Imagine what we can save.
Dean’s Letter

THERE IS NO OUTLANDISH PRIMARY

remember the Choose Your Own Ending books we read as kids? The sense of what if each time you read several pages before deciding to go to page 10 or skip to page 22? This issue of UAB Public Health builds on that “choose your own ending” theme.

For the last several months, faculty members have shared with me their most outlandish hopes and dreams, ideas that are too edgy, too nascent, or too unconventional to attract the attention of the usual granting agencies or traditional donors. For each of these ideas we knew we wanted to get to that “what if” juncture where we could “choose our own ending.” If we were successful in tweaking interest, these ideas would see the light of day as a new line of inquiry, a new business opportunity, or perhaps, even a disappointing failure.

So, this issue of UAB Public Health was envisioned as a different kind of magazine, a magazine filled with ideas we hope will see the light of day as a new line of inquiry, a new business opportunity, or perhaps, even a disappointing failure.

Join us, for instance, as we explore the possibilities for real time, 3-D air quality maps made possible by the Environmental Tricorder Project® that brings together state-of-the-art monitors with citizen scientists and a small fleet of unmanned aerial vehicles. The ETP® offers opportunities to explore the intersection of neighborhood air quality and personal health status or establish industry-academic partnerships for air improvement. Or join us as we bring meaning and insight to the famous industry-academic partnerships for air improvement. Or join us as we bring meaning and insight to the famous industry-academic partnerships for air improvement.

Dr. Emily B. Levitan

r. Emily B. Levitan’s grandmother was fraught with anxiety when, at age 93, she was diagnosed with breast cancer. It was not the illness that worried her as much as it was the treatment. She already was receiving medical care for hypertension and heart failure. She had no desire to undergo surgery, chemotherapy, and radiation for cancer.

“The situation was upsetting for her and my family,” recalls Levitan, with the Department of Epidemiology at UAB School of Public Health. Her grandmother’s concerns were put to rest after a visit with the oncologist, who said he would not put her through cancer treatment because it could be fatal, considering her age and poor health.

Furthermore, her other health conditions would likely kill her before the cancer would. “That sounds kind of harsh,” Levitan says, “but it was reassuring to my grandmother.”

Levitan began to wonder why doctors put her grandmother through the stress of a mamogram in the first place when treatment was not a viable option. Given her health status, would it not have been more responsible for her physician to give her the choice to opt out of breast cancer screening and just treat symptoms for comfort if and when they arose? Shouldn’t healthcare take into account quality of life, especially when it comes to geriatric patients? Measuring quality of life is not clear-cut, because it is a personal decision. And research does not always provide the right class to guide patients who are facing this dilemma. Evidence-based medicine generally focuses on only curing or shifting the health problem. Guidelines also do not consider the elderly or patients with multiple health issues.

For example, studies show that mammograms can detect breast cancer at an early stage so that patients can undergo treatment quickly to improve their odds of survival. “But who is that evidence based on?” Levitan asks. What if there is morbidity such as heart failure? How does that change the quality of life equation?

This led Levitan to question the validity of dietary guidelines, specifically when it comes to people with heart failure. These patients are advised to follow a stringent diet restricting sodium and fluids, which means processed foods are no longer allowed, along with hampering the joy of dining out at restaurants and sharing meals with friends and family.

“It would be lovely if everyone could have fresh and non-processed foods every day. But if you are frail, how are you going to stand up and cook at the stove for a long time?” Levitan says. “Convenience foods are convenient for a reason. They make things easier for people, especially those who are sick or frail.”

But what if healthcare began assessing quality of life as part of the treatment protocol? Especially in geriatric or terminal patients, would less treatment with less impact on quality of life result in more harm to their health?

“That’s the sort of thing I’m interested in finding out,” Levitan says, especially for end-stage heart patients. She plans to study how day-to-day variations in diet affect biomarkers of heart failure status, symptoms of the disease, and quality of life in general.

“If it works, we could get some interesting information,” Levitan says. “And that could lead to how we can help geriatric patients in palliative care make the best out of what’s left of their lives.”

