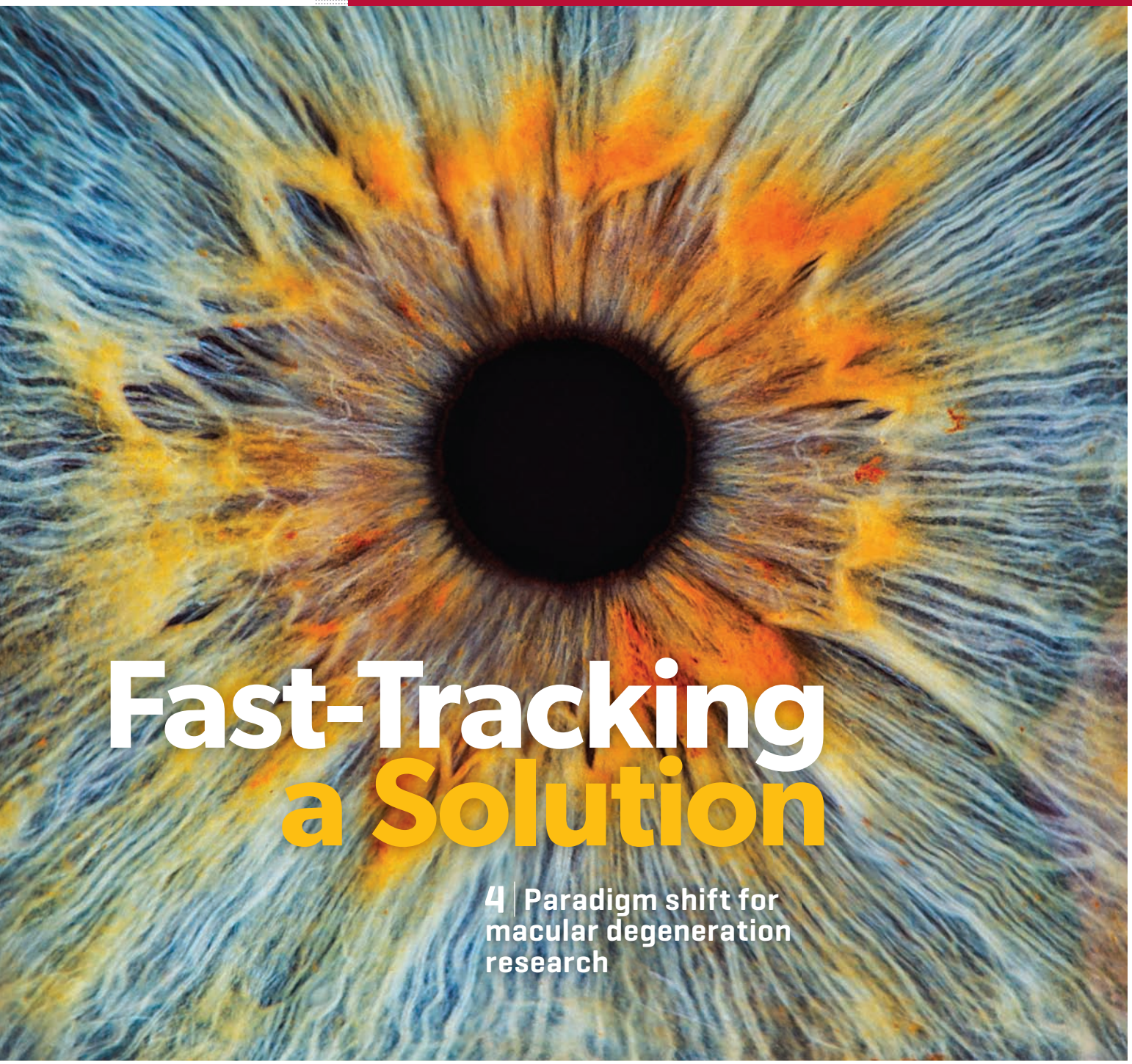
SUMMER 2014

Exploring Medical Horizons

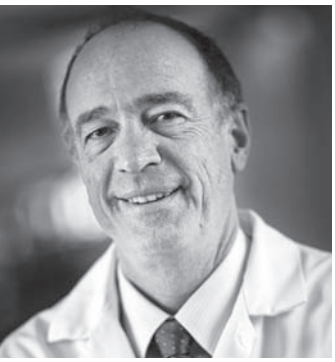
Frontiers



Fast-Tracking a Solution

UNIVERSITY OF UTAH HEALTH CARE

Your Partner in Patient Education



THOMAS L. MILLER, M.D.
Chief medical officer, University of Utah Hospitals and Clinics; and executive director, Ambulatory Clinics

