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SARVER HEART CENTER

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Julia H. Indik, MD, PhD, Named to the Flinn Foundation/American Heart Association Endowed Chair in Electrophysiology

Julia H. Indik, MD, PhD, assistant professor of medicine at the UA College of Medicine and Sarver Heart Center member, has been named to the Flinn Foundation/American Heart Association Endowed Chair in Electrophysiology.

While congratulating Dr. Indik at a celebration in her honor, Sarver Heart Center Director Gordon A. Ewy, MD, said, "The Flinn Foundation/American Heart Association Endowed Chair was the second established endowed chair in the Section of Cardiology and quite possibly the second endowed chair for the University of Arizona. We are so glad to be able to recognize such young and promising talent with this prestigious award."

Dr. Indik completed her undergraduate studies at Princeton University and pursued her PhD in astrophysics at MIT. After relocating to Tucson in 1986, Dr. Indik began post-doctorate work at UA's Steward Observatory. Within a few years, she decided to change directions and entered the UA College of Medicine, graduating with her MD degree in 1996. She completed her internship and residency at University Medical Center. It is here that she met Dr. Ewy, Dr. Frank Marcus and Dr. Peter Ott. "I immediately felt like I had found my second family," says Dr. Indik. "This is where I wanted to be."

Dr. Indik enjoys the biological sciences, physics and problem-solving challenges of cardiology and electrophysiology. She notes that electrophysiology has allowed her to blend her two passions – physics and improving the human condition through medicine.

Electrophysiology focuses on the electrical impulses received by the heart from the brain. These impulses provide the needed stimuli for the heart muscle to contract and relax – the heart beat. Electrophysiology has led to the development of life-saving pacemakers and internal defibrillators, devices that help to regulate the heart beat.

"Julia's talent and brilliance as a physician are characteristics that we wanted to foster," says Dr. Ewy. "Frank and Peter worked to create a fellowship in electrophysiology specifically for Julia - what a great decision!"

Dr. Marcus, the founder of the Section of Cardiology, began creating this endowed chair in 1977. He furthered his knowledge of electrophysiology during two sabbaticals in France. He realized the potential of this emerging field within cardiology, and with a letter to Mr. Robert Flinn asking for assistance in funding, the course was charted for the creation of this chair.

During the dinner celebration for Dr. Indik, Dr. David Gullen, chairman of the board of directors for the Flinn Foundation, recounted this story:

"In November 1977, Frank wrote Dr. Flinn again to report on a sequence of events that should assure eminence for cardiology at the UA. He reported simply that a 'rock concert at Arizona Stadium had attracted more than 58,000 people and resulted in $200,000 available to the American Heart Association to be used to study the

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Endowed Chair

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causes of abnormal heart rhythms.' Now, he failed to mention that the concert in the sold-out stadium was 'Fleetwood Mac.' Perhaps he thought this was not Dr. Flinn's musical preference!"

Funding for the endowed chair would be completed by early 1981, and Dr. Frank Marcus would become the first occupant.

Dr. Indik said, "The first and previous holder of the EP Chair, Dr. Frank Marcus, has been my mentor for years, and we have worked together on several projects involving the diagnosis of the rare disorder called Arrhythmogenic Right Ventricular Cardiomyopathy/Dysplasia," says Dr. Indik. "I am very happy that this work will continue."

Since becoming a member of the Sarver Heart Center in 2003, Dr. Indik has made significant research contributions. She is the author or co-author of more than 40 scientific publications and has received many academic and research awards.

Dr. Julia Indik studies heart disease with the goal of designing the next generation of public-access defibrillators.

"I am very excited about the opportunities the EP Chair will give me to further my research in heart rhythm disorders, in particular my work with the CPR research group at the Sarver Heart Center," Dr. Indik said. We will be able to study how congestive heart failure, heart attacks and other forms of heart disease can alter the ECG (electrocardiogram) appearance of the life-threatening heart rhythm called ventricular fibrillation. This work will allow us to design the next generation of 'smart' public-access defibrillators ('AEDs') that will tell rescuers exactly what to do."