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CONTENTS
Volume 11, Number 2

1 Live Long and Prosper
   Living with chronic diseases
2 Wicked Problem 2014
   Sexual abuse on campus
3 UAB STEMS the Problem
   New fellowships honor retiring Louis Dale, PhD
4 We’re Up to Some Good
   How our faculty is shaping a better tomorrow
6 Feature: Together, Imagine What We Can Save
   Three problems with three solutions
13 PH Undergrad Program To Award Scholarships
   The first recipients will be awarded in January 2015
14 Feature: Environmental Tricorder Project®
   Real-time environmental monitoring
18 Alumnus of the Year
   Max Michael, MD, MPH, MBA
19 Grad Stops Ebola in Nigeria
   Faisul Shabani, MD, MPH
20 Donor Spotlight
   Herman F. Lehman, Jr., DDS, MPH

THE TRICORDER takes its name from London’s 1854 cholera outbreak, which was halted when physician John Snow traced the source of the disease using a “mortality probe” — a type of water pump. Based on its actions, Snow became known as “the father of modern epidemiology.”

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It's estimated that at least a fifth of women who attend college will face some form of sexual assault, ranging from unwanted touching to rape. And 85 to 90 percent of them will know their attacker.

Theorized in the fact that half of the assaults occur during dates, and it's not surprising that 50 percent of women don’t consider their assault as rape, especially without overt signs of physical injury or a weapon being used. All of these factors, plus the “she asked for it” perception in society and the shame adds up to sexual violence being the most underreported crime, especially among college students. Studies show that victims of sexual violence have a higher incidence of chronic illnesses including heart disease, high cholesterol, and stroke. “Intimate partner violence, rape, stalking—all of these forms of violence can create toxic stress on the body that is long-lasting and cumulative, and can negatively impact a person’s health and well-being for the rest of their life,” says Dr. Howard Spivak with CDC Violence Prevention.

As a public health issue, the silence must end. And reaching out to men rather than women could be the key. “Sexual violence is a complex issue that is influenced by a multitude of factors and impacts the entire population. It is a learned behavior and can be prevented,” says Dean Max Michael.

With its growing impact, the School of Public Health chose sexual assault on campuses for the Wicked Problem Case Competition 2014. In April, multidisciplinary teams of four to six students from across campus were handed packets outlining background information on the subject. They had less than a week to create an effective strategy and action plan spanning three years and costing under $25,000 to combat sexual assault on a campus.

The winning team, “Our Voice,” hailed from the School of Education.

Their strategy hit the myths head-on with a straightforward educational campaign for college men about defining what real consent looks like. Their “Man Up” campaign centered on the idea that “Just because it isn’t a NO, doesn’t mean it’s a YES.” Posters, videos, T-shirts, yard signs and more would display slogans such as, “Just because she’s drinking, doesn’t mean she wants sex. Man Up.” and “Just because she’s by herself, doesn’t mean she wants to be with you. Man Up.” The creative and straightforward approach put the focus on calling out the causes and during those most likely to be perpetrators to change.

After joining UAB in 1973, the university’s first African American vice president is retiring. The Louis Dale Fellowships in the Statistical Sciences will continue his legacy.

The Louis Dale Fellowships in the Statistical Sciences will honor the mathematician’s commitment to academic excellence and social justice. The fellowships will fund up to four minority Alabama students per year for three years.

UAB Leads in Biostatistics Minority Grads

Over the past decade, UAB has emerged as the premier institution for successfully graduating African-American PhDs in biostatistics and continues to enroll minority students at a higher rate than any other national biostatistics program. Says Leslie McClure, PhD, professor in UAB Department of Biostatistics, “Once you have been successful, word gets out — faculty advisors feel comfortable sending their students to our department, because they know we will work hard to ensure student success.”

The National Science Foundations indicates that 539 PhDs were awarded nationally in biostatistics and related fields from 2005–2009, only 2 percent (23) were awarded to minorities. Yet statistics continually appear as a great career choice. “The jobs are available,” Michael says. “It’s a matter of having sufficient funds to support these students through their first few years of study.”

Creating opportunities for bright students is the hallmark of Dr. Louis Dale’s career. His legacy will continue through the new fellowships.

