Better Ways to Heal Bones

UConn Health is engineering innovative solutions for bone and joint problems, promoting faster recovery and less trauma to the body. p.8
Dr. R. Lamont “Monty” MacNeil reflects with pride on his 12 years as dean of the UConn School of Dental Medicine and looks forward with optimism at where the School will go from here.

“Looking back, it has been quite humbling to be the dean of a dental school with such a great national reputation and part of such a distinguished university,” says MacNeil, who soon plans to take a sabbatical but will return as a faculty member. “It has been a phenomenal experience and a privilege to work with the talented faculty, staff, and students here.”

MacNeil joined the Dental School as a graduate student in 1986 after six years in private practice. He took his first role on the School’s leadership team, as associate dean, in 1998 and was named dean in 2007.

Since then, he has shepherded the School through three perfect accreditation reviews and seen it rise in the ranks to number 11 in funding from the National Institute of Dental and Craniofacial Research. The School was awarded the prestigious William J. Giers Award for Achievement in 2016, and MacNeil helped establish the cross-campus Biomedical Engineering Department in partnership with the UConn schools of Medicine and Engineering.

MacNeil also maximized Bioscience Connecticut funding to transform the physical infrastructure of the School with renovated academic areas, simulation training centers, state-of-the-art dental clinics, and advanced technology.

“The physical renewal we have accomplished here lifts a heavy burden off the next generation of students here.”

MacNeil believes the School has a bright future. He foresees further growth in interprofessional training for students and residents and envisions a greater emphasis on how dentists can be part of patients’ broader primary care teams.

“We are the perfect place for such experimentation because of our integrated structure and our academic interests,” he says. “We should be the School testing new approaches and new models, being the leaders in this new world of collaborative health care. The key is looking beyond roadblocks and limitations and seeing the many opportunities that surround us and maximizing them.”

MacNeil will dedicate his sabbatical to his chairman of the board for the American Dental Education Association, which has more than 20,000 members across 76 U.S. and Canadian dental schools. MacNeil says he hopes to advance discussions on topics including reforming national dental licensure, encouraging student interest in academic interests, and expanding international dental education dialogue. The issues he’s most passionate about are innovating methods of assessing dental students and researching the benefits of integrating oral health care with primary medical care, efforts he says could have profound implications for dental education.

“My endpoint goal as dean was to leave the School in a better state than when I took office,” says MacNeil. “I am confident that has been accomplished. We are stronger than ever before, and I know we will keep pushing the boundaries of dental medicine to accomplish even more.”

MacNeil will end his 12-year tenure as dean of the UConn School of Dental Medicine in August and remain on the faculty. MacNeil has been on the School’s leadership team for 20 years.

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— Dr. R. Lamont MacNeil, UConn School of Dental Medicine

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UConn has announced that on Aug. 31 Dr. Sharon M. Gordon will become the next dental school dean and first woman to serve in the role. Gordon, a distinguished educator, clinician, and scientist, hails from East Carolina University’s School of Dental Medicine where she serves as associate dean for innovation and discovery and chair of the Department of Foundational Sciences.

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PTSD can undo a sufferer’s life. MDMA may help sufferers untangle their trauma and find their way back to mental health.

Better Ways to Heal Bones

With a rapidly aging U.S. population, experts say the incidence of, and costs to treat, musculoskeletal issues are in danger of spiraling out of control. UConn Health is intent on reversing the trends.

Unraveling

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Better Ways to Heal Bones

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Research doesn’t stop when we report it. Here are updates on past UConn Health Journal stories:

**Glycogen Storage Disease**
The world’s first gene therapy clinical trial for Glycogen Storage Disease (GSD) Type Ia is expected to start this year, hosted by the GSD Program at Connecticut Children’s Medical Center and UConn Health, under the direction of Dr. David Weinstein. The FDA–approved trials will be done in conjunction with biopharmaceutical company Ultragenyx.

Spring 2017, "Free to Be Imperfect" Fall 2017, "Improving Risk Factors to Prevent Postoperative Delirium" Fall 2018, "Detecting Hearing Loss, Vertigo Via Blood Tests"

**Breast Health**
UConn Health assistant professor and breast surgeon Dr. Christina Stevenson has begun providing breast health education in hair salons, funded by the Connecticut Breast Health Initiative. The program aims to reach women in Hartford County who may be at risk for late-stage diagnosis of breast cancer due to health care access barriers.

