Pioneering Paths to Healing

On the brink of a turning point in medicine
PIONEERING PATHS TO HEALING
UConn doesn’t just claim to be on the cutting edge of improving health for citizens. The innovative careers and research pursuits of our faculty and alumni alike are living proof of how the University community is pushing the boundaries of the future of medicine.

THE SOUNDS OF INNOVATION
An unlikely partnership between UConn medical technology engineers and music scholars has led to an unprecedented method for bringing antique musical instruments back to life.

VANTAGE POINT
Feeling stressed? Not to worry. UConn psychiatry professor Julian Ford, an expert in stress and trauma, shares one simple strategy that you can use right now to regain control of your emotions.

HUSKYMANNIA
Get an insider’s look into the philosophies guiding new UConn head football coach Bob Diaco as he seeks to take the Huskies to a new level.

ALUMNI FOCUS
Best-selling author Wally Lamb ’72 (CLAS), ’77 MA talks about Wishin’ and Hopin’, the first of his works to be made into a feature-length film, slated for release later this month.

For Peter Werth III ’80 (CLAS), trekking across some of the most rugged, geographically isolated terrain on the planet could not be more gratifying. Two years ago, Werth founded Himalaya Currents, a nonprofit devoted to supporting sustainable energy and water projects in an impoverished, remote region of Nepal. The organization and its partners have installed numerous hydroelectric and solar- and wind-powered hybrid units, as well as a pumping system to deliver clean drinking water to local residents. Prior to starting Himalaya Currents, Werth worked in the pharmaceutical industry and with the Werth Family Foundation.

Why did you first travel to Nepal, and what were your impressions?
My first trip to Nepal took place in 2012. I was going to see the progress of a project the Werth Family Foundation partially funded with the World Wildlife Fund (WWF). This was a micro-hydroelectric project in a remote region of Nepal in the Himalayan Mountains called Dolpa. The area is a three days’ hike from the nearest dirt-strip airport and a seven days’ hike from the nearest road.

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What are the people like?

During my first trip to Dolpa, I was amazed at their kind, gentle nature. They shared everything they had and openly embraced me as one of their own. The sense of community was amazing. They are extremely hard-working. They live on the margin of survival, and therefore everything they do is with a purpose. They are very religious, and look to the stars, nature, and the lamas [priests] for signs of good karma. I find it hard to understand how people that live such a hard life can be so gentle and kind inside. These villages are at altitudes of 11,000 to 14,000 feet. Just walking up a hill for me is a struggle. The villages are isolated from November to April by avalanches and heavy snows, and to get to these places one must cross 18,000-foot passes — not an easy task!

Why did you decide to found Himalaya Currents?

Once I lived in the village, I knew that I wanted to do more for these people who really have no advocates for their needs. I founded Himalaya Currents to be a focused NGO [nongovernmental organization] that would deal with energy and resource problems specific to the Himalayan environment. The Werth Family Foundation covers a broad spectrum of causes that we support in the New England region, so I wanted to carve out an area where my personal passion wouldn’t eclipse what the foundation does.

How do you determine which projects to fund?

Projects are decided by meeting with villagers at community gatherings. They discuss what they want, and then we come back to them with possible solutions. You can be in a village a couple days and just observe … what the biggest problem they face is. It usually revolves around energy, water, or sanitation. If the project is sustainable, environmentally friendly, and can be handed over to the village, I am good with that. When I hike out of the village, the project is 100 percent theirs — they maintain and run it once we’re gone.

What’s the political situation in Nepal? Has that posed a challenge?

After the Maoists assumed power in 2008, there was incredible in-fighting. Basically, if you wanted something, you had a strike and closed down roads, or even entire districts, until the government met your demands. It led to a system where the country was being held hostage by in fighting all the time. The first Constitutional Assembly failed miserably to write a constitution, so the government was ineffective. It became very apparent that if you wanted to put in a school, a health clinic, or lights, you needed to do it yourself. However, the new Constitutional Assembly is back in session, and it looks like there might be easing. But maneuvering through the bureaucratic system there is always a challenge — the rules and regulations seem to change all the time.

Projects are handed over to the village, I am good with that. When I hike out of the village, it is an open mind.

I understand you’ve been able to involve UConn students in your projects. What have the students done?

Two UConn engineering students were involved in the Saldang Solar Hybrid Unit that we completed last year. They mentored and helped design and fabricate the unit with high school students from Hartford Public High School. Then one of the students, Pravesh Mallik ‘15 (ENG), was flown to Nepal — he’s Nepali — and arranged for the chemicals needed for the special batteries we used for this system.

What are your plans for the organization’s future?

Ideally, I would like to optimize and standardize a wind/solar hybrid system and a small hydrokinetic system for distribution throughout the Himalayas. This would involve working with NGOs like USAID [U.S. Agency for International Development] and other agencies.

What would you say to those who want to make a difference in developing countries like Nepal?

If you want to make a difference, just do it — no one will hand you a roadmap. You need to be prepared to take some knocks and hear a lot of “no’s,” but if you ask the right questions, you will find people who would love to have your help. The biggest thing is to have an open mind.

You partner with the World Wildlife Fund on all of your projects in Nepal. What do they bring to the table?

The WWF is invaluable for me in navigating all the governmental rules and regulations. If we agree that a project fits both our visions, then they assist with permits and logistics. At the end of the day, we essentially do these projects together.

