



L. ANDREW KOMAN, M.D.

Research Can Directly Benefit Orthopaedic Practice

OREF's Annual Campaign supports current research projects that can directly impact orthopaedists' daily practice.

"Most basic science research can be extrapolated to design operations, or to defend operations," said **L. Andrew Koman, M.D.** "It's difficult to obtain CPT® codes, but using resultant data from research that began with an OREF grant, we were able to do just that," he said.

Current Procedural Terminology (CPT®) codes enable doctors, including orthopaedists, to report medical services and procedures. According to the American Medical Association, the uniform language provides accurate information to agencies concerned with insurance claims and allows evaluation of current diagnostic and operative procedures.

Since 1962, OREF has awarded nine research grants to the Department of Orthopaedic Surgery at Wake Forest University School of Medicine. Three recent grants, in which Dr. Koman was an investigator, have aided in approving CPT® codes for surgical procedures and methods of simple treatment and diagnosis.

With funding from an OREF Basic Science Grant, Dr. Koman investigated the effects of sympathectomy — removing the nerves from the arteries to decrease the impulses that make them constrict — on blood flow in rabbit ears. This research enabled him to verify that the human digit behaves much like the rabbit ear. Because of these results, Dr. Koman was able to clinically test sympathectomies, confirming that they're effective on human patients.

Sympathectomy can be used to manage patients who have significant Raynaud's Disease — extreme cold sensitivity in the fingers — if those patients have ulcers or sores or do not respond to medication. *(continued on page 14)*

STUDY TO FOCUS ON PERIPROSTHETIC INFECTION

Smart Implants Could Eradicate Joint Replacement Infections

By Amy Kile, Public Relations Specialist



JAVAD PARVIZI, M.D.

Joint replacements enable patients to return to activities they once enjoyed. But for some, infections require treatment that can hinder recovery. To fight infection without causing further stress to the patient, orthopaedic researchers are investigating new

treatment methods that directly employ artificial joints to eradicate infections.

"Periprosthetic infection is a very difficult problem to deal with," said **Javad Parvizi, M.D.**, Assistant Professor in the Orthopaedic Department of Thomas Jefferson University. "It is associated with immense psychological cost for the patient and high financial burden for the health care industry."

Each year in the United States, according to Dr. Parvizi, about 600,000 patients undergo joint replacement surgery. Although many measures are taken to minimize the risk of infection, about 1% to 3% of joint replacement patients become infected.

Scientists from a multitude of disciplines, including bioengineering, chemistry, and life sciences, will help Dr. Parvizi to research new means of preventing and treating periprosthetic infection. *(continued on page 10)*

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SHANDS CIRCLE MEMBER
 STRENGTHENS
 COMMITMENT



FROM THE BOARD CHAIR



VICTOR M. GOLDBERG, M.D.
BOARD CHAIR

OREF-funded Grants Lead to Advancements in Orthopaedics

Beginning at the February 2005 AAOS meeting in Washington, D.C., OREF will initiate a yearlong series of commemorative activities acknowledging its contributions to our specialty. Starting on page 3 we present the complete schedule of activities that occur in conjunction with the AAOS Annual Meeting. It is a pleasure to serve as Chairman as we move forward with many exciting plans that will be introduced in forthcoming communications.

In its long history, OREF has funded more than 1,900 research projects with nearly \$56 million. Many OREF-funded research grants led to advancements in our specialty, improving our clinical practice and our efforts to improve patient care. Some of these grant recipients include:

- **William H. Harris, M.D.**, whose OREF grant initiated his research on tetracycline labeling, allowing orthopaedic researchers to study bone formation. These studies have led to treatments for diseases, such as osteoporosis, that clinical orthopaedists see on a daily basis.
- **Marshall R. Urist, M.D.**, whose research began with an OREF grant and led to the development of Bone Morphogenetic Protein.
- **Steven R. Garfin, M.D.**, whose OREF grant has contributed to advancing the understanding of how to inject cement into fractured vertebrae. This bioresorbable cement will enhance bone in-growth and healing, and provide the appropriate strength to the bone without injuring the surrounding bone.
- **Stuart L. Weinstein, M.D.**, whose OREF grant funded his study of late onset scoliosis, teaching surgeons what they should try to prevent, and giving them clear indications to decide if and when they should recommend surgery.

- Further, hundreds of other researchers are now continuing their efforts in the academic and industry settings. They received their first research grants — launching their research careers — from OREF.

“...more than 85 cents of each dollar contributed to OREF funds research.”

OREF was founded in part by **Alfred R. Shands, Jr., M.D.**, and five other orthopaedic surgeons, who along with the AAOS, the American Orthopaedic Association, and the Orthopaedic Research Society, recognized the need for a single foundation to raise money to fund research in our specialty. Today OREF is meeting that challenge, as evidenced by the fact that more than 85 cents of each contributed dollar funds research.

As pleased as I am to reflect on our long and distinguished history, it is exciting to look ahead, to examine how OREF will continue to evolve into an organization as dynamic as the research itself.

Sincerely,

Victor M. Goldberg, M.D.
Board Chair

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OREF to Celebrate its 50th Anniversary



OREF will kick off its 50th Anniversary celebration at the 2005 AAOS Annual Meeting in Washington, D.C.

