS-JAEGER.

HIV Risk Factors as Seen by Teens



How can researchers learn more about the social determinants of HIV to reduce risk among vulnerable teens? Hand those teens a camera and let them photograph the risks and assets they see in their community, says Briana Woods-Jaeger, assistant professor of community and behavioral health.

Numerous studies indicate African American youth are among those at highest risk for contracting HIV. In a study published in *Qualitative Health Research*, Woods-Jaeger’s research team employed

photovoice, a community-based participatory research method using photography to highlight community concerns, to identify the HIV risk factors faced by African American teens in one North Carolina community.

The researchers worked with one group of seven girls and one group of five boys. Each group developed its own questions to answer as photo assignments and received disposable cameras to document challenges that increased their HIV risk. Then each group participated in facilitated discussions of their photos, expressing both the problems they saw and possible solutions.

The researchers analyzed transcripts of the photo discussions and grouped the identified risks under three themes: being “stuck” due to limited opportunities, adults and social institutions not caring, and stereotypes and low expectations becoming a self-fulfilling prophecy.

While other studies have looked at HIV risks among African American youth, Woods-Jaeger said that using photovoice got participants directly involved in the process and made it more locally relevant. “Photovoice has been shown to be empowering with youth,” says Woods-Jaeger. “The teens’ keen understanding of these large-scale issues and wanting to be a part of the solution was really striking.” As part of the photovoice process, participants developed action steps that are now being implemented, including youth leadership and advocacy training and raising awareness of the impact of stereotyping.

READY OR NOT: Older Adults Aren't Prepared for Natural Disasters

Compared to younger adults, older adults are more likely to have more disabling medical conditions, making them more vulnerable when natural disasters hit. Yet the majority of adults age 50 and older in the U.S. may not be prepared for a serious flood, earthquake, tornado, or other natural calamity.

These are among the findings College of Public Health researchers recently reported in the *American Journal of Public Health*. The report is based on a 2010 survey that was part of the Health and Retirement Study, which collects social, economic, and health information on adults age 50 and older in the U.S.

Only about one-third of the 1,304 adults interviewed said they had participated in an educational program or read information on how to prepare for a disaster. Less than 25 percent had an emergency plan in place. At the same time, nearly one-quarter of these older adults said they live alone, and almost one-third reported being disabled or in



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fair or poor health. The survey did not include older adults living in nursing homes or other institutional settings.

“Our analysis underscores that older adults living at home often have special needs and situations that put their health and safety at risk in the face of natural disasters,” says Tala Al-Rousan, the study’s primary author and a graduate student in epidemiology. “Yet many older adults report not being adequately prepared for disasters. The oldest respondents, 80- to 90-year olds, were significantly less prepared than 65- to 79-year-olds.”

The researchers also included Robert Wallace, professor of epidemiology and internal medicine and the director of the UI’s Center on Aging, and Linda M. Rubenstein, statistician in epidemiology.

“Our analysis underscores that older adults living at home often have special needs and situations that put their health and safety at risk in the face of natural disasters.”

HELPING KIDS RECOVER FROM INJURY

Marizen Ramirez, associate professor of occupational and environmental health, has been approved for a funding award of \$1.7 million by the Patient-Centered Outcomes Research Institute (PCORI) to study how parents can help their children recover emotionally and socially from traumatic injuries.

While children can recover physically, they often have problems dealing with the emotional and social impacts of their injuries. The study will compare two parent-based approaches to help injured children recover.

“One is a program we have developed called Listen Protect Connect for Injured Kids, which guides

parents on how best to speak with their child after an injury, how to identify signs of distress, and how to obtain more care for their child if needed,” says Ramirez. “The second approach is an educational booklet given to families as they leave a hospital after a child’s injury.”

Three months and six months after a child’s hospitalization, the researchers will collect information from the parents and children about school attendance and performance, children’s emotional health and quality of life, and overall family relationships, especially regarding support and communication.