How often have you wished you could spend a few more minutes with your patients to discuss a new drug they read about on the Internet, or a TV news report about changing guidelines for mammograms? Nothing can replace that one-on-one patient interaction, but University of Utah Health Care's patient education website, HealthFeed, offers expert health news and information, addressing scores of current health topics in the form of blog posts, articles and downloadable podcasts. In my weekly podcast on *The Scope Radio*, I interview UUHC specialists and discuss health issues in the news like preventive immunizations, hospital drug shortages, new hypertension treatment guidelines, and selection of nonprescription analgesics. Podcast topics from other physician hosts have included health concerns for women and children and what constitutes a medical emergency. We hope you will view HealthFeed as a valuable resource for you and your patients.

Frontiers provides another avenue for you, our community of referring physicians, to see how UUHC physicians apply their expertise to a broad range of medical conditions. In this issue, the co-director of the Utah Center for Reproductive Medicine explains how a multidisciplinary care team strives to provide infertile couples with the least invasive and most cost-effective treatment options to achieve pregnancy. The CEO of the Moran Eye Center describes a unique partnership with Allergan, Inc. to pursue a treatment for age-related macular degeneration. Physicians in our liver transplant program—one of the few in the nation to achieve an operative death rate of zero—are partnering with the Huntsman Cancer Institute team to treat cancer of the liver and bile duct. Finally, the founder of our interdisciplinary Comprehensive Arrhythmia Research and Management Center has published a study describing a significant development in the treatment of atrial fibrillation.

Please contact **frontiers@hsc.utah.edu** to learn more about our specialists. And please share HealthFeed with your patients and let us know any subjects you would like to see covered: **healthcare.utah.edu/healthfeed**.

Sincerely,

Thomas L. Miller, M.D.

HealthFeed
Expert Health News & Information

TheScope
UNIVERSITY OF UTAH HEALTH SCIENCES RADIO
TheScopeRadio.com

University of Utah Health Care was recognized by **The University HealthSystem Consortium** as a **top 10 principal academic medical center in the U.S.** and a recipient of the **UHC Quality Leadership Award** for the fourth year in a row.

TOP TEN
FOUR YEARS IN A ROW.

