1909
Dr. Willis C. Campbell opened his practice in Memphis. He would become one of the world’s preeminent leaders in the advancement of orthopaedic medicine.

1910
Dr. Campbell organized the Department of Orthopaedic Surgery at the UT School of Medicine in Memphis.

1924
Dr. Campbell established the orthopaedic residency program at UT-Memphis. The program has trained over 450 of the world’s best orthopaedic surgeons.

1933
The American Academy of Orthopaedic Surgeons (AAOS) was founded by Dr. Campbell, who served as its first president. Campbell Clinic surgeons Harold Boyd, Hugh Smith, Rocco Calandruccio, and Terry Canale succeeded Dr. Campbell in leading AAOS.

1939
Dr. Willis Campbell wrote and published the first Campbell’s Operative Orthopaedics. Since that time, the Campbell Clinic staff has updated the text every five to seven years. Used by surgeons all over the world, reviewers today call it “the bible of orthopaedic surgery.” The 10th edition was published in 2002 in seven languages.

1946
To perpetuate Willis Campbell’s commitment to the advancement of orthopaedic medicine, his partners — Drs. Spencer Speed, Harold Boyd, J.F. Hamilton, and Hugh Smith — established The Campbell Foundation.

1990
Formalizing a long-standing informal arrangement, the department was officially designated the UT-Campbell Clinic Department of Orthopaedic Surgery. All Campbell Clinic surgeons hold faculty appointments in the department and work closely with its research scientists.

2003
Community and corporate leaders joined the Foundation’s Board of Trustees and implemented a formal development program to encourage support from grateful patients, alumni, foundations and industry.

2004
The Board of Trustees adopted a strategic plan for research and committed to build a world-class musculoskeletal research institute. The Campbell residency program marked its 80th anniversary.

2005
The Memphis Musculoskeletal Research Institute was launched. Dick Tarr was named Executive Director, a Board of Directors and a Scientific Advisory Board were established, and a quarterly musculoskeletal lecture series was initiated. The Campbell residency program hosted an additional five orthopaedic residents from Tulane University displaced by Hurricane Katrina.

HEALTHCARE FIX THE CRITICAL NEED

On behalf of the Board of Trustees of The Campbell Foundation, it is with great pleasure that I present this special issue of Momentum, a publication designed to inform our closest friends and supporters of achievements in musculoskeletal research and education at The Campbell Foundation and our partners Campbell Clinic and the University of Tennessee-Campbell Clinic Department of Orthopaedic Surgery.

THE CRITICAL NEED

The World Health Organization has declared 2002 to 2011 to be the “Bone and Joint Decade,” in recognition of the serious toll musculoskeletal disorders take on families and society. Musculoskeletal injuries are the leading cause of disability in the United States and the number one reason for doctor visits, accounting for 102 million visits to physician offices, 10.2 million hospital outpatient visits and 25 million emergency department visits each year.

Conditions such as osteoporosis, osteoarthritis, rheumatoid arthritis, back pain, spinal disorders, fractures and overuse soft-tissue injuries affect millions of people — problems that are predicted to double in the next 20 years with the aging of the Baby Boomers. Many children also suffer from crippling bone and joint diseases, impeding normal development and preventing them from having full and healthy lives. It is clear that the need for new discoveries into the causes, treatments and cures of musculoskeletal disease has never been greater.
OUR MISSION AND OUR PROGRESS

The mission of The Campbell Foundation is to enhance quality of life through the science of orthopaedic medicine worldwide with a strong commitment to advancing orthopaedic research, surgeon education and community healthcare.

Over the past two years the staff, Board of Trustees, and industry and community partners have worked to develop a strategic plan to build a world-class musculoskeletal research institute. In this issue, you’ll read about the official launch of the Memphis Musculoskeletal Research Institute, now called InMotion Musculoskeletal Institute; the naming of Dick Tarr as Executive Director; and the exciting progress to date. Thanks to the generous support of our patients, alumni, trustees, physicians and industry partners during 2005, the foundation has been laid for the Institute’s success.

In the year ahead our goals for InMotion Musculoskeletal Institute include moving into office and lab space in a building adjacent to the new UT-Baptist Research Park; jointly hiring two clinician scientists with Campbell Clinic; and, with the University of Memphis, hiring a director of biomechanics.