"The University of Arizona, the College of Medicine and the Sarver Heart Center are extremely grateful to Mr. John Murphy of the Flinn Foundation, the Flinn Foundation board, to the Arizona Heart Association and to the other contributors of this endowed chair," said Dr. Ewy. "Creating an endowed chair in the Sarver Heart Center is one of the greatest legacies that can be established. Being fortunate to hold a chair is perhaps the greatest honor within the university one could have." ♥

For more information regarding how to create an endowed chair, please contact the Office of Development at (520) 626-4146 or (800) 665-2328

Sarver Heart Center Welcomes Pediatric Cardiac Surgeon Kimberly Gandy, MD, PhD

Kimberly Gandy, MD, PhD, has joined the Sarver Heart Center – as well as Dr. Jack Copeland's cardiothoracic surgery team, the faculty of the UA Departments of Surgery and Pediatrics and the pediatric cardiology team at University Physicians Healthcare. She will direct the lung transplantation program at UMC, and she holds a research appointment at Steele Children's Research Center.

Dr. Gandy is the first specialty-trained pediatric cardiac surgeon in Southern Arizona. She earned her medical degree at Northwestern University and her doctorate at Stanford University, completed her cardiothoracic surgery training at Duke University and two years of subspecialty training at Stanford.

In her 15 years of training, Dr. Gandy has worked with a wide range of cases, including premature infants weighing less than 2 pounds and adults with rare, congenital heart conditions. "Clinically, pediatric patients are among the most challenging," she says. "Their physiology is complex, and everything is smaller." But, she adds, it is the physiology and the technical challenges that drew her to pediatric heart surgery. "And I just like working with kids. There's an added pull there."

After she had completed 10 years of her training, Dr. Gandy stepped out of the operating room for a few years and into the lab to do research in transplant immunology and stem cell biology at Stanford. There, she and her husband, Adrianus (Jos) Domen, PhD, worked together on myocardial rescue and tolerance induction – basically, a mechanism that allows the body to accept transplanted organs. They are continuing their research here, studying cells that enhance the ability of the immune system to function appropriately. The researchers hope to discover ways to improve outcomes for patients who undergo organ transplantation. ♥

The Use of Chest-Compression-Only CPR by the Public is Spreading

The headline of the front-page article of *USA Today* was, "Lifesaving move: CPR made easier." The article was reporting on the American Heart Association's (AHA) consensus on science in the medical journal *Circulation*. The reader was left with the impression that the new AHA CPR guidelines had finally endorsed the approach advocated for years by the Sarver Heart Center CPR Research Group: continuous chest compression without mouth-to-mouth ventilation.

"The American Heart Association unveiled dramatic changes (…)," the article read, "(…) to its emergency cardiovascular care guidelines to make CPR simpler and less intimidating to a passerby (…). The revised guidelines for cardiopulmonary resuscitation shift the emphasis from mouth-to-mouth to chest compressions. (…) an international team of scientists found that CPR is too complicated for the average person, (…). That is deadly for the more than 250,000 people who collapse each year in cardiac arrest."

The article then quotes one of the members of the AHA committee: "The most common reason many people die is because no one nearby knew CPR, or if they did know it, they didn't actually do it."

The article continues, "Now it's simple: Call for help. Push the chest. Don't stop."

Another AHA committee member is quoted, "Some CPR is better than no CPR."

It then continues with comments, "Until emergency medical responders arrive, chest compressions alone can often be just as effective in saving a life," and "The more times a person pushes on the chest, the better off the patient is, because there is more blood flow to the brain and other vital organs."

CPR Research Group

Members of the Sarver Heart Center CPR Research Group are (from left): Ronald Hilwig, DVM, PhD; Mohamed Gaballa, PhD; Arthur Sanders, MD; Karl Kern, MD; Gordon Ewy, MD; Charles Otto, MD; Robert Berg, MD; Melinda Hayes, MD; Lani Clark.

To those of us of the Sarver Heart Center CPR Research Group, this was a most gratifying article; it seemed to make all of our years of work advocating this approach worthwhile.

However, reading other newspaper accounts and looking at the original report in *Circulation* was somewhat disappointing. The article acknowledged that the previously recommended 2:15 ventilation-to-chest compression ratio was not optimal. The authors' recommendation of 2:30 (ventilations to compressions) evidently was based on the need for more chest compressions and on the animal studies that revealed more arterial oxygen content compared to using chest-compression-only CPR.