OREF DAY

THURSDAY, FEBRUARY 24, 2005

SCHEDULE OF EVENTS

LEADERSHIP BREAKFAST:	6:30 A.M. TO 8:00 A.M.
SYMPOSIUM MORNING SESSION:	10:30 A.M. TO 12:30 P.M.
SYMPOSIUM AFTERNOON SESSION:	1:00 P.M. TO 3:00 P.M.
SHANDS CIRCLE GALA:	6:00 P.M TO 11 P.M.

Event: Leadership Breakfast

The Leadership Breakfast presents a unique opportunity to network with distinguished OREF grant recipients, orthopaedic opinion leaders, and committed industry colleagues who support OREF's efforts to advance the orthopaedic community.

Location: Renaissance Hotel,
Congressional Hall Rooms A&C
Time: 6:30 a.m. to 8:00 a.m.

Event: Symposium: The Future of Orthopaedics: Advances That Will Affect How Care Is Provided

Time will be allotted for questions and answers after each session.

Morning Session

Moderator: **Victor M. Goldberg, M.D.**

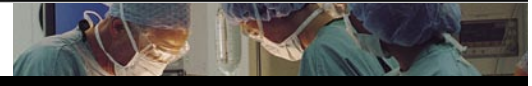
Location: Washington Convention Center, Ballroom C
Time: 10:30 a.m. to 12:30 p.m.

Introductory remarks begin at 10:30 a.m. followed by a session to ascertain answers from the audience regarding the future of orthopaedic research. *(continued on page 12)*



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SHANDS CIRCLE UPDATE



ALFRED R. SHANDS, JR.
CIRCLE

Shands Circle Gala Promises To Be Memorable Evening: Reagan Building a Distinctive Site to Salute OREF's 50th Anniversary

What better place than our nation's Capitol to celebrate this year's Shands Circle Dinner, which we have renamed the Shands Circle Gala to honor OREF's 50 years of contributions to orthopaedic medicine.

Heralded by critics as "Washington's newest architectural triumph," the Ronald Reagan Building and International Trade Center features a magnificent interior framework of stone, steel, and glass that culminates in a soaring, 10-story rotunda and a dramatic, cone-shaped skylight composed of an acre of glass. The Gala will be held in the fabulous Atrium that features a 125-foot skylight and a terrazzo marble and granite floor, which will provide a wonderful atmosphere for after-dinner dancing. **Nancy Hays** as well as the **Ken Olivera Band** will provide the music for the evening. This will follow a cocktail reception on the Atrium Balcony and a delectable dinner in the Atrium Ballroom.



RONALD REAGAN BUILDING AND INTERNATIONAL TRADE CENTER

While I am enthused about the Gala—and we should celebrate OREF's 50th anniversary—we must also take a moment to remember what the Shands Circle is all about. Named after **Dr. Alfred R. Shands, Jr.**, one of the organizers of OREF, the Shands Circle is a recognition society for those who make significant contributions to fund the OREF Endowment. When you join the Shands Circle, you are leaving part of your legacy while making a commitment to support important orthopaedic research in perpetuity.

In 2003, 64 orthopaedic surgeons joined the Shands Circle. The Committee's goal for 2004 is to add 80 new members, and at press time we had added 35. In total, the 389 current Shands members have provided more than \$13 million in currently invested assets and more than \$31 million in planned gift commitments. These are staggering totals that will safeguard the future of orthopaedics by investing in research that advances the specialty.

Sincerely,

Charles A. Rockwood, M.D.
Chair, Shands Circle Committee



"When you join the Shands Circle, you are leaving part of your legacy while making a commitment to support important orthopaedic research in perpetuity."

Giving Back Essential for Shands Member

ALVIN H. CRAWFORD, M.D. believes in the philosophy of giving back to those who have given to him. Recently, OREF benefited greatly from this philosophy.

“Your status is partially determined by what you get, but what lives on is what you give. It’s all about being able to give back and to help another person along the way.”

Dr. Crawford first became involved with OREF as a grant recipient when he received the **Carl Berg-Sloat Traveling Fellowship** in 1972. The Fellowship helped him begin his journey as an academician and contributed to his philosophy of the importance of giving back.

“Some of the research OREF has funded has resulted in fundamental changes in the way we practice medicine”

Dr. Crawford used the Fellowship to obtain answers to a list of questions. He wanted to learn more about current trends and cutting-edge pediatric orthopaedics. The grant allowed him to query directors from diverse orthopaedic centers. With the resultant data, Dr. Crawford put together a syllabus — about 1,000 slides and 270 pages — that became a glossary or atlas for pediatric orthopaedists.

“My goal at that time was to put together a treatise such that someone interested in going into pediatric orthopaedics could use it as a starter-kit. It gave residents, post-graduate fellows, and early practitioners of

the art a basic background about what was going on in pediatric orthopaedics at that time.”

The Pediatric Orthopaedic Syllabus sold in 33 countries. It also cultivated Dr. Crawsford's desire to give back.

“I truly appreciated that Fellowship, and paying back is extremely important to me. I decided that donating to OREF’s Annual Campaign would be my way,” said Dr. Crawford, who became a long-time Order of Merit level donor, contributing \$1,000 to the Annual Campaign for the past twelve years.