IOWA STUDENT RECEIVES INTERNATIONAL RESEARCH AWARD

Kiran Sapkota, PhD candidate in epidemiology in the College of Public Health, has received a Stanley Award for International Research. Sapkota's research will take him to Chitwan, Nepal, to study the risk factors associated with oral cancer in the Nepalese population.

The Stanley Awards for International Research are used to conduct research abroad or pursue learning activities in international studies that are not available on the Iowa campus. Each student receives \$2,500 toward their research project. The Stanley Awards for International Research are funded by the Stanley–University of Iowa Foundation Support Organization. Recipients are expected to spend a minimum of four weeks abroad and must plan to return to the UI for at least one semester after the period abroad and before graduation.



Robinson Contributes to New Cholesterol Guidelines

Remember when cholesterol was defined by a simple number? No more. Cholesterol is now defined as a combination of who you are and your lifestyle. As a result, more Americans could be taking medication to lower it, says Jennifer Robinson, professor of epidemiology and internal medicine.

Robinson served on the expert national panel that reviewed the previous guidelines and came up with the new ones. She notes that the old guidelines focused mainly on lowering patients' bad LDL cholesterol to a certain number. The new guidelines, recently announced by the American College of Cardiology and the American Heart Association, focus on patients' risks of heart attack and stroke. The new guidelines target four high-risk groups:

- People who have had heart attacks, other heart disease, strokes, or artery blockages;
- People with genetically high cholesterol levels;
- People with diabetes; and
- People at high risk for heart disease and stroke.

For these high-risk groups, doctors are advising statins—medications that block the liver from making too much cholesterol. Robinson estimates that about 32 million Americans fit into one of these four groups, but only half of those with heart disease and diabetes are currently taking statins.



Diet Drinks May Increase Heart Disease Risk

Drinking two or more diet drinks a day may increase the risk of heart disease, including heart attack and stroke, in otherwise healthy postmenopausal women, according to a new UI study.

In addition to lead investigator Ankur Vyas, a fellow in cardiovascular disease at UI Hospitals and Clinics, the study team included Linda Rubenstein, Jennifer Robinson, Linda Snetselaar, and Robert Wallace from the UI College of Public Health, along with other colleagues.

The study, which analyzed diet drink intake and cardiovascular health in almost 60,000 women participating in the Women's Health Initiative Observational Study, found that compared to women who never or only rarely consume diet drinks, those who consume two or more a day are 30 percent more likely to have a cardiovascular event and 50 percent more likely to die from related disease. Vyas says the association between diet drinks and cardiovascular problems raises more questions than it answers, and should stimulate further research.



The Complexities of Cancer Treatment

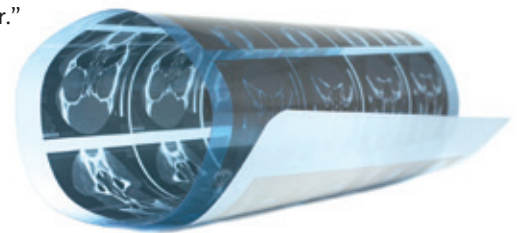
Despite advances in the treatment of many cancers, a number of patients choose not to be treated. In Iowa, more than 12 percent of those who learn they have cancer don't pursue treatment, according to research led by Marcia Ward, professor of health management and policy.

The researchers originally were focused on identifying the location of cancer specialists across the state and whether there were gaps in patient access to cancer treatment. While analyzing data from the Iowa Cancer Registry, the team was surprised to find that so many Iowans did not pursue treatment within the first year after diagnosis, according to Fred Ullrich, research specialist in the Department of Health Management and Policy.

"Treatment-seeking decisions are complex," says Ullrich. "They're based on a number of factors, and they are not necessarily dictated by remoteness of residence or distance to a treatment center."

Along with the expected factors of advanced age or advanced stage of cancer, rates of non-treatment were also higher in patients who visited non-accredited cancer facilities and those who saw physicians who were not cancer specialists. Individuals with certain types of cancers that are known to progress slowly were less likely to pursue treatment, including stage 2 prostate cancer and non-Hodgkin lymphoma. While distance to treatment facilities did not seem to be a factor, rural Iowans were less likely to choose treatment.

