# Sarver Heart Center

A publication from The University of Arizona College of Medicine

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*Since The University of Arizona College of Medicine's opening in 1967, more than 3,000 medical students have earned their degree here. The Sarver Heart Center is proud to contribute to the College's growing legacy by working toward a future free of heart disease and stroke.*



# The Fight Against Heart Disease in Women: Flexing our Muscles

*The Sarver Heart Center welcomes the recipient of the Allan & Alfie Norville Endowed Chair for Heart Disease in Women Research*

Finding Henk Granzier's office in the brand-new Medical Research Building is not easy. Dozens of boxes, stacked up in the hallway, hide the door from view. "We arrived just two weeks ago," the newly hired scientist says with an apologetic smile. His voice reveals a hint of exhaustion. Henk Granzier, PhD, who occupies the newly created Allan & Alfie Norville Endowed Chair for Heart Disease in Women Research, moved his entire laboratory, including 12 researchers at various stages in their scientific careers, from Washington State University to Tucson. But in addition to lab equipment and highly trained and motivated research specialists, the internationally recognized scientist also is bringing something else to the UA Sarver Heart Center, something that is less visible but equally invaluable on the quest for new discoveries and remedies for heart disease. Dr. Granzier also brought with him significant funding granted by the National Institutes of Health (NIH) to support his unique research.

*Alfie & Allan Norville*

"Everybody here is incredibly thrilled and proud that we were able to attract someone of Henk's caliber to occupy this important position," says Carol Gregorio, PhD, who heads the Sarver Heart Center's Molecular Cardiovascular Research Program and has her office just down the hall from Dr. Granzier.

Obtaining even a single research grant from the NIH is extremely difficult. Highly successful researchers from all over the United States apply and only the top 5 percent of proposals are funded each year. To receive one such grant is a great honor and getting another one is extremely difficult because the NIH tends to support previously unfunded applicants before granting another round of funding to a previously successful applicant. To obtain a second round of funding, the research proposal has to be truly superior. "Just to give you an idea," Dr. Gregorio says, "Henk has *four* of these grants!"

*Henk Granzier, PhD*

A glint of embarrassment crosses Dr. Granzier's face when asked how he managed to acquire such an extraordinary

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## ...from the Director

Martha Lochert

*The lead story in this issue is really about a vision that is materializing right before our eyes: The prevention, treatment and ultimately the elimination of what now is an emerging epidemic – heart and vascular disease in women, commonly referred to as "heart disease in women." One of our goals is the development of a comprehensive program for heart disease in women. While the classic academic pillars of research, education and patient care support each of our programs, a unique research pillar is critical. This particular research pillar has been made possible by the Allan & Alfie Norville Endowed Chair for Heart Disease in Women Research, established by a generous gift by the Norvilles matching a challenge gift from an anonymous donor. The purpose of this endowed chair is to spearhead, for the first time in an academic institution, a comprehensive research focus on the underlying molecular mechanisms relating to gender differences in cardiovascular diseases. To this end, a world-class scientist was needed to lead this effort. Establishing an endowed chair was a critical step in this unique program. Our goal for the basic science pillar not is only to focus on basic genetic differences that will lead to new therapies and cures but also to train a whole new generation of scientists to focus on the extremely pressing issue of heart disease in women. For this program to be successful, it also required laboratory space, equipment and collaborators. The Sarver Heart Center is indebted to several key players who made this endeavor possible, among them Dean Keith A. Joiner, MD, MPH; Vicki Chandler, PhD, Director of UA's BIO5 Institute; and Carol Gregorio, PhD. Of the several who interviewed, the ideal candidate was Henk Granzier, PhD. I invite you to meet this extraordinary man and learn more about his work in our feature article.*

Gordon A. Ewy, MD
*Director, UA Sarver Heart Center*

## Heart Disease in Women *continued from page 1*

validation of the relevance of his research. "Yes, I guess they have been quite receptive to what we do," he says and then quickly changes the subject to talk about his family and how moving to Arizona was the most difficult decision of his life. "My wife and my children were very supportive. But I was worried because it meant leaving a very secure and comfortable job at a great college in a place that was almost perfect to live. My kids are in middle and high school and for them it meant leaving behind all their friends and everything else they had gotten used to."