Their treatment recommendation: "Rescuers should be encouraged to do compression-only CPR if they are unwilling to do airway and breathing maneuvers or if they are untrained in CPR or are uncertain how to do CPR. Researchers are encouraged to evaluate the efficacy of compression-only CPR." (*Circulation* 2005;112:III-5-III-16)

Each day more than 1,000 individuals in the United States die from out-of-hospital cardiac arrest, which as a cause of death is secondary only to all cancers combined. Unexpected sudden death in

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SHC Research Grants, Awards and Honors

The Bettie F. Pitts Memorial Heart Disease Research Award
Joseph J. Bahl, PhD (Synthesis of thyroid hormone analogs for treatment of heart disease)
Kimberly Lynn Gandy, MD, PhD (Transplant tolerance induction through autologous reconstitution)

The Lillian Bilyu and John J. Banchi Research Award
Vanessa Jensen, MD (Lymphangiogenesis and its molecular and genetic control)
Steve Morrissy (Cardioprotective effect of progesterone in vivo)

Steven M. Gootter Sudden Cardiac Death Research Award
Abigail S. McElhinny, PhD (Signaling pathways in stretch response in cardiac muscle)

The William J. "Billy" Gieszl Endowment for Heart Research
Michael Seckeler, MD, will conduct his research on the noninvasive identification of cyanotic heart disease in the newborn nursery.

The Margarita Chavez Memorial Young Investigator Award
Jordan J. Lancaster, graduate student, will study mesenchymal stem cells in heart failure.

Mohamed A. Gaballa, PhD, a research associate professor in the Department of Medicine and a Sarver Heart Center member, will receive a grant from the Arizona Biomedical Research Commission to study "Human Umbilical Progenitor Cell-Based Therapy for Myocardial Infarction." The commission awarded 27 projects statewide, 10 of them to UA College of Medicine faculty.

Michelle Dew, MD, a third-year cardiology fellow, is one of three principal investigators from three academic institutions who received a Leveraging/Collaboration award from the Food and Drug Administration Office of Women's Health-Cardiovascular Disease Initiative in June. This award recognizes research efforts utilizing performance and teamwork across institutions investigating gender differences in cardiovascular disease and FDA-approved products and devices used to diagnose coronary heart disease.

Eric A. Brody, MD, assistant professor of clinical medicine and associate director of the Native American Cardiology Program based at AHSC, has received a 2005 Distance Learning Award for Excellence in Distance Learning Teaching from the United States Distance Learning Association (USDLA). Dr. Brody received the award for "EKG Jeopardy," his innovative distance education approach to teaching with the Native American Cardiology Program. His novel videoconference approach is modeled after the popular television game show and generates enthusiasm for learning complex cardiology concepts among his students at a variety of Arizona sites. The teaching sessions are broadcast to multiple locations on the network of the Arizona Telemedicine Program at the UA.

Tragedy Inspires Quest for Answers

In early February 2005 Steven Gootter began his day like any other. He got up early, rounded up the family dog and headed out for a morning jog. That was the last time that his wife, Debbie, their two children and the rest of their family and friends would see him. Steven would not come home again – sudden cardiac death had claimed his life.

Joe and Paulette Gootter, Steven's parents, had to face what no parent ever should, the loss of a child – and worse, there were no real answers as to why Steven, a healthy, active man of 41 would fall victim to this killer.

Struggling to cope with their loss, Joe and Paulette, longtime friends of the Sarver Heart Center, turned to Center Director Dr. Gordon A. Ewy for help in understanding what had happened. That conversation would help turn this horrible tragedy into a quest for answers. In a truly selfless act, the Gootter family created the Steven M. Gootter Sudden Cardiac Death Research Award at the Sarver Heart Center. Joe, who is a member of the Sarver Heart Center Advisory Board, and Paulette had asked that gifts be directed to the Sarver Heart Center in memory of Steven. "So many friends and family came forward; we were overwhelmed," Joe said. "We hope this research award will one day give us the answer to 'Why?'" The Steven M. Gootter Sudden Cardiac Death Award is providing the resources needed to help answer that question.

This year's award recipient is Abigail S. McElhinny, PhD. Her research is key to answering the 'Why' question and will focus on the molecular signaling mechanisms of titin, a protein with an important role in the stretch response in the heart muscle.