Fall 2016, "On the Ground for Breast Cancer Awareness"

Fall 2018, “Finding Skin Cancer in a Flash”

**Skin Cancer Screening**
Up to 60 percent of UConn Health patients with a suspicious skin lesion or mole can now avoid invasive biopsies thanks to confocal microscopy technology, according to dermatologist Dr. Jane Grant-Kels. The technology uses a painless laser light to see skin cells on a cellular level and help doctors identify skin cancers, including melanoma.

Summer 2016, “Finding Skin Cancer in a Flash”

**Detecting Hearing Loss**
Findings presented at the 3rdr American Neurotology Society annual spring meeting reveal the first potential biomarker for noise-induced hearing loss. A collaborative study by UConn Health and Sensorion showed changing levels of prestin, an outer hair cell protein, in the blood correlated with the severity of hearing loss.

Fall 2016, “Detecting Hearing Loss, Vertigo Via Blood Tests”

**Advancing Surgical Care for Older Adults**
2018 Leader in Advancing Research Award from the Alzheimer’s Association, Connecticut Chapter.

Dr. Richard Fortinsky, Lahey, chief of Cardiothoracic Surgery, says he couldn’t agree more.

"The hybrid operating room enables us to deliver health care in ways we have never been able to before," says Lahey. "We now have all the advanced radiological equipment inside a huge operating room."

All the high-tech equipment in the hybrid OR hangs from the ceiling, including imaging equipment, large plasma screens, and LED boom lights that assist surgeons with brighter and sharper lighting of the surgical field. A high-resolution video system provides real-time video and photo imaging during surgery for direct communication with the Department of Pathology or teleconferencing and live broadcasts of surgery for physician training and medical education.

Hybrid OR Expands Surgical Capabilities

This spring, neurosurgery chief Dr. Ketan Bulsara and his team were the first to perform surgery in UConn John Dempsey Hospital’s 1,200-square-foot hybrid operating room.

The team leveraged the new high-tech room and its dual advanced X-ray imaging capabilities to guide a successful minimally invasive, neurological procedure.

“There are not many biplane hybrid operating rooms in the United States, and there are only a handful along the East Coast,” says Bulsara. “The biplane imaging provides surgeons multiple views and not only makes patient care safer but also allows surgeons to do things that we could not ordinarily do inside the operating room.”

The hybrid room gives surgeons the ability to perform a range of procedures in one setting, from minimally invasive treatments to the most complex neurosurgery, interventional cardiology, and vascular procedures.

“The hybrid operating room allows surgeons to choose what they feel is the best treatment for that patient,” says Bulsara.

According to Bulsara, the hybrid room enables UConn Health to continue to providing world-class care to its patients while shaping the future of surgery and medicine and optimizing the personalized care given to each individual patient.

UConn Health’s Dr. Stephen Lahey, Chief of Cardiothoracic Surgery
HONOR ROLL

Dr. Christine Finck, UConn School of Medicine associate professor of pediatrics and surgery, was honored with a Women of Innovation award by The Connecticut Technology Council (CTC) for her research innovation and leadership.

Dr. Katherine Coyner was honored by her alma mater UMass Amherst with its Distinguished Achievement Award.

LAB NOTES

Latest UConn Health Discoveries

PROSTATE MEDICATION UPS DEMENTIA THREAT
Tamsulosin, a medication prescribed to treat benign prostatic hyperplasia (BPH), may increase the risk of dementia in men ages 65 or older, a recent UConn study published in Pharmacoeconomics and Drug Safety found. The risk of developing dementia increased by as much as 37 percent when compared to similar patients who were not taking any medication to treat BPH. According to Dr. Helen Wu of the Connecticut Institute for Clinical and Translational Science and UConn Health, tamsulosin may also quicken the decline of those with early memory loss.

NEW COMPOUND STIMULATES IMMUNE RESPONSE AGAINST CANCER
A new synthetic compound created by a team of top immunologists, molecular biologists, and chemists has proven to be highly effective in activating human invariant natural killer T cells (iNKT). The compound called AH10-7 also causes the cells to release a specific set of proteins that stimulate anti-tumor immunity. One of the limitations of earlier compounds was their tendency to cause iNKT cells to release a rush of different cytokines with conflicting immune responses. The study, led by UConn chemistry professor Amy Howell, Ph.D., was published in Cell Chemical Biology. The findings could lead to more effective cancer treatments and vaccines.

For Anxiety, Single Intervention Is Not Enough
No matter which treatment they get, only 20 percent of young people diagnosed with anxiety will stay well over the long term, UConn Health researchers report in the Journal of the American Academy of Child and Adolescent Psychiatry.

“When you see so few kids stay non-symptomatic after receiving the best treatments we have, that’s discouraging,” says UConn Health psychologist Golda Ginsburg. She suggests that regular mental health checkups may be a better way to treat anxiety than the current model.