What has been your most rewarding experience with Himalaya Currents?

The most rewarding was a trip this May, where we lit up the entire village of Ringmo. To have every family, around 200 people, come to me and personally shake my hand and smile was amazing! It’s amazing what a light can do.

What's the biggest thing is to have an open mind. You will find people who would love to have your help. The biggest thing is to have an open mind.
While at UConn, Nicki (Castonguay) Maher ’00 (SFS) set records and earned acclaim as an All-American in field hockey — a team that just this past year won its third national championship. Today, Maher maintains her own winning streak as the leader of a very different team.

Since 2010, Maher has been thriving as vice president of lifestyle brand Alex and Ani’s Charity by Design division. Named one of the nation’s 100 fastest-growing private companies in 2013 by Inc., Maher has seen revenue skyrocket from a million dollars in 2010 to $288 million last year.

As Maher can attest, however, her focus in Charity by Design reaches far beyond jewelry sales. Charity by Design produces an Alex and Ani collection of customized, symbolic charm bangles that support select nonprofit partners nationwide. For every Charity by Design bangle sold, the company donates 20 percent of sales to the designated charity — while also offering support to thousands of additional nonprofits through sponsorships, volunteerism, and more.

In just four years, Maher’s division has achieved upwards of $10 million in revenue and has coordinated donations in excess of $12 million to more than 1,500 charitable organizations — from the American Heart Association to Farm Aid.

"The smarter we are as a for-profit business, the more we can give back each year," Maher says.

With a corporate philosophy centered on such principles as positive energy, spirituality, and empowerment, Alex and Ani seems the perfect fit for Maher and her own can-do attitude. "I have a confidence in life, a faith that everything happens for a reason," she says.

"Life is so short, and we, especially women, have so many things in life that are expected of us — to be friends, daughters, mothers, wives, as well as career women — that sometimes we hold back or are afraid to ask for more." But, she adds, "When I was told, ‘You can’t have it all,’ it made me want to push harder … Everybody’s ‘have it all’ is different. Why hold somebody back from their potential dreams?"
When stress takes a hold of our daily lives, most of us know how we should handle it: Eat healthfully. Exercise. Pace ourselves. Tend to our relationships. But most of the time, we feel too stressed to maintain the discipline necessary to take those seemingly simple steps. We’ve come to believe that we are just too stressed to use our stress-management skills.

Stress is ubiquitous in modern life, and stress-related medical and psychiatric illness is increasingly recognized as a worldwide epidemic. Although scientists are working to enable traumatized people to recover from — or to prevent — PTSD is one of the most pressing and traumatic disorders — and those who have developed post-traumatic stress disorder (PTSD). PTSD is an acute anxiety disorder in which the sufferer often revisits, or relives, a traumatic event through flashbacks and nightmares. Unfortunately, it is far from rare. Comparable in prevalence to depression, PTSD affects as many as one in every 10 adults in Western societies, and one in every 15 children and adolescents. Developing effective therapeutic interventions to enable traumatized people to recover from — or to prevent — PTSD is one of the most pressing agendas for scientists and health practitioners today.

When Stress Takes Over

Hijacked by Your Brain: How to Free Yourself from Stress. A clinical psychologist and professor of psychiatry at the UConn School of Medicine, Julian Ford has spent the past two decades researching stress and trauma. He has edited or authored 10 books, including co-authoring Hijacked by Your Brain: How to Free Yourself from Stress (Sourcebooks, 2013). Here, he offers a glimpse into his work as well as one approach we can all use in managing our own stress.

Feeling stressed? Try the “SOS” approach right now:

1. **SLOW DOWN**
   Re-enter the present moment. Observe what’s happening in your mind and body. Perhaps count to 10, close your eyes, or take three deep breaths.

2. **ORIENT TO YOUR CORE VALUES**
   Focus your mind entirely on one thought. That thought — an image, an emotion, a goal — is whatever at this moment is most important to you in your life. Focusing on just one thought turns down your brain’s alarm.

3. **SELF-CHECK**
   Take a moment to assess the level of stress you’re feeling as well as your level of personal control, or your ability to think clearly on scales of 1 to 10.

LOSING CONTROL

My own research over the past 20 years has focused on those suffering from extreme stress syndromes caused by exposure to trauma — such as life-threatening violence, abuse, or disasters — and those who have developed post-traumatic stress disorder (PTSD). PTSD is an acute anxiety disorder in which the sufferer often revisits, or relives, a traumatic event through flashbacks and nightmares. Unfortunately, it is far from rare. Comparable in prevalence to depression, PTSD affects as many as one in every 10 adults in Western societies, and one in every 15 children and adolescents. Developing effective therapeutic interventions to enable traumatized people to recover from — or to prevent — PTSD is one of the most pressing agendas for scientists and health practitioners today.

In my book Hijacked by Your Brain, I explain that there is an alarm center deep in our brains. When we are stressed, that alarm can essentially take control of areas in the brain that manage our memories and enable us to think clearly. For someone victimized by PTSD, that alarm is on high alert. Until it gets reset, the brain is stuck in survival mode, often causing the brain’s memory and thinking centers to “crash” like a computer’s hard drive and resulting in persistent feelings of stress that seem unstoppable. Instead of exploring the world so that we can grow, develop, and engage fully in our lives — using what I’ve called the “learning brain” — the brain of a PTSD victim shifts to hyper vigilance and a fight-flight state — a “survival brain.”