The Foundation will continue to focus our efforts on:

- Devoting the finest physicians and scientists available to lead our research efforts in areas such as arthritis, osteoporosis, cartilage regeneration, joint replacement, trauma care, bone tumors and children’s bone and joint diseases.
- Providing increased seed funding to launch promising research and bring new solutions for debilitating problems to our patients.
- Strengthening one of the country’s most distinguished orthopaedic residency and fellowship programs; and continuing work on the eleventh edition of Campbell’s Operative Orthopaedics.
- Investing in our community’s health by providing orthopaedic care for children and adults, regardless of their ability to pay.

Ultimately the success of our efforts will depend on your support. Sixty years ago The Campbell Foundation was established to perpetuate Willis Campbell’s commitment to the advancement of orthopaedic medicine. Please join us in celebrating this milestone and working together to offer patients today and of future generations hope for better, more active lives.
Approximately one in five adults has doctor-diagnosed arthritis?

A fracture requiring orthopaedic treatment occurs about every 14 seconds?

Musculoskeletal disorders and conditions are the #1 cause of disability, worldwide?
Baptist Memorial Health Care’s former Medical Center Main Tower was imploded on November 6, 2005, marking a significant step forward in the creation of a world-class center for bioscience research in the heart of the Memphis medical district.

Debris removal is expected to take approximately 11 months to complete, and new building construction will begin in the second quarter of 2006. Completion of the research park is estimated to take approximately 10 years and will be completed in six phases.

The demolition effort was led by Chandler Demolition Company, Inc. of Memphis. Chandler Demolition opted to demolish the structures by means of implosion instead of conventional methods in order to reduce the risk of accident and injury to workers and minimize the inconvenience to the general public and surrounding area.

Though Dick Tarr knew these things, he could have walked away. After 33 years in orthopaedics, including his most recent position as Vice President of Worldwide Research and Emerging Technologies at DePuy Orthopaedics, Inc., in Warsaw, Indiana, Tarr had spent his career seeking and developing innovations to treat musculoskeletal disorders.

Instead, a couple of months before his retirement, Tarr heard Memphis and Campbell Clinic calling. Tarr knew about Campbell the way everyone knows about Campbell, the home of world-class orthopaedic care. Tarr also knew of the Clinic’s long tradition of educating outstanding orthopaedic surgeons through its residency and fellowship programs. What he did not know, and what intrigued him immediately, was Campbell’s ambitious plans for expanding its research programs through the creation of an independent research facility.

The Campbell Foundation and Campbell Clinic, with the urging of Memphis Tomorrow and the Memphis Bioworks Foundation, had taken a leading role in the creation of a new type of research facility, one that would continue Memphis’ growth as a biomedical powerhouse, and that would align the city’s assets in the field of musculoskeletal research and treatment.

Seeing the opportunity, Tarr left retirement and became Executive Director of the newly-named InMotion Musculoskeletal Institute, formerly the Memphis Musculoskeletal Research Institute. InMotion’s goal is to bring translational orthopaedic research to Memphis. Translational research transports innovative research into the clinic, so that patients benefit directly from that research. InMotion’s slogan aptly describes its mission: “From research to reality.”

The Campbell Foundation, along with the Hyde Family Foundations and the Memphis Bioworks Foundation, has provided start-up money for InMotion. The Campbell Foundation has also provided office space and human resources support for InMotion employees, as well as development expertise to fund the institute’s research.

At full strength, InMotion will provide a nexus of collaborative efforts among orthopaedic surgeons and researchers who might not have worked together in other settings. Plans for InMotion include providing research and development for orthopaedic technology companies such as Smith & Nephew, Medtronic Sofamor Danek, DePuy Orthopaedics, and Wright Medical Group, as well as education efforts such as assisting Campbell Clinic in training its residents in research design.

continued on next page
Richard R. Tarr was DePuy’s Vice President of Worldwide Research and Emerging Technologies prior to retiring on July 1, 2005, after twenty years of continuous service. Mr. Tarr was responsible for DePuy’s worldwide research initiatives to bring new technology products to market, particularly in the emerging technologies area. He was directly responsible for the new 50,000 sq. ft. research facilities in Warsaw, Indiana, which were opened and dedicated in September, 2003.

In addition to his research activities, Mr. Tarr oversaw research and development on a worldwide basis, working with the respective vice presidents of Research and Development in each of the DePuy business units, ensuring that DePuy retained the highest standards of safety and efficacy for its products.