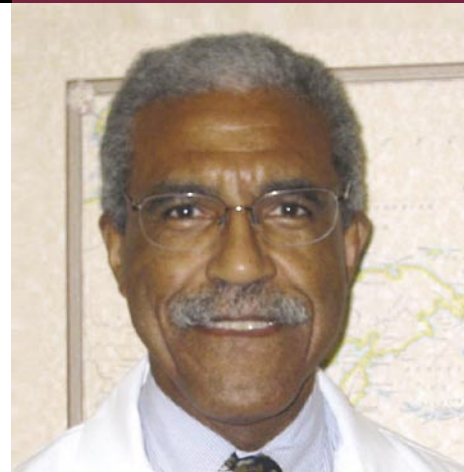
Dr. Crawford continued to practice his philosophy of giving back. After the Scoliosis Research Society (SRS) elected him president, he decided to make a Shands Circle-level commitment, giving to the SRS Endowment through OREF. More recently, Dr. Crawford increased his support by making a \$1 million contribution through a life insurance policy assignment.

“Around the same time I became president, the Scoliosis Research Society developed a relationship with OREF. Part of the vision of leadership should be to set the example, to be a guide, and I decided that if I wanted our fellowship to commit to the SRS research endeavors and to contribute, I needed to step forward to get their attention,” said Dr. Crawford.

Dr. Crawford said that he felt honored that the SRS had confidence in him and believed in his ability to lead the organization, one he considers to be “the premier spine research society on the planet.”

“I felt whatever I could contribute to maintaining the continuum of the SRS would simply be paying back in kind,” he said.

Dr. Crawford wasn’t only paying back OREF and SRS for what those organizations did for him. He also wanted to give because of what



ALVIN H. CRAWFORD, M.D.

the funded research accomplished for other orthopaedists.

“It’s primarily about making the lives of humans, especially children, better and easier to treat if they have musculoskeletal problems. Some of the research OREF has funded has resulted in fundamental changes in the way we practice medicine,” he said.

From his years of playing competitive tennis, he sees himself as a potential patient and appreciates OREF funding of current studies on articular cartilage. “We’re active people who are all going to be affected by arthritis in one way or another, and we could be helped by research that found early support from OREF.”

And although Dr. Crawford sees OREF as a source of seed money to fund opportunities that young researchers may not have otherwise had, he also sees value for orthopaedists in every day practice.

“I think the private practitioner gets as much out of [OREF funding] as the academic. But what’s more important is that the patients benefit from it. And that completes the circle—you give, you get, and not only that, the person who gives to you—your patient—gets the result of your supporting an organization that’s funded research that has given new ideas and concepts to the orthopaedic specialty.” ■



TOM COFFMAN
SENIOR VP, ENDOWMENTS

Planning Your Estate: Which Way Will You Turn?

By Tom Coffman, Senior Vice President, Endowments

Planning your estate may not be on the top of your “to-do list,” but if you do not make it a priority, you could end up paying a lot more to the government in taxes.

As you work through the process, consider this: If you die in 2004, your beneficiaries may receive as much as \$1.5 million in assets without paying federal estate taxes. Estates above the exempt amount can be taxed as high as 48%.

To reduce your estate’s size, you can give up to \$11,000 a year to individuals without paying taxes — these gifts do not count against the tax-exempt amount. You may also bequeath an unlimited amount per year to OREF, or consider one of the following types of charitable gifts or strategies.

Real Estate: If your estate is below the tax-exempt amount, no estate tax will be owed on a bequest of your home. Regardless of whom you leave your home to, if you live in your home until you die, there will be no capital gains tax when your heirs or other beneficiaries sell it.

Bypass Trust: With a bypass trust, the surviving spouse can use the property though, legally, he or she does not own it, after the original grantor — the person who transferred the assets into the trust — dies. When both spouses are gone, no estate tax is owed from the final beneficiaries.

If the surviving spouse dies without a bypass trust, his or her estate will include property inherited from the deceased spouse.

“If you do not make planning your estate a priority, you could end up paying a lot more to the government in taxes.”

Charitable Remainder Trust: Another option is transferring cash, appreciated stocks or property to a tax-exempt charitable remainder trust. You or other individuals can receive income for life and a tax deduction. OREF obtains the balance when the trust term ends.

There are many different options to consider when writing your will and making future financial plans; procrastination should not be one of them. ■

For more information about making endowment gifts to OREF, including planning your estate, or for information about joining the Alfred R. Shands, Jr. Circle, please contact Tom Coffman, Senior Vice President, Endowments at (847) 384-4349 or coffman@oref.org; or Robin Mueller, Coordinator, Shands Circle at (847) 384-4358 or mueller@oref.org.

WE CAN HELP

OREF can provide important information on how to take advantage of the following benefits associated with charitable giving:

- Receive tax deductions
- Support our mission
- Protect your heirs
- Increase income
- Leave a legacy



2003 Corporate Associates

OREF is proud to acknowledge these distinguished companies for their generous support. A strong and productive alliance with industry enables OREF to fund quality programs and projects that bring about significant advances in the orthopaedic profession, ultimately leading to improved patient care. ■

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Champion Exposition Services
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To learn more about the Corporate Associates Program, please contact **Judy Sherr**, VP, Corporate Relations at (847) 384-4356 or sherr@oref.org or **Jackie Opel**, Corporate Relations Coordinator at (847) 384-4350 or opel@oref.org.



