NIH awards USC team $1 million for fetal pacemaker

By Hope Hamashige

A team of researchers from the Keck School of Medicine of USC, Children’s Hospital Los Angeles (CHLA) and the USC Viterbi School of Engineering has landed a three-year, $1 million grant from one of the community’s largest funders of health research to help them develop a tiny pacemaker for unborn babies with a potentially fatal heart problem called fetal heart block.

“We needed this money to move our research forward so we’re pretty excited,” said Yaniv Bar-Cohen, associate professor of pediatrics at the Keck School and director of cardiac rhythm devices at CHLA, who is one of the principal researchers on the project.

This project got off the ground when Ramon Chmait, assistant professor of clinical obstetrics and gynecology at the Keck School, contacted Bar-Cohen to discuss research on bionics and has extensive experience building medical devices.

With funds from the Southern California Clinical and Translational Science Institute, the work was under way. In about five months the group had a prototype of a pacemaker that is less than 20 mm long.

This is not the first time doctors have tried to come up with a solution for fetal heart block. Others have tried using a standard pacemaker that is implanted in the mother and connected to the baby through a wire. But because babies in the womb do wriggle, the wires become dislodged and the baby dies.

The USC team is developing a tiny pacemaker for unborn babies with a potentially fatal heart problem called fetal heart block.

They got over that initial hurdle by searching for help at their home institution. Another colleague from USC introduced them to Bar-Cohen and Bar-Cohen asked Gerald Loeb, a professor of biomedical engineering, who turned out to be the answer to their problem.

“We were hunting for a bioengineer, and we found Dr. Loeb right here. He was the perfect fit,” said Chmait.

Loeb, although a professor of engineering, is also a trained surgeon who conducts research on bionics and has

The USC surgeon Yuri Genyk performs new robotic liver procedure

By Hope Hamashige

Recovery from liver resection surgery can be a trying affair for many patients because, according to Yuri Genyk, the incision is large and traumatic and can cause patients a lot of pain.

But Genyk, assistant professor of surgery at the Keck School of Medicine of USC, is performing a new, innovative procedure at Keck Hospital to help change all of that.

Genyk recently performed the first of a new type of liver resection surgery, employing a robot, which reduces recovery time and, because the incision is far smaller, can greatly reduce the pain most patients suffer in the days following their surgery.

“It was remarkable,” said Genyk, of his first robot-assisted liver resection surgery, which was done past this summer. “The recovery was faster and much less painful.”

In the case of his first patient, Genyk said it cut the recovery time to less than five days. Typically, the patients he operates on spend up to a week in the hospital following surgery to remove tumors from the liver. Genyk said this was the first time this procedure was performed in Los Angeles employing a robot.

In fact, he said, only a few surgeons anywhere in Southern California offer liver resections using robotic technology.

“It is not common at all at this point,” said Genyk, noting that while the recovery is simpler for the patient, the procedure is more difficult for the surgeon.

“It is complex and takes longer than the traditional way,” he said. “It takes a lot longer because it is a more tedious process, and you have to be really methodical.”

Still, he said he would recommend it for anyone who is a candidate.

“I saw the difference in the recovery and it is dramatic,” he said.

By Hope Hamashige

A team of researchers from the Keck School of Medicine of USC, Children’s Hospital Los Angeles (CHLA) and the USC Viterbi School of Engineering has landed a three-year, $1 million grant from one of the community’s largest funders of health research to help them develop a tiny pacemaker for unborn babies with a potentially fatal heart problem called fetal heart block.

“We needed this money to move our research forward so we’re pretty excited,” said Yaniv Bar-Cohen, associate professor of pediatrics at the Keck School and director of cardiac rhythm devices at CHLA, who is one of the principal researchers on the project.

This project got off the ground when Ramon Chmait, assistant professor of clinical obstetrics and gynecology at the Keck School, contacted Bar-Cohen to discuss research on bionics and has extensive experience building medical devices.

With funds from the Southern California Clinical and Translational Science Institute, the work was under way. In about five months the group had a prototype of a pacemaker that is less than 20 mm long.

This is not the first time doctors have tried to come up with a solution for fetal heart block. Others have tried using a standard pacemaker that is implanted in the mother and connected to the baby through a wire. But because babies in the womb do wriggle, the wires become dislodged and the baby dies.