Tarr joined DePuy in 1985 and progressed through research and development holding positions of Director, Hip, Extremities, Sports Medicine, Operating Room and Trauma Product Development; General Manager, DePuy DuPont Orthopaedics; Vice President, R & D; Senior Vice President, R & D; Chief Technology Officer; Vice President, Worldwide Research and Orthobiologics; and finally, Vice President, Worldwide Research and Emerging Technologies.

Prior to joining DePuy, Mr. Tarr was an Instructor in research ortho-

Another InMotion accomplishment has been the selection of a Board of Directors:

- Dr. Steven J. Bares, President and Executive Director of the Memphis Bioworks Foundation;
- Dr. James H. Beaty, Chief of Staff, Campbell Clinic;
- Jack Blair, former Smith & Nephew group president of North America and Japan;
- Dr. S. Terry Canale, Chairman of the UT/Campbell Clinic Department of Orthopaedic Surgery;
- Dr. Leonard “Rusty” Johnson, Interim Vice Chancellor of Research at the University of Tennessee Health Science Center;
- J.R. “Pitt” Hyde, III, founder of AutoZone;
- Dr. Shirley Raines, President of the U of M; and
- Jon Serbousek, President of Medtronic Sofamor Danek.

In December 2005, InMotion launched its quarterly Musculoskeletal Lecture Series, sponsored with support from Medtronic Sofamor Danek. Dr. Stephen Badylak of the McGowan Institute for Regenerative Medicine at the University of Pittsburgh presented his research to an audience of over 60 surgeons, researchers, medical students, and foundation and clinical staff meeting at the FedEx Institute of Technology in Memphis.

For example, the two entities will create joint appointments in both trauma and total-joint replacement, with the physician-scientists performing clinical rotations at Campbell Clinic and research at InMotion. Planning also includes expanding the research staff by jointly sponsoring an appointment in biomechanical engineering with the University of Memphis. The staff now consists of Executive Director Memphis, Director of

In addition, InMotion Musculoskeletal Institute has taken the steps necessary to be recognized as a 501(c)(3) not-for-profit foundation. This designation, which the IRS is expected to bestow in 2006, will allow the organization special tax privileges, as well as the ability to seek charitable contributions and certain foundation, state, and federal funds. While this designation will mark the official ‘separation’ between InMotion and The Campbell Foundation, the two groups will remain close partners.

InMotion’s staff will soon move to new laboratory and office space on the seventh floor of 20 South Dudley building, home of the Memphis Bioworks Foundation and adjacent to the site of the new UT-Baptist Research Park. The opening of this space will mark the beginning of a new age of translational research and collaboration in Memphis, Tennessee.

So much for walking away.

**Richard R. Tarr, Executive Director, InMotion**

Richard R. Tarr was DePuy’s Vice President of Worldwide Research and Emerging Technologies prior to retiring on July 1, 2005, after twenty years of continuous service. Mr. Tarr was responsible for DePuy’s worldwide research initiatives to bring new technology products to market, particularly in the emerging technologies area. He was directly responsible for the new 50,000 sq. ft. research facilities in Warsaw, Indiana, which were opened and dedicated in September, 2003.

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Prior to joining DePuy, Mr. Tarr was an Instructor in research ortho-
Mr. Tarr holds five patents on orthopaedic products and instruments and frequently speaks and publishes on orthopaedic research topics.

A biomedical engineering graduate of Northwestern University, Mr. Tarr received a Master of Science degree in Bioengineering from Texas A&M University and also completed a three-year tour of duty in the U.S. Army Medical Corps where he obtained his radiologic technologist training.

New Opportunities Will Rise in Old Hospital’s Footprint

New buildings will soon rise as the UT-Baptist Research Park begins to take shape. The research park will ultimately consist of 1.2 million square feet of laboratory, research, education and business development space located on a 10-acre campus. The research park is at the heart of a city-wide bioscience development strategy that is expected to lead to $250 million in annual salaries from 5,000 new jobs and have a $2 billion annual economic impact on the Memphis economy.

MMRI goes InMotion

The Memphis Musculoskeletal Research Institute has changed its name to the InMotion Musculoskeletal Institute. This new name reflects InMotion’s mission to reduce disability and to improve mobility for the musculoskeletal patient through translational research.

“The new name conveys the excitement, enthusiasm, and commitment that the Memphis community has brought to this endeavor,” says Dick Tarr, InMotion Executive Director. “The collaboration between InMotion and local universities, hospitals, clinics, and industry provides a new paradigm for translational medicine by effectively and efficiently forming partnerships to move research to reality in the care of the musculoskeletal patient.”
Each year Campbell Clinic’s reputation for excellence in orthopaedic surgery attracts patients from across the nation and, increasingly, from around the world.