UAB HELPS STEM THE PROBLEM

New Fellowships Honor Retiring Louis Dale

LOUIS DALE, PhD

Career Highlights

• Bachelor’s from Miles College (1963), master’s from Atlanta University (1964), and doctorate in mathematics from the University of Alabama (1973).
• Joined UAB in 1973
• Promoted to full professor of mathematics, 1981 (the first UAB African American to scale the ranks from assistant professor)
• Interim chair, Department of Mathematics, 1982-1984
• Associate dean of the School of Natural Sciences and Mathematics, 1987-1991
• Associate vice president for Academic Affairs, 1991-1995
• Associate vice provost for minority and special programs, 1995-2003
• Vice president for equity and diversity, 2003-2014
• Arthur A. Veltre Lifetime Achievement Award from the American Association for Affirmative Action, 2014
• Two Presidential Awards for Excellence in Science, Mathematics and Engineering Mentoring from National Science Foundation, 2000 and 2003
• Second a career total of over $43 million in National Science Foundation grants to provide scholarships and fellowships in science, mathematics, and engineering for underrepresented minority students

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Creating opportunities for bright students is the hallmark of Dr. Louis Dale’s career. His legacy will continue through the new fellowships.

WICKED PROBLEM CASE COMPETITION 2014

SEXUAL VIOLENCE ON CAMPUSES

Nearly 32,000 pregnancies occur each year in the U.S. as a result of rape.

The FBI estimates approximately 21,000 women are raped as a result of rape.

Approximately 32,000 as a result of rape.

Approximately 32,000 pregnancies occur each year in the U.S. as a result of rape.

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Lymphoma Risk Factors Unmasked

While conducting the largest epidemiology and genetic studies of non-Hodgkin lymphoma (NHL), Christine Skibola, PhD, professor of epidemiology at UAB School of Public Health, and colleagues discovered something intriguing. Patients with diffuse large B-cell lymphoma (DLBCL) and follicular lymphoma (FL) two of the most common types of NHL, display vastly different risk profiles. For DLBCL, risk factors were related to patients’ medical history, family history of blood cancers, lifestyle factors, and occupations. But for FL, only a few modest relationships were found. “When we looked at genetic risk factors, our findings for FL were quite profound, but not so profound for DLBCL. We never expected to see such differences,” Skibola says.

Some major risk factors for DLBCL included young adult obesity and history of autoimmune disease. Others, like alcohol consumption and allergic conditions, actually lowered the risk. “We also identified risk factors that were common among various NHL subtypes as well as risk factors that appeared to be distinct among individual or a few subtypes, suggesting both subtype-specific and shared underlying mechanisms,” Skibola says.

The results for FL are remarkable. “Particularly our findings in DLBCL and FL offer new insights into the nature of NHL,” Skibola says. “We specifically focus on serious injuries in collisions involving relatively new cars,” McGwin says. They gather information on the vehicle and the victim’s injuries, surgeries, and complications. Then a team of trauma surgeons, forensic pathologists, engineers, and epidemiologists ascertain what vehicle part contributed to each injury. “We’re looking for what actually caused injury,” he explains.

Much of the research is determining whether items currently employed on vehicles are effective or not, like frontal airbags. Turns out, airbags are a prominent source of eye injuries. But they replaced flying glass as a source of more serious injuries. “We’re trading off less severe injuries from airbags to protect against death,” McGwin says.

The team communicates their findings to auto manufacturers and government regulators for safety improvements in vehicle design. “To communicate results to a room that contains both of those groups is a success in and of itself,” McGwin says. “You rarely have that opportunity to communicate to both the people who make the cars and those who regulate them.”

You Don’t Outgrow the Stroke Belt

From 2003 to 2007, about 30,000 people nationwide—blacks and whites, men and women—enrolled in the REGARDS for Geographic and Racial Differences in Stroke (REGARDS) study, the average age settled around 65 with 57 percent living in the Stroke Belt. The infamous Stroke Belt has consistently produced higher stroke mortality than the national average since the 60s, generally about 40 percent higher. “The geographical boundaries can vary, but it always centers in the Southeast and currently ranges across eight states. The causes for the statistical anomaly have yet to be fully discovered,” Howard says.

During six years of the REGARDS study, 615 of the enrollees had strokes. Researcher Virginia Howard, PhD, an epidemiologist, sought to discover if any particular time of life spent in the Stroke Belt affected the stroke risk. It did. “We looked at where they were born and every place they’d lived right up to the present,” Howard says.

Howard’s analysis, funded by the National Institute of Neurological Disorders and Stroke, found that people who spent their formative teenage years in that region were 17 percent more likely to have a stroke. The risk was only slightly lower for those who lived in the Stroke Belt during their preteen years.

“What we think that means is childhood behaviors can make a difference,” Howard says. “That your lifestyle choices growing up, like exercise and diet, carry with you.”

Is It Hot in Here?