The study followed 319 young people aged 10 to 25 who had been diagnosed with separation, social, or general anxiety disorders at sites in California, North Carolina, Maryland, and Pennsylvania. They received evidence-based treatment with either sertraline (the generic form of Zoloft) or cognitive behavioral therapy or a combination of the two and then had follow-ups with the researchers every year for four years.

The follow-ups assessed anxiety levels but did not provide treatment. Other studies have done a single follow-up after one, two, five, or 10 years, but those were essentially snapshots in time. This is the first study to reassess youth treated for anxiety every year for four years.

The sequential follow-ups meant that the researchers could identify people who relapsed, recovered, and relapsed again as well as people who stayed anxious and people who stayed well. They found that 20 percent of patients got well after treatment and stayed well, rating low on anxiety at each follow-up. But about half the patients relapsed at least once, and 30 percent were chronically anxious, meeting the diagnostic criteria for an anxiety disorder at every follow-up.

Females were more likely to be chronically ill than males. Other predictors of chronic illness were experiencing more negative life events, having poor family communication, and having a diagnosis of social phobia. On the bright side, the study found that young people who responded to treatment were more likely to stay well. The study also found no difference in long-term outcomes between treatment types. This means that if there is no cognitive behavioral therapist nearby, treatment with medication is just as likely to be effective.

The study also found that kids did better if their families were supportive and had positive communication styles. Parents should talk to their child and ask the therapist questions. Why do they suggest this treatment? (It should be supported by evidence.) Have they been trained in cognitive behavioral therapy? How can we reinforce what was learned in therapy this week? But parents should also be aware that a single intervention may not be enough.

“If we can get them well, how do we keep them well?” says Ginsburg. “We need a different model for mental health, one that includes regular checkups.”

Tamsulosin, a medication prescribed to treat BPH, may increase the risk of dementia in men ages 65 or older, a recent UConn study published in Pharmacoeconomics and Drug Safety. The risk of developing dementia increased by as much as 37 percent when compared to similar patients who were not taking any medication to treat BPH. According to Dr. Helen Wu of the Connecticut Institute for Clinical and Translational Science and UConn Health, tamsulosin may also quicken the decline of those with early memory loss.
THE PULSE

UConn Health News

HONOR ROLL

Dr. Juan Salazar, professor and chair of the Department of Pediatrics at the UConn School of Medicine, was named a member of the Vaccine and Therapeutics Subcommittee of the Tick-Borne Disease Working Group established this year by the U.S. Department of Health and Human Services.

Liisa Tiina Kuhn, Ph.D., associate head and associate professor of biomedical engineering at the UConn School of Dental Medicine, was elected to the American Institute for Medical and Biological Engineering’s College of Fellows.

The UConn Health Board of Directors named Dr. Brenton Graveley HealthNet, Inc. Chair in Genetics and Developmental Biology and Dr. David McFadden Murray-Heilig Chair in Surgery.

Class of 2009 Med Students Return to Practice at UConn Health

Dr. David Pacheco (cardiology), Dr. Sara Tabtabai (neurology), Dr. Ben Ristau (urologic oncology), Dr. Maria Katz (internal medicine), Dr. Ben Ristau (urologic oncology), Dr. Sara Tabtabai (cardiology), and Dr. Rafael Pacheco (radiology) came back with fond memories of their time as UConn medical students.

The UConn School of Medicine graduating class of 2009 is experiencing a mini-reunion at UConn Health, with five doctors from the class now practicing here.

Dr. Todd Falcone (ear, nose, and throat), Dr. Marilyn Katz (internal medicine), Dr. Ben Ristau (urologic oncology), Dr. Sara Tabtabai (cardiology), and Dr. Rafael Pacheco (radiology) came back with fond memories of their time as UConn medical students.

Katz says she knew the UConn School of Medicine was a match right away. “I loved everyone I met on my interview day—students, faculty, and staff—and canceled all my other interviews once I received my acceptance.”

Falcone joined UConn Health in 2014. “I had an excellent time here, and I credit the School of Medicine for preparing me to match into a competitive residency program and become a competent and caring physician and educator. I do not believe I could have received a better medical school education anywhere else."

From left: Dr. Sara Tabtabai, Dr. Ben Ristau, Dr. Todd Falcone, and Dr. Marilyn Katz

The five physicians say their medical school connections help them deliver better patient care today. “Rafael Pacheco and I were medical interns together as he was doing his prior year prior to radiology,” Katz shares. “It was great to discuss similar patient cases with him then, and knowing I can call him now to discuss testing is a huge benefit as a primary care physician.”