**RESETTING YOUR ALARM**

There is no direct biological intervention that reliably resets a hyper vigilant brain. Medications designed for depression and anxiety help with some PTSD symptoms in some cases — but not consistently — and they do not fully or permanently restore the survival brain’s capacity to make and to retrieve ordinary memories and to think clearly. However, psychological therapies have been shown to reset brain activity in related disorders, such as depression and obsessive-compulsive disorder. Studies are underway in my lab and my colleagues’ labs to test whether victims of PTSD could similarly benefit.

The most consistently effective psychological therapies for PTSD are designed to change how people remember extremely stressful or traumatic experiences — but not to enable them to reset their brains’ alarm systems. To address this gap, my research has focused on developing practical skill sets for resetting the brain’s alarm when it has become stuck in survival mode. Changing how one feels and thinks when recalling traumatic experiences may indirectly reset the brain’s survival alarm, but there might be a more direct path if we can help people to re-engage the brain’s memory and thinking centers on a 24x7 basis, rather than only when recalling stressful memories.

The educational and therapeutic program I have developed, “Trauma Affect Regulation: Guide for Education and Therapy” (TARGET), shows individuals how experiencing extreme, chronic, or traumatic stressors can lead the brain’s alarm to react self-destructively and become stuck in survival mode.

They also learn how to use their brain’s memory and thinking centers throughout the day (and at night) to reset their alarm back into learning mode. TARGET then teaches several common-sense, practical skill sets to engage the brain’s memory and thinking centers and reset the alarm — strategies that anyone can use in moments of high stress. One of these approaches is called “SOS,” which stands for Slow down, Orient, and Self-check. (Try it yourself right now — just see the sidebar.)

If slowing down and orienting don’t turn down your stress, doing a self-check can help activate your learning brain, leading you to begin feeling better and thinking more clearly.

Stress is not good or bad; it is a physical reaction from your body and brain that is intended to help keep you safe. Instead of avoiding or trying to “get over” your stress reactions, SOS may be a way to help you regain the one essential skill that chronic stress takes away: the ability to stop and to think clearly so that you can make the right choices.

Thinking clearly when you are under stress is a challenge we all face as humans. We’ve all got an alarm in our brains, and we all experience stress reactions that can threaten our health, happiness, and success. Fortunately, we all have potentially highly effective memory and thinking centers in our brain, and we can learn how to harness those capacities. Use your stress reactions as a reminder to pay attention to what really matters in your life. Reorienting yourself to the emotion you want to feel right now is the key to turning down your alarm and effectively managing stress.
“I think that Connecticut is on the right track,” says Tamborrino, owner of one of the state’s first six licensed medical marijuana dispensaries. “If we’re going to treat it like a medicine, it should be dispensed like a medicine — and that’s what drew me in.”

Tamborrino, who opened Bluepoint Wellness of Connecticut in Branford this past September, is one of numerous UConn alumni and faculty who today are pioneering innovative paths to healing across diverse areas of medicine in an effort to better the health and wellness of residents throughout the state and beyond. The University and UConn Health have long been committed to promoting medical advancement through breakthrough research and outstanding health care services for Connecticut’s citizens. More recent initiatives, such as Bioscience Connecticut — a bold $864 million investment poised to raise the University’s stature as a leader in genetics research and personalized medicine — continue to push the limits of modern medicine and support the University’s ongoing dedication to improving health care.

‘AT THE GROUND LEVEL’

Tamborrino, 38, has worked as a clinical consultant for a prescription management benefit company, as a training coordinator for the Yale New Haven Health System, and as a retail pharmacist. He says he’s always wanted to start his own business, and when state legislators began studying medical marijuana legalization, Tamborrino started doing his own research.

As he learned more, Tamborrino says the benefits of medical marijuana became evident. However, the drug is still illegal federally and not approved by the Food and Drug Administration. Through the Connecticut Pharmacists’ Association (CPA), Bluepoint Wellness will take part in an international research program run by the Canadian Consortium for the Investigation of Cannabinoids. The study will, in part, document patients’ conditions and symptoms and how well each strain of medical marijuana treats each illness.

“We’re going to pinpoint the exact strain with certain conditions,” says Tamborrino, who is chairman of CPA’s Academy of Medical Marijuana Dispensaries. “We’re at the ground level.”

Not only does Tamborrino hope his work will help define which types of marijuana are better for which conditions, but he also believes the way his business is run can help create a new, safer model for dispensing the drug.

“I’m trying to create a new model,” says Tamborrino, who explains that the dispensary resembles a medical clinic. “It’s a hybrid, pretty much a mix of a retail pharmacy and a medical office.”

Patients are admitted into the secure facility and show identification and registration cards at a teller window. Once those are verified, patients are let into a waiting room where they can browse electronic menus and iPads filled with descriptions of the products.

Patients then meet with a pharmacist to discuss their medical history and drug interactions and to determine what strain to buy.

“We’re not just looking to dispense marijuana, we’re trying to create a program where we can really monitor and learn from this,” says Tamborrino, who is licensed to treat patients with conditions including cancer, glaucoma, and HIV. “Our goal is to find a means to track outcomes of patients taking cannabis, as well as to create a metric and convert the outcomes into real-world data to help define the safety and efficacy of the different products.