GENE R. WURTH
PRESIDENT AND CEO

OREF at 50 Years: Looking Back and Looking Forward

By Gene R. Wurth, President and CEO

As OREF prepares to celebrate its 50th anniversary in 2005, we will look back at our history and ahead to the many changes facing orthopaedics in the future. As we review the last 50 years of OREF, we have learned several important things in orthopaedics.

1. A Broad Base of Research Support is Necessary.

Many times research that began on one particular topic merged into research that led to important information used in other ways. Similarly, research often has multiple uses, sometimes unexpected from the original hypothesis. Consequently, we've learned that there is a need to support a broad range of research, both basic science research and clinical research, and to value both equally in the evolution of orthopaedic medicine.

2. Basic Research is Closely Related to Clinical Research.

We often hear that there is a gap between basic science and clinical research, yet there is really a continuum between the two. What starts as basic science research changes and emerges over time into practical clinical applications. Sometimes the clinical impact is obvious, while sometimes the practical impact is latent.

For example, according to **Dr. Andy Koman** of Wake Forest University, "Most basic science research can be extrapolated to design operations, or to defend operations. It's difficult to obtain CPT® codes, but using resultant data from research that began with an OREF grant, we were able to do just that." This perceived gap between basic science and clinical research has been around for years. In fact, in a document summarizing the proceedings of a 1981 conference held in Memphis, Tennessee, referred to as *The Memphis Report*, one participant observed, "Some orthopaedists suggest that there really is no clear distinction, and trying to make such a

distinction may be a disservice to the specialty. A better view is that these are points on a continuum, and that research is research, all interconnected, all potentially helpful. What some consider basic research today is applied or clinical research tomorrow. The focus should be on what eventually serves to benefit the patient."

3. Patience is a Virtue... and a Necessity.

Ideas that began long ago often take time to evolve and need the input of a number of different viewpoints and researchers before they become practical. However, when the results are known, it is obvious to many that the path was worth following.

One of the most important developments in orthopaedic medicine was the emergence of bone morphogenetic protein, or "BMP." BMP has had such an impact that, at the AAOS Annual Meeting last year, a special display was erected to honor the work of **Dr. Marshall Urist**, a pioneer in BMP's development.

Dr. Urist received two grants from OREF in the late 1960s, early in his career. While it would be difficult to point to those two grants and conclude that they directly led to the development of BMP, there is no question that much of the knowledge he gained, some of the research skills he acquired, and some of the information that was generated did emanate from those grants.

Had one or more of those sources of funding or ideas not been available to Dr. Urist, it is hard to predict what the outcome might have been. We do know, however, that all of those sources and all of that experience combined eventually led to the development of BMP. That is one of the important lessons we have learned: we must be patient in waiting for the practical application of some of the research that is funded.

OUR MISSION

The Orthopaedic Research and Education Foundation is an independent organization that raises funds to support research and education on diseases and injuries of bones, joints, nerves, and muscles. OREF-funded research enhances clinical care, leading to improved health, increased activity, and a better quality of life for patients.



FROM THE PRESIDENT

4. *The Volume and Pace of Change is Accelerating.*

We must acknowledge that change as a result of research — both basic science and clinical research — is coming rapidly. New metals and composites, minimally invasive surgery, the advent of more pharmaceutical care as a part of orthopaedics, the growing impact of genetics, nanotechnology, and improved imaging technologies are examples of the variety of change that is rapidly beginning to affect the way orthopaedic care will be provided in the years ahead. Both the volume and the speed of that change are staggering.

“We must also acknowledge that change as a result of research — both basic science and clinical research — is coming rapidly.”

That may seem contradictory to the statement that we must be patient, but the fact is orthopaedic surgeons must learn new information at a rapid pace and then be patient enough to wait for that information to shake out to the most practical clinical benefit for the care of their patients.

5. *Orthopaedic Surgeons Must Be Principal Drivers in That Research.*

The orthopaedic specialty must be ready for the volume and speed of change and be able to manage it on its own terms. When OREF was founded 50 years ago, its originators believed that orthopaedic research was best managed by orthopaedic surgeons who were directly involved in patient care. As research has become more sophisticated, the role of Ph.D. scientists, research assistants, and other staff has become critically important, and their collaboration is greatly appreciated. But ultimately the final direction in orthopaedic research should come from orthopaedic surgeons, which has been the goal of OREF for 50 years.

To accomplish this, orthopaedic surgeons must properly support research. We know that institutional support of research is shrinking, and many young researchers are becoming discouraged, deciding

not to pursue research careers. There is no way of knowing what potential breakthroughs we are missing because these orthopaedists are turning away from research career paths.

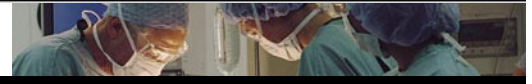
At the other end of the spectrum, obtaining NIH funding is becoming more difficult as its budget is under continuous scrutiny, and, often, other competing demands arise. As a result, OREF stands alone as the connection between introductory research opportunities and the kind of multi-year research projects that can be funded with larger dollar amounts from NIH. Our role as the bridge between those two extremes becomes critically important as the years go by, and if orthopaedic surgeons are to continue the role of managing their own research agendas as OREF's founders envisioned, then support for OREF is crucial.