Ullrich also notes that other factors, such as which patients choose to consult with specialists or seek treatment at an accredited facility, need to be better understood in order to address the issue of cancer non-treatment. Ward believes that the rate of non-treatment is higher than previously recognized, and that the rate in Iowans is similar to other states.



CLASS NOTES

Rebecca Arnold (MPH '10) is currently serving as BKMI (Bangladesh Knowledge Management Initiative) project director for Johns Hopkins Bloomberg School of Public Health, Center for Communication Programs, and is working in Dhaka, Bangladesh. (See photo on page 25.)

Emily Cornish (MPH '13) is serving as a research analyst at Vanderbilt University in Nashville, Tenn.

Grant Davies (MHA '89) has been appointed to the Board of Commissioners of The Joint Commission. Davies is the CEO of North Bay Hospitals and the executive vice president for the California Pacific Medical Center in San Francisco, all part of the Sutter Health system.

Anshul Dixit (MHA, MPH '08) was recently named medical director of Wellmark Blue Cross and Blue Shield in Des Moines, Iowa.

Rebecca Dove (MPH '11) is working as a research specialist in otolaryngology at the University of Minnesota in Minneapolis.

Lei Hua (MS '07, PhD '10) is a senior biostatistician at Vertex Pharmaceuticals in Boston, Mass. She previously held research positions at the Harvard School of Public Health and the Holden Comprehensive Cancer Center at the University of Iowa.

Whitney Krueger (MPH '05, PhD '11) is currently a postdoctoral research associate for the U.S. Environmental Protection Agency, Environmental Public Health Division, in Raleigh-Durham, N.C.

Ryan Landi (MPH, MHA '12) is now chief of ambulatory care at the Edward Hines Jr. VA Hospital in Hines, Ill.

Emily Mashack (MPH '13) is currently working as a clinical dietitian at University of Iowa Health Care in Iowa City.

Leslie McClure (MS '97) is a professor of biostatistics at the University of Alabama at Birmingham and was recently named head of the Section on Research Methods and Clinical Trials.

Thomas Miller (PhD '07) is the director of health policy research at the American Society of Anesthesiologists in Washington, D.C.

Rebecca O'Rourke (MHA, MPH '08) has been appointed assistant director for clinical care services at the University of Iowa Hospitals and Clinics in Iowa City. She has served in several capacities since joining UI Hospitals and Clinics, including administrative resident, administrative fellow, assistant to the Chief Executive Officer, director of dialysis, and most recently renal services administrator.

Kimberly Hoppe Parr (PhD '13) is currently working as an environmental scientist/toxicologist at GZA GeoEnvironmental, Inc. in Waukesha, Wis. She previously worked as a graduate research assistant in the Pulmonary Toxicology Facility, part of the Environmental Health Sciences Research Center at the University of Iowa.

Erin Reynolds (PhD '12) was recently named an assistant professor of health services at the University of Southern Indiana in Evansville.

George E. Schwartz (MA '69) has converted his Amarillo Independent news web site to a blog and has been retained as a consultant for investigative reporting for KVII-ProNews 7 in Amarillo, Texas.

Steve Slessor (MHA '08) was recently named CEO of Buchanan County Health Center in Independence, Iowa.

Jennifer Thompson (MHA, MPH '10) is currently assistant director of support services for University of Iowa Hospitals and Clinics in Iowa City. She previously served at UI Hospitals and Clinics as an administrative fellow, dietitian, retail manager, dietetic intern in food and nutrition services, and senior project manager in the UI Children's Hospital.

Kelli Todd (MPH '12) was recently named a staff consultant for CSG Government Solutions in Des Moines, Iowa.

Amy Weber (MHA '98) currently serves as a business systems analyst at RelayHealth in Dubuque, Iowa.