Another important question is, "What happens in sudden cardiac death?" In many cases sudden cardiac death is a result of ventricular fibrillation. Fibrillation means that the heart begins to "flutter" and is no longer pumping blood. "The heart is experiencing hundreds of electrical impulses. It is a flurry of activity that, in most cases, can only be stopped if the heart is shocked back into normal rhythm," explains Dr. Indik, a member of the Sarver Heart Center and an assistant professor in the UA College of Medicine, who has been appointed to the Flinn Foundation/American Heart Association Endowed Chair in Electrophysiology (see cover story). "We know what happens, but we don't always know why – and this is the critical question."

Joe and Paulette Gootter, longtime friends of the Sarver Heart Center, created the Steven M. Gootter Sudden Cardiac Death Research Award.

Continued funding of the Steven M. Gootter Sudden Cardiac Death Research Award will come from the Steven M. Gootter Foundation, created by a group of Steven's close friends, along with his family. An annual benefit tennis tournament will be held in honor of Steven. To say that Steven had a passion for tennis is an understatement. Many of his friends feel that to play in a tournament in his memory is an honor. The inaugural tournament is scheduled for April 8, 2006. "We hope to continue to fund the award in Steven's name with larger gifts each year," Joe said of the event. "It is important to us to help further this research." For more information about the tournament, visit www.stevenmgootterfoundation.org.

Dr. Ewy said, "We are grateful to Joe and Paulette for their vision and commitment to helping in the fight for a future free of heart disease and stroke. The Steven M. Gootter Award will have a powerful and meaningful impact on research at the Sarver Heart Center. I hope one day we will be able to provide their family with definite answers." ♥

The research funded by this award will focus on innovative ways to identify triggers that cause sudden death by heart disease and help lead to a better understanding of the role electrophysiology plays in sudden cardiac death.

D is for Diabetes

Betsy Dokken, NP, MSN, CDE

Readers of the Sarver Heart Center newsletter will recall that in our last issue we said "D is for Diet." We haven't changed our minds! The link between diabetes and cardiovascular disease is so important that we decided our "ABCs of Heart Disease" series requires two "Ds" – one for diet and one for diabetes.

The new numbers are out, and the epidemic is even worse than we thought.

According to the Centers for Disease Control (CDC), diabetes in the United States has increased by 14 percent in just two years and now affects 7 percent of the population. Almost one third of the 20.8 million Americans with diabetes have no idea they have developed the disease, putting them at particularly high risk for developing its most serious consequences: heart disease, stroke, blindness, limb amputations and kidney failure.

These startling statistics – which reflect both the increased age and weight of the average American – come from the National Diabetes Fact Sheet 2005, published on October 27, 2005 by the CDC. When the last fact sheet was released in 2003, the number of Americans with diabetes was 18.2 million.

Pre-diabetes, a condition that indicates a very high risk of developing diabetes, is an even bigger problem, affecting 41 million people in the U.S. between the ages of 40 and 74.

Because the rate of diabetes is rising so rapidly, the CDC estimates that one out of every three Americans born in 2000 will develop the disease, including two out of every five African Americans and one out of every two Hispanic females born that year.

What is diabetes, and what causes it?

Diabetes describes a group of metabolic disorders characterized by a high level of glucose (sugar) in the blood. Although we need glucose, if the level in the blood is too high, the glucose is in the wrong place; not enough of it has been transported from the bloodstream into the cells. In people with normal glucose metabolism, the blood glucose level is maintained in a fairly tight range, between 65 mg/dl and 100 mg/dl in the fasting state (without calories for 8 hours) and less than 140 mg/dl two hours after eating, or after undergoing a glucose tolerance test in the lab. When these levels are higher, it means that the regulatory process has failed.

Type 2 diabetes is a progressive disease

There are two major reasons for high blood glucose levels: either not enough insulin is present, or the insulin does not work properly. The type of diabetes that is increasing rapidly is Type 2, which used to be called Adult Onset (the name was changed because so many children are now affected by this disease). This disease is caused by both of the aforementioned defects. Insulin production, although in some cases higher than normal in pre-diabetes and the early stages of Type

KNOW YOUR DIABETES ABCs

Manage your hemoglobin A1C (blood glucose or sugar), Blood pressure, and Cholesterol. This will help lower your chances of having a heart attack, a stroke or other diabetes problems. These are called the ABCs of diabetes.