The USC team is developing a tiny pacemaker for unborn babies with a potentially fatal heart problem called fetal heart block.

They got over that initial hurdle by searching for help at their home institution. Another colleague from USC introduced them to Bar-Cohen and Bar-Cohen asked Gerald Loeb, a professor of biomedical engineering, who turned out to be the answer to their problem.

“We were hunting for a bioengineer, and we found Dr. Loeb right here. He was the perfect fit,” said Chmait.

Loeb, although a professor of engineering, is also a trained surgeon who conducts research on bionics and has extensive experience building medical devices.

With funds from the Southern California Clinical and Translational Science Institute, the work was under way. In about five months the group had a prototype of a pacemaker that is less than 20 mm long.

This is not the first time doctors have tried to come up with a solution for fetal heart block. Others have tried using a standard pacemaker that is implanted in the mother and connected to the baby through a wire. But because babies in the womb do wriggle, the wires become dislodged and the baby dies.

The USC team is developing a tiny pacemaker for unborn babies with a potentially fatal heart problem called fetal heart block.

They got over that initial hurdle by searching for help at their home institution. Another colleague from USC introduced them to Bar-Cohen and Bar-Cohen asked Gerald Loeb, a professor of biomedical engineering, who turned out to be the answer to their problem.

“We were hunting for a bioengineer, and we found Dr. Loeb right here. He was the perfect fit,” said Chmait.

Loeb, although a professor of engineering, is also a trained surgeon who conducts research on bionics and has extensive experience building medical devices.

With funds from the Southern California Clinical and Translational Science Institute, the work was under way. In about five months the group had a prototype of a pacemaker that is less than 20 mm long.

This is not the first time doctors have tried to come up with a solution for fetal heart block. Others have tried using a standard pacemaker that is implanted in the mother and connected to the baby through a wire. But because babies in the womb do wriggle, the wires become dislodged and the baby dies.
Two recent gifts from faith-based nonprofit organization QueensCare will help USC offer bone marrow transplantation to patients who might otherwise not be able to afford it.

**Borchart Foundation gift helps researchers target adult heart cell regeneration**

By Amy E. Hamaker

Human heart tissue, unlike many other tissues in the body, has an extremely limited ability to regenerate, which is why coronary disease can be so deadly.

A recent $75,000 gift from the Albert and Elaine Borchart Foundation is helping researchers at the Keck School of Medicine of USC better understand the limitations of adult heart cells and develop targets for improved regeneration through the use of embryonic heart tissue.

“The heart needs to maintain output,” explained Henry Sucov, associate professor in the Departments of Cell and Neurobiology and Biochemistry and Molecular Biology, whose project on adult cardiac muscle stem cells is the focus of the gift. “If you’ve lost heart muscle cells, then the rest of the heart will compensate—but only up to a point. After that, it leads to decompensated heart failure, the leading cause of death in the Western world.

“In the lab, we’ve been studying what goes on during fetal heart development—heart muscle cells divide actively, even as they’re ‘hearing,’ ” he continued. “Our approach is to isolate a rare population of cells in the adult heart that share some of the properties of embryonic heart muscle cells. We can test the hypothesis that these cells resemble the embryonic heart cells are the ones that retain the ability to divide and potentially regenerate heart muscle. If so, then we have a target to increase or improve their regenerative capacity in an injured adult patient.”

According to Sucov, experimental work so far has been done with mice, but the biology in mice and humans is very similar. “The Albert and Elaine Borchart Foundation’s support of the Keck School of Medicine of USC dates back several decades. Dr. Sucov’s work underscores the importance of investing in basic research as a means to understanding and improving the human condition,” said Janna Beling, executive vice president for the foundation.

“You’re really using an investment in leading-edge medical research that will enhance life and health,” said Sucov. “We think it’s important to try to bring these treatments to the people who need them.”

Incorporated in 1978, the Albert and Elaine Borchart Foundation promotes research, education, social justice and the arts, and aims to improve the human condition. To this end, the foundation makes grants to nonprofit organizations located primarily in California and has been a great supporter of Southern California universities. Willard Beling, a past president of the Borchart Foundation who died in 2009 of congestive heart failure, was a former USC professor of international relations.