Laurel Whitis (MPH '13) is a medical student at Des Moines University in Iowa.

In Memoriam

Mark Lebeck (MS '07, '13) passed away suddenly on March 9, 2014. He earned master's degrees in epidemiology and in industrial hygiene and was studying for a doctoral degree in industrial hygiene.

Sarah Wolfe (MPH '03) passed away suddenly on Feb. 6, 2014, in East Liberty, Penn. She was an assistant professor with the University of Pittsburgh, Department of Psychiatry, and served as a consultant at Children's Hospital of Pittsburgh.

SHARE YOUR NEWS

Have you started a new job, received an honor or award, or achieved a noteworthy career milestone or accomplishment? Share your professional news and updates with fellow College of Public Health alumni! Submit your news to mitchell-overton@uiowa.edu with Class Notes in the subject line. Be sure to include your year of graduation, department or program, and contact information so we can follow up with any questions.



“HE WAS AN EXCELLENT
ACADEMIC LEADER
AND MENTOR.”

Donation Honors UI Leader in Epidemiology

Robert and Maureen Wallace recently designated a generous gift to support the E. Peter Isacson Memorial Fund in the Department of Epidemiology. The fund was established in honor of Isacson, pictured above, who served as chair of the UI Department of Preventive Medicine and Environmental Health (PMEH) from 1972 until 1985. He then directed PMEH’s Division of Epidemiology until his retirement in 1991.

Isacson trained in infectious disease epidemiology; however, under his leadership, the department’s epidemiology orientation shifted toward chronic conditions, including aging, cancer, and cardiovascular diseases, which remain essential strengths of the program today.

“Maureen and I are delighted to contribute to this fund in Dr. Isacson’s memory,” says Robert Wallace, professor of epidemiology and director of the UI Center on Aging. “He was an excellent academic leader and mentor.”



WE ARE PHIL! The College of Public Health and the University of Iowa celebrated “We Are Phil” again this spring. “Phil” is short for philanthropy, and the day is an opportunity to thank all of the generous donors who support the college and university. Co-chairs for CPH’s “We are Phil” campaign, Charles Lynch and Kim Merchant, are thrilled to report that 40 percent of our faculty and staff have given gifts in support of the university so far this year!

Scholarship Supports OEH Students

Two College of Public Health emeritus professors have established an endowed scholarship fund to support students pursuing advanced degrees in the Department of Occupational and Environmental Health (OEH).

The Craig Zwerling and Nancy L. Sprince Scholarship in Occupational and Environmental Health will benefit graduate studies in areas such as occupational health, injury prevention, and rural health. Both Zwerling and Sprince served in senior leadership roles in the college during a period spanning more than 20 years.

“Looking back on our careers, we believe that one of the most rewarding aspects was helping to train the next generation of scientists and practitioners,” says Sprince. “We are grateful to have had the opportunity to help build the department and to see alumni flourish in their careers as they protect the health of workers, the environment, and rural communities—and reduce the burden of preventable injury.”

New Scholarship Established for Health Administration Students

A new scholarship in the Department of Health Management and Policy has been established through a generous gift from health care revenue cycle management company MediRevv and CEO Christopher Klitgaard.

“I hope this new scholarship enables today’s MHA students to achieve the goals they set forth for graduate school and beyond,” says Klitgaard, a 1999 graduate of the Master of Health Administration program.

MediRevv, based in Coralville, Iowa, handles insurance claims and patient payment for hospitals, health systems, and physician groups. It was recently honored as the top growth company of the year by the Technology Association of Iowa.



For more information about supporting the college, please contact Kathryn Wittneben, College of Public Health director of development, at kathryn-wittneben@uiowa.edu or (319) 467-3806.

“Big Picture” Blog Helps Clarify Health Care

Brad Wright, assistant professor of health management and policy, describes how his blog aims to make health policy research understandable to the public.



We want to be a place where researchers and policy analysts learn about each other's work, where Congressional staffers and state legislators turn for innovative ideas that are easy to digest quickly, and where everyone can engage in a constructive dialogue about what works and what doesn't in American health care.