Stepping hole in data exists relating to food intake and ambient temperature that could illuminate causes of obesity. Molly Bernhard, a pre-doctoral student at UAB Nutrition Obesity Research Center and the School of Public Health, spotted the void and endeavored to find out if sedentary office workers ate less in warmer or cooler room temperatures. “There are existing correlations between living in a temperature-controlled environment and increases in body mass index (BMI). We can’t say what the mechanisms for that would be, but these are many avenues to explore hypotheses in this line of research,” Bernhard says.

To get a glimpse at food intake in elevated ambient temperatures, she and her mentors—Julia Golink, PhD, and David B. Allison, PhD—recruited 20 people in Birmingham, Alabama, between ages 19 and 35. Each participant was randomly placed in either a warmer 77°F or a colder 64°F room. For one hour, they performed sedentary office or school work. Then each was presented with a large pizza for lunch and left alone for an hour. Researchers later quantified the calories eaten.

The participants didn’t quite follow the existing hypothesis that people eat less in warmer ambient temperatures. “The participants’ intake followed that pattern, but it was not statistically significant,” Bernhard says, adding that the small number of subjects and high variability could have influenced the outcome.

Bernhard is looking to do a larger study using participants with identical BMIs and exposing them to both temperatures for up to eight hours. The outcome of the study could fracture some weight-related conventional wisdoms.
Problem
Addiction bleeds dry health and happiness, leaving in its wake damage and destruction.

Addiction
The pre-teen inhales deeply on her first cigarette, doggedly continuing to smoke daily until she’s hooked. The two-pack-a-day habit she develops leads to an early death.

A needle juts from the still man’s arm. The victim of a heroin overdose, he spent his last moments in a suburban bedroom with family members unaware and only steps away.

The desperate woman furtively darts into an out-of-town pharmacy, clutching a forged painkiller prescription. Her doctor refused to continue providing the unnecessary medicine.

The man adds another bottle to the empties spilling from his trash. Excessive drinking that started in college now rules him. Cirrhosis or a drunken car crash event will eventually end his life.

Substance abuse and addiction dominate as the most common mental health problems. The consequences occur every day, inflicting an astronomical toll in human pain and economic loss on our society. “Too many people are dead from addiction—over half a million deaths in this country every year,” says Peter Hendricks, PhD, clinical psychologist in the UAB School of Public Health Department of Health Behavior.

No socio-demographic group escapes. Children are hooked as young as 12. And despite the rather sensationalized reports on addiction to meth and heroin, tobacco and alcohol reign as the top two leading causes of premature death in the U.S.

“We could take all the other leading causes of death in this country, and they wouldn’t come close to accounting for the deaths caused by alcohol and tobacco every year,” says Hendricks.

According to the U.S. Substance Abuse and Mental Health Services Administration (SAMHSA), about 8 percent of adults in Alabama were dependent on alcohol or drugs in 2013. But the addictions start early here. SAMHSA states that the mean age for first marijuana use among 12- to 17-year-old Alabamians was 13.9 and for first cigarette use was 12.6.

Smoking causes more deaths each year than the combined mortalities from illegal drug use, alcohol use, Human Immunodeficiency Virus (HIV), motor vehicle injuries, and firearm-related incidents, according to the Centers for Disease Control and Prevention’s Office on Smoking and Health. The same office reports more than ten times as many U.S. citizens have died prematurely because of cigarette smoking than have died in all the wars fought by this country.
“We will collaborate on the drug abuse epidemic—everything from tobacco to heroin.”

— Peter Hendricks, PhD, UAB Department of Health Behavior

Conventional wisdom gives us peace of mind, but blind faith in long-held beliefs can have deadly consequences. History has proven that to us time and again.

Conventional Wisdom: In the 1990s, hormone replacement therapy (HRT) combining estrogen and progestin was the second-most prescribed medication in the United States, widely marketed as a cure-all for menopausal symptoms, including hot flashes, night sweats, vaginal changes, and mood swings. The drugs were also touted as a preventative for cardiovascular disease.

Fact: In 2002, a study on the effects of HRT in menopausal women as part of the Women’s Health Initiative was halted prematurely to release the alarming findings to the public immediately. The research showed hormones increased the risk for breast cancer by 22 percent, heart attacks by 29 percent, and stroke by 41 percent in otherwise healthy women.

Conventional Wisdom: For generations, mothers taught us that putting our babies to bed on their tummies helped them sleep better and improved muscle strength needed for rolling and crawling.