Enhancing Delivery of Care with UConn HealthOne

UConn Health’s new integrated electronic health record (EHR), UConn HealthOne, launched this spring, making patient records easily accessible to all members of care teams and to the patient.

HealthOne represents a technological, clinical, and operational transformation aimed at enhancing the patient experience. At its heart is an EHR platform, powered by health care software company Epic, that facilitates collaboration, knowledge-driven care coordination, and continuous improvement.

The integrated EHR takes most paper—and the turnaround times associated with paper—out of the clinical process, making provider notes available in real time and lab and test results available quickly. For providers, that means a seamless flow of information following the patient throughout their encounter not only with UConn Health but also with other health care systems through HealthOne’s interoperable Care Everywhere tool. All members of a care team, including referring physicians, will have access to the same up-to-date patient information at the same time.

Patients using HealthOne get more efficient care and can access their test results and other health information at any time. Through myHealthOne, the new, secure online portal, patients can access tools they can use to manage their care team, request prescription refills, and manage appointments.

New Neurosciences Chair Establishes UConn’s First Alzheimer’s Lab

Internationally recognized neurodegenerative disease researcher Ruiqiang Yan, Ph.D., joined the UConn School of Medicine this spring as chair of the Department of Neurosciences. He has established the medical school’s first research laboratory dedicated to studying and discovering new treatments for Alzheimer’s disease and other neurodegenerative diseases.

Prior to his appointment, Yan served as the Cleveland Clinic’s Morris R. and Ruth V. Graham Endowed Chair Professor and Vice Chair of Neurosciences and professor of molecular medicine at Case Western Reserve University. His five studies that focus on identifying the biological culprits behind Alzheimer’s disease are funded by the National Institute on Aging (NIA). Yan’s studies build upon his co-discovery of the BACE-1 protein, the critical molecule that he revealed fuels the production of β-amyloid peptides, or plaque build-up, in the brains of Alzheimer’s disease patients. Studies suggest that these peptides are toxic and lead to cognitive decline in patients with Alzheimer’s.

Yan and his team are currently testing in mice models the power and safety of several promising molecules to target BACE-1 and inhibit its biological function in order to prevent or stop further β-amyloid growth. Just before he arrived at UConn Health, Yan’s team published significant findings in the Journal of Experimental Medicine that showed that removing the BACE-1 enzyme in adult mice with Alzheimer’s reverses the plaque formation that inhibits cognitive function. The study was widely covered by national media.

In addition, Yan and his team are gaining greater insight into the important role reticulin 3 protein (RTN3) plays in the formation of dystrophic neurites in the brain, which can lead to memory loss, dementia, and Alzheimer’s disease in the elderly. The Yan lab is also exploring treatment that aims to enhance neurogenesis to replenish the loss of brain cells in patients with Alzheimer’s and other neurodegenerative diseases.

“We welcome Dr. Yan to UConn School of Medicine and Connecticut, as he and his research programs are very highly respected by leaders and other scientists in the field,” says Dr. Bruce T. Liang, dean of UConn School of Medicine.

Yan’s recruitment brings with it a host of research collaboration opportunities across the School of Medicine and its departments of Neurology, Neurosurgery, and Psychiatry, with the UConn Center on Aging, with neurology and Alzheimer’s disease investigators at the University; as well as with the Jackson Laboratory for Genomic Medicine on UConn Health’s campus.

“I look forward to working with my colleagues at UConn to expand creative research in neurosciences,” says Yan, who earned his Ph.D. from the University of Kentucky and completed a postdoctoral fellowship at The Rockefeller University. “It is my passion and desire to mentor our talented UConn neuroscientists and staff and watch their lists of research, discoveries, and accomplishments grow even greater, along with more national recognition of their efforts.”

He adds: “We all have a hope that in 5 to 10 years ... we will indeed have an effective drug to finally treat Alzheimer’s disease.”

Very inspiring words from Dr. Yan about the future of Alzheimer’s disease research at UConn Health and the potential for collaboration with national and international partners in the field. It is exciting to see the progress being made in this important area of research.

We all have a hope that in 5 to 10 years ... we will indeed have an effective drug to finally treat Alzheimer’s disease. — Ruiqiang Yan, Ph.D., Chief of Neuroscience

In this rendering, healthy neurons are depicted in white, neurons afflicted with amyloid plaques are colored orange. Studies suggest this plaque build-up is associated with cognitive decline in patients with Alzheimer’s disease. This highlights the importance of research in this area to find effective treatments and prevent the progression of Alzheimer’s disease.
Better Ways to Heal Bones

By Julie Bartucca

UConn Health is engineering innovative solutions for bone and joint problems, promoting faster recovery and less trauma to the body.