**QueensCare gift for bone marrow transplantation offers new hope**

By Amy E. Hamaker

Two recent gifts from QueensCare, a Los Angeles faith-based nonprofit organization, will make a real difference for indigent patients with blood disorders, allowing them to receive life-saving bone marrow transplantation treatment.

A recent $75,000 gift to the Keck School of Medicine of USC's Department of Medicine of USC will be split between the Keck School of Medicine of USC’s Department of Surgery for therapy for patients of its Transplant Institute, and to provide transport for patients of the Keck School Department of Medicine’s Galaxy Program. The Galaxy Health Care pilot project at Los Angeles County+USC Medical Center offers more consistent and timely access to primary care services based on the patient-centered medical home model.

Bone marrow transplantation (BMT) is often used as a cure for blood disorders such as lymphoma, acute leukemia, myelodysplasia, multiple myeloma and aplastic anemia. Although many of the patients who come to LAC+USC needing BMT—who are often young adults—might be good candidates for the treatment, they may not receive it without Medi-Cal coverage.

“For many leukemia patients, BMT is vital,” said Vinod Pullarkat, director of the Bone Marrow & Stem Cell Transplantation Program at the USC Norris Comprehensive Cancer Center. “With modern transplantation techniques, the survival rate for those patients goes from almost nothing to 70 to 80 percent. “But if patients don’t qualify for Medi-Cal and don’t have private insurance, there has been no other way to offer BMT to them,” he continued.

“Without QueensCare’s gift it wouldn’t be possible to offer these transplants. It’s the only mechanism we have to provide these services to the indigent population,” QueensCare provides health care to low income, uninsured individuals residing in Los Angeles through its own open heart surgery pilot project at the Keck School about partnerships and collaborations with academic, faith-based and other local organizations serving this population.

“Many hardworking people do not have access to care when they need it—especially sophisticated treatments like BMT,” said Barbara Brandlin Hines, president and CEO of QueensCare and QueensCare Family Clinics. “QueensCare is happy to partner with USC to bring these treatments to those who would otherwise go without.”
Keck professor wins young investigator award

By Sara Reeve

The V Foundation for Cancer Research recently honored Christina Curtis, assistant professor of preventive medicine at the Keck School of Medicine, with one of only 17 2012 V Scholar grants.

The V Scholar award provides $200,000 to fund specific research being conducted by a young investigator. The award provides the recipients with resources to help them advance their cutting-edge research and to strengthen their ability to receive additional grant funding throughout their careers.

Curtis’ research, “Interrogating patient-specific tumor dynamics through single cell profiles and computational modeling,” analyzes the molecular mechanisms of cancer progression.

“Our integrative framework couples the single cell genetic and computational modeling to enable the interrogation of cancer genomes at single cell resolution, providing insight into both the spatial and temporal dynamics of tumor progression,” said Curtis.

This level of detail has not previously been achieved and has critical implications for understanding the extent of genetic diversity present within individual tumors, the role of cancer stem cells, and the changes in cancer cells that take place over time and in response to treatment.

V Scholars are selected through a competitive process conducted by the Foundation’s Scientific Advisory Board. “The V Scholars are chosen from the best and brightest young cancer researchers across our country,” said Scientific Advisory Board member Robert C. Bast Jr. “We are investing in the careers of scientists whose discoveries will cure this large family of diseases.”

According to Curtis, support from groups like the V Foundation is important to young researchers as it allows them to pursue high-risk, high-reward projects that may require preliminary data in order to be funded through more conventional means.

“The flexibility these awards provide is particularly important since timing can be critical in initiating such projects, and the cancer community cannot afford delays in translating this kind of research to the clinic,” she said. “Given the current funding climate, support from groups such as the V Foundation has become even more important for young investigators pursuing out-of-the-box cancer research that will transform patient care.”

The V Foundation for Cancer Research was founded in 1993 by ESPN and the late Jim Valvano, legendary North Carolina State University basketball coach and ESPN commentator. Since 1993, the foundation has funded more than $100 million in cancer research grants nationwide.