Fact: Public health organizations challenged that conventional notion, suggesting that putting babies to bed on their backs could help reduce the number of fatalities from Sudden Infant Death Syndrome (SIDS). As a result of the Back to Sleep Public Education Campaign launched in 1994, the number of SIDS cases dropped by more than 50 percent within five years.

“Unconventional thinking is the essence of what public health is and what the school tends to have as its culture,” says Dean Max Michael. Unfortunately, research that backs away at conventional wisdom is not always “sexy” enough to win financial support, such as the illusion of the so-called healthy American diet. This diet is rooted in the USDA official food guides and used as a basis for cardiovascular health and school meal plans.

By 2030, obesity could contribute to the following new cases of related diseases in Alabama:

- 661,673 of type 2 diabetes
- 1,458,880 of coronary heart disease and stroke
- 1,236,270 of hypertension
- 819,336 of arthritis
- 200,226 of obesity-related cancer

— Trust for America’s Health

Conventional Wisdom: If more Americans followed the USDA-sanctioned diet of restricting calories, eating more whole grains, and cutting back on fats, then the country’s obesity problem would be under control. Why, then, are Americans fat? More than two-thirds of the population is bursting at the seams with a body mass index (BMI) of more than 25.

Many endeavor to lose weight following the so-called healthy American diet. It may offer short-term weight loss, but most people regain the weight with a vengeance. As a result, we are hungrier, fatter, and sicker.

Considering the proven fallacy of Conventional Wisdom, could the calorie-counting diet be contributing to the national obesity epidemic? Would Imagine a Solution...
What if there were a fountain brimming with resources from which researchers could dip into and miraculously be granted the ability to pursue ideas that challenge conventional wisdom?

Imagine the improvements it could spawn.

Consider, for example, if there were funding for Kevin Fontaine’s research on the American diet. Fontaine, a professor with the Department of Health Behavior at UAB School of Public Health, contends that calorie-restrictive, low-fat, high-carb diets Americans believe to be healthy may actually be contributing to the national obesity epidemic.

Carbohydrates spike insulin which fuels fat storage, he says. Wouldn’t it make sense that restricting carbohydrate intake would help people lose weight without the need to count calories? Diets such as Atkins and Paleo essentially preach the same message, but they are not adequately tested.

But what if there were resources available through a Challenge to Conventional Wisdom grant? Could it curb the obesity epidemic? Improve overall health? Save lives?

“I don’t know the answer,” Fontaine says, “but I’d like to find out.”

The only way to understand the impact of Fontaine’s research and the work of other faculty at UAB School of Public Health who are willing to ask those uncomfortable questions is to support the Challenge to Conventional Wisdom grant.

“Good ideas are more likely to emerge in environments that contain a certain amount of noise and error.”

- Steven Johnson, “Where Good Ideas Come From: The Natural History of Innovation”

Poverty spawns poverty—along with a host of societal ills, including infant mortality, low levels of education, teen pregnancy, and violence.

“Yes, the problem is poverty, but also everything that comes along with poverty,” says Martha S. Wingate, DrPH, associate professor and director of the Maternal and Child Health Policy and Leadership Program in the Department of Health Care Organization and Policy.

One generation’s acceptance of poverty drips on to the next generation. According to the Children’s Defense Fund, someone is three times more likely to be poor at age 30 if they have experienced poverty at any point in childhood. “When a 16-year-old has a baby, what happens to her happens to that baby,” emphasizes Wingate. Children of unmarried teen mothers without a high school diploma are nine times more likely to grow up in poverty, says the National Conference of State Legislatures.

For those endeavoring to escape poverty, society’s own obstacles pull them back to the poverty line. Working a second job can mean just enough income to lose other financial support, such as food stamps and Medicaid, making it more lucrative to stay poor.

The continued fears and stress of the struggle to keep a roof overhead or to maintain a semblance of control over their own life choices can trigger lashes of violence and extinguish any desire for change. The ripples of the circumstances flow out over all aspects of their lives. “Poverty is a determinate of many different negative health outcomes. It influences the risk factors of a lot of seemingly unrelated things, including infant mortality, asthma, and obesity,” Wingate says.

If the BMI of Alabama residents were lowered by just 5% by 2030, the number of people in Alabama who could be spared from developing new cases of related diseases includes:

• 141,297 from type 2 diabetes
• 121,749 from coronary heart disease & stroke
• 102,683 from hypertension
• 59,554 from arthritis
• 9,846 from obesity-related cancer

— Trust for America’s Health

“I have not failed. I’ve found 10,000 ways that won’t work.”