“This is the first state to require pharmacists to dispense this drug,” he says. “If we could prove that this makes sense, this could be the standard across the nation.”

BETTER SLEEP … THROUGH SMARTPHONES

Fellow UConn grad Madhvi (Bhatt) Upender ’90 (CLAS, SAH), meanwhile, is working to improve health care in a different way — by focusing on revolutionary technological advancements.

BY JULIE STAGIS ’10 (BUS, CLAS)

Medical marijuana is considered so cutting-edge it’s not yet legal in 27 states. The state of Connecticut became one the first to legalize medicinal cannabis sales, passing legislation two years ago that permits its use for specific health conditions while requiring a pharmacist to dispense the drug. And that’s exactly why UConn alum Nick Tamborrino ’02 Pharm.D., ’11 MBA wants to be at the forefront of the industry in Connecticut.
Entrepreneur Madhvi (Bhatt) Upender ’90 (CLAS, SAH) is developing a smartphone app that will help diagnose sleep disorders in children.

A background in neuroscience and cancer genetics, coupled with a passion for entrepreneurship, guide Upender’s mission to empower individuals to take control of their health. As CEO and co-founder of Maryland-based Awarables Inc., Upender is developing hardware and software that will allow people to track the quality of their sleep. Among her teammates is another UConn alum, Raghu Upender ’90 (CLAS), ’95 MD, her brother-in-law and co-founder of Maryland-based Awarables Inc., Upender is developing a smartphone app that will help diagnose sleep disorders in children.

“Some children simply don’t sleep well, and that can significantly affect their quality of life,” says Upender. “We’re creating devices that the children will wear to bed, with sensors for heart rate, sound, and other sleep quality indicators. The metrics will be accessible by parents via a smartphone app, which collects the data and tracks it over time. The company also plans to build a portal for physicians to access the data, allowing them to make changes to medications or treatments and to see how they affect the patients’ sleep, according to Upender.

“We’ve talked to a lot of parents who have children with these conditions, [and] to doctors,” Upender says. “It could be a very simple thing that they need to change that could result in a significant lifestyle improvement.”

The Department of Defense, which has an interest in how sleep affects military personnel, has also awarded a grant to Awarables, Upender, who became interested in the translational aspect of science — “bringing scientific discoveries to practical application” — while doing postdoctoral work in cancer genetics at the National Institutes of Health.

Upender, who later worked at the National Cancer Institute and at a startup that developed a new test to identify early-stage cervical cancer, says the entrepreneurial bug eventually hit her. In 2013, she created the business plan for Awarables, then called Naveenum, as part of a University of Maryland entrepreneurship program. After being named a semifinalist in the 10th annual StartRight! Women’s Business Plan Competition with her plan for Awarables, she started working on the business full time.

“I’m very excited about all the technology advancements that are going on,” she says. “I want to be part of this wave of innovation that’s happening in health care.”

BIOSCIENCE BREAKTHROUGHS ON CAMPUS

On the University’s own campuses, this same wave of innovation is engaging faculty, some of whom have specifically been drawn to UConn in recent years by the expansion of UConn Health’s research facilities as well as the growing cross-disciplinary opportunities to study biomedical problems that could transform medicine. For Annabelle Rodriguez-Oquendo, the state’s dedication to the Bioscience Connecticut project, demonstrated by funding of billion-dollar projects like The Jackson Laboratory for Genomic Medicine, solidified her own interest in UConn.

A professor of cell biology who holds the Linda and David Roth Chair in Cardiovascular Research at UConn Health, Rodriguez-Oquendo arrived at UConn two years ago from Johns Hopkins University. There, she had been studying an enigmatic condition that she first found in a patient who had high levels of high-density lipoprotein (HDL) cholesterol — the “good” kind — but who also had many risk factors for heart disease.

Guidelines at the time said patients with HDL levels over 60 were protected from heart disease, according to Rodriguez-Oquendo. Yet despite the patient’s high levels of “good” cholesterol, she had found evidence of blocked arteries. “It was really clear that there was a paradox,” Rodriguez-Oquendo says. “There had been a lot of research on the low density lipoprotein [LDL] cholesterol and its impact on risk for heart disease, but the protein affecting the levels of HDL cholesterol in the bloodstream had been a mystery. At Hopkins, Rodriguez-Oquendo and her team became the first to identify the gene variation that puts patients at a higher risk for heart disease as well as infertility.”

Rodriguez-Oquendo hopes to bring her research full circle at UConn, developing treatments to reduce the risk of heart disease while increasing fertility in those with the defect.

“We’re right now in that ‘wow’ moment,” she says. “It’s nice to know it’s materializing. It’s exciting.”

Since arriving at UConn Health in 2012, her lab has patented a gene that — with the genetic variation associated with high HDL cholesterol — believe causes heart problems and infertility in 20 percent of the population.

“The work we’re doing is just thrilling We’re into new territory,” she says. “We’ve gone from that place of when I saw that patient, saying, ‘Huh, there is really something odd about this HDL and her blocked artery,’ to looking at the genetic code, and we’ve been able to distill it down.”

Rodriguez-Oquendo hopes to bring her research full circle at UConn, developing treatments to reduce the risk of heart disease while increasing fertility in those with the defect.