We’ve all signed a child’s colorful cast on their broken arm, gotten a call to inform us an elderly relative fell and broke a hip, or been laid up with back spasms ourselves. Maybe you’ve had a knee replacement or dealt with joint pain from years of athletic activity. It’s practically inescapable — 1 in 2 American adults suffers from a musculoskeletal disorder or injury such as arthritis, chronic back pain, fractures, or osteoporosis, according to 2016 data from the United States Bone and Joint Initiative (USBJI).

This is compounded by the fact that the U.S. has a rapidly aging population and, as people age, they lose bone density and the risks increase. Experts say the incidence of and costs to treat such issues are in danger of spiraling out of control.

But researchers at UConn and UConn Health are using a host of materials and technologies — from stem cells to spider-spun silk fibers to hydrogel to ultrasound waves — to strengthen bones and joints and accelerate recovery from musculoskeletal diseases and injuries.

“Musculoskeletal injuries are among the most common reasons to see a doctor. If we can take care of those faster and more effectively, patients can get back to their activities and work faster.”

Dr. Augustus D. Mazzocca, director of the UConn Musculoskeletal Institute (MSI) and chair of the Department of Orthopaedic Surgery at UConn Health.

“There’s the economic impact of having people out of work, and the emotional problems of people who lose mobility and are isolated,” he says. “We’re trying to bring you back into society and get you back to what you like to do.”

To that end, UConn Health doctors also are developing ways to get you home faster after any musculoskeletal procedure, including spearheading same-day joint replacements.

Faster, Safer Recovery

UConn Health hip and knee replacement patients don’t have to wait for our clinical innovations to come to market. They can benefit from new approaches to the surgeries right now — and “right now” might also describe when they can go home post-op.

“Nearly 100 percent of my patients go home within 24 hours, and some now the same day,” says Dr. Mo Halawi, a new UConn Health orthopaedic surgeon who specializes in joint reconstruction and is spearheading an effort to minimize the time these patients spend in the hospital recovering.

“The criteria for discharge are identical whether a patient leaves on the day of surgery or several days later. But with minimally invasive techniques, regional anesthesia, blood-conserving strategies, opioid-sparing analgesia, and immediate mobilization, patients are now achieving recovery milestones a lot quicker than before,” he says. According to Halawi, the ideal candidate for same-day total joint replacement is one who is independent, motivated, has a good support system, and has no major risk factors for surgical complications.

Much of the work is done in advance to optimize patients’ health and prepare them for surgery, allowing for the speedy discharge.

After surgery, Halawi takes a less-is-more approach. Patients get on their feet right away and have no IV medications, drains, catheters, dressing changes, braces, or laboratory tests. Very rarely do his patients get discharged to nursing homes or rehabilitation facilities. Studies
have shown that “patients recover better and have fewer complications in the comfort of their homes,” he says. “Hip- and knee-replacement surgery is constantly evolving, and we need to always deliver safe, effective, efficient, and evidence-based medicine to our patients. Soon, more surgeons and patients will realize that long hospital stays and recovery times are outdated,” Halawi says.

Engineering Cartilage

Though it is in the very early stages of development, UConn Health tissue engineer Syam Nukavarapu and his team have created a hybrid hydrogel system that they hope is the first step toward forming a hypotrophic cartilage template with all the right ingredients to initiate bone tissue formation, vascularization, remodeling, and ultimately the establishment of functional bone marrow to repair long bone defects.

How the more than 200 billion cells that make up an adult human skeleton form and how they are repaired if injured varies and has posed a challenge for many researchers in the field of regenerative medicine.

The cartilage template Nachiketa Nakavarapu and his team created appears to overcome hurdles that make it difficult for regenerative scientists to help the body’s long bones regenerate.

Two processes involved with human skeletal development help all the bones in our body form and grow. These processes are called intramembranous and endochondral ossification: IO and EO respectively.

While they are both critical, IO is the process responsible for the formation of flat bones, and EO is the process that forms long bones like femurs and humeri.

For both processes, generic mesenchymal stem cells (MSCs) are needed to trigger the growth of new bone. Despite this similarity, IO is significantly easier to re-create in the lab since MSCs can directly differentiate, or become specialized, into bone-forming cells without any additional steps. However, this relative simplicity comes with limitations. To circumvent the issues associated with IO, Nukavarapu’s team set out to develop an engineered extracellular matrix that uses hydrogels to guide and support the formation of bone through EO.