Lilly Hanbury, 15, from Petersfield, England, traveled more than 4,000 miles to have Dr. Bill Warner and Dr. Jim Calandruccio of Campbell Clinic perform surgery after a non-healing compound fracture of her right leg left her on crutches for months and unable to participate in the activities she loved.

“The services of Campbell Clinic and the skill of Dr. Warner and Dr. Calandruccio, along with Lilly’s follow-up care, were just extraordinary,” said Daphne Hanbury, Lilly’s mother. “We weren’t able to find a specialist in England we felt had the level of competence and knowledge of leading-edge technology that was available at Campbell Clinic. Every aspect of Lilly’s experience at Campbell Clinic was exceptional.”

A KICK DOES SERIOUS DAMAGE

An experienced horsewoman who has been riding since she was five, Lilly was on an afternoon ride in the countryside with friends when the horse in front of her kicked at Lilly’s horse, striking Lilly’s leg. After a long wait in the emergency room of the nearest medical facility, Lilly learned that she had suffered an open fracture of the tibia.

“I didn’t think it hurt much,” Lilly said, “but I learned later that was because I was in shock. The doctor told my mum that it was a serious break.”

Two surgeries were performed during the first three days after the accident, and Lilly went home on crutches. When her cast was removed 12 weeks later, x-rays revealed that her tibia was not healing. Nine months after the accident, when there was still no evidence of healing, doctors suggested that Lilly see a specialist for non-healing wounds.

“The injury was a terrible inconvenience, with someone having to carry Lilly’s books all the time at school and that sort of thing,” her mother said. “Worse was the fact that a very spirited young girl couldn’t participate in normal activities, and we couldn’t see an end to the problem.”

Lilly is back on a horse this spring, playing polo on a club team. She is also playing on the lacrosse team at her school, and she’s enjoying one of her favorite social activities, dancing, once again.
FACTS: TIBIA FRACTURES

- Tibia fractures are the most common of all long-bone fractures.
- The National Center for Health Statistics has reported an average occurrence rate of approximately 492,000 fractures of the tibia and fibula in the U.S. each year.
- Despite treatments with casts, plates, intermedullary nails or external fixators, more than 50,000 Americans suffer from a non-union of the tibia annually.

A FORTUNATE CONNECTION

Daphne Hanbury considers herself “extremely lucky” to have known about Campbell Clinic at the time of Lilly’s injury.

“I grew up in Memphis, and I was treated at Campbell Clinic when I was a girl,” said Daphne, who is the daughter of Daphne and Snowden Boyle Jr. of Memphis. “Jim Calandruccio’s wife is one of my childhood friends. So I called Dr. Calandruccio, and he agreed to have the Campbell Clinic staff review Lilly’s case.” At Dr. Calandruccio’s suggestion, the Hanburys also talked to a specialist in England.

“When the specialist here said they would try to repair Lilly’s leg by inserting a Russell Nail, Dr. Calandruccio told me, ‘The Russell Nail is made here in Memphis, and we have a research study underway involving the Russell Nail.’ That helped convince me that we should go to Campbell Clinic.”

One week later, Lilly was in Memphis, undergoing the surgery that helped her resume the active life of a normal teenager.

A SUPERB PATIENT, COMPLETELY HEALED

Drs. Warner and Calandruccio inserted an intramedullary nail in Lilly’s tibia, securing the rod with locking screws. Lilly remained in Memphis for two weeks, enjoying an extended visit with her grandmother while undergoing physical therapy.

When she returned to England, local physicians sent x-rays to Memphis so that Campbell Clinic could monitor Lilly’s progress. Four months later, during the Christmas holidays, the English teenager returned to Memphis to have the supporting screws removed.

“Lilly was a superb patient, with a delightful attitude despite her quite devastating injury,” Dr. Calandruccio said. “Her family support was widespread and enthusiastic. Today, her fracture has completely healed and she is left with only minor inconvenience.”

Lilly is back on a horse this spring, playing polo on a club team. She is also playing on the lacrosse team at her school, and she’s enjoying one of her favorite social activities, dancing, once again.

A STRONG NETWORK OF SUPPORT

“From the time Lilly arrived at Campbell Clinic through the surgery and her follow-up care at Le Bonheur Children’s Medical Center, the entire experience was completely positive,” Lilly’s mother said.