6. *Discovering the Future of Orthopaedics.*

To address the need to cover the spectrum of important research opportunities, and to ensure patients that ideas have support for several years, OREF is embarking on a special campaign to celebrate its 50th anniversary. The goal is to create an endowment worth \$100 million, which will allow us to permanently endow all of our major research efforts. Funding all of our research efforts would give us the ability to address research opportunities when they arise across the broad range of orthopaedic care. Permanently endowing them means that we will have the patience to stay with these researchers and to ensure that these opportunities are not missed for lack of support.

Join us in discovering the future of orthopaedics by supporting OREF and becoming involved in our efforts over the years ahead. We will be telling you more about our accomplishments and our plans for the future in the months ahead as we celebrate our anniversary throughout 2005. ■

“We will look back at our history, but we are also going to look ahead to the many changes facing orthopaedics in the future.”



Smart Implants Could Eradicate Joint Replacement Infections (continued from page 1)

Dr. Parvizi is one of three clinician scientists to receive an OREF Clinician Scientist Award in 2004. Funded by the *Journal of Bone and Joint Surgery*, Dr. Parvizi's award will provide him with a \$100,000 per year salary stipend for three years.

"Without the OREF award, I would not have been able to dedicate the time to this research, and thanks to the Clinician Scientist Award, now I'm able to dedicate 50% to 60% of my time to research without having to endure a huge economic penalty by losing my clinical revenue," said Dr. Parvizi.

Infection of prostheses has been studied extensively, and, although the total number of infections has decreased, problems of successful salvage with current treatment methods still remain.

The most common strategy to deal with infection is to remove the prosthesis and place a dynamic or static methylmethacrylate cement spacer impregnated with antibiotics. The antibiotics in the spacer can leach out over time in the local environment of the joint. The patient also receives weeks of intravenous antibiotics. Later, the prosthesis is reimplanted if possible. This protocol to eradicate infection is successful between 80% and 90% of the time, but even if the infection is successfully eliminated, there are problems inherent to this method of treatment.

"The cost is immense. You can imagine the psychological trauma of the first surgery, taking out usually well-fixed components, the interim of two to three months requiring intravenous antibiotics, some with potentially serious side effects, and the second stage surgery," said Dr. Parvizi.

There are other problems with this method

of treatment, too. Antibiotic contained within the methylmethacrylate cement often eludes out at an unpredictable rate, meaning the amount of antibiotic released and the period over which this elusion occurs is unpredictable. The cement can also inactivate some of the antibiotics, rendering them useless against bacteria.

Dr. Parvizi and his group of researchers are working at Thomas Jefferson University at Rothman Institute to identify a treatment method that will not only fight periprosthetic infection, but also solve the problems intrinsic to current treatment methods.

enough antibiotics to kill the organism. The antibiotic land mine will not go off unless the organism is present and steps on it," said Dr. Parvizi.

This specific approach, as far as Dr. Parvizi and his team know, has never been attempted before, although the delivery of antibiotics from implant surfaces is not new.

"People have used biodegradable materials such as poly-lactic acid (PLA), poly-glycolic acid (PGA), or a combination of both (PLAGA), to deliver antibiotics. The problem with these materials is that the diffusion kinetics over time are not known, and

diffusion occurs regardless of whether an organism is present or not. In other words, after a given time period no antibiotics will be around," Dr. Parvizi said.

The attraction of the Smart Implant technology is that the antibiotic-prosthesis bond is stable and the antibiotic will be around for years to combat later infections. Presently it is not uncommon for

patients to undergo procedures, such as tooth extractions, that introduce bacteria to the blood. This may result in infection of a hip or knee prosthesis many years after the joint replacement. The Smart Implant, which only releases antibiotics when provoked, would still be able to combat the later infections.

Smart Implants may also have applications beyond fighting off and preventing infections. Implant components can loosen with time, and osteolysis, or bone loss may occur. After repeated loading of the bearing surfaces, where the motion occurs, wear particles develop. This triggers an inflammatory process as cells are recruited to digest these wear particles. The cells engulf the particles, secreting enzymes that harm the surrounding bone. As the bone is lost, the prosthesis may loosen. During revision surgery there is less bone to hold

"The analogy is to a land mine. The organism steps on it and it explodes and delivers enough antibiotics to kill the organism."

"We thought why not design a new treatment method that allows the surface of a metal implant to act as an antibiotic carrier? If we were able to attach antibiotics to the surface of the implants and control their release, a prosthesis made of this material could be used to possibly prevent infection in those patients at risk and for treating those patients who do develop infection," Dr Parvizi said.

To make these "Smart Implants," as Dr. Parvizi calls them, he and his team have developed a method to attach antibiotics to the surface of titanium. Because the antibiotics are attached chemically to the implant in a covalent manner, they are stable and are only cleaved from the implant surface when bacteria threaten them.

"The analogy is to a land mine. The organism steps on it and it explodes and delivers



Dr. Parvizi is shown in the laboratory where he performed tests to confirm that antibiotics covalently attach to Smart Implants.

the prosthesis in place, and replacing it would be difficult, similar to placing a heavy bookshelf in a wall made up of drywall without struts.