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Cover: Getty Images

Teaming Up to Treat Infertility

UCRM strives for less invasive, more cost-effective care

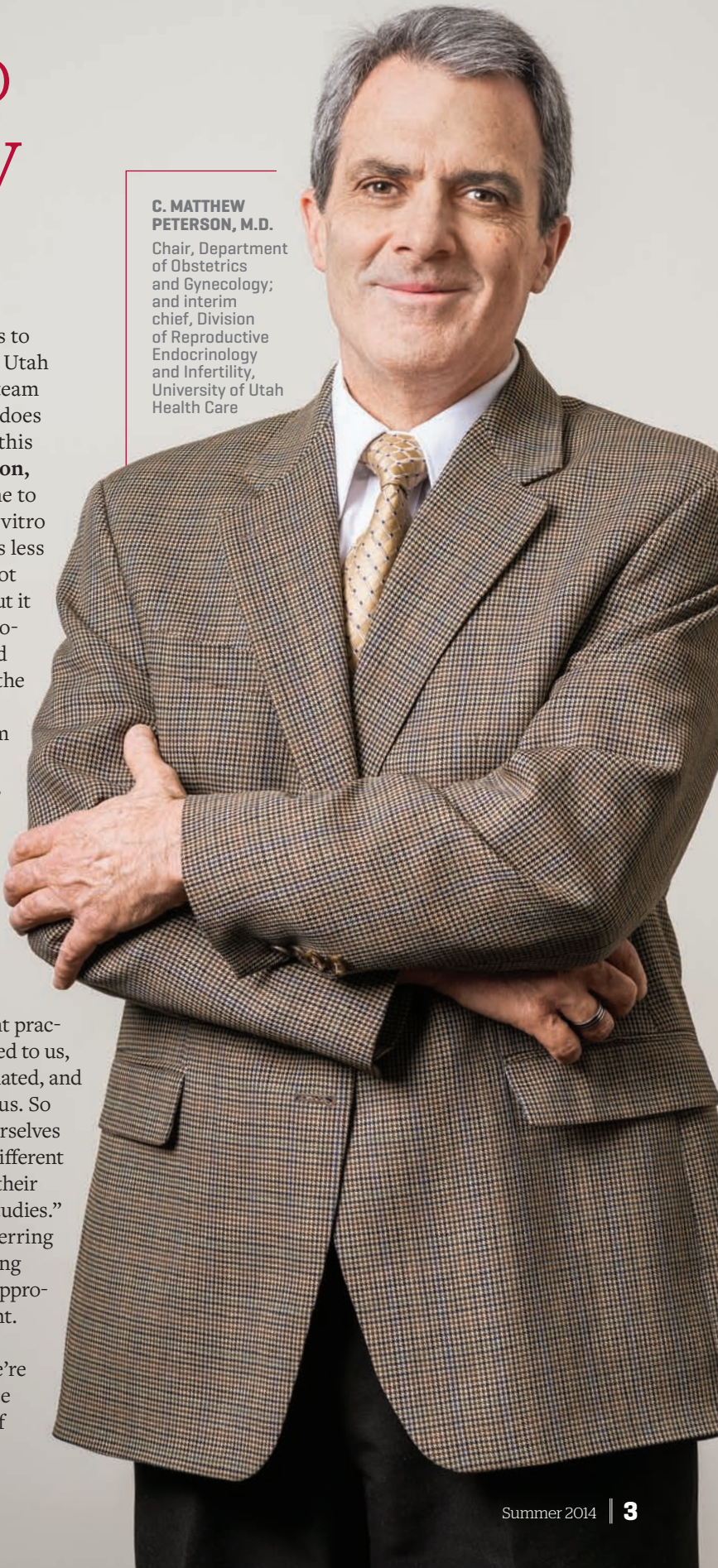
Sometimes less is more, particularly when it comes to high-tech, costly treatments for infertility. At the Utah Center for Reproductive Medicine (UCRM), the team of fertility specialists that evaluates each patient does so with the philosophy that "we would like to do this as naturally as possible," says director **C. Matthew Peterson, M.D.** "As a result, 75 to 80 percent of the patients who come to our clinic are able to achieve a pregnancy without doing in vitro fertilization [IVF]. That's a bonus for the patients; it means less expense and less intervention." Careful patient selection not only saves some patients unnecessary stress and expense, but it also translates to superior results when IVF is deemed appropriate. "If you look at statistics from the Society for Assisted Reproductive Technology, our success rates are well above the national average," Peterson points out.

Infertile couples who come to UCRM benefit from a team approach that draws upon a broad spectrum of expertise, Peterson says. "Every patient is cared for by a cadre of M.D.s, Ph.D.s, and expert staff and technicians who have dedicated their lives to treating infertility. We meet several times each week and talk about every patient in detail. When a couple goes through IVF here, the team includes the couple themselves, along with multiple doctors and other specialists, including embryologists, andrologists, nurses and technologists, who all play a key role in the success of that cycle."

Team care begins with referring physicians, who, in the Intermountain West, tend to be highly skilled and competent practitioners, Peterson says. "When patients do need to be referred to us, for the most part they have been thoroughly tested and evaluated, and the docs that refer do a very good job of getting that data to us. So we're not repeating tests, labs or imaging studies. We see ourselves as an extension of that initial provider—offering a menu of different types of services and opportunities that are value-added for their patients, including opportunities to participate in research studies."

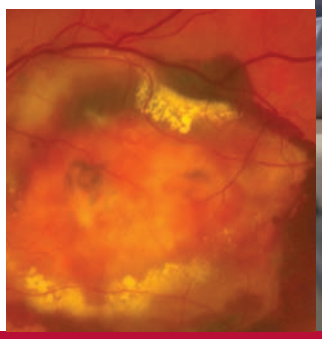
The UCRM team maintains communication with the referring physician during and after treatment, Peterson says, ensuring that the patient receives appropriate follow-up treatment. "We appreciate the good care they provide, and we're here to serve as a resource for the specialized care of their patients." ■

LEARN MORE. For more information about UCRM, contact Erika Lindley, administrative director, Department of Obstetrics and Gynecology, at **801-581-3115**.