“I think what makes Campbell Clinic so outstanding, and what we didn’t see in England, was the extraordinary network of support that exists there, from research and education that enables the surgeons to learn advanced techniques and become so skilled, to such competent administration and sensitive patient care,” said Mrs Hanbury. “Every step confirmed to us that Campbell Clinic was the right choice to care for our Lilly.”
DePuy extends support of residency training with Richardson Foot and Ankle Rotation

DePuy Orthopaedics, Inc., the nation’s oldest manufacturer of orthopaedic implants, has made a generous grant to The Campbell Foundation that will enrich the educational experience of promising orthopaedic residents through the E. Greer Richardson, M.D. Foot and Ankle Rotation.

The grant from DePuy will also establish the E. Greer Richardson, M.D. Foot and Ankle Fellowship, which will annually enable one or two talented orthopaedic surgeons to complete a 12-month fellowship in surgery of the adult foot and ankle.

DePuy’s support honors Dr. Greer Richardson, who has been on staff at Campbell Clinic since 1977 and is a past president of the American Orthopaedic Foot and Ankle Society. Dr. Richardson is Editor-in-Chief of Foot & Ankle International. He holds a full professorship at the University of Tennessee-Campbell Clinic Department of Orthopaedic Surgery.

The DePuy commitment enhances the company’s support of residency training through The Campbell Foundation. In 2003, a grant from DePuy established the Marcus J. Stewart, M.D. Rotation in Anatomy and Pathology in the UT-Campbell Clinic orthopaedic residency program.

“This generous support from DePuy will significantly enhance our residency training program in the foot and ankle subspecialty,” said Frederick Azar, M.D., the Foundation’s Director of Resident Education.

“DePuy’s continuing commitment to education and research through the UT-Campbell Clinic orthopaedic residency program will have a positive impact on thousands of patients in the present and the future.”

The E. Greer Richardson, M.D. Foot and Ankle Rotation, which will begin in academic year 2006-2007, will annually enrich the education of eight residents in the foot and ankle surgery subspecialty. Dr. Richardson will instruct and mentor residents participating in the residency.

**About the E. Greer Richardson Foot and Ankle Rotation**

- The grant will underwrite the education of eight residents in the subspecialty of foot and ankle surgery.
- The rotation is six weeks in length and occurs during the third year of the Campbell Clinic residency program.
- During the rotation, residents are instructed and mentored by Campbell Clinic faculty who are fellowship-trained in this subspecialty.
- Time in the rotation is split approximately fifty percent clinical and fifty percent surgical to allow residents to experience continuity of care for most patients, from initial examination and evaluation, through surgical or non-surgical treatment, to post-operative rehabilitation (if required), until final result.
- Each year, more than 400 senior medical students or medical school graduates apply for the eight positions in the Campbell program. Acceptance into the program is based on past performance, references and interviews.
An outstanding team of distinguished physicians, business executives, and community leaders guides The Campbell Foundation by serving on the Foundation’s Board of Trustees. A dedicated member of that team is Robert A. Compton, who joined the Foundation’s Board in 2003.

Having earned an MBA from Harvard University Business School, he previously served as President of the Neurologic Technologies division of Medtronic, Inc., and as president and COO of Sofamor Danek Group Inc. Since 2000, Bob Compton has founded several companies including NoInk Communications, SnappyGreetings.com, Indian Math Online and Vontoo: on-demand voice messaging. He serves on a number of boards and as advisor to numerous companies.

Recently Mr. Compton talked about what influences and motivates his philanthropy, and he discussed how he and his wife, Janice, are taking steps to instill a philanthropic spirit in their two daughters, Elizabeth and Meredith.

**What is the motivation for your commitment, both in time and money, to foundations and charitable causes?**

My parents instilled in me at a very early age the importance of giving back to one’s community. My wife Janice and her family also had a tradition of giving time, talent, and money back to not-for-profit organizations. We both believe it is a vital part of being a good citizen.

We feel that philanthropic and charitable investments are a great way to have a very direct impact on a problem or need in one’s community — no need to wait for government to try to solve a problem, just roll up your sleeves and pull out your wallet, and make something happen.

**Is your philanthropy focused in a particular area?**

Our philanthropic investments have focused on two areas primarily — medical research and education-related programs and activities. For example, in Memphis we were founding investors in Junior Achievement’s downtown Exchange City facility to teach economics and financial literacy to the next generation of Memphis entrepreneurs and citizens.