Currently, to address this problem, orthopaedic surgeons use cadaver bone or bone substitutes such as growth factors, demineralized bone matrix, calcium sulfate, or other bone graft substitutes. To aid in stimulating bone growth, Smart Implants could have growth factors attached to their surface.

“The titanium could deliver growth factors to the native bone and stimulate bone regeneration, making it possible to use the titanium as a vehicle for delivery of growth factors to deal with the problems of aseptic loosening and osteolysis,” said Dr. Parvizi.

The main emphasis, however, is on an implant that would be self-protective against infection.

“That’s the Smart Implant. If it is successfully developed, it might have a revolutionary effect on the treatment of periprosthetic infection. It could make a huge difference to patient care by either reducing the risk of infection or treating infection when it does occur,” Dr. Parvizi said.

Dr. Parvizi and his team have already accomplished the first stage of developing these Smart Implants. They have proven their method, on which they have a patent pending, of covalently bonding antibiotics to the titanium surface. These results were presented at the Hip Society last year and a manuscript based on these findings will be published in *Clinical Orthopaedics and Related Research* this December.

With the preliminary research completed, Dr. Parvizi soon will move to an animal model. He will place antibiotics bonded to titanium cylinders in infected rat femurs. If, as Dr. Parvizi anticipates, these tests are successful, they will move on to a larger animal model to test Smart Implants.

“We’re working on hip implants because currently 70% to 80% of the femoral components and nearly 100% of the acetabular components that are being implanted in North America are uncemented,” said Dr. Parvizi. “We feel that Smart Implants will have application in the hip first.”

Dr. Parvizi credits OREF for the success of the preliminary research. “Because of the OREF grant, early work on this research was possible, and we believe that the research is

now receiving much more favorable reviews by other organizations,” he said.

One of those favorable reviewers was the Department of Defense, which is also funding research on Smart Implants. This is a testament to the importance this research has to the medical community.

“All surgeons benefit from the results of research. This particular research will benefit an orthopaedic surgeon implanting artificial joints,” said Dr. Parvizi. “This is a classical example of how the development of a unique technology in the basic research laboratory can have direct patient application for the practicing surgeon that will minimize problems and complications that can occur.”

With Smart Implants battling infections, more total joint replacement patients will realize the benefits of the procedure without the pain and expense of revisions. ■

Dr. Zachary B. and Mrs. Kathleen Friedenberg established an endowment, making the first Clinician Scientist Award possible.

Because of the example set by Dr. and Mrs. Friedenberg, the *Journal of Bone and Joint Surgery* and **Dr. Dane and Mrs. Mary Louise Miller** have also established endowments.

The *Journal of Bone and Joint Surgery’s* donation to OREF’s 2003 fund made **Dr. Javad Parvizi’s** Clinician Scientist Award possible. This award will provide Dr. Parvizi with a salary stipend of \$100,000 per year for the next three years.

For information about making endowment gifts to OREF or funding a Clinician Scientist Award, please contact **Tom Coffman**, OREF Senior Vice President, Endowments, at (847) 384-4349 or coffman@oref.org.

OREF to Celebrate its 50th Anniversary (continued from page 3)

50th Anniversary Symposium Speakers



Speaker: Robert S. Langer Sc.D.
**Topic: Targeted Drug Delivery:
Emerging Technology**

With a bachelor's degree in chemical engineering from Cornell University and a doctor of science degree from the Massachusetts Institute of Technology, Professor Langer seemed destined to become an inventor. He has more than 500 patents issued or pending, more than 100 of which have been licensed or sublicensed to pharmaceutical, chemical, biotechnology, and medical device companies. Working out of the Langer Laboratory at Massachusetts Institute of Technology, where he is also the Germeshausen Professor of Chemical and Biomedical Engineering, Professor Langer has created synthetic wafers that target brain tumors by carrying chemotherapy directly to the brain. He has also worked with **Joseph (Jay) Vacanti, M.D.**, **Charles Vacanti, M.D.**'s brother, to develop three-dimensional frameworks to grow cells for replacement organs.



Speaker: Charles A. Vacanti, M.D.
**Topic: Tissue Engineering and Regenerative
Medicine**

Dr. Vacanti joined the faculty of the Massachusetts General Hospital (MGH) and Harvard Medical School in 1983. In 1985, he was presented the **Henry K. Beecher Clinical Teacher Award** at MGH. His research interest is in tissue engineering. In 1994, he was appointed Professor and Chair of the Department of Anesthesiology at the University of Massachusetts. He was the founding president and the first elected president of the International Tissue Engineering Society and founding editor of the international journal, *Tissue Engineering*. The journal is now considered the primary reference journal in tissue engineering. In 2002, Dr. Vacanti was appointed Chairman of the Department of Anesthesiology, Perioperative and Pain Medicine at Brigham and Womens Hospital in Boston, and the VanDam Covino Professor of Anesthesiology at Harvard Medical School. He has published more than 100 original articles and is the recipient of several awards from international societies and institutions.