"Had it not been for the Allan & Alfie Norville Endowed Chair, I would not have taken this position," Dr. Granzier says. "The endowment funds enable us to bootstrap more innovative research and pursue new promising directions. This kind of exploratory research is often what brings unexpected success, but it is pretty much impossible to do with NIH funds, because in order to get those a scientist can't stray much from proven paths that promise foreseeable results."

Dr. Granzier, who hails originally from the Netherlands and has authored or co-authored 8 books and book chapters and 108 original scientific articles, has set out to unravel the molecular workings of heart muscle cells. His findings have furthered our understanding of diastolic heart failure and may lead to a future therapy for this condition, which affects half of the population at some point in their life, primarily women. In diastolic heart failure, the heart is stiffer than normal, which interferes with the heart's ability to provide enough blood to the organs. Currently there is no cure for diastolic heart failure, prompting the Sarver Heart Center to put a strong

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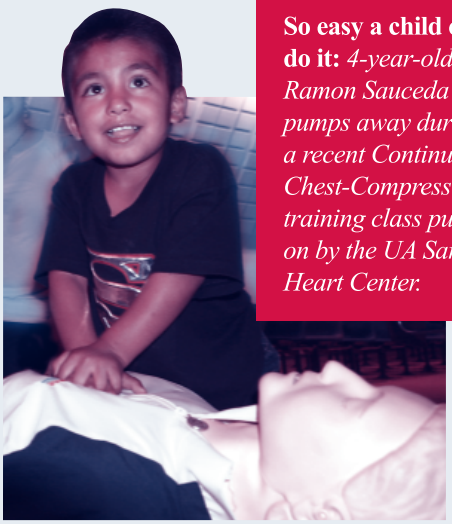
# The New CPR in *Newsweek*: The Story Behind the Story

*The following article appeared in the July 23, 2007 issue of* Newsweek. *We are pleased to be able to share a reprint with our readers, along with comments by Sarver Heart Center Director Gordon A. Ewy, MD.*



**So easy a child can do it:** *4-year-old Ramon Sauceda pumps away during a recent Continuous-Chest-Compression training class put on by the UA Sarver Heart Center.*

## There's a New CPR

**BY JOAN RAYMOND**

The good news: millions of Americans know how to perform CPR. The bad news: when confronted with an apparent victim of cardiac arrest, most bystanders won't do it because it includes mouth-to-mouth breathing.

Now Dr. Gordon Ewy, director of the University of Arizona's Sarver Heart Center, is championing a new form of CPR called cardiocerebral resuscitation, or CCR, which focuses on rapid, forceful chest compressions, about 100 per minute, minus the mouth to mouth. "Mouth to mouth inflates the lungs, but it's not the lungs that need oxygen, it's the heart and the brain," says Ewy. "Chest compressions alone will help save those organs."

The Sarver researchers have developed two separate CCR protocols. Bystanders who witness a cardiac arrest are urged to perform chest compressions until help arrives. Paramedics are to attempt CCR for two minutes, before they use a defibrillator. Several Arizona fire departments have adopted the new approach. An analysis of that data shows survival rates have nearly tripled.

Current American Heart Association and American Red Cross guidelines do recommend compression-only CPR for anyone who is unwilling or unable to provide mouth to mouth. The AHA also encourages emergency dispatchers to give instructions for compression-only CPR to bystanders at the scene of a presumed cardiac arrest. "People want to do the right thing," says Ewy, "and we are giving them an easier way to do the right thing."

When Joan Raymond of *Newsweek* called to interview me about Cardiocerebral Resuscitation, I was impressed with her detailed knowledge about CPR. When I commended her on this she told me the following story: One day she was driving on the highway when the car in front of her veered off the road and crashed into a ditch. Joan pulled over, determined to help and deliver first aid. At the same time, a young man who had witnessed the accident had stopped as well and was making his way toward the damaged vehicle. He tried to open the driver's door but couldn't, so Joan instructed him to call 911. She then pried the door open and together they tried to pull the unconscious driver out of harm's way. Struggling to extricate the driver from the wreck, Joan grabbed hold at his shoulders, while the young man pulled at the victim's legs. The next moment, he found himself tumbling backwards, the driver's leg in hand! Although he realized only seconds later that he was holding a prosthetic appendage, this experience, according to Joan, "rendered him useless for any further rescue efforts, so he sat quietly on the railing for the remainder of the endeavor." Joan managed to pull the still unconscious driver out and placed him on the ground to begin resuscitation. Apparently he had suffered a cardiac arrest and needed CPR. "Problem was," Joan said, "he had vomited and every time I braced myself to give mouth-to-mouth, I gagged. I just couldn't do mouth-to-mouth resuscitation, I just couldn't!" So Joan did the best she could – continuous chest compressions. It took about five minutes of chest compressions before the paramedics arrived. "I was exhausted," she remembers, "but the man survived!"