— Thomas A. Edison
"Giving someone money does not solve poverty. You have to think in a broader context of influences, like health, education, family connectedness, parenting, and intergenerational issues."

— Martha S. Wingate, DrPH, UAB School of Public Health

THE INITIATIVE FOR THE PREVENTION OF CHILD POVERTY

would become a broad-scope initiative to address factors that can affect the cycle of poverty. Through a multidisciplinary team of experts, the Initiative, through research activities, would unveil risk factors and causes of poverty, then engineer evidenced-based strategies not seen before to combat these issues. “The Initiative would have research, practice, and education working simultaneously, all feeding into each other—research feeds practice feeds education which feeds back into research,” explains Wingate. “That’s the cyclic uniqueness of the Initiative’s mission.”

These solutions would not stop at one-source strikes at a single cause, but advance from a multitude of directions—anthropology to education to business management—because of the everyday demands of their central mission. Through mentorships and trainings, the Initiative would equip them to more advanced skills and techniques that could ultimately weaken poverty’s hold in their communities.

For scholars researching in the ranks of varied fields—from anthropology to education to business management—the Initiative would devise new curriculum on how their disciplines can bring about the end of poverty. “We want to stimulate a collective conversation among our students, postdocs, and others in their respective fields,” Wingate says. “We hope to open them to how poverty fits into the broader picture of their work.”

The Initiative would engage state and local agencies to develop practical strategies and programs, connecting them together in new ways, to produce measurable and anecdotal improvements for families and children. “We want to give practitioners tools they don’t have in their tool belt now,” Wingate says.

Too many frontline agencies are unable to take time to find the most effective ways to utilize their existing resources because of the everyday demands of their central mission. Through mentorships and trainings, the Initiative would expose them to more advanced skills and techniques that could ultimately weaken poverty’s hold in their communities.

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The School wants to begin this expansive approach to prevent poverty and its associated risk factors now. Its mission requires a firm level of support over decades to keep the long-term solutions in play. As the Initiative for the Prevention of Child Poverty reaches its intended potential, the breadth of its impact could be immense.

— By Jane Ekerhardt

PUBLISCH HEALTh UNDERGRAD PROGRAM AWARDS SCHOLARSHIPS

The first recipients will be awarded in January 2015.

T he UAB School of Public Health undergraduate program began offering scholarships for research, educational travel, and academic accomplishment in October. Categories include: high academic achievement, student-related research, and travel related to public health study. The scholarships are available to both existing and incoming School of Public Health students.

“Our goal with our current funding is to fund about 30 educational scholarships a year at $1,000 a piece,” says Suzanne Judd, PhD, assistant dean of undergraduate education and associate professor of biostatistics. The academic scholarships are awarded based on GPA/ACT scores and evidence of commitment to public health. In addition, the school plans to award an additional 10 to 15 more public health travel- or research-related scholarships.

“There are many opportunities for undergraduates to present their research, including the American Public Health Association annual meetings,” Judd says. “Presenting research findings helps students develop public speaking skills and provides them exposure to the vast research in public health.”

For the scholarship program’s inaugural year, Lisa McCormick, DrPH, director of public health practice for UAB School of Public Health, will be taking some recipients to a warehouse in Mississippi that serves as a training facility for public health professionals. For those students doing foreign study, there are options for course credit and foreign travel, coordinated through the Sparkman Center for Global Health. For example, Judd says, there is a two-week trip to Kingston, Jamaica, that allows students to “deliver real boots-on-the-ground public health education such as HIV prevention strategies.”

Outside of the School of Public Health, Judd is working with the UAB Honors College to develop a course on sustainability in Amsterdam and Belgium. The course will focus on exploring differences between Birmingham and places in Europe that are not as reliant on the automobile.

“The goal of the travel scholarships is to help defray the costs of those training opportunities that require travel and may be cost-prohibitive for some students,” Judd says.

To continue and enhance the fledgling scholarship program, “we’ve been talking to donors about the opportunity,” she says. “I’d say 5 to 10 percent of undergraduate School of Public Health students are actually coming from families where no one in their family has gone to college before. We would love to have a full-ride scholarship for those first-generation undergraduates.”

— By Nancy Dorman-Hickson
THE ENVIRONMENTAL TRICORDER PROJECT

BY JANE EHRHARDT

Before cell phones, back when computers were the size of rooms, the 60s science-fiction TV show Star Trek, had a science officer called Leonard McCoy. When the “away team” would teleport onto an alien surface, Leonard McCoy would flick on his tricorder — a handheld, light-flashing, beeping gadget — and immediately analyze the air quality for any dangers.