“Thus far, very few studies have been focused on matrix designs for endochondral ossification to regenerate and repair long bone,” says Nukavarapu, who holds joint appointments in the departments of biomedical engineering and materials science and engineering. “By developing a hybrid hydrogel combination, we were able to form an engineered extracellular matrix that could support cartilage-template formation.”

Nukavarapu’s team’s findings could be the first step to initiating the proper healing of long bones with biomedical help.

Using the Wisdom of Spider Webs

When someone breaks a load-bearing bone — the femur, for instance — doctors might install a metal plate to support the bone as it fuses and heals. But the metal can cause inflammation and irritation, and since metals are very stiff, the new bone may grow back weaker and more vulnerable to fracture.

UConn materials scientist and biomedical engineer Mei Wei and her team have developed an alternative to metal: a composite made with silk fibroin, a protein found in the silk fibers spun by spiders and moths and a common component in medical sutures and tissue engineering because of its strength and biodegradability.

Wei’s study found that the high-performance biodegradable composite showed strength and flexibility characteristics that are among the highest ever recorded for similar biodegradable materials.

Working with UConn mechanical engineer Dianyun Zhang, Wei’s lab created a mix of silk and polyactic acid fibers coated in inorganic nanoparticles. The new composite lasts about a year — large, adult leg bones can take many months to heal — and then starts to degrade. No surgery is required for removal.

Capturing the Power of Ultrasound

In the Department of Orthopaedic Surgery and the Institute for Regenerative Engineering at the UConn School of Medicine, researchers Yusuf Khan, Bryan Huey, and Lakshmi Nair are studying the combined power of gel-encapsulated bone cells and ultrasound waves to help fractured bones heal.

Physical force has been shown to stimulate bone cell regeneration for full healing, but immobilizing the fracture with a cast doesn’t allow for any movement. Khan believes that adding cells to the fracture site early on, and then directing a transdermal physical force toward the cells via low-intensity ultrasound, could accelerate fracture repair. In cases where a fracture can’t heal on its own, the therapy could provide the necessary stimulus to complete the healing process.

The team’s lab has already demonstrated the successful placement of bone cell hydrogels in mice and is working with the Department of Materials Science and Engineering to optimize the gel capsules for human use.

Harnessing Stem and Amniotic Tissue

In its initial studies, Laurencin’s team has found its amnion-based delivery system can support stem cell survival, growth, and proliferation, and that the combination of amnion matrices and stem cells can show immunosuppressive and anti-inflammatory effects on knee tissue cells.

“We believe amniotic tissue growth factors help drive human development and regeneration,” says Laurencin. “We are hopeful that harnessing this powerful new cell combination will help us further advance regenerative engineering for patients, especially those with arthritis or sports injuries, who want to avoid steroid treatments or are interested in next-generation therapies.”

Although it is not yet covered by insurance, amnion tissue treatment is available now to Laurencin’s patients. Laurencin’s team hopes to make the combination amnion–stem cell therapy available within the next three years.

From the advanced research that’s changing the care of the future to the clinical changes happening now, Musculoskeletal Institute head Mazzocca says the Institute is uniquely positioned to provide the best possible care to patients.

“We try to take all the clinical people that treat musculoskeletal disease — rheumatology, osteoporosis, comprehensive spine, orthopaedics — and put it in one place, and combine them with all the researchers so they can cross-pollinate and make care better for the patient,” he says. “And there’s nobody else in the state of Connecticut that does what we do.”

Jessica McBride, Colin Poitras, and Lauren Woods contributed to this story.

“Soon, more surgeons and patients will realize that long hospital stays and recovery times are outdated.”
When lasting trauma is caused by callous acts of violence, the key to recovery can be making meaning from meaninglessness. This year UConn Health will host a phase 3 FDA trial that tests whether the drug MDMA, known on the street as ecstasy or molly, is a safe and effective treatment for post-traumatic stress disorder. The disorder is difficult to treat, and many people have a tough time handling the treatment. MDMA not only might make therapy more tolerable but it also may help open a window for patients into their own mind. The insight allows them to process a shattering, horrific event into something that makes them stronger. The American Psychiatric Association’s Diagnostic and Statistical Manual of Mental Disorders defines post-traumatic stress disorder, or PTSD, as when a person is traumatized in some way and then continues to reexperience the trauma through flashbacks, nightmares, or unwanted intrusive memories. The person with PTSD avoids people or places associated with the trauma, becomes overly negative in thoughts and speech about themselves and other people; and has heightened arousal that can include a hair-trigger startle reflex, inability to sleep, hypervigilance, irritability, and aggression. At its worst, people are unable to cope with everyday life and may even become suicidal.