A IS FOR THE A1C TEST.
It shows how well your blood glucose has been controlled over the last three months. It should be checked at least twice a year. The goal for most people is a level less than 7. It may be lower for you.

B IS FOR BLOOD PRESSURE.
The goal for most people with diabetes is 130/80. It may be lower for you.

C IS FOR CHOLESTEROL.
The LDL goal for most people with diabetes is less than 100. It may be lower for you.

Adapted from the National Diabetes Education Program (NDEP) http://ndep.nih.gov

2 diabetes, begins to wane, causing blood glucose levels to rise, and progressively decreases over time so that after 10-20 years of diabetes most patients will require insulin therapy to maintain control of blood glucose levels. One related myth is that patients with Type 2 diabetes who take insulin must do so because they have failed to improve their lifestyle behaviors. Although poor health habits can indeed contribute to both the development of diabetes and the need for insulin therapy, it's important to realize that even with the healthiest lifestyle, people with Type 2 diabetes may need to take insulin.

Diabetes IS a cardiovascular disease

During the past decade it has become increasingly clear that diabetes and cardiovascular disease are closely linked. Diabetes is a major risk factor for cardiovascular events such as heart attacks, strokes and amputations. In addition, the diabetes complications affecting the eyes, kidneys and nerves are all caused, at least in part, by vascular disease. Patients with diabetes who have never had a heart attack have as high a risk of having one as patients without diabetes who have already suffered a heart attack. A study showed that in men who were not aware that they had diabetes, a mildly elevated blood glucose level could predict death from cardiovascular disease

No one's blood glucose is "normally" high

If you have normal glucose metabolism, you could go into a Circle K, buy a 64-ounce soda AND a doughnut, consume everything, and have a normal blood glucose level. Now, I'm not recommending this, just making a point—unless you have either pre-diabetes or diabetes, eating "sugar" or another form of carbohydrate will not cause an elevated blood glucose level. Nor does eating too much sugar cause diabetes. That said, it's also important to understand that, for patients with diabetes, merely controlling the diet is almost never enough to control the blood glucose level. It's important, but usually not enough.

Diabetes Prevention

If you don't have diabetes, you can decrease your risk of developing the disease in the future if you keep your weight down and stay physically active. The Diabetes Prevention Program demonstrated that among those at high risk for developing diabetes, a weight loss of 7 percent of body weight along with an average of 150 minutes of exercise each week decreased the risk of diabetes by 58 percent.

What can we do about it?

Diabetes is a chronic disease, for which there is no cure. Most patients with diabetes also have other chronic conditions or diseases, such as obesity, high blood pressure, and unhealthy blood cholesterol levels. These health problems are all related, and in order to decrease the risk of complications such as cardiovascular disease, they must all be aggressively treated and controlled.

A wide variety of treatments are available for diabetes

If you have diabetes, the most important thing is to know the "ABCs of Diabetes." If your personal results don't match the recommended levels, you are at high risk of developing the complications of diabetes, including blindness, kidney failure, nerve damage, amputation, heart attack and stroke. These complications are devastating but preventable in most cases. If you are already doing all you can to stay healthy, and your "ABCs" are not under control, talk to your health-care provider about more aggressive treatments.

In sum, diabetes is an epidemic in the United States and in many other countries around the world. Many of us inherit the tendency to become overweight and develop diabetes, but we can adopt behaviors to decrease our risk of that happening. People who do develop diabetes must be actively involved in their health care. It is important to be aware of important laboratory values and other vital measurements such as blood pressure. Your health-care provider is your partner and will be able to help you reach your goals. Difficult cases or situations may benefit from a referral to a diabetes specialist. Whatever you do, if you have diabetes, continue to strive for good control—it may save your life. ♥

For more information about diabetes, go to the American Diabetes Association (ADA) Web site: www.diabetes.org or call the ADA at 1-800-DIABETES.

New Investigations in Heart Failure – a Disease without a Cure

Douglas F. Larson, PhD
Sarver Heart Center

Heart failure, a clinical condition where the heart cannot pump a sufficient quantity of blood to permit normal daily activities, is the primary research and clinical focus of the Sarver Heart Center. There are two general types of heart failure – systolic heart failure and diastolic heart failure. Systolic heart failure results from the heart not having the capacity to contract with sufficient strength to eject the blood from the ventricles. Diastolic heart failure is due to a stiff ventricle (inability to relax properly) that impedes the proper filling of the heart even though the contractile function may be normal. Current statistics show that about half of heart failure patients have diastolic dysfunction, and about half have systolic dysfunction; however, almost all systolic heart failure patients have some degree of diastolic dysfunction also.