UAB scientists may have the tricorder beat. Right now, disks about the size of a fat quarter collect air samples for lab analysis. But it’s going to get a lot techier. Star Trek techier. Because Claudiu T. Lungu, PhD, and Michelle V. Fanucchi, PhD, both associate professors at UAB School of Public Health, are developing a new concept that could morph into devices with value far beyond the workplace.

We could see our clothes grow protective shields, our homes pinpoint contaminants, and tiny dragonfly-shaped drones track clouds of air pollutants across borders.

A pregnant woman revels in her newly decorated nursery. Suddenly, her house sensors sound an alert, and her smartphone bings with a message. It shows an alarming amount of formaldehyde in the house. She follows the alert’s advice to pinpoint the source. It’s her new carpet. She opens the windows in the nursery and avoids the room until her house sensors deem the air safe once again.

Lungu and Fanucchi envision this Personal Indoor Air-Quality Monitoring System as integrated sensors throughout the house, giving homeowners an unprecedented air-quality alert system. No more smoke, radon, or carbon-monoxide detectors. No more experts to seek out mold infestation. These sensors would do it all. “The alert would be very practical too. It might ask a few questions — like whether you’ve cleaned today — that leads you to what the source might be and the solution,” Fanucchi says. “These sensors would give people awareness to make informed decisions about their actions.” This system could be in homes within five years.

A train derail and tankers spew a toxic greenish plume of chlorine into the night air. The gas can leave lasting damage even if inhaled for only a few minutes. Above the hazmat unit on the scene, tiny drones the size of large beetles fly in formation. Lungu and Fanucchi’s sensors attached, the little drones fly, locate, and follow the invisible, deadly cloud. They send real-time data to officials with the gas’ actual location and concentration, allowing time for evacuations and avoiding unnecessary ones, as the cloud floats for days on precarious winds across state lines.

City-wide systems could be in play within ten years. The tech is available, but no one has put it all together.” However, with a drone-fed sensor network in place, the impact on air quality and potentially the health of entire regions could be enormous. “We make policy now without real data,” Lungu says. “This system could be a real-time 3-D air quality map resembling Doppler meteorology maps on TV.

Doctoral students involved in the sampler project include Evan Floyd, PhD, assistant professor at University of Oklahoma Health Science Center (past), and Jonghua Oh (current).
avd Scheiman is currently serving as the senior regional advisor for the Southern Africa Region of World Vision, a Christian humanitarian organization that globally works with children, families, and communities to help them reach their full potential. This includes good health, education, protection, and fostering a love of God and neighbor, by providing assistance and combating the causes of poverty and injustice. Scheiman’s World Vision experience includes overseeing teams that allocated more than $100 million funding 159 development programs in 25 African countries, including Angola, Burundi, Chad, Congo (DRC), Ethiopia, Ghana, Kenya, Lesotho, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Senegal, Sierra Leone, Somalia, South Africa, South Sudan, Swaziland, Tanzania, Uganda, Zambia, and Zimbabwe. The primary focus of Scheiman’s current position with World Vision is to develop a strategy for the region and to ensure alignment between marketers in the United States, and priorities and programs in the field. Prior to this, he worked as senior director of Africa Programs at World Vision, a position he held from 2009 - 2012. A 1992 Masters of Public Health graduate, Scheiman also holds a Masters of Business Administration from Eastern University and possesses more than 20 years of development, programming, and relief experience. He is based in Stafford, Virginia, near Washington, D.C.

**HIV/AIDS RESEARCH Highlighted in SOPH Alum’s Book**

Scott Rhodes, PhD, MPH, CHES, has edited *Innovations in HIV Prevention Research and Practice through Community Engagement*. The text focuses on community involvement as an effective method of limiting HIV and AIDS in the U.S. The book includes best practices and processes throughout the country, focusing on such affected groups as African Americans, Native Americans, Latinos, adolescents with HIV, and others. Chapters outline the use of approaches such as community engagement, partnerships, and community-based participatory research. Charles Collins, a UAB School of Public Health PhD graduate, authored a chapter on dissemination and implementation research at the Centers for Disease Control and Prevention.