I told Joan she should include that story in that issue of the *Newsweek* and title it, "I just couldn't bring myself to do mouth-to-mouth resuscitation, so he survived!" Unfortunately they did not print her experience, so we are sharing it with our readers here.

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## New CPR *continued from page 3*


The cover of that same issue of *Newsweek* featured Brian Duffield of Tucson, a 41-year old avid swimmer who was resuscitated by off-duty Tucson Firefighter Dianne Wygal-Springer using an AED and TFD paramedics performing "Sarver CPR" after he collapsed in the shower at The University of Arizona's Hillenbrand Pool *(see newsletter no. 46 – available online at www.heart.arizona.edu).* Upon arrival at University Medical Center's emergency department, Duffield was comatose. After opening a blocked coronary artery during urgent catheterization performed at UMC by Sarver Heart Center member and resuscitation researcher Karl B. Kern, MD, Duffield was cooled to reduce the possibility of brain damage resulting from the cardiac arrest. Called "induced hypothermia," this is a cutting-edge treatment that very few hospitals currently offer. The UMC Induced Hypothermia Program is headed by Sarver Heart Center member Arthur Sanders, MD. A few days later, Duffield was back with his family and resumed work. Duffield's case illustrates how a "chain of survival" consisting of bystander continuous-chest-compression CPR, rapid defibrillation, a prompt EMS response and state-of-the-art treatment at the hospital can result in a good outcome after cardiac arrest, a condition that only a few Arizonans survived prior to the institution of the Sarver Heart Center cardiocerebral resuscitation protocol. ♥

## Heart Disease in Women

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emphasis on bench-to-bedside research to develop therapeutic interventions for diastolic heart failure.

Although the objects of Dr. Granzier's research, molecules of a heart muscle protein called titin, are microscopically small, compared to other molecules they are huge – so huge, in fact, that until recently nobody knew they existed. "Techniques used by scientists were only able to detect small proteins," explains Dr. Granzier. "While textbooks have for a long time accurately shown the other types of muscle proteins, it was not until scientists discovered this elusive protein that cardiac muscle made sense." "Suddenly we had the explanation for how it is possible that muscle relaxes after a contraction." This always had puzzled researchers, because the types of muscle proteins that were known at the time can only cause the muscle to contract. Titin, it turns out, does the opposite – like a molecular-sized spring, it recoils and causes the muscle to relax.

In 1997, Dr. Granzier's laboratory advanced science with a spectacular finding: The group provided the first evidence that it is possible, with the right tools, to strap single molecules to measuring devices and analyze them individually. For example, using laser beams that act as "molecular tweezers," Dr. Granzier and his team can hold a single titin molecule and precisely measure the microscopically small force of its recoil action.

The group brings promising findings to the Heart Center that will facilitate future discoveries and provide the basis for successful collaborations with other members of the Sarver Heart Center. Dr. Granzier's group has found that titin in the hearts of female mice is different from that found in male mice.

"Our goal is to explore whether there are differences among titin molecules that could explain differences observed in hearts of women when compared to men. For exam-

# Stiff Hearts Never Mend – Or Do They?

*An international collaboration to investigate the immune system's role in heart failure*

"A lot of our colleagues think we're crazy," says Douglas F. Larson, PhD. "But we have the data to prove that our approach works."

Together with his laboratory group of young researchers and graduate students, Larson, a professor in the Department of Surgery at The University of Arizona College of Medicine and a member of the UA Sarver Heart Center, chose to think outside the box rather than follow the herd. His group studies new solutions to old problems: high blood pressure and one of its most common consequences, heart failure. Less than a handful of research groups worldwide are pursuing what is regarded as a strange avenue by many, but has the potential to become a medical breakthrough some day: coaxing the immune system to halt or even reverse heart failure.