Earlier this year, our family gave $250,000 to fund T-cell research at St. Jude Children’s Research Hospital. Dr. Vignali and his team of researchers there are exploring how T-cells can be controlled to treat both diabetes and cancer in children.

I served as trustee of the Rose-Hulman Institute of Technology in Indiana for 10 years, and we contributed to an endowed chair for biomedical research as well as several scholarships for engineering students who needed financial assistance to attend the Institute.
training, and he will serve as director of the E. Greer Richardson, M.D. Foot and Ankle Fellowship.

“This honor is undeserved, but greatly appreciated,” Dr. Richardson said. “I want to thank DePuy for their generosity and thank the Campbell Clinic staff, who allowed me to concentrate in this challenging area of orthopaedics.”

In addition to Dr. Greer Richardson, Campbell Clinic foot and ankle surgeons who are involved with resident and fellow education are Dr. Andrew Murphy, Dr. Susan Ishikawa and Dr. David Richardson.

During 2005, Campbell Clinic foot and ankle surgeons recorded over 12,000 patient visits. A recent National Hospital Ambulatory Medical Care Survey indicated that foot and toe or ankle symptoms accounted for 11.8 million visits to physicians annually.

DePuy Orthopaedics, a Johnson & Johnson company, designs, manufactures and distributes orthopaedic devices and supplies including hip, knee, extremity, trauma, orthobiologics, and operating room products. Founded in 1895, DePuy has more than 6,000 employees worldwide.

The Campbell Foundation honors Dr. Greer Richardson and DePuy at a reception held on April 3, 2006.

Pictured: Rob Chambers, DePuy Eastern US VP of Sales, Dr. Greer Richardson, Jack Blair, Chairman of The Campbell Foundation, Dr. James Beaty, Chief of Staff, David Ford, DePuy Territory General Manager, Dr. Terry Canale, President of The Campbell Foundation

The Most Common Foot and Ankle Injuries

More than 11 million visits are made to doctors’ offices each year because of foot, toe and ankle problems, including more than two million visits for ankle sprains and strains and more than 800,000 visits for ankle fractures. To follow, a list of the most prevalent foot and ankle injuries:

- **Ankle sprains.** Because the inner ankle is more stable than the outer ankle, the foot is likely to turn inward from a fall, tackle, or jump. This stretches or tears ligaments and results in an ankle sprain.

- **Achilles tendon injury.** The Achilles tendon connects muscles in the lower leg to the heel bone. Sports that tighten the calf muscle, such as basketball, running and high-jumping, can overstress this tendon and cause a strain or a rupture. A direct blow to the foot, ankle or calf can also cause an Achilles tendon injury.

- **Overuse injuries.** Excessive training, such as running long distances without rest, places repeated stress on the foot and ankle. The result can be stress fractures and muscle/tendon strains.

- **Shin splints.** Pain in front of the shin bone (tibia) usually is caused by a stress fracture, called shin splints. Overtraining, poorly fitting athletic shoes, and a change in running surface from soft to hard puts athletes at risk for this injury.

SOURCE: American Academy of Orthopaedic Surgeons
There are so many worthwhile causes and organizations to which your family could contribute. How do you decide where to make a commitment?

We feel we should invest in areas about which we are passionate.

Most areas of philanthropy are seeking to affect long-term change and improvement. If you are not passionate about solving the problem, you may not have the energy to see it through the many years of effort required. We prefer funding areas in which our active involvement of time and energy can supplement our financial commitment.

Is it important to you and your wife that your children are also committed to giving, whether it be through service or gifts?

We feel a culture of giving is critical to any community, and we try to instill that sense of opportunity and obligation in our daughters.

Both of our girls have been active in their own fund-raising activities with St. Jude and with the Juvenile Diabetes Research Foundation. They also receive a great deal of encouragement in community giving from the school they attend, St. George’s Independent School.

Why are you committed to The Campbell Foundation’s mission and goals?

It starts with our children. Our younger daughter was born with clubfoot and has had many surgeries to correct the structure of her feet. Our older daughter has also required orthopaedic surgery. Campbell Clinic doctors performed many of those surgeries.

Beyond that, my business experience in the field of orthopaedic devices taught me that significant improvements can be made in the treatment of musculoskeletal disease if there is sufficient investment in research and medical education. The Campbell Foundation raises funds to make those important investments.