Body Computing Conference highlights technology to improve health care

Nowadays if a patient with a pacemaker begins experiencing cardiac symptoms, he heads for the hospital, where it may take up to seven hours to be evaluated and have the implanted device reprogrammed. With a new system that sends data via a smartphone, the whole process might take five or 10 minutes without requiring the patient or the physician to leave his home or office.

The new system—developed by the USC Body Computing Center, Boston Scientific, Verizion and Samsung—was the first of several demonstrated Oct. 5 at Town and Gown on the University Park campus during the annual USC Body Computing Conference. The conference brings together scientists, clinicians and business leaders to discuss innovative ideas using technology to improve health care.

For the sixth year, Leslie Saxon, chief, division of cardiovascular medicine at the Keck School of Medicine, and founder of the USC Center for Body Computing, led the discussion about how wireless technology is changing the delivery of health care.

Along with the 40,000 medical apps now available, the marketplace is flooded with 150,000 consumer health apps, according to some reports, Saxon said. Most estimates predict that investors will pump a billion dollars into digital health care over the next year.

Henri R. Ford, vice dean for medical education at the Keck School of Medicine, has been elected to serve on the Board of Regents of the American College of Surgeons (ACS).

Founded in 1913, the ACS is a scientific and educational association of top flight surgeons dedicated to improving the quality of care for surgical patients by identifying and establishing high standards for surgical education and practice.

Ford and five other surgeons were elected to the 22-member ACS Board of Regents by the association’s Board of Governors. The Regents are responsible for the management and control of the business and affairs of the college.

Ford was second vice-president-elect of the college from 2010 to 2011 and served as a governor from 2005–2011, and on the Board of Governors executive committee from 2009–2010.

In past years, he was vice-chair of the executive committee, chaired and was ex-officio member of the nominating committee, and was a member of and liaison to the committee on surgical infections.

Fetal: USC team sets sights on lifesaving device for babies

Continued from Page 1

To avoid that problem, the USC group, which also includes Michael Silka, Keck School professor and director of cardiology at CHLA, and Jay Pruetz, assistant professor of pediatrics at the Keck School and director of fetal cardiology at CHLA, has designed a pacemaker that is implanted directly onto the baby’s heart using a catheter similar to a narrow straw.

In other words, it will not have externalized wires that the baby can dislodge. Placing it on the baby will not require invasive surgery.

Chmait, who is also director of Los Angeles Fetal Therapy, called the award a “very pleasant surprise,” explaining that the USC group was a little unsure of their chances since the NIH tends to fund research that will benefit large numbers of people. This device, if it eventually works, will likely be implanted only into a few hundred babies every year.

Bar-Cohen added, however, that there may eventually be a broader use for a pacemaker similar to this one.

“The hope is that this device, or something similar that does not require invasive surgery to implant, will eventually be used in children and adults, not just fetuses,” Chmait said.

Both Chmait and Bar-Cohen said they are optimistic that they will be able to begin testing the device soon and that resources could help them see the project through.

“I strongly believe that we will have something in three years,” said Chmait.
Calendar of Events

This Calendar of Events is also online at www.usc.edu/hscalendar for the Health Sciences campus community

Monday, Oct. 22
9 a.m. - 1 p.m. Center for Excellence in Research Workshop. "Conducting Experiments Under Good Lab Practices: When and How?" Frances Richmond, USC. CHP 106. Info: (213) 740-6709

Tuesday, Oct. 23

Wednesday, Oct. 24
10 a.m. - 1 p.m. USC Campus Safety Awareness Fair. USC is committed to making this a safe campus by offering critical information to every student, faculty and staff member in order to survive a natural disaster, violent crime, sexual assault or theft. Come get prepared with knowledge and supplies that will help in an emergency. Pappas Quad. Info: (323) 422-2168


Thursday, Oct. 25

1 p.m. USC Diabetes & Obesity Research Institute Seminar. "HDL Structure and Function in Diabetes." Hussein Yassine, USC. CSC 250. Info: (310) 941-9274

Friday, Oct. 26
8:30 a.m. Surgical Grand Rounds. "Simulation Training in Trauma: What Comes After XTLS?" Peep Taibing, USC. Info: (323) 442-9964