The U.S. health care system is large and complicated. In fact, it makes up nearly one-fifth of the entire U.S. economy, and all of us—at one time or another—utilize health care. Yet, few Americans truly understand how the system works or what is being done to try and make it work better. Most people don't think much about health policy or health services research, even though it can determine whether or not they have access to affordable, high-quality health care.

In an attempt to change that, I started a blog, *Wright on Health*, that aims to translate complex health policy and health services research issues so that they can be more effectively communicated to an educated lay audience.

In my experience, most people aren't going to pick up and read a copy of *Health Affairs* or *Health Services Research*, but that doesn't mean that they wouldn't be interested in the information contained in those publications if the relevant implications were explained to them. Helping the public make that connection is a responsibility that researchers should embrace far more often than they do. Consequently, my goal is always to focus on answering the “big picture” or “so what?” questions. For example: “What will this policy do?” “What did this study find?” “Why is that interesting?” “Why does it matter to me?”

In 2009, amidst a mountain of misinformation, I created *Wright on Health* to objectively explain “ObamaCare” and the need for health reform. Today, our broader goal is to educate the public about their health care system.

Some of the topics we've written about include the “doc fix” bill, the cost of health care, quality initiatives, and enrollment in health insurance exchanges. We want to be a place where researchers and policy analysts learn about each other's work, where Congressional staffers and state legislators turn for innovative ideas that are easy to digest quickly, and where everyone can engage in a constructive dialogue about what works and what doesn't in American health care.

After nearly five years and more than 750 posts, our work has appeared on *NPR*, *Kaiser Health News*, *The New Republic*, *Real Clear Politics*, *The Health Care Blog*, *The Huffington Post*, *Health Works Collective*, and *KevinMD*. Blogging alongside me are: Nicole Fisher, founder and principal at Chicago-based HHR Strategies (a health care and human rights advising firm); Dr. Shirie Gale, a Boston-based anesthesiologist; Dr. Robert Hackey, director of the health policy and management program at Providence College; and Maggie Mahar, former contributor to *Barron's*, *Time*, and *The New York Times*, creator of the HealthBeat blog, and the author of *Money-Driven Medicine: The Real Reason Health Care Costs So Much*.

As we continue growing, we're exploring ways to partner with the UI College of Public Health. We're also looking for additional contributors to help us achieve our vision of expanding our network of bloggers, enhancing our content, and reaching more people. If you're interested in writing for us, or would like to learn more about the mission of the blog, please contact me at brad-wright@uiowa.edu. You can visit our blog at www.healthpolicyanalysis.com.

GALLERY

Rebecca Arnold (MPH '10) is pictured in Bangladesh, where she works for Johns Hopkins University Center for Communication Programs as the project director for Bangladesh Knowledge Management Initiative. The initiative is a USAID-funded project that strengthens the capacity of the Ministry of Health and Family Welfare to design, implement, manage, and evaluate evidence-based social and behavior change communication interventions.



SPARK

Infectious Art: Bridging Science and Creativity

“DANGEROUS BEAUTY” may be the best way to describe the jewelry creations depicting bacteria, vectors, and viruses at many times their actual size. The concept was dreamed up by Marc Ginsberg, owner of M.C. Ginsberg, a jewelry store and design studio in downtown Iowa City, with input from Sue Curry, dean of the College of Public Health. The works present “the dichotomy between the aesthetic beauty of pathogens and the havoc they wreak on humanity,” says Ginsberg, whose creative team includes experts in sculpture, ceramics, machining, and 3D modeling. The team consulted with College of Public Health faculty to ensure scientific accuracy of the forms. Each piece is made to order, with profits donated back to the UI College of Public Health.

Learn more at infectiousart.com.



THE WORKS PRESENT “THE DICHOTOMY BETWEEN THE
AESTHETIC BEAUTY OF PATHOGENS AND THE HAVOC
THEY WREAK ON HUMANITY.”