With the aging of our population, age-related orthopaedic degeneration will be an increasing health problem for our citizens. The clinician-scientists associated with the Campbell Clinic and the University of Tennessee are pioneering treatments for those diseases. No doubt I will personally be a patient one day, and I may benefit from research we have funded.

Serving on any board — including the Board of Trustees of The Campbell Foundation — is time consuming. What are the rewards for this investment of your time?

I think the most satisfying aspect is the association with the Campbell Clinic doctors who work so hard to help their patients.

I always find it inspiring to come to a Campbell Foundation board meeting in the late evening and meet with the surgeons who show up still in their hospital scrubs from a long day in surgery, or in their lab coats having spent the day seeing patients. The dedication of these physicians instills a commitment in me to see that they have sufficient funds to continue their research, and that we as a community support their work.

Second, it has been very satisfying to work so closely with Campbell Clinic physicians and the scientific researchers at the University of Tennessee over the past three years in developing a strategic plan for building a world-class orthopaedic research center in Memphis. Memphis is the second-leading city for the global orthopaedic industry. A renowned musculoskeletal research center in Memphis would help ensure the growth of that industry in our community and could lead to medical discoveries that would benefit people around the world.
Is HA (hydroxyapatite) the best coating to apply to an implant to encourage osseointegration, or are there better coatings? How long should HA remain on an implant before its benefits outweigh the problems it can cause?

Is calcium phosphate the ideal material to use in creating a scaffold for bone defect reconstruction? Will the properties of calcium phosphate in the scaffold optimize cell ingrowth?

These are questions that drive the work of Dr. Joo Leng Ong, Hyde Professor of Orthopaedic Surgery and Biomedical Engineering for the University of Tennessee-Campbell Clinic Department of Orthopaedic Surgery. And even though Dr. Ong has been conducting research for more than 15 years in the field of early bone formation at the bone-biomaterial interface, every question answered raises another question, and another.

Dr. Ong joined the UT-Campbell Clinic Department of Orthopaedic Surgery’s research staff in 2004, along with Dr. David Carners and Dr. Yunzhi Yang. The three scientists had worked together in biomedical research in San Antonio.

“We are focusing on two studies, both concerned with the role of HA and other calcium phosphates on early bone cell activity,” Dr. Ong said. “There has been a lot of progress in this area in the last decade, but we still have a lot to learn.”

Hydroxyapatite, or HA, makes up about 70% of bone structure. Dr. Ong’s research indicates that HA-coated implants are biocompatible and may induce bony ingrowth faster when compared to non-coated titanium implants. But HA has its drawbacks, including adherence problems and the fact that HA may attract bacteria.

“We are looking at ways to make the adherence stronger,” Dr. Ong said. “We’ve also learned that we may not want the HA to stay on for the life of the implant.

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**FACTS, IMPROVING IMPLANTS**

- More than 300,000 knee and hip replacement surgeries are performed each year in the United States. Sixty-five percent of hip replacement and seventy-two percent of knee replacement surgeries are performed on people over the age of 65.
- Many credit Sir John Charnley, a British orthopaedist, with performing the first modern total hip replacement in the 1950s. His innovations included combining a metal stem and ball with a plastic shell and using a methacrylate cement, similar to the cement used by dentists, to hold the devices in place.
- One problem with implants is loosening that can be the result of cracks in the cement caused by wear, particularly in patients who are very heavy or very active.
- Since 1980, new implant designs have been introduced that attach directly to bone without the use of cement. These designs have a surface topography that is conducive to attracting new bone growth. It was hoped that cementless implantation would eliminate the problems of bone resorption and stem loosening caused by cement failure.
- Researchers are working to find coatings to apply to the surface of implants that will encourage the bone to grow into the prosthesis and hold it in place.

**SOURCES:** American Academy of Orthopaedic Surgeons (AAOS), www.jointreplacements.com, www.medicalnewstoday.com
So we are asking what’s the best process for applying HA to an implant surface so we get the short-term benefit of enhanced bone formation, but then we may want the HA to go away.”

The goal of this research, Dr. Ong said, is to find the ideal implant surface for optimum osseointegration, thereby reducing implant failures that are expensive to patients in terms of costs, trauma, and recovery time.

In another study, Dr. Ong is looking at bone defect reconstruction, using tissue-engineered bone scaffolds rather than autograft (from the patient’s own body) or allograft (from another human body) bone.