*Doug Larson, PhD, discusses experiments with his students.*

Larson says an urgent need exists for innovative and unconventional therapies. Current heart failure therapies affect symptoms without appreciably reducing the mortality rate of 50 percent in five years – highlighting the current limitations in treating heart failure.

High blood pressure can lead to heart failure, rendering the heart unable to pump enough blood to meet the body's demands. The condition is a growing problem in an aging population, with 5 million people affected and more than a half million new cases diagnosed each year. Heart failure will affect one in four individuals at some

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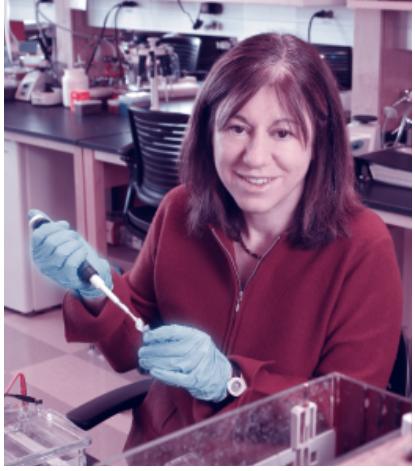
*Henk Granzier, PhD (back row, fourth from left) moved his entire research crew to The University of Arizona to investigate some of the molecular mechanisms that underlie heart disease in women.*

ple, it is well-known among clinical researchers that diastolic heart failure tends to be more severe in women than in men, with women's hearts being stiffer." Why? Nobody knows, but subtleties in the molecular architecture of the heart muscle cells are likely to play an important role.

Dr. Granzier is excited about joining the UA and the Sarver Heart Center because "the high level of interdisciplinary research allows us to collaborate with clinicians who can provide us with human tissue samples and integrate our findings into future therapies for heart failure patients." But before the occupant of one of the world's few endowed chair positions dedicated to solving the mysteries of heart disease in women can set up innovative experiments and start new collaborations, he needs to tackle a more daunting task – move all those boxes. ♥

# SHC Appoints New Co-Director



**Carol Gregorio, PhD**, director of the Molecular Cardiovascular Research Program at the UA College of Medicine, was appointed one of the UA Sarver Heart Center's co-directors. She is a basic scientist with a special research interest in the contractile proteins of heart muscle. Not only has she made major contributions to our understanding of heart muscle abnormalities, but she also has been an integral part of the UA College of Medicine's goal to strengthen its translational research and the UA Sarver Heart Center's effort to recruit other outstanding basic scientists, such as Henk Granzier, PhD, holder of the Allan & Alfie Norville Endowed Chair for Heart Disease in Women Research.

"Dr. Gregorio will continue to be a great asset as we integrate our basic science research and clinical programs," said fellow UA Sarver Heart Center co-director and director of cardiothoracic surgery, Jack G. Copeland. The UA Sarver Heart Center has been asked by College of Medicine Dean Keith A. Joiner, MD, MPH, to take the new diabetes program under its wing until this program can develop into a freestanding center of excellence. "Carol also has been very helpful in integrating basic science research in diabetes into the UA Sarver Heart Center," said Ewy. He emphasized that "diabetes is a cardiovascular disease. While 38 percent of Americans die of cardiovascular disease, 65 percent of diabetics die of cardiovascular disease." Dr. Gregorio said: "Working with Dr. Ewy and the other members of the UA Sarver Heart Center is an incredible opportunity and very productive – we make a great team!" ♥

# Artificial Heart Pioneer Honored with Barney Clark Award

On June 7, biomedical engineer and technical director of the Artificial Heart Program Richard G. Smith, MSEE, CCE, was honored by the American Society for Artificial Internal Organs (ASAIO) with the prestigious Barney Clark Award for his "success in the clinical application of artificial hearts and heart assist devices against overwhelming odds and criticisms."

The award recognized Smith as a "leader in moving the Total Artificial Heart from failure to highly successful clinical applications," at ASAIO's 53rd Annual Conference, held in Chicago, June 7-9. Smith received the Barney Clark Award 25 years after its namesake, Barney Clark, was implanted with the Jarvik 7 artificial heart device in 1982.