“I WANT TO BE PART OF THIS WAVE OF INNOVATION THAT’S HAPPENING IN HEALTH CARE.”

— MADHVI (BHATT) UPENDER ’90 (CLAS, SAH)
THE SOUNDS OF Innovation
How UConn Researchers Are Resurrecting Antique Musical Instruments With 21st-Century Technology Via 3-D Printing

In our modern age of specialization, it is increasingly rare to find the kind of individual who, in another age, would have been known as a Renaissance man or a polymath. The likes of Leonardo da Vinci, recognized for his painting as well as his scientific inventions, Michelangelo, famous as a painter, architect, and poet, or Benjamin Franklin, the scientist, politician, and author, were renowned for their expertise across several disciplines — and their ability to apply their diverse knowledge to solve problems.

Before completing his medical degree from the UConn School of Medicine, Robert Howe ‘82 MD had already been heading toward a life of wide curiosity and inquiry, earning dual undergraduate degrees in chemistry and music through a joint program between Case Western Reserve University and the Cleveland Institute of Music.

While establishing his medical practice — today he is medical director of Maple Street Medical Group in East Longmeadow, Mass. — Howe also pursued his interest in the construction of antique woodwind instruments, particularly the oboe, which he had studied as a student. Over the past two decades, he has conducted research and published his findings in scholarly music journals such as The American Musical Instrument Society and The Double Reed.

In recent years, Howe has accelerated his interest in studying music more formally. Now a Ph.D. candidate in UConn’s School of Fine Arts, he shared his ideas with his doctoral advisor, Richard Bass, professor of music theory in the Department of Music, and the two have since orchestrated an unprecedented collaborative effort between musicians and engineers at the University, using a technology typically exclusive to medical science — microcomputer tomography — to explore the makeup of 18th- and 19th-century musical instruments.

PRINTING MUSICAL INSTRUMENTS IN 3-D
Using the technology in this way for the first time is providing researchers with precise measurements to within thousandths of a millimeter for parts of antique instruments such as the saxophone and recorder. Howe and his fellow UConn researchers say their findings have resulted in the unprecedented replication of instrument parts — using 3-D printing — that could allow instruments hundreds of years old to be played once again while providing security authentication for rare instruments held by collectors and museums.

Their findings were published earlier this year in academic and scientific journals and at conferences, including the Sax 200 Bicentenary Conference in Brussels in July, where Adolphe Sax, the Belgian instrument maker who invented the saxophone, was celebrated during a series of events marking the 200th anniversary of his birth.

“The impetus behind the study was to find a way to get better copies of the original antiques without subjecting them to any risks and subjecting the process to the errors of measurement by hand,” says Howe. “The thought is that if one can take a hands-off set of measurements and then replicate the instrument directly, can one get a more accurate representation of the original? I would hope so.”

Howe and Bass have been working with Sina Shahbazmohamadi ‘13 Ph.D., who developed a new method for using microcomputer tomography to examine antique wind instruments and then create new parts using 3-D printing technology.

The researchers are using scientific equipment at UConn’s Center for Clean Energy Engineering to examine antique wind instruments and then create new parts using 3-D printing technology.

A 1770 recorder made by Thomas Cahusac, with a foot piece made by Sina Shahbazmohamadi ‘13 Ph.D. (above), who developed a new method for using microcomputer tomography in UConn’s Center for Clean Energy Engineering to examine antique wind instruments and then create new parts using 3-D printing technology.

In our modern age of specialization, it is increasingly rare to find the kind of individual who, in another age, would have been known as a Renaissance man or a polymath. The likes of Leonardo da Vinci, recognized for his painting as well as his scientific inventions, Michelangelo, famous as a painter, architect, and poet, or Benjamin Franklin, the scientist, politician, and author, were renowned for their expertise across several disciplines — and their ability to apply their diverse knowledge to solve problems.
STRIKING THE RIGHT NOTE

In noting the range of initial findings uncovered by the study, Howe cites the example of the Cahusac recorder. Measurements were taken of the original recorder using traditional methods, and a craftsman created an entirely new recorder based on the three pieces of the instrument — a mouthpiece, a resonator tube with sound holes, and a foot piece, which also has a sound hole. The foot of the 1770 recorder was scanned using microcomputer tomography, which revealed cracks, warping, and other imperfections in the original wood that developed from use and aging over time.

Using a program designed by Shahbazmohamadi, three versions of the foot piece were created with additive manufacturing technology, commonly known as 3-D printing. One was an exact reproduction of the original foot, complete with its flaws. A second was a foot piece that corrected the flaws, and the third was a corrected foot with lighter porosity — density — than the original.

Shahbazmohamadi says the high resolution of the microcomputer tomography equipment, which can only scan objects of a limited dimension, requires multiple scans of instrument parts.

“The machine goes up to half a micron. You can’t do it by one image session,” he says. “We had to do stitching. We did the top part, then the bottom part, and used an algorithm to stitch them together.”

Once the digital image of the recorder part was completed, a stereolithography file was created to allow the process of polymerization to create the three-dimensional replica of the recorder’s foot. Howe then assembled a recorder from three different sources — the traditionally crafted replica of the mouthpiece, the original resonator tube, and the replicated foot pieces from the scan. The assembled recorder using the replicated original foot piece and the corrected foot piece produced similar sound when Howe played the instrument, including the recorder’s lowest tone from the sound hole in the foot piece. However, using the replicated foot piece with the lighter porosity, Howe could not produce the same quality of sound at the recorder’s lowest tone.