Often the source of the trauma is a shocking event involving interpersonal violence, such as rape, combat, or sexual abuse. Racial discrimination and harassment, particularly when it is shocking or pervasive, can also cause PTSD. UConn psychologist Monnica Williams began focusing on race-based trauma when she was at the University of Pennsylvania and had a very successful, high-achieving, black client come in with PTSD stemming from racial discrimination she’d suffered on the job. Williams was taken aback and began studying the link between racism and post-traumatic stress disorder.

Deconstructing the Trauma
But no matter what type of trauma causes the PTSD, the most effective treatment for it is exposure-based therapy, such as “prolonged exposure.” Essentially, the therapist has the patient discuss the traumatic event in excruciating detail, over and over again, until it ceases to cause overwhelming fear and anxiety. Prolonged exposure works — indeed, it has the most evidence behind it. But it’s terribly difficult for the patients, who often get visibly upset during sessions, and many quit therapy because the experience is too much like the original trauma.

MDMA-assisted psychotherapy could be one way to change that. The drug stimulates the release of neurotransmitters that promote a feeling of trust and well-being and might also help the brain rewire itself. But when Williams first heard of it, she was skeptical.

“It sounded weird, like junk science, and I didn’t want to be part of that.”
she says. But she agreed to take a look at an article in Psychopharmacology. She was fascinated to see that researchers had used MDMA as an adjunct to psychotherapy for PTSD and had gotten really good results. She was pleasantly surprised again when she first watched a video of an MDMA-assisted therapy session. “People were sitting in a chair, relaxed. They’re processing it on their own, and would sometimes share new insights with the therapist,” Williams says. It was utterly unlike the distress, tension, and fear PTSD patients typically show during prolonged exposure. “They would say things like, ‘Wow. Now I understand the trauma didn’t happen to me because I’m a bad person — I was just in the wrong place at the wrong time.’ And we’re like ‘Yes! Yes! They finally get it!’”

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The phase 3 study is organized by the Multidisciplinary Association for Psychedelic Studies (MAPS), a nonprofit pharmaceutical company that explores the beneficial medical uses of psychedelic substances. MAPS had not had many people of color participate in its trials, and it was reaching out to Williams for advice. She made some recommendations, and UConn Health became one of 12 U.S. sites participating in the phase 3 trial. Uniquely among the test sites, UConn Health will specifically recruit people from communities of color who have PTSD, with an emphasis on experiences of racial violence, harassment, or discrimination.

“It’s got to come out” It takes a while for psychoactive drugs to work their way through the FDA approval process. MAPS has been testing MDMA-assisted therapy for PTSD for more than a decade. Many of the early participants experienced lasting improvement. Rachel Hope, who experienced a cascade of abusive events as a child that left her with severe PTSD, “did 20 years of psychotherapy prior to participating in an MDMA-assisted therapy session. ‘When I got into the outer limits of the really hardcore stuff, I’d start to destabilize and get sicker. . . I’d start vomiting or have to leave the room. I knew that I had to tell it — the story has a soul of its own. It’s got to be seen, got to be known. It’s got to come out. But I couldn’t get it out,’” she says.

Hope had had good therapists and managed to run a real estate development company, but eventually the PTSD got so bad she couldn’t leave the house. Finally her personal assistant threatened to quit if she didn’t go back into therapy. And that’s how she came to participate in an MDMA-assisted psychotherapy trial in 2005. It was a revelation. “The MDMA was a terrific antianxiety medicine,” she says; it didn’t make her fuzzy-headed like most antianxiety meds had. “It amplified access to memories and, really, I had access to everything, and I wasn’t terrified. I could actually tell someone, for the first time in my life, what had happened to me. I had so much access to my own mind.” She describes it as the perfect tool to help work through the trauma. “I was rebooting my mind under my own directive,” she says. “It’s felt like a lot of insights happening constantly.”

“People were sitting in a chair, relaxed. They’re processing it on their own, and would sometimes share new insights with the therapist,” Williams says. It was utterly unlike the distress, tension, and fear PTSD patients typically show during prolonged exposure. “They would say things like, ‘Wow. Now I understand the trauma didn’t happen to me because I’m a bad person — I was just in the wrong place at the wrong time.’ And we’re like ‘Yes! Yes! They finally get it!’”

Hope says. “It’s been a year since the session, and every now and then I have a moment where I remember an insight from it, and/or have another one. It’s a wonderful thing.”

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Williams agrees that the MDMA seems to help patients rapidly make connections and breakthroughs in a single therapy session. Typically, a patient in psychotherapy might have just one such realization every few months.