"It's not hard to be a wingman to Dr. Copeland," Smith said. "He's truly a pioneer and leader in heart devices, and especially the CardioWest temporary Total Artificial Heart (TAH-t)."

*Biomedical engineer Richard Smith holds the Barney Clark Award bestowed on him by the American Society for Artificial Internal Organs. Smith is also holding the CardioWest temporary Total Artificial Heart, which has been implanted in more than 650 patients worldwide.*

Smith and world-renowned cardiac surgeon Jack Copeland, MD, both started at University Medical Center (UMC) in Tucson in 1977. The two began working together in 1985. Together that year, they performed the world's first successful bridge-to-transplant procedure using the Jarvik 7 artificial heart. The use of the artificial heart as a bridge to transplant marked a medical milestone because the device was designed and then used as a permanent artificial heart from 1982 to 1985.

"Receiving this award truly was an honor," Smith said, "but it's hard to ever envision getting an award for doing the work you love."

The Jarvik 7 became the CardioWest™ Total Artificial Heart when UMC took over development in the early 1990s. Since 2001, SynCardia Systems, Inc., formed in 2001 by Smith, Dr. Copeland, and Marvin J. Slepian, MD, has been manufacturing the device.

This device is the first and only temporary artificial heart to receive FDA and CE mark approval. The device is currently designated as a bridge to transplant. More than 650 patients have received the TAH-t, accounting for more than 100 patient years of life on the device. ♥

# Join us for

## The Heart of the Matter – What Women Need to Know About Heart Disease

*A heart-healthy educational luncheon with a focus on – but not only for – women. Hosted by The University of Arizona Sarver Heart Center Women's Education Committee.*

**October 13, 2007**
Noon - 2 p.m.
Check-in at 11:30 a.m.
Skyline Country Club
5200 E. Saint Andrews Dr.
Tucson

Admission is $25 and includes lunch.

♥

**Program Overview:**

**Gordon A. Ewy, MD**
*There IS a Difference: How Heart Disease Affects Women*

**Lori Mackstaller, MD**
*Heart Disease in Women: Understanding Choices*

**Elizabeth Juneman, MD**
*Heart Disease & Breast Cancer: An Overview of Clinical Research*

***For more information and to register, please call Sherry at (520) 626-4144 or Linda at (800) 665-2328.***

# Sarver Heart Center Researchers Discover Link between Obesity and Enlarged Heart

New research from The University of Arizona Sarver Heart Center helps explain why excessive body weight increases the risk for heart disease.

In the largest study of its kind, cardiologist M. Reza Movahed, MD, PhD, and Research Specialist Adolfo A. Martinez, MD, discovered that excessive body weight is associated with a thickening of the heart muscle in the left ventricle, the heart's main pumping chamber. Known to physicians as left ventricular hypertrophy (LVH), the condition potentially can lead to heart failure and rhythm problems.

"We observed that the thickening in the muscle wall becomes especially noticeable in obese patients," says Dr. Movahed. "Previous studies have shown that left ventricular hypertrophy is associated with a higher risk of mortality."

Analyzing 17,261 heart ultrasounds, the researchers studied moving images of the heart to evaluate structure and function. Although results showed that narrowing of the aortic valve (the main valve that carries blood away from the heart to the rest of the body) was the strongest predictor of muscle enlargement in the left pumping chamber, obesity played a significant role.

While the cause of LVH in obese patients is not known, it may be related to increased work load or to the presence of other cardiac risk factors in these patients.

The findings may guide physicians who study obesity and cardiac function. Drs. Movahed and Martinez presented the results of their study at the 18th Annual Scientific Sessions of the American Society of Echocardiography (ASE) in Seattle, Wash.

"These results are another stake in the ground that supports healthy lifestyles for the benefit of heart protection," says Dr. Movahed. "Maintaining a proportionate weight may prevent LVH and leads to better heart function." ♥

*M. Reza Movahed, MD examines a heart ultrasound image taken from a patient at University Medical Center.*

# Helping to Train Tomorrow's Cardiologists Today

On March 16, 2007, Laura A. Seitz of Green Valley, Ariz., passed away at the age of 89, leaving behind her husband of 67 years, Carl, their two children, Terry and Karla, several grandchildren and a great-granddaughter. In the wake of his loss, Carl asked that gifts in memory of his wife be directed to the Sarver Heart Center. "I know this is what she would have wanted. The doctors and staff had been wonderful. This is one way I could say 'thank you.'"