“It won’t support the lowest note. There’s not enough mass [in the foot piece],” Howe says. “It tells us not to make a replica out of insufficiently dense material. Woodwind musicians have argued whether the type of wood or plastic matters in the response and sound of an instrument. We have demonstrated that if a particular density is unable to make a functioning musical instrument, then it must matter.”

AS THEY WERE MEANT TO BE HEARD

Creating missing parts of centuries-old instruments so they can be played today is another area the UConn researchers are exploring. Howe notes that while there are several saxophones made by Sax that sit in museums, they are missing the proper wooden mouthpiece and cannot be played.

“In his patent of July 1846, when he patented the saxophone in France, he only drew the mouthpiece for the bass saxophone,” Howe says. “He said this is the mouthpiece for the bass, but [that] the others could be made in the same proportion, as necessary.”

The researchers have access to an original mouthpiece created by Sax for a B-flat tenor saxophone and believe that if they can scan that part, they can proportionately scale it for six original Sax instruments of varied tones — and then use 3-D printing to create appropriate mouthpieces so they once again can be played.

Bass says the technology has potential for the authentication of antique instruments that are donated or sold to museums and collectors. Historically, the authentication of antique instruments is based on the judgment of specialists in the field.

“It could be a security method for instruments. For example, if we could make 3-D images or copies of some essential parts of an instrument and it gets stolen, we could verify it’s that instrument if it turns up somewhere else,” Bass says. “If we have an exact copy of a piece of that instrument in a vault, there’s real potential for museums and collectors to authenticate and protect their collections.”

According to Eric Rice, head of UConn’s Department of Music and artistic director for the annual Connecticut Early Music Festival, learning more about the construction of antique instruments will also assist in the presentation of early music so that today’s audiences can hear works of composers such as Bach or Beethoven as they would have sounded two centuries ago.

“To figure out how these instruments were constructed and to establish why they sound the way they do and why they are as successful as instruments is important,” says Rice. “You can’t look in the historical record. This research enlists modern technology to allow a dissection of the instrument just as you would do with a mummy that you would like to learn more about but cannot take apart.”

Watch as UConn researchers restore the sounds of 18th- and 19th-century music using 21st-century medical imaging technology at uconn.edu/instruments.
First-year UConn head football coach Bob Diaco likes to say he doesn’t have a job. Instead, he insists, “I have a mission.”

From the outside, that mission may seem fairly straightforward: Take the Huskies to new heights as a nationally competitive program. The 41-year-old New Jersey native, who was named to his first head coaching job last year after a successful stint as defensive coordinator and assistant coach for the Notre Dame Fighting Irish, sees his mission — indeed, his vision for Husky football — go far beyond playing on the field. It is a philosophy that has guided Diaco, a 1995 Iowa graduate and linebacker, throughout his life: Reject fear, embrace simplicity, put your head down, and work.

“Think about if today is going to be your last day. What would it look like?” he asks. “Know yourself. Know what you’re competing against and know the terrain, and you’ll have no reason to fear.”

From the time he gets into his office before dawn to begin prepping for the next game, through the team meetings and meals and practices, Diaco says he tries to embrace a kind of emotional asceticism to cut down on whatever distracts him from his goals.

“Try it yourself,” he says. “Need less. Need fewer pats on the back from people. Need fewer things that get between you and achievement.”

Diaco, who dazzled Connecticut residents in his first UConn press conference with off-the-cuff Latin and classical quotations, is under no illusions about miraculous reversals of fortune: Progress takes time. It is a message he has delivered throughout his first year as he speaks on campus and as he travels around the state speaking to fans, business leaders, and anyone else interested in UConn football.

“Everyone in this building is under false pretenses,” he says. “Everybody here understands the work that’s needed.”

For UConn’s Bob Diaco, every day is gameday.
“WE’RE JUST GETTING STARTED” with our program. We’re in an incredible development phase. We’re taking over a downtrodden, losing program that was losing in almost every area. It’s going to take some time, and everybody understands how far we have to go. We have a long way to go.

“You tell them the truth. And you show them the truth. You don’t blow smoke. You don’t make stuff up. You show them the truth and you tell them, and in doing that, they’re going to see a lot of positives. A lot of new positives.”

“WE’VE HAD BENCHMARKS” where there’s an evaluation and a successful moment, and it’s celebrated. So we didn’t just end camp, we broke camp. They won that moment. Then we celebrated. There have been 100 different moments like that, where we’ve tried to reset the energy and belief system.

“They won the moment. Then we celebrated. There have been 100 different moments like that, where we’ve tried to reset the energy and belief system.”

“That’s why we’re building a strong foundation. How long it takes to get that foundation, we’ll see, but this is not being built on sand. This is not a house of cards. This is not sticks and timbers that the big, bad wolf is going to blow down.”
ECONOMIC IMPACT: SUSTAINING CONNECTICUT

$3.4 BILLION

UCONN’S TOTAL ECONOMIC IMPACT ON THE STATE OF CONNECTICUT

From proudly supporting innovative research endeavors to strengthening partnerships with high-tech startup businesses, the University of Connecticut is actively contributing to the region’s economic vitality — now and into the future — as shown in a recently released study.