“It has been estimated that tissue-engineered products will be a $5 billion market worldwide in the future,” Dr. Ong said. “Because of the financial potential, there is a vast amount of research being conducted on three-dimensional scaffolds to persuade the body to heal or repair tissues that do not heal spontaneously.”

Some researchers have studied biodegradable polymeric scaffolds but have learned that this alternative lacks sufficient mechanical strength and releases acidic degradation products that can cause inflammatory responses. Dr. Ong’s team at UT-Campbell Clinic is focusing on the use of calcium phosphates, a primary component of bone.

“We have made some good progress in this area,” he said. “Several companies are interested in the potential of this research.”

Dr. Ong considers interaction with and input from Campbell Clinic surgeons valuable to his research.

“Surgeons tell us what their problems are and it helps us in the thinking process,” he said.

He also believes that working in a city with a strong medical device industry and multiple institutions engaged in musculoskeletal research benefit his work.

“That’s really the reason I was attracted to Memphis,” Dr. Ong said. “You have the opportunity to work with people who are on the leading edge of the industry, and you see how you can contribute. It encourages you to work harder to make advancements.”

The goal of his research, Dr. Ong said, is to find the ideal implant surface for optimum osseointegration, thereby reducing implant failures that are expensive to patients in terms of costs, trauma, and recovery time.
The windows to the Junior Call Room exploded into the darkness. Over the next few hours, we could hear other windows doing the same all the way down the hallway. Water started to creep in from under locked doors.

There was relatively little activity in the Charity emergency room. Several fingers had been smashed in doors, and people were apparently falling off roofs all over town, but they either were not able to get to the hospital or did not want to. The power went out, and the generators supported only basic backup electricity. This also meant the elevators, the computers, the pager system, and the overhead PA system were out. The operating rooms were unavailable, being on the 12th floor, so a MASH-like, two-bed OR was created in the first floor casting clinic.

The levees had failed, and the streets were filled with water. We launched the canoe into the streets of New Orleans on our first unsanctioned reconnaissance mission.

We headed to University Hospital to round on our few patients there and to check out the overall situation. The streets were littered with debris, dead birds, oil slicks, and human waste. After checking our patients, we boarded the canoe, agreeing to make a return trip with some critical medicine that was no longer available at University Hospital.

As we headed back down to University Hospital, we noticed a fire and rescue truck sitting...
for “hurricane duty” on the last weekend of August 2005.

As Dr. Belongie left his apartment for Charity Hospital on Saturday, hurricane reports led him to load his 17 foot canoe into his truck, transport it to the hospital, then lash the canoe to a pillar in the hospital’s parking garage. In the days to come, the canoe enabled the Tulane residents to provide a valuable, water-based shuttle service, sharing supplies and gasoline for generators between hospitals.

The hurricane struck early Monday morning, August 29. During the next three days, the team served patients at the three hospitals despite stifling heat, loss of electricity and power to elevators and computers, waters that rose two to three feet deep in hallways and hospital rooms, little communication with the outside world, and growing concern for their patients’ and their own safety.

“After the hurricane, Tulane’s orthopaedic residency program had to find another location to continue our training,” Dr. Belongie said. “Tulane wanted to keep us together as much as possible, and nearby, so we would return when the program was able to operate again.”

A large number of hospitals and clinics opened their doors to the residents. “But everyone knows Campbell Clinic, because they wrote the book,” Dr. Belongie said, referring to Campbell’s Operative Orthopaedics, used as a textbook in many medical schools and hospitals. “We all knew that Campbell Clinic is an elite residency training program.”

Dr. Azar said, “The residents who came to us from Tulane have fit well into our resident rotations and have allowed more of our faculty members to have one-on-one opportunities for teaching. They bring different perspectives to our established routines and provide a new viewpoint from which we can evaluate our program. They also have made us more appreciative of our circumstances and have made us realize how quickly circumstances can change.”

Tulane Hospital expects to have its orthopaedic residency program operating again by July 1, 2006.

Wednesday, Aug. 31

The big plan for the hospitals was to get all the patients evacuated by helicopters, then the staff would be free to leave. At this point, there was reason to believe that our lives were in danger the longer we stayed. Looters were running loose in the streets, and a helicopter had been shot at while evacuating patients.

What we endured was but a tiny ripple within Katrina’s wake. The scope was so huge that the city and the nation were stunned, delaying the initiation of meaningful relief efforts. It will take a long time to return a sense of normalcy, and things will truly never be the same.
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