The diagnosis of heart failure can be frightening. This is a serious condition that has no cure, but the individual can live a full and enjoyable life with the right treatment and active attention to lifestyle decisions – as did my mother, who died of diastolic heart failure last year.

The most important thing to remember is that the heart failure patient is not alone. Nearly 5 million Americans are living with heart failure, and 550,000 new cases have been diagnosed this year. It is projected that, in 2040, 20 percent of individuals over the age of 65 will have heart failure. From 1990-99, the number of people hospitalized with a primary diagnosis of heart failure increased from 810,000 to more than 1 million. This was due to the population aging and to more people surviving heart attacks. More Medicare dollars are spent for heart failure diagnosis and treatment than for any other disease. In 2005, this condition will cost an estimated $28 billion in direct and indirect health-care expenses. As a result, heart failure has been described as the new "epidemic" of cardiovascular disease.

The risk factors for heart failure include: aging, hypertension, coronary artery disease, diabetes, irregular and/or rapid heart rate, cardiac birth defects, cardiac valve disease, metabolic syndrome and being female. Obviously some of these risk factors cannot be modified, but many can be with the advice and careful guidance from your cardiologist. Heart failure usually is a chronic disease. That means it's a long-term condition that tends to gradually become worse. By the time someone is diagnosed, chances are that the heart has been losing pumping capacity little by little for quite a while. Some people may not realize that one of the main symptoms of heart failure is becoming easily exhausted.

There are many good medications approved by the FDA for the treatment of the symptoms of systolic heart failure; however, there are no FDA drugs approved for the treatment of diastolic heart failure. Most drugs are based on modify-

ing the nervous system or the release of hormones. However, research in the Larson laboratory at the Sarver Heart Center is focused on a third system, the immune system, with the hope of discovering a pathway for curing heart failure. Moreover, the research is directed primarily in investigating diastolic heart failure since there are no approved drugs for this disease and since it is also a component of systolic heart failure. Recently, the Larson laboratory was awarded a five-year, $1.874 million grant from the National Heart, Lung and Blood Institute to conduct further research in the relationship between the immune system and the heart. The grant, "Immunomodulation: Cardiovascular Structure and Function," includes studies to measure the effects of specific types of white blood cells, known as T-cells, on the structure and function of the heart and ultimately may lead to new therapeutic approaches.

There are numerous types of cells in the immune system performing many functions – especially protecting us from infectious diseases. The immune cell being investigated in the Larson lab is the white blood cell called the T-lymphocyte. These cells not only protect us from viral and fungal infections and tumors, but also are key controllers in wound healing. Our research hypothesis is that under risk factor conditions mentioned above, such as hypertension, the lymphocytes play a role in wound-healing processes of the heart, termed "remodeling."

The regulatory mechanism of T-lymphocytes resides with two subtypes, TH1 and TH2 cells. Our research has shown that an increase in TH1 cells leads to increased stiffness in the heart muscle – as is the case in diastolic heart failure. In contrast, TH2 cells enhance B-lymphocytes, which are key in producing antibodies. Increase in TH2 cells leads to a loss of firmness in the heart muscle – as is the case in systolic heart failure. Clearly, both TH1 and TH2 cells can affect heart structure and function.

In an article in the American Journal of Physiology, titled "A role for T-lymphocytes in mediating cardiac diastolic function," Dr. Larson and his team, including Qianli Yu, MD, PhD, John Marchalonis, PhD, and Ronald R. Watson, PhD, have recently shown that, unlike neurological and hormonal pathways, the immune pathway is a pivotal pathway where heart failure conditions can be reversed in the experimental model with altering the balance between TH1 and TH2. This new grant will build on this research focus and may enable scientists one day to define and test therapies for heart failure patients.

Sarver Heart Center Director Dr. Gordon A. Ewy comments, "The importance of this research cannot be overestimated. Understanding the underlying causes of heart disease will open the way to new approaches for the treatment and maybe even a cure of hypertension, diastolic dysfunction and heart failure." ♥

Swim, Bike, Run – To Prevent Heart Disease and Stroke!