For the full report, visit economicimpact.uconn.edu.

Model inputs included actual FY 2012-13 expenditures provided by UConn and UConn Health.

ECONOMIC IMPACT by UConn campus

<table>
<thead>
<tr>
<th>Location</th>
<th>Economic Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>STORRS</td>
<td>$1.5B</td>
</tr>
<tr>
<td>STAMFORD</td>
<td>$1.7B</td>
</tr>
<tr>
<td>TORRINGTON</td>
<td>$6M</td>
</tr>
<tr>
<td>HARTFORD</td>
<td>$102M</td>
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<tr>
<td>AVERY POINT</td>
<td>$17M</td>
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<tr>
<td>WATERBURY</td>
<td>$25M</td>
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<tr>
<td>$202.5M</td>
<td>Local and state tax revenue generated by UConn</td>
</tr>
</tbody>
</table>

$1.7B

UCONN HEALTH

$43M

$102M

UCONN HEALTH

$25M

STAMFORD

$1.5B

STORRS

$17M

WATERBURY

$11.80

UConn generates $11.80 for every state-funded dollar

$373.3M

Economic impact of UConn’s ongoing research

$24,235

Connecticut jobs sustained by UConn

“it’s gratifying to know that the work our faculty, staff, and students do every day has such a direct impact on the lives of Connecticut residents. But this is only the beginning of what we’re capable of achieving.”

UConn President Susan Herbst

Learn more at economicimpact.uconn.edu

ON THE BIG SCREEN

BY STEFANIE DION JONES ’00 (CLAS)

Even best-selling fiction writer Wally Lamb ’72 (CLAS), ’77 MA admits he never could have envisioned it: The house in which he spent roughly 16 years penning several of his celebrated novels is now part of a movie set for a forthcoming feature-length film based on one of those books.

Lamb’s fourth book, the comic novella *Wishin’ and Hopin’* (HarperCollins, 2008), is the first of his works to be adapted for the big screen. Filmed in Connecticut by Rocky Hill-based Synthetic Cinema International, the movie — slated for limited release across the country later this month — was shot in part just minutes from the UConn Storrs campus in a quiet, residential neighborhood in Willimantic. There, inside the same unassuming, three-story home where the UConn alum had for many years rented space as a writing sanctuary, his characters will now come to life on film.

Set at Christmastime in 1964, *Wishin’ and Hopin’* tells the story of 10-year-old Felix Funicello, a parochial school student growing up in the fictional town of Three Rivers, Conn. Among the stars cast in the film are Molly Ringwald, Meat Loaf, and Annabella Sciorra. Lamb himself will also make a cameo appearance in the movie, playing the role of a school janitor.

The movie, which wrapped up filming in August, was shot in the Connecticut towns of Willimantic, Jewett City, and Norwich — another source of excitement for Lamb, who was born in Norwich and still lives in Connecticut.

“One of the delightful things for me about this experience was the chance to bring the story back to home port,” says Lamb, who had suggested to the film’s producers the idea of using the house in Willimantic as one of the movie sets. The interior of the house was subsequently transformed into the Funicello family home, and the office in which Lamb wrote *Wishin’ and Hopin’* became Mr. and Mrs. Funicello’s bedroom in the film.

“It was kind of surreal,” says Lamb, though he believes the late owner of the home, his friend and former landlady Bernice “Bunny” Bennett, would have approved. “I knew she would have gotten a kick out of using her house,” he says.

Although the movie rights for several of his other novels had been sold previously, none of those deals has yet led to the development of a feature-length film.

“I still scratch my head sometimes and say, ‘How did all of this happen?’” Lamb says. “I have a pretty good imagination, but I couldn’t have imagined a life for myself that has become this cool and this interesting and this challenging.”

“Wishin’ and Hopin’” will air at 9 p.m. EST on Dec 6 on the Lifetime channel.

Built on the

VIDEO

Visit s.uconn.edu/wishin to get a behind-the-scenes look as Wally Lamb’s Christmas novel *Wishin’ and Hopin’* is brought to life on the big screen.

In addition to limited theatrical release in theaters across Connecticut, New York City, and Los Angeles, *Wishin’ and Hopin’* will air at 9 p.m. EST on Dec 6 on the Lifetime channel.

on the

Big Screen
If you give professors 110% in class and in your assignments, they will give you 110% of their assistance for you when you ask for it.” — Steve Priest '15 (GEO)

"Don't worry about whether or not you have a map, so long as you have your compass.” — Laura Berlinger '06 (CLAS)

"Don't quit the bad day.” — Lauren Blanchard '13 (CLAS)

"You will only be happy when you’re doing something you love. Nothing else works if you’re not happy with the relationships you have with the people who will always be there for you.” — Qasim Ali '14 (BUS)

"If you find something you are passionate about, it will never feel like you worked a day in your life. Follow your passion, and the money will follow.” — Kyle Jay '11 (BUS), founder of Connecticut Scooter Pros

"Always take the time to be with the people you love; nothing is more important than fostering the relationships you have with the people who will always be there for you.” — Laura Berlinger '06 (CLAS)

"Your best friend is your first college professor,” says Anne M. Wilkins '88 (BUS), author of Kiss, Tell, and Tempt: A Woman’s Guide to Emotional and Intimacy Protection within the Engineering and Technology Field. "They bring 23 years of experience in the engineering field to his position as a non-qualifying employee with the agency."