According to former UAB SPH faculty member Laura C. Levinson, PhD, now with the Robert Wood Johnson Foundation, “This book ... delves deeper into the meaning and utilization of community-based participatory research, with implications that reach beyond the HIV epidemic to public health and medicine in general.” Rhodes is now a professor and vice chair of the Department of Social Sciences and Health Policy, Division of Public Health Sciences, at Wake Forest School of Medicine. He earned a MPH from the University of South Carolina and then entered the Peace Corps, serving in Guatemala for three years, before becoming a health educator at the Richland County Health Department in Columbia, South Carolina. From UAB School of Public Health, he earned his doctoral degree within the Department of Health Behavior in 2001, the same year he was named PhD student of the year.
A passion for quality of care combined with an entrepreneurial spirit led Mazi Abdolrasulnia to found PackHealth, a Birmingham-based business that provides tools, accountability, and personalized programs to help patients manage their chronic conditions. He also founded M Consulting LLC where he advises health-related companies on strategy, knowledge transfer, and policy implications, and he serves as an adjunct faculty at UAB School of Public Health. While working in the private sector, Abdolrasulnia continues to contribute to the field of public health by publishing and presenting protocol and drug adherence, barriers to the adoption of vaccines, breast cancer management, physician-patient communication, and nursing education, among others.

In 2003, Abdolrasulnia completed the coordinated master of public health/master of business administration program and was inducted into the honor societies of both schools. UAB School of Public Health, recognizing his leadership and academic acumen, honored him with the Outstanding Masters Student of the Year Award. Abdolrasulnia also holds a doctorate in health services administration from UAB and a bachelor of science from The College of William and Mary. The Birmingham Business Journal selected him for its 2011 “Top Under 40” list, recognizing the city’s best and brightest young professionals. The following year, Abdolrasulnia graduated from the highly regarded Leadership Birmingham program.

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Herman Lehman began his career as a dentist, but a hand injury caused him to pursue a second profession, so he earned his Masters of Public Health. In 1972, he was hired by UAB to be the director of the Cancer Epidemiology Service.

At the time, the graduate program in public health and epidemiology was located within the School of Medicine, and the chairman also oversaw the public health division in the School of Community and Allied Health Resources. In 1976, the joint Department of Public Health was formed between the Schools of Medicine and Community and Allied Health Resources, and Lehman was named director. Lehman taught epidemiology courses to public health, medical, dental, optometry, and nursing students. But he also actively recruited students to the Department of Public Health. With little more than a dozen students in the department, Lehman was able to make time for each one. His folksy approach and compelling storytelling, coupled with his knowledge, wit, and good humor enabled him to make even the most complicated information understandable and enjoyable.

"Students sought him for information, advice, and counsel. Our alumni recall the interest he took in their situations, the humane and calming way he dealt with them, and his willingness to stand up for them." Dean Max Michael says. "He was a person who went the extra mile."

Lehman enjoyed mentoring his students and was committed to helping them understand the science of public health, but he also was quick to call out students who were not pulling their own weight. It earned him an added degree of respect.

Lehman worked hard, but he also knew the value of downtime with faculty and students. There were many beers shared at Hogan’s Hideaway and many parties in the Lehman home. "It was a different time then," recalls his wife Norma Kay Lehman. She refers to the small number of students which allowed for more one-on-one time. "It was all about building relationships between students and faculty."

Lehman also served as the intramural football coach for the Public Health team, planning plays to topple competition from the Medical School. And he was a true Renaissance man who loved art and music, serving as the leader of the South 20th Street Skiffle Society, a Dixieland-style band.

During his time at UAB, Lehman was instrumental in recruiting new students, setting high academic standards, and helping the department achieve accreditation in 1978. This led to the creation of the School of Public Health in 1981, where he served as the first assistant dean. He retired in 1992 and passed away three years later.

In 2007, on the 25th anniversary of the School of Public Health, the Herman Lehman, Jr. Endowed Scholarship was established. The annual scholarship is funded by alumni and friends.

"Dr. Lehman was not a traditional academic, but rather someone who had a ‘real world’ orientation. This certainly was reflected in the way he taught his students and the way he interacted with his faculty colleagues," Michael says. "His legacy is still very much a part of the School."
~ In this edition of Public Health Magazine, we have shared the dreams and hopes of our forward-thinking students and faculty. Albert Einstein said, “We can’t solve problems by using the same kind of thinking we used when we created them.” It is this type of innovative, critical thought that is being nurtured at UAB School of Public Health to solve the complex, vexing public health challenges of our time.