This past April, Christopher Phillips competed in his first triathlon, the inaugural Arizona Ironman Triathlon, which he ran in memory of his late father, Glenn Phillips. Chris raised funds in support of the Sarver Heart Center. "In 1988, while I was a student at the UA, my father passed away from a stroke. I thought, if I can in some small way help to spare another family from this tragic loss, then I know I will have done some good." The Sarver Heart Center extends its thanks and congratulations to Chris on completing his first triathlon and qualifying as one of the top 20 fundraisers. ♥

Hello, Daniel!

Daniel Stolte, formerly a science writer with UA's BIO5 Institute, has joined the Sarver Heart Center as our director of communications and public outreach. After earning his master's degree in biology from Freiburg University in Germany, he entered the German School of Journalism in Munich. In 2003 he joined the public relations department at the German Cancer Research Institute in Heidelberg as a science writer.

Daniel, who attended Northern Arizona University as an exchange student in 1996-'97, came to The University of Arizona in early 2005. Of his new position he says, "I'm especially intrigued by its variety, in particular the outreach component. I am excited to interact with those who directly benefit from everything the Sarver Heart Center does." ♥

CPR

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an adult often is due to an abnormal electrical disturbance of the heart, but the heart muscle is functioning adequately. These individuals are said to have died with "hearts that are too good to die."

Efforts to improve survival of out-of-hospital cardiac arrest have long been a goal of the Sarver Heart Center Cardiopulmonary Research (CPR) Research Group.

Research findings of ours and others have led us to develop several new programs that treat victims of sudden unexpected cardiac arrest. One is the SHARE program, a program run by Lani Clark at SHC which has now gone statewide, to register automated external defibrillators (AEDs).

AEDs are used to shock the heart of a patient with cardiac arrest back to normal and are lifesaving if applied early. The use of AEDs has been proven to save lives in airplanes, airports, casinos, golf courses and other areas where a significant number of adults who are at risk congregate. Although there are 1,800 AEDs registered in Arizona, they seldom are used by the public.

Thus AEDs either are not available or are not used for the vast majority of adults with unexpected collapse (usually due to cardiac arrest). Therefore, bystander-initiated chest compressions are necessary to preserve brain and heart function until paramedics/firefighters can arrive to provide defibrillation. However, most people do not know how, or do not want to learn how, to do CPR because they do not want to do mouth-to-mouth rescue breathing.

Using experimental models of simulated out-of-hospital cardiac arrest, a major finding our CPR research group made over a decade ago, was that continuous-chest-compression CPR (CCC-CPR) – also called chest-compression-only-CPR – was dramatically better than the simulated calling of 911 and doing nothing until the paramedics arrive.

A study from Seattle found that survival rates of out-of-hospital cardiac arrest were as good when emergency medical dispatchers instructed lay individuals in CCC-CPR as when they instructed in standard CPR. Slowly but surely, other cities are adopting CCC-CPR. In early 2004, 21 of the nation's largest cities instituted a program in which callers on the 911 line were instructed to perform CCC-CPR. Others are following suit.

Moreover, more recent Sarver Heart Center research has found that stopping chest compressions for mouth-to-mouth breathing is more harmful than helpful; when chest compressions are stopped for rescue breathing, none of the body's organs are receiving blood.

Dr. Karl Kern and the other members of the SHC CPR research group compared the survival rate of CCC-CPR in the experimental laboratory with standard CPR, in which a realistic 16-second interruption in the delivery of chest compressions was used for the two breaths. The survival rate was dramatically better with CCC-CPR. This and a number of other findings convinced us that the approach to CPR advocated for the past four decades was far from optimal.

Based on our findings, our "Be a Lifesaver" program was initiated in Tucson in November 2003. It involves three simple steps:

1. Call 911
2. Perform CCC-CPR
3. If an AED is available, place it on the patient and follow the voice commands.

It is reassuring that a recent study in humans, completed in Tokyo, confirmed our results. However, since this study has been reported only in abstract form, this important finding is not incorporated in the AHA consensus on science report in *Circulation*.

Previous studies showed that individuals who received bystander chest-compression-only CPR had a survival rate as good as those who received bystander chest compression plus so called "rescue breathing."