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"Authority is out there lying in the hallway; you just have to take it in order not to lose it," — Michael Keaton '83, "Batman" and "The Wolf of Wall Street"

Your father always said, "You have to work hard for what you want; it's going to be hard and it's okay to get through if you want it bad enough." — Jaelle Leit '17, CLAS

"If you're having a hard time believing in yourself, believe in the support of your mentors. They want you to succeed and won't let you attempt something you don't think you're capable of doing." — Charlie Van Buton '12, CAHNR, 2014 Greater Hartford Walk to Cure Arthritis Class Fundraising Team Captain

"It's important to enjoy the good times and do your best with the bad ones. There is no such thing as being happy, only good timing and being patiently irritable." — Karl Orents '08, CLAS

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UCONN HEALTH — Outpatient Pavilion

The $203 million, 300,000-square-foot outpatient pavilion currently under construction and scheduled to be completed by December will bring under one roof virtually all outpatient services offered by UConn, making it easier for patients to access.

The new outpatient center is part of the state’s $864 million Bioscience Connecticut initiative, which also includes construction of a new patient tower at John Dempsey Hospital and renovations to 238,000 square feet of existing UConn Health research facilities, including additional incubator space intended for entrepreneurs in bioscience as well other industries.

Other transformations at the Farmington campus include a new parking garage and The Jackson Laboratory’s $135 million, 183,500-square-foot genomic research center, which opened last month.

UCONN BASKETBALL CHAMPIONS CENTER

Opening this fall on the heels of the men’s and women’s dual national championships, the new $35 million, 78,000-square-foot Werth Family UConn Basketball Champions Center features practice gyms, locker rooms, coaches’ offices, and areas for academic support,

video analysis, sports medicine, and strength training. The facility will allow basketball student-athletes to practice, train, study, and dine in one location. It is one of the projects supported through the fundraising campaign launched in 2009 by the UConn Foundation, which has so far received about $30 million in commitments for the new facility.

NEW FIVE-STORY ENGINEERING BUILDING GETS GREEN LIGHT

This past spring, the UConn Board of Trustees approved a $92.5 million planning budget to develop a new five-story engineering and science complex on the site of the Old Central Warehouse. The new building will include high-tech laboratory space for what’s known as trans-disciplinary research, in which researchers from different fields work in teams and blend their expertise for innovative outcomes. Demolition of the approximately 50,000-square-foot Old Central Warehouse off Glenbrook Road started this summer, with construction of the new complex scheduled to start over the winter.

Construction of the new building is expected to take about 21 months, with the building ready for use starting in the 2016-17 academic year.

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HARTFORD

UCONN HARTFORD PLANS BIG MOVE

In June, UConn announced plans to relocate the Hartford campus from West Hartford to downtown Hartford. UConn Hartford will be a neighborhood campus centered around the former Hartford Times building that will include the addition of a new, attached five-story building. The restored Hartford Times building, which will retain its iconic façade, will be joined to the new building by an atrium. UConn opened its first Hartford campus in 1939, eventually moving to the West Hartford location in 1970. In addition to the historic significance of returning to its urban roots, UConn’s move will create a neighborhood campus fully intertwined with the nearby Hartford Public Library, Wadsworth Atheneum, Connecticut Science Center, Connecticut Convention Center, and state and city government offices.

Classes could begin at the new campus as early as Fall 2017. UConn’s nearby Graduate Business Learning Center will also be consolidated with other programs, including the Department of Public Policy and the School of Social Work, at the new campus. The new UConn Hartford campus will be home to about 2,300 students and 250 faculty members.

Campus transformations are underway across the University — from the expansion of state-of-the-art teaching facilities to the creation of collaborative space for entrepreneurs on the front lines of bioscience.

STORRS

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Targeted by bullies throughout her middle school years for her sexual orientation, Molly Rockett ’15 (CLAS) says she was left feeling “trapped and powerless” at the age of 13. She started contacting her legislators, urging them to take action on LGBT rights — and when one state senator replied with a handwritten note, Rockett says she was stunned by the response.

“She was making a difference in the lives of students dealing with student debt. Fifteen million students were impacted.”


While Molly was in the office, we were working on the Stafford Student Loan issue, and protecting student loan rates from doubling. … This wasn’t a theoretical issue; she was making a difference in the lives of students dealing with student debt. Fifteen million students were impacted.”


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Spending time in shark-infested waters may be far from your notion of an ideal career. Not so for UConn alum Chris Perkins ’12 (CLAS), co-founder and director of research for nonprofit Shark Bay Research Trust (sharkbayresearch.org) in South Africa. Working alongside Sharklady Adventures, a cage-diving and educational tour operation, Perkins is taking his marine sciences degree to the seas to conduct groundbreaking research with hopes of not only changing negative perceptions of great whites and other shark species, but also raising awareness about their greatest threat — humankind. Each year, nearly 100 million sharks are killed, with most dying as a result of illegal poaching or drowning by commercial fishing nets. “From almost the time that I first discovered sharks at age 2, I always told people that I was going to be a marine biologist when I grew up, and I guess that I just never let that go,” Perkins says.

To learn more and to watch several video clips captured by Chris Perkins ’12 (CLAS), please visit s.uconn.edu/sharks.