C. MATTHEW PETERSON, M.D.
Chair, Department of Obstetrics and Gynecology; and interim chief, Division of Reproductive Endocrinology and Infertility, University of Utah Health Care

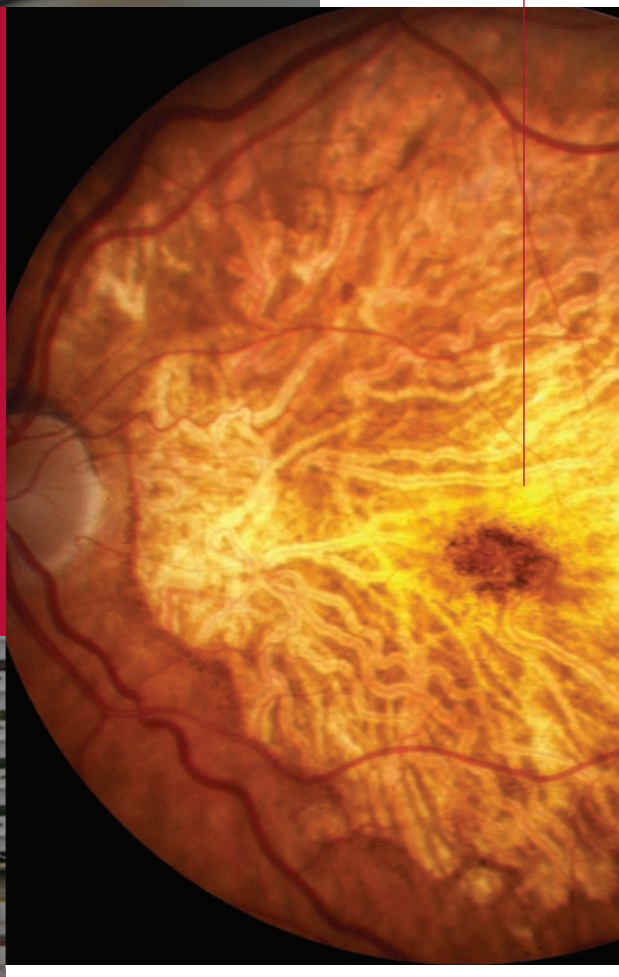
Chad Kirkland



Geographic atrophy, depicting end-stage dry macular degeneration

Collaborating to Conquer Blindness

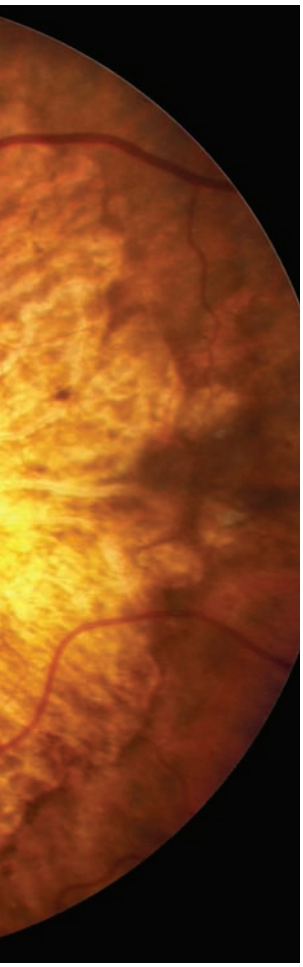
Innovative partnership turbocharges macular degeneration research



At left, Gregory S. Hageman, Ph.D., John A. Moran Presidential Professor; and executive director of the Moran Eye Center for Translational Medicine at the University of Utah Moran Eye Center. "Our goal is to expedite the pace to translate scientific discoveries into clinically effective therapies." Top left, Randall J. Olson, M.D. and Hageman set the foundation for a new clinical trial.

> "THERE IS NO PLACE IN THE WORLD WHERE [UNIVERSITY AND INDUSTRY RESEARCHERS] ARE WORKING IN TANDEM LIKE THIS. IT'S A BEAUTY TO SEE."

Age-related macular degeneration has robbed millions of otherwise healthy Americans of their ability to drive, read and recognize faces. The leading cause of legal blindness in people older than 55, this disorder cannot be prevented, and current treatments for the primary disease have limited effectiveness. Now a unique partnership between University of Utah's John A. Moran Eye Center and Allergan, Inc. has the potential to fuel groundbreaking research into the genetic underpinnings of macular degeneration.