Speaker: Alan E. Guttmacher, M.D.
Topic: The Impact of Genomics

Alan E. Guttmacher, M.D. is the Deputy Director of the National Human Genome Research Institute (NHGRI) of the NIH. In that role, he helps oversee the institute's efforts in advancing genome research, integrating the benefits of genome research into health care, and exploring the ethical, legal, and social implications of human genomics. Dr. Guttmacher also serves as the Director of the Office of Policy, Communications, and Education at the NHGRI. Dr. Guttmacher came to the NIH in 1999 from the University of Vermont, where he directed the Vermont Regional Genetics Center and Pregnancy Risk Information Service, the Vermont Cancer Center's Familial Cancer Program, the Vermont Newborn Screening Program, Vermont's only pediatric intensive care unit, and an NIH-supported initiative that was the nation's first statewide effort to involve the general public in discussion of the Human Genome Project's ethical, legal, and social implications. A graduate of Harvard College and Harvard Medical School, Dr. Guttmacher completed a residency in pediatrics and a fellowship in medical genetics at Children's Hospital of Boston and Harvard.



Event: **SHANDS CIRCLE GALA**

This year's Shands Circle Dinner, which we have renamed the Shands Circle Gala to honor OREF's 50 years of contributions to orthopaedic medicine, will be held in the fabulous Atrium of the Ronald Reagan Building and International Trade Center.

AFTERNOON SESSION

Moderator: **Thomas A. Einhorn, M.D.**

Location: Washington Convention Center, Ballroom C

Time: 1 p.m. to 3 p.m.

Introductory remarks begin at 1 p.m. followed by a session to ascertain answers from the audience regarding the future of orthopaedic research.



Speaker: Stephen I. Katz, M.D., Ph.D.
Topic: Research Opportunities at NIAMS

Stephen I. Katz, M.D., Ph.D. has been Director of the National Institute of Arthritis and Musculoskeletal and Skin Diseases at NIH since August 1995, and he also serves as a Senior Investigator in the Dermatology Branch of the National Cancer Institute at NIH. After attending the University of

Maryland, he graduated from the Tulane University Medical School with honors in 1966. Dr. Katz completed a medical internship at Los Angeles County Hospital and his dermatology residency at the University of Miami School of Medicine from 1967 to 1970. He served in the U.S. military at the Walter Reed Army Medical Center from 1970 to 1972. From 1972 to 1974, Dr. Katz completed a postdoctoral fellowship at the Royal College of Surgeons of England and obtained a Ph.D. degree in immunology from the University of London in 1974. In 1980, he became Chief of the Dermatology Branch of the National Cancer Institute, a position he held until October of 2001. Dr. Katz continues to focus his studies on immunology and the skin.



Speaker: Hollis G. Potter, M.D.
Topic: Advancements in Imaging Technology for Orthopaedic Surgeons

Dr. Potter earned her medical degree from New York Medical College, after which she completed a residency at North Shore University Hospital, and Fellowships in musculoskeletal radiology at the Hospital for Special Surgery in New York, and in

skeletal radiology at New York Hospital/Cornell University. She is currently Professor of Radiology at Cornell University and the Chief of Magnetic Resonance Imaging at the Hospital for Special Surgery in New York. She is both a nationally and internationally recognized expert in developing magnetic resonance applications for orthopaedic conditions. With an interest in sports medicine and cartilage imaging, Dr. Potter developed a method of imaging soft tissue, especially cartilage, which is necessary to diagnose orthopaedic conditions. Such applications can find conditions radiologists may overlook, such as subtle cartilage lesions and particle wear in total hip replacements.



Speaker: Anthony M. DiGioia III, M.D.
Topic: Advances in Medical Robotics and Computer Assisted Surgery

Dr. DiGioia earned his undergraduate and postgraduate degrees from Carnegie Mellon University, where he now serves as a Senior Research Scientist in the Robotics Institute. He is also the Founder and Director of the Institute for Computer Assisted Orthopaedic

Surgery at Western Pennsylvania Hospital. Dr. DiGioia's interests include the clinical applications of medical robotics and computer-assisted surgery. His current focus is on the use of navigation and robotic technologies to enable more accurate, less and minimally invasive joint reconstructive surgery.

Location: Ronald Reagan Building and International Trade Center

Date: Thursday, February 24, 2005

Time: 6:00 p.m. to 11:00 p.m.

Reception: 6:00 p.m.

Dinner: 7:00 p.m.

After the dinner has been served, **Nancy Hays** as well as the **Ken Olivera Band** will perform.

Research Can Benefit Practice *(continued from page 1)*

"There are hundreds of thousands of people who have Raynaud's Phenomenon or Disease, which can be very debilitating," said Dr. Koman.

From the information acquired during the rabbit study and subsequent clinical trials, Dr. Koman's work provided support for CPT® codes for radial and ulnar artery sympathectomy, superficial arch sympathectomy, deep arch sympathectomy, and digital sympathectomy by members of the American Medical Association coding committee. All codes were approved.

"Some doctors might say that this is esoteric research, why should blood flow in a rabbit's ear matter to me. But this is why. It may affect your practice, it may ultimately help you," said Dr. Koman.

"Some doctors might say that this is esoteric research, why should blood flow in a rabbit's ear matter to me. But this is why. It may affect your practice, it may ultimately help you."

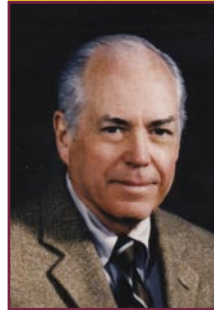
Funding from a Prospective Clinical Outcome Grant, also awarded by OREF, enabled Dr. Koman to develop reproducible questionnaires that orthopaedists can employ to document successes and failures of upper extremity treatments.