In July, Carl joined the many friends and family who had paid tribute to his wife with his own gift in Laura's memory. "We were lucky to have a good cardiologist in Dr. Ewy. Hopefully this little gift will help to make sure others get the same care," he says about this special memorial fund.

"It is fortunate that Mr. Seitz chose to support the training of future cardiologists," says Dr. Ewy. "There will be a significant shortage of doctors, including cardiologists, unless our school and training programs are expanded. We are grateful to Mr. Seitz for this generous gift."

Carl and Laura Seitz were married in the "Little Brown Church in the Vail" in Nashua, Iowa, in the summer of 1940. Over the next three decades they built a successful welding supply business. Carl also served as president of the National Welding Supply Association. Last year, Laura recalled, "We planned so many conferences and dinners. I did enjoy it, but I was so glad when Carl finally retired."

In 1973, Carl and Laura became full-time residents of Green Valley, where they immersed themselves in the local community. They served in their local church, owned an antique store for a short time, and Carl still is an active member of the Lions Club.

*"We were lucky to have a good cardiologist. Hopefully this little gift will help to make sure others get the same care."* – Carl Seitz

As long-time patients at the Sarver Heart Center, Carl and Laura attended many of the lectures and seminars conducted by the Center. The couple shared a deep appreciation for the care they received and for the educational programs about heart and vascular disease.

To express their gratitude and to make a difference beyond their lifetime, the Seitzes also decided to make a provision in their estate plan to benefit the work of the Sarver Heart Center. "Laura and I just finished making some minor changes to our will in December. We had known for many years that we would leave a portion of our estate to the important work of the Sarver Heart Center." ♥

***For more information on how to include the Sarver Heart Center in your estate plans or ways you can make a gift, please contact the UA Sarver Heart Center Office of Development at (520) 626-4146.***

## Stiff Hearts *continued from page 5*

point in their life. It comes in two forms, systolic heart failure and diastolic heart failure.

In systolic heart failure, the heart muscle weakens to the point at which the heart ejects only a fraction of what would be necessary to sustain a healthy blood flow through the body. With appropriate medications, doctors sometimes are able to curb the detrimental effects of this type of heart failure. Diastolic heart failure, on the other hand, results from a progressive stiffening of the heart muscle. Currently, no therapeutics are available that treat this problem. High blood pressure, age, diet and being female are risk factors for diastolic heart failure.

With common approaches for a cure running into dead ends, Larson and his team decided to marry two fields that most heart researchers would not even consider as candidates for a blind date: cardiology and immunology. Backed by a $1.9 million grant from the National Institutes of Health (NIH), Larson's team discovered that specialized cells of the immune system, called T-lymphocytes, not only go about their well-known business in fighting off virus and bacteria, but in addition exert an influence on the structure of the heart muscle.

Specifically, the researchers found that the immune cells had a direct effect on the mesh of collagen and protein fibers that surround the heart muscle cells and connect them to each other. In diastolic heart failure, the collagen meshwork is too rigid, restricting the muscle cells in their movement and making the heart too stiff to effectively pump blood.

The scientists hope that in the near future their discoveries will lead to new therapeutics that specifically affect the T-lymphocyte and its effect on this condition, thereby reversing or at least slowing the progression of diastolic heart failure.

You could call Dr. Larson a poster child of collaborative research, living up to a concept that, while being touted by many research institutions as the most promising way to achieve new scientific and medical breakthroughs, has trouble getting off the ground in many places. "Nature is highly complex," says Dr. Larson. "If we want to understand biological processes on a level that enables us to design new therapeutic approaches, then we have to realize that no one person nor one discipline can accomplish this goal alone. To be successful, we need to get together scientists from different backgrounds and different areas of expertise."