More than 20 years and a multibillion-dollar investment are required typically to bring a scientific discovery to fruition in the clinic, says **Randall J. Olson, M.D.**, who sought a quicker path to address what he viewed as an urgent public health need. "The vision statement of the Moran Eye Center is that no one should be without hope when it comes to blinding conditions, which means that our core mission is about finding new treatments," he explains. "So we thought, how can we be smarter about the process of creating new options?" Olson's first step was to recruit Gregory S. Hageman, Ph.D., "whom I consider the best macular degeneration researcher in the world today," to head the Moran Eye Center for Translational Medicine (CTM). Voyant Biotherapeutics LLC, a company formed from the CTM, negotiated a comprehensive agreement with Allergan that enables the two teams to work together to identify disease-associated pathways and targets for the development of new therapeutic agents for ocular disease, with an initial focus on macular degeneration.

The collaboration will bring critical resources to the researchers much earlier in the process than normally occurs in a university-business partnership, Olson says. "Allergan has the largest retinal research group that exists in the world today," he notes. "They are prepared to flex resources we couldn't even dream of to rapidly take this product all the way. I think of their scientists not only as great scientists but also as super engineers; they can go through hundreds or tens of thousands of compounds to try to isolate some small molecule you could use as a treatment, either as a drop or potentially as a pill."

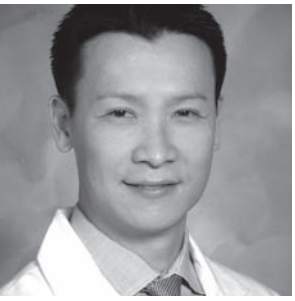
In the meantime, university researchers are targeting mutations on chromosome 10 that are associated with both the more severe form of macular degeneration and potentially with cardiac syndrome X. "People with cardiac syndrome X get heart attacks and angina, but on an angiogram their vessels look completely normal," Olson says. "And we're confident we know why: We think both cardiac syndrome X and this form of macular degeneration are microvascular diseases. HTRA1 and ARMS2 are two potential sites of a protein defect that are so closely associated, nobody's been able to differentiate between them. If individuals have bilateral risk alleles at that chromosome 10 site, they are highly likely to be bilaterally, legally blind. The perfect scenario would be to examine people at genetic risk at this locus, then give them something that acts as a blocking agent, and they would never develop macular degeneration or cardiac syndrome X."

The teams from the university and Allergan are already working together seamlessly, Olson says, adding that he has challenged their researchers to launch a new clinical trial within 18 months. "There is no place in the world where [university and industry researchers] are working in tandem like this. It's a beauty to see. We desperately need this breakthrough in macular degeneration, and I think we're going to show that we can shrink the time required to develop a product from decades to years while dramatically decreasing the overall costs." ■

RANDALL J. OLSON, M.D.
Chair, Department of Ophthalmology and Visual Sciences, University of Utah Health Care; and CEO, John A. Moran Eye Center

Joining Forces to Combat Liver Cancer

Multidisciplinary expertise drives success of transplant program



ROBIN D. KIM, M.D.
Executive director, Transplantation; chief, Section of Transplantation; and director, Hepatobiliary Cancer Program, University of Utah Health Care

Close collaboration between the Huntsman Cancer Institute and hepatobiliary specialists at University of Utah Health Care has led to outstanding results for patients undergoing liver transplantation. According to the University HealthSystem Consortium (UHC), the UUHC-HCI program is one of only four (among 68 liver transplant programs in the U.S. eligible for UHC evaluation) to achieve an operative death rate of zero. UHC is an alliance representing more than 90 percent of the nation's nonprofit academic medical centers.

Careful patient selection, pretreatment prior to transplantation, and stringent postoperative follow-up—all performed by a multidisciplinary team—are key factors in the program's success, says **Robin D. Kim, M.D.** Although resection of the entire tumor is still considered appropriate first-line treatment for some patients with liver cancer, for those with underlying liver disease, "many options, including curative resection or surgery, are not possible because the liver becomes overstressed when you try to remove a part of it," Kim explains. "The best treatment for them is to replace their liver after having controlled the cancer. Chemotherapy and radiation therapy are, in general, not thought to be curative. A cure can only be achieved by resection or transplantation. And the survival rates for transplantation in properly selected patients are actually better than those for resection."