"The questionnaires tell what is happening with the patient. They help the doctor to judge whether the surgery, or non-operative intervention, or medication, or any other method of treatment was helpful or not," said Dr. Koman.

That study also confirmed the value of surgical procedures for cerebral palsy patients and helped to justify CPT® codes for the use of botulinum toxin. In the future, botulinum toxin could be used to temporarily weaken muscle tissue after tendon repair, thereby decreasing pain and facilitating rehabilitation with less bracing and casting.

OREF funded research can benefit orthopaedic practice

"I received an OREF grant that enabled the initiation of my research on



tetracycline labeling, a tool that was important in beginning to understand metabolic bone diseases, such as osteoporosis, that the orthopaedic surgeon sees every day. Millions of people use bisphosphates to prevent osteoporosis, and the basic studies that led to this form of treatment hinged on the ability to measure bone formation through tetracycline labeling." — William H. Harris, M.D.

"Orthopaedic surgeons should support OREF because it gives the orthopaedic specialty information that helps them to better understand problems with their patients," said Dr. Koman. "Right now the value of everything an orthopaedic surgeon does is being questioned, and OREF support helps us to justify what orthopaedic surgeons do daily. The basic information that comes from OREF research helps to ensure that our treatment methods are beneficial so that the Health Care Financing Administration, Congress, and insurance companies will continue to pay us. OREF supports the practice of orthopaedic surgery; the very core of the orthopaedist's existence."

Contributions to OREF's Annual Campaign support current research such as that conducted at Wake Forest University School of Medicine. To contribute to OREF's Annual Campaign, please fill out the donor form on the opposite page or for more information please contact **Ed Hoover** at hoover@oref.org or (847) 384-4354, or **Maria Aguirre** at aguirre@oref.org or (847) 384-4357. ■

OREF funded research can benefit orthopaedic practice

"In 1992, I received an OREF grant to study the long-term natural history follow-



up of patients with untreated idiopathic scoliosis. Most children and their parents are alarmed when the diagnosis of late onset — adolescent idiopathic — scoliosis is suggested based on sports or annual physicals, or during a school screening. This study gives orthopaedic surgeons a solid foundation from which to advise their patients who've been diagnosed with this disease." — Stuart L. Weinstein, M.D.

Please Support OREF's 2004 Annual Campaign



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B ANNUAL GIVING LEVELS:

<i>Order of Merit—Summa Cum Laude</i>	\$5,000 & Above
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<i>Order of Merit—Cum Laude</i>	\$1,000-2,499
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D DESIGNATED GIVING PROGRAM

Order of Merit members (contributions of or exceeding \$1,000 annually) have the opportunity to designate support for specialty societies through their annual contribution to OREF.

NOTE: Contributions less than \$1,000 may not be designated.

- I understand that a minimum of \$500 of my annual *Order of Merit* contribution is **unrestricted** to OREF. I have indicated below the total amount I'd like to designate to OREF and to these specialty societies:

- \$ _____ OREF
- \$ _____ American Academy of Orthopaedic Surgeons
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- \$ _____ American Foundation for Surgery of the Hand
- \$ _____ American Orthopaedic Association
- \$ _____ American Orthopaedic Foot and Ankle Society
- \$ _____ American Orthopaedic Society for Sports Medicine
- \$ _____ American Shoulder and Elbow Surgeons
- \$ _____ American Spinal Injury Association
- \$ _____ Arthroscopy Association of North America
- \$ _____ Cervical Spine Research Society
- \$ _____ Hip Society
- \$ _____ International Society of Arthroscopy, Knee Surgery, and Orthopaedic Sports Medicine
- \$ _____ J. Robert Gladden Orthopaedic Society
- \$ _____ Knee Society
- \$ _____ Limb Lengthening and Reconstruction Society
- \$ _____ Mid-America Orthopaedic Association
- \$ _____ Musculoskeletal Tumor Society
- \$ _____ North American Spine Society
- \$ _____ Orthopaedic Learning Center
- \$ _____ Orthopaedic Rehabilitation Association
- \$ _____ Orthopaedic Research Society
- \$ _____ Orthopaedic Trauma Association
- \$ _____ Pediatric Orthopaedic Society of North America
- \$ _____ Ruth Jackson Orthopaedic Society
- \$ _____ Scoliosis Research Society
- \$ _____ Society of Military Orthopaedic Surgeons
- \$ _____ Western Orthopaedic Association

\$ _____ **Total Gift**

E ENDOWMENT INFORMATION

(Please visit www.oref.org for the most current endowment listings.)

I wish to make a contribution of \$ _____ to an existing OREF endowment: _____

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For more information, please contact **Ed Hoover** at hoover@oref.org or (847) 384-4354 • www.oref.org

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NEW OREF/BAYER RESIDENT AWARD IN BLOOD MANAGEMENT

***We are pleased to announce the new OREF and Bayer
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***The grant will be awarded to an orthopaedic resident to study operative strategies for blood
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- ***Improving Patient Outcomes***
- ***Economic Impacts***
- ***Impact on Transfusion Practices***

***The application deadline is January 10, 2005. To receive the application, please contact
Mary Marino (847) 384-4359 or marino@oref.org. For the RFA, please log-on to www.oref.org.***



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