*Doug Larson, PhD, uses live ultrasound imaging to study the effects of the immune system on the heart's structure and function.*

Along these lines, Dr. Larson recently traveled to Norway to start a collaboration with the Heart Failure Center in Oslo. "It's like hands across the ocean to take a novel approach to cure a disease that affects people on both sides." In a true bench-to-bedside approach, the colleagues in Oslo will take the experimental findings obtained by Dr. Larson's group in Tucson and apply them in a clinical setting.

In addition, Dr. Larson teamed up with long-time collaborator Ronald Watson, PhD, a professor at the UA Mel and Enid Zuckerman College of Public Health, resulting in a book elaborating on promising research that may lead to better treatments for heart failure. *Immune Dysfunction and Immunotherapy in Heart Disease* examines how immune dysfunction can cause heart problems.

Pursuing and promoting an interactive and collaborative approach to the most pressing research problems we currently are facing is the goal of the Sarver Heart Center, and scientists like Dr. Larson lead the way in exemplifying how scientific and medical breakthroughs will be achieved in the future – an endeavor that is anything but crazy. ♥

# “It was straight out of a movie”

*Heart surgeons save shooting victim’s life after road rage incident*

“I heard three rapid pops,” said Orazio Amabile, MD, chief resident of cardiothoracic surgery at University Medical Center and member of the UA Sarver Heart Center. “People were turning their heads and then I saw those two cars slamming into each other.”

Friday, June 29, early afternoon: Andrew Paxton, 23, is driving on East Grant Road in Tucson when a pickup truck swerves into the lane he is in. Paxton maneuvers in an effort to avoid a collision and passes the pickup in the process. At the next traffic light, he watches in his rearview mirror as the pickup approaches from behind in the neighboring lane.


*Surgeons Orazio Amabile, MD, and M. Cristy Smith, MD, hold their recognition plaques while standing in Operating Room 3 at University Medical Center, where they performed the life-saving surgery.*

Around the same time, Dr. Amabile and Cristy Smith, MD, assistant professor of cardiothoracic surgery, leave University Medical Center to satisfy “a sudden craving for tater tots,” according to Dr. Smith, who was five months pregnant at the time. As they approach the intersection of Campbell Avenue and Grant Road, they hear three gunshots crack the midday air.

“It was straight out of a movie,” recalls Dr. Amabile. “I told Cristy, ‘I think that guy got shot! We should follow that car.’”

The two doctors spotted Paxton’s car in front of a residence at a nearby intersection. “The airbags were deployed and there was blood on the ground,” said Dr. Amabile. “A few yards away, a person was lying face-down on the front porch.” “Hi,” Dr. Amabile said when he approached the shooting victim. “His skin was ashen and I saw blood pooling under his back. I knew he had less than five minutes to live.”

“I don’t remember much of what happened that day,” said Paxton. “But I do remember that I was lying there and I asked Dr. Smith if I was going to die. She looked at me for what seemed like a while and finally smiled and said, ‘No. You are not going to die.’”

Minutes later, Dr. Amabile was about to load Paxton into the police car that had arrived at the scene, when an ambulance pulled up. “I waved my arms at the paramedics and shouted, ‘Don’t get out! I’m putting him in the back and then let’s go!’”

As the ambulance sped away with Dr. Amabile and Paxton, Dr. Smith called University Medical Center and informed the emergency staff that they were going to bypass the ER. “I told them we couldn’t afford losing time and they had to prep the OR immediately for emergency surgery.”

Paxton was incredibly lucky. The bullet had struck his breast bone, causing it to ricochet and altering its path inside the chest. It only brushed the heart but severed a major artery before it exited through Paxton’s right shoulder.

Four weeks later, during a press conference at the UA, Tucson Police Assistant Chief Roberto Villasenor presented the two doctors with certificates of appreciation for their service and bravery. Paxton also was present and, after sharing his story to a spellbound audience, embraced both doctors and thanked them for saving his life. Unfortunately, the shooter is still at large. ♥

# Gift to Diabetes Research Honors Son

*Ralph and Shirley Morgan*

One morning Ralph Morgan returned from one of his regular Lions Club meetings with an idea that he could not wait to share with his wife, Shirley. Keith Joiner, MD, MPH, dean of The University of Arizona College of Medicine, had presented a new research initiative to develop new therapies for diabetes. Although that day's club meeting had brought back painful memories of the couple's oldest son, Tim, who had passed away from diabetes at the age of 64, it had showed Ralph a way to turn a tragedy into a purpose. "When I heard the dean discuss the new diabetes initiative at the Lions Club that morning, I was reminded of Tim and really wanted to help." His wife did not need to be convinced – 68 years of marriage have forged a shared sense of purpose.