Patients with liver cancer or liver ailments that may require multidisciplinary treatment are evaluated by a liver tumor board that meets weekly, says Kim, adding that "our approach to discussing patients is one of the most integrated I've seen. In addition to hepatologists, the team includes a radiologist, an interventional radiologist, a medical oncologist and, obviously, surgeons. We come together and present our cases so that, as a group, we can make a coordinated decision about how best to treat these patients. One of the advantages of this dual partnership is our ability to toggle between the worlds of transplant and medical oncology by putting the folks in those two institutions together."

Kim estimates that 70 percent of patients who present with liver tumors undergo further testing to determine whether they're suitable candidates for transplantation, "and among those, maybe a third to a half are eligible to actually become candidates. Patients with hepatocellular carcinoma, which are about 80 percent of the cancers that we transplant, must be documented as meeting strict criteria relating to tumor size and number in order to be put on a transplantation list."

70 PERCENT

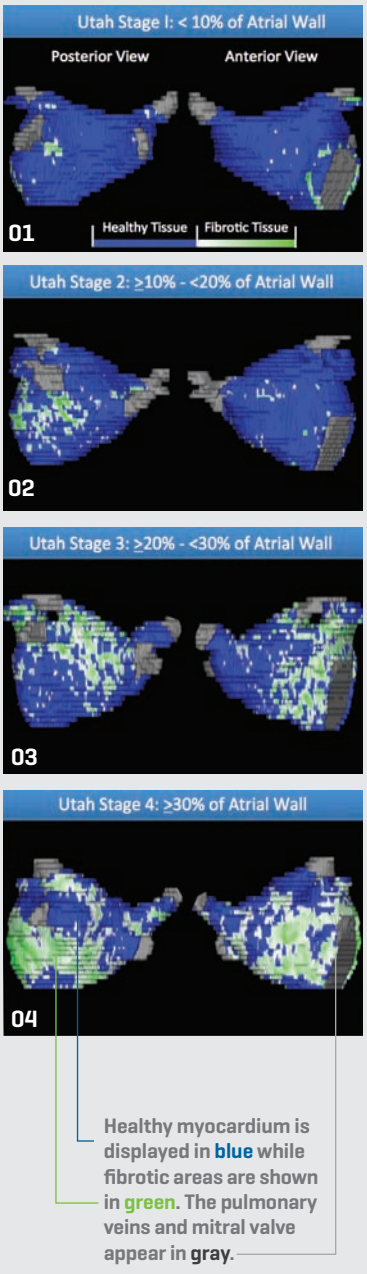
of patients who present with liver tumors undergo further testing to determine whether they're suitable candidates for transplantation, "and among those, maybe a third to a half are eligible to actually become candidates."

The underlying purpose of the liver transplant program is "to provide world-class care to the Intermountain West," Kim remarks. "We work closely with referring physicians as partners in care to ensure that their patients receive the specialized treatments from a multidisciplinary team that an academic institution can provide. We want the doctors to know that we are accessible to everyone in the region. In addition, we foresee our program becoming a destination center for transplantation that will ultimately attract patients even from outside the Intermountain West. That's our goal." ■

Transforming Treatment

Landmark study could reduce unnecessary cardiac ablation procedures

3-D reconstructions from delayed enhancement MRI images of the left atrium depicting the four stages of left atrial fibrosis. Stages 1–4 shown here chart progressive increases in the percent of left atrial wall volume composed of fibrosis.



Healthy myocardium is displayed in blue while fibrotic areas are shown in green. The pulmonary veins and mitral valve appear in gray.

A multi-institutional, international study headed by a University of Utah Health Care team dedicated to the treatment of heart arrhythmias points to a breakthrough in the management of patients with atrial fibrillation (AF), says lead author **Nassir F. Marrouche, M.D.** "In the past, we have focused on symptoms and other factors like age, comorbidities and EKG presentation to decide how to treat patients with atrial fibrillation," he notes. "Now we have shown that we can visualize atrial tissue fibrosis noninvasively, and use that information to predict which patients are likely to benefit from an invasive procedure like catheter ablation and which are not."