So, even before the recent data from Tokyo showed that CCC-CPR was better, it was difficult for some of us to understand the AHA position. Standard CPR with chest compression and ventilation, for which millions (and perhaps billions) of dollars, and millions (and perhaps billions) of man-hours have been spent teaching is not better than the CCC-CPR technique, which has heretofore neither been taught nor encouraged.

The Sarver Heart Center continues to offer free monthly training in CCC-CPR in the DuVal Auditorium at University Medical Center. We hope that the spark initiated by the Sarver Heart Center CPR Research Group will light a fire that will spread until the technique explodes into acceptance worldwide. ♥

We'd Like to Hear from You!

Please take a minute to complete this form and return it to us. If you have a question or concern that is not addressed here, please attach a note to the form, or send an e-mail to us at heart@u.arizona.edu.

Please Send Me:

[ ] A brief, one-page summary of the top 10 ways to prevent heart disease and stroke.
[ ] The "To Prevent Heart Disease & Stroke ... I Need to Know My Numbers" wallet card with information about my goals for cholesterol, blood pressure, etc.
[ ] A packet of eight complimentary memorial and honor cards that will allow us to remember family and friends and contribute to research at the same time.

About this Newsletter

How much of the Sarver Heart Center do you typically read?

[ ] All [ ] Most [ ] Some [ ] Little

Which topics interest you the most??

[ ] Health tips [ ] Medical research news [ ] Focus articles (stroke, heart conditions etc.)

Suggestions: .....
.....

Do you share this newsletter with friends, family or others?

[ ] Often [ ] Sometimes [ ] Rarely [ ] Never

Supporting the Sarver Heart Center

[ ] I/We would like to **volunteer** with various activities at the Sarver Heart Center. Please contact me/us about volunteer opportunities.

[ ] I/We would like more information about **planning a gift** through a charitable gift annuity, a charitable trust or through my/our estate or bequest.

[ ] Please send more information about **endowed funds** and how I/we might establish an endowed fund in support of cardiovascular research.

[ ] I/We wish to be acknowledged on the **Wall of Recognition** in the Sarver Heart Center building. Please send information about the levels of giving and how to be listed.

Contacts

The following family/friends have an interest in your work. Please send them your newsletter.

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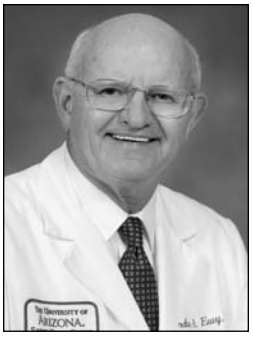
Please return this form to:
UA Sarver Heart Center, P.O. Box 245046, Tucson, AZ 85724-5046
or fax to (520) 626-2666

FROM THE DIRECTOR



This issue highlights the naming of Julia H. Indik, MD, PhD to occupy the Flinn Foundation and American Heart Association Endowed Chair in Electrophysiology. An impressive clinician and researcher, Julia is truly one of the brightest of our rising stars. Her appointment holds added significance, as she not only is the youngest individual to receive such an honor, she also is the second woman to hold this position in the history of The University of Arizona College of Medicine.

Dr. Indik started her career as a rocket scientist, obtaining a PhD in astrophysics from the Massachusetts Institute of Technology. During a post-doctorate at the UA she decided to take up something more challenging – and entered medical school.

During her cardiology fellowship she expressed an interest in electrophysiology, so Drs. Frank I. Marcus and Peter Ott of the Section of Cardiology and Electrophysiology received national approval for a fellowship training program in electrophysiology to train Julia to become an academic cardiologist.

The University of Arizona, the College of Medicine and the Sarver Heart Center are extremely grateful to Mr. John Murphy of the Flinn Foundation and the Flinn Foundation board, to the then-Arizona Chapter of the American Heart Association and to other contributors to this endowed chair.

The chair was first held by Dr. Frank I. Marcus, founding chief of the Section of Cardiology at the College of Medicine, whose contributions to cardiology and medicine are legend. I am honored to have worked with Dr. Marcus and to have Julia pick up the torch to assure that his many contributions will not flicker, but will burn ever brighter as we go forward.

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

The *UA Sarver Heart Center Newsletter* is published regularly. News reporters are welcome to quote from newsletter articles and are kindly asked to provide credit. Correspondence or inquiries should be addressed to: UA Sarver Heart Center, Public Affairs, PO Box 245046, Tucson, AZ, 85724-5046.

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