The participants in the phase 3 trial at UConn Health will have a total of 20 therapy sessions, three of which will include MDMA. Each session will have two therapists present. The MDMA-assisted sessions will be six to eight hours long, after which the participant will stay overnight in the hospital to rest, supervised by a night attendant. And as part of the effort to involve participants from communities of color, all but one of the therapists at UConn Health identifies as an ethnic, racial, and/or sexual minority.

“In Singapore, I was part of the majority, but I was curious how it felt to be Malay, Indian, or one of the other minorities,” says Terence Ching, a clinical psychology doctoral student involved in the study. Ching has also lived in Australia, New Zealand, and Kentucky, where he was not part of the majority ethnic group. “That led me to critically introspect my place in society as someone with many different identities. Having that multifaceted perspective allows me to experience a lot of empathy for people from marginalized groups in the U.S.,” Ching says. To get a better understanding of what the MDMA-assisted psychotherapy would be like for study participants, Ching participated in a session himself as part of his training. “It felt like a lot of insights happening constantly,” Ching says. “It’s been a year since the session, and every now and then I have a moment where I remember an insight from it, and/or have another one. It’s a wonderful thing.”

Ching hopes that the participants benefit from their MDMA-assisted psychotherapy in the same way he did. “For someone who has experienced trauma, MDMA-assisted psychotherapy might help them be able to make meaning of it. I really believe in this work,” Ching says.
What are your top priorities for the Health Disparities Institute (HDI) at UConn Health and how do you plan to address them in your second year as director?

During my first nine months, HDI underwent an internal, strategic refocusing process. This process involved conducting a 360-degree assessment and reviewing state-level data on health disparities outcomes and populations. It resulted in the identification of four complementary strategic focus areas: health systems change, utilization, and finance; behavioral health; chronic disease prevention and control; and neighborhoods, housing, and health. HDI is committed to advancing health equity and works explicitly to connect, support, and serve populations at greatest risk for poor health and social outcomes. These goals are accomplished by generating rigorous evidence for action, building multisector coalitions, translating data for policy impact, and accelerating community-sourced innovations. We apply an explicit racial equity lens to our work. We value social justice, youth engagement, and the power of art to amplify community voice and disrupt single stories about the truly underserved.

What initiatives has HDI put in place or advanced in the past year, and how are they helping people?

Boys and men of color (BIPOC) in our nation are uniquely underserved across a number of health indicators. Currently, HDI is developing several initiatives designed to address social determinants of health, well-being, and health equity among BIPOC. Recognizing this critical gap, the HDI has established a multisector alliance composed of private, public, academic, and community leaders to provide high-level strategic guidance and accelerate systems change for BIPOC in Connecticut. HDI has also launched a series of overlapping research, policy translation, and programmatic initiatives focused on advancing health equity for boys and men of color in the state.

What can physicians do to better serve men and boys?

I think it is important for health care providers to be aware of the gendered help-seeking barriers men and boys experience. Such barriers include shared cultural norms and values that discourage men from disclosing vulnerability and distress. These norms may lead some men to avoid health care altogether or “watch and wait” even when health symptoms are present. It is important for health care providers to maximize appointments with men and boys, for example, by screening for behavioral health symptoms during a primary care visit.

Recently, public figures like Jay-Z and NBA star Kevin Love have spoken out about mental health struggles and the stigma surrounding them. Are we on the verge of a sea change? What more needs to be done on a cultural and policy level?

It is always encouraging when public figures leverage their influence to promote mental health awareness. They have a bigger platform than scientists and far fewer structural constraints on their media engagement. In my more than a decade in the men’s health space, I have witnessed ebbs and flows in the scientific and public discourse about these issues. We are definitely in a flow period. To achieve a sea change, we also need to change structural constraints on their media engagement. In my more than a decade in the men’s health space, I have witnessed ebbs and flows in the scientific and public discourse about these issues. We are definitely in a flow period. To achieve a sea change, we also need to change systems, culture, and policy.

We certainly need mental health parity in the way we pay for services. A lot could be accomplished by the systemwide integration of behavioral and primary care services. We would also benefit tremendously from changing norms. Men and boys (and the women and girls who love them) would be healthier if they had fewer social sanctions around displaying emotional vulnerability. We encourage men and boys to be strong, stoic, and silent. If we are going to have a real sea change, those norms have to be disrupted.

We have immensely improved a patient’s time to diagnosis and treatment, as well as the overall quality of care they receive.

— Dr. Omar Ibrahim, Associate Professor, UConn School of Medicine

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