Shirley was a freshman at Purdue in 1936 when she and Ralph met. He was a senior making his way through college as a janitor on the property where Shirley lived. The landlady forbade Ralph to date any of the college students who lived on the property. However, she approached him one day, suggesting that he go to the Saturday night mixer with the young woman in the corner apartment. And that is how it all began.

Ralph began as the sole engineer with Durametallic, a pump manufacturer in Kalamazoo, Mich., which eventually became Flowserve Corporation, a leading provider of fluid control products and services. By the time he retired and the couple moved to Tucson, 40 engineers were reporting to him. In addition to raising their six adopted children, Shirley has played the pipe organ at church for 50 years. A musician at heart, she also enjoys playing piano, violin and English bells.

The Morgans have been loyal supporters of ongoing medical research at the UA College of Medicine. Their gift in support of diabetes, however, is the catalyst for a brand-new program. This generous investment allowed the recruitment of nationally renowned Type-2 diabetes expert Craig Stump, MD, PhD, to begin a comprehensive diabetes program at The University of Arizona. Under the leadership of the Sarver Heart Center, Drs. Ewy, Joiner and Stump are making great strides in assembling a team of researchers and clinicians whose expertise is in the area of diabetes.

Says Dr. Ewy, "When Dean Joiner asked us to help foster the growth of this program, the answer was easy: 'Yes, absolutely!' As a matter of fact, diabetes is a cardiovascular disease, with heart disease and stroke being the greatest risk of death for diabetics. The connection between the Diabetes Program and the Sarver Heart Center is a natural fit. We are invigorated by the addition of Dr. Stump and his team to the Heart Center."

For the Morgans, defeating diabetes is a matter of ending family loss for others. Shirley's sister died of complications from the disease and, in fact, Shirley is the only one in her family who has not been diagnosed with diabetes.

"The loss of our son to diabetes broke our hearts," Ralph says. "We feel if we can help make a difference through research in his memory, we might spare other families the loss we feel so deeply. People don't realize all the many complications brought on by diabetes."

Shirley adds, "We have had some hardship and sorrow, but we have led a blessed existence and want to share that with others." ♥

## *Diabetes Quick Facts*

- Diabetes is a leading cause of premature death and disability in the United States.
- Type-2 diabetes, which is associated with family history, insufficient exercise and poor diet, affects 6 million people in the U.S., with an additional 3 million undiagnosed.
- The risk of developing heart disease is twice as high for women with diabetes compared to diabetic men.

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# 800th Heart Transplant at UMC Saves Baby Girl's Life

*Youngest female heart transplant recipient in the Southwest*

The Cardiothoracic Transplant Program at University Medical Center saw its 800th heart transplant on June 27. Edna Acedo, who was 6 months old at the time and weighed 12 pounds, received a new heart during a nighttime procedure that lasted about five hours. The surgical team was led by Raj K. Bose, MD, and assisted by Pei H. Tsau, MD, both assistant professors of cardiothoracic surgery at The University of Arizona College of Medicine and members of the UA Sarver Heart Center. Since the transplant procedure, the girl has made good progress toward recovery. She was able to leave the hospital on Aug.13.

Born at UMC, Edna was stricken with valvular heart disease and rapidly developed severe heart failure. Richard G. Smith, technical director of the Artificial Heart Program, filed an emergency request for a Berlin Heart, a German-made ventricular-assist device. This device assisted Edna's own heart, pumping blood through her body and sustaining her organs until a donor heart became available.

Because little Edna was fed through a feeding tube for most of the time in the hospital, she has to learn again how to swallow, says her dad, Alfredo Acedo. "But she is getting better every day. She likes bananas and apples. She is a strong baby."

He smiles and adds: "She misses the hospital and the nurses." ♥

*Edna with her parents, Edna and Alfredo Acedo, shortly after she left UMC with a new heart beating in her tiny chest.*