11 a.m. Hematology Grand Rounds. "Phenotypic Hypersensitivity in SS Disease." Dagi Johnson and Yap-Ki Lau, USC. IPT 223/230. Info: (323) 865-3950

Monday, Oct. 29
9 a.m. - 1 p.m. "The Mammalian Kidney: Development, Damage and Repair." Frank Costantini, Columbia Univ.; Ben Humphreys, Brigham and Women's, Roger De Filippo, CRLA; Melissa Little, Queensland; Andy McMahon and Janos Peti-Peterdi, USC. BCC 1st Floor Conference Room. Info: (323) 442-7732

2 p.m. - 4 p.m. Musnay Prieto Lecture. "Are There Circadian Clocks? Might they also be a Genetic Prayer, Heaved from Mid-Court in Organizational Structure and Delivering Good Value to Patients." As things stand now, according to Porter, the health care system in the United States does not have good metrics by which to measure performance.

ONLINE EXTRAS
Read more USC news online:

• Annual moustache-growing event to raise funds and awareness about men’s cancers http://usc.edu/nbs

• USC develops software to facilitate large-scale biological inquiry http://usc.edu/lsb

• Physician assistant program announces five National Health Service Corps scholars http://usc.edu/shot

• Maximilian Raymond Gaspar, Keck School alumnus and former faculty member, 97 http://usc.edu/nbb

• Philip W. Raals, former professor of radiology and surgery http://usc.edu/tbu

• USC Norris Cancer Hospital hosts women’s cancers event http://usc.edu/nbb

• Fall fashion show raises money for breast cancer research http://usc.edu/usb

By Hope Hamashige
The practice of medicine is, on the one hand, constantly moving forward with respect to improvements in science and technology. But in another sense, its practices, specifically its business practices, have kept the field arrested, according to Harvard Business School professor Michael E. Porter.

"Our approach to delivery is rooted in the organizational structures, management practices and payment models of the 19th century," said Porter, addressing a packed house in Mayer Auditorium last week.

Change is long overdue, he said, but it will not likely come about until the medical profession can agree upon a common universal goal around which to organize itself. It came as no surprise that Porter, the author of Redefining Health Care: Co-creating Value-Based Care (2009) and co-author of the landmark book, Healthcare Strategy for Results, advocated an overhaul of the organizational structure of health care and delivering good value to patients.

As things stand now, according to Porter, the health care system in the United States does not have good metrics by which to measure performance. Few doctors evaluate their own work beyond noting whether a patient survives or not, and most don’t have the faintest idea what the true cost of delivery of their service is. Porter suggested that the best way to determine whether the system is working is to begin tracking outcomes and the exact cost, not only what was billed, in order to determine what kind of value is being delivered to patients.

He added that changes in organizational structure can help health care providers deliver better value. One example he gave was of health care providers creating integrated practices around problems, such as the West German Headache Center, which originated in an attempt to tackle the high costs and mediocre outcomes for migraine patients in Germany.

Bringing together various health care providers who typically see migraine patients, including neurologists and psychologists, improved outcomes dramatically. The group managed to slash the cost of care for migraine patients by 25 to 30 percent.

"Every provider unit thinks they need to offer everything to everyone who walks in the door, and that is making it harder to deliver value," said Porter.

This was only one example, said Porter, of change that is moving health care in a positive direction. He added there are many ideas, including bundling prices for services as well as integrating care across facilities, that have merit and are, in fact, being employed in different parts of the country.

Health care providers, he noted, have been “timid” about advocating for changes to the organizational structures and have, instead, let change happen in a way that hasn’t always been good for the practice of medicine or for the doctors working it.

He encouraged the crowd to think about their role in the system and begin to embrace value-based care because more change is on the horizon.

"It is scary because it changes the traditional structure, but it does so for the right reason," he said.

The event was sponsored by the Keck School of Medicine Department of Educational Affairs.

In case of an emergency...

Call the Emergency Information Phone: (213) 740-9233 The emergency telephone system can handle 1,400 simultaneous calls. It also has a backup system on the East Coast.

Visit the USC Web: http://emergency.usc.edu This page will be activated in case of an emergency. Backup Web servers on the East Coast will function if the USC servers are incapacitated.