The 15 centers participating in the study[1] analyzed 260 patients with paroxysmal and persistent AF, using delayed enhancement MRI prior to the patients undergoing their first catheter ablation. The MRI allowed researchers to quantify, through a staging system developed at UUHC's Comprehensive Arrhythmia Research and Management Center, the degree of left atrial wall fibrosis in each patient. Patients were followed for about a year after their ablation therapy to determine the rate of AF recurrence.

The study concluded that patients with the least fibrosis had the lowest risk of recurrence, while those measured at the highest stage of fibrosis were the most likely to suffer recurrence. "We found that the more fibrosis the patient has, the less chance you have of curing or even helping him with an invasive procedure," Marrouche says. "Our results show that we need to be looking more at the disease than at behavior of the arrhythmia."

Converting standard MRI infrastructure to equipment capable of delayed enhancement MRI requires a software upgrade that is gradually becoming more broadly available, Marrouche says. Currently, UUHC is the only location in the Intermountain West to offer this technology. Estimating that about half of people 65 and older have atrial fibrosis, he envisions a time when primary care physicians will screen those patients routinely and determine treatment based on the findings of the MRI. While the search continues for more effective drug therapies, "the first step for today should be to save patients from unnecessary procedures. First things first: look before you treat. That's individualized medicine." ■

[1] Marrouche NF, Wilber D, Hindricks G, et al. Association of Atrial Tissue Fibrosis Identified by Delayed Enhancement MRI and Atrial Fibrillation Catheter Ablation: The DECAAF Study. *JAMA*. 2014;311(5):498-506.

NASSIR F. MARROUCHE, M.D.

Founder, Comprehensive Arrhythmia Research and Management Center, University of Utah Health Care; associate professor of Internal Medicine, University of Utah School of Medicine

CONNECT

Physician Connection Has Launched!

University of Utah Health Care has debuted its new and greatly improved version of Physician Connection. Physician Connection is UUHC's online portal (electronic medical record, or EMR) that allows health-care providers access to the records of their patients who have received treatment at UUHC. Now you will have convenient online access to all of your patients' charts, real-time event notification, and secure communication with UUHC physicians.

For more information and to set up your account to access your patients' records today, please visit **physicians.utah.edu**.

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Briefs

RECOGNITIONS

W. BRADFORD ROCKWELL, M.D.
Chief, Division of Plastic and Reconstructive Surgery; and program director, Plastic Surgery Residency, University of Utah Health Care

W. Bradford Rockwell, M.D., is pleased to be serving for a third consecutive year as medical director for the Larry H. Miller Tour of Utah, a world-class professional cycling event Aug. 4–10, sanctioned by Union Cycliste Internationale. An avid cyclist, Rockwell will lead a volunteer team of 20 University of Utah Health Care physicians, physician assistants, physical therapists and athletic trainers. In addition to providing the medical team, UUHC is also a major partner of the Tour of Utah as well as the presenting sponsor of the Ultimate Challenge, a separate noncompetitive endurance event in which hundreds of amateur cyclists ride Stage 6 of the Tour of Utah, traditionally known as the "Queen Stage."

"We have two medical cars among the 30 or so vehicles that follow the riders and two ambulances follow at the back," Rockwell says. Most of the injuries are "road-rash, burn-type wounds" incurred when a rider skids on pavement, he notes, but "last year I sewed up a guy who fell." Another rider, who suffered a broken arm and a head injury, was airlifted to University Hospital in Salt Lake City. Much of the care is administered off the course, Rockwell says. "Probably half of what we do is family practice-type medicine," he explains. "Each night we set up a medical suite in the hotel where the riders are staying. Our role is to care for the riders, but anyone who has a problem finds us. Last year we treated altitude sickness among the media."

The grueling Tour of Utah, dubbed "America's Toughest Stage Race," attracts elite cyclists from all over the globe, many of whom will have finished the Tour de France the week before. Last year's course featured more than 43,000 vertical feet of climbing spanning 586 miles. The race received 18 hours of national broadcast coverage on FOX Sports Network and reached international audiences in 49 countries via Eurosport 2. For more information, visit **tourofutah.com**.

Offering medical care on and off the tour course are (from left): Corey Ames, N.P.; Linda Scholl, P.T.; Trevor Leavitt, EMT; Brad Rockwell, M.D. (medical director); Chris Gee, M.D.; Grace Noda, N.P.; and Erin Goodfellow, P.A.