At the Johns Hopkins Department of Plastic and Reconstructive Surgery, we use the most advanced procedures to reshape tissues, and thus to restore lives after disfiguring illness, accident, or other trauma.
RISING TO THE CHALLENGE

A CALL TO ACTION
Rising to the Challenge: The Campaign for Johns Hopkins will raise unprecedented levels of support to attract, sustain, and further empower the people of Johns Hopkins—our students, faculty, and researchers—who through their work improve the lives of millions around the world. Together with our philanthropic partners we will:

ADVANCE DISCOVERY AND CREATIVITY through support of our exceptional faculty and researchers. Their innovative work drives the development of new knowledge, new forms of expression, and new ways to save lives and improve health, and furthers progress across our core disciplines in science and technology, the humanities and arts, and public health and medicine.

ENRICH THE STUDENT EXPERIENCE by investing in scholarships and fellowships, inspirational spaces for collaborative learning and social opportunities, and new programs that will enhance student-faculty interactions, ensure diversity on campus, link learning in the classroom to life after graduation, and strengthen connections between our students and our surrounding communities.

SOLVE GLOBAL PROBLEMS AS ONE UNIVERSITY by creating new cross-disciplinary solutions in crucial areas such as sustaining global water resources, revitalizing America’s cities, advancing individualized health, understanding how we learn and teach, and attacking the root causes of global health problems.

The Johns Hopkins Department of Plastic and Reconstructive Surgery is committed to playing a key role in the success of the campaign. Please join with us in this important mission.

THE JOHNS HOPKINS DEPARTMENT OF PLASTIC AND RECONSTRUCTIVE SURGERY

What is Plastic and Reconstructive Surgery?
- Burn, wound, and scar repair
- Facial reconstruction and reanimation
- Tissue transfer and reconstruction of the breast, hand, trunk, or lower extremity
- Microvascular surgery for trauma or damages caused by cancer
- Hand surgery for nerve compression, fractures, tumors, and arthritis
- Peripheral nerve repair
- Correction of cleft lip and palate and other birth deformities
- Transplantation of hand and other composite tissues
- Cosmetic procedures

To many people, the term plastic surgery is synonymous with cosmetic procedures. But for patients who come to Johns Hopkins after devastating injuries or cancer deformities, beauty is often the least of their concerns. They want to feel and look like themselves again, and they want their lives back.

A disfiguring disease such as cancer, a birth defect, or a traumatic injury often causes both severe physical and psychological damages. For someone who has recently undergone a mastectomy for breast cancer, survived a house fire but with substantial burns, sustained facial fractures in a car accident, or was born with a birth defect, reconstructive surgery is often the only hope for regaining form and function. Children and adults alike are affected by these life-shattering events. Not only their ability to resume normal daily function, but also their self-esteem, experience of social interactions, and quality of life depend upon our capacity to restore their bodies to a form and function that feels like their own. The process of reshaping tissues—whether replacing a missing hand, repairing a disfiguring wound, or fixing a cleft palate—is thus, in a sense, life-giving treatment.

At the Johns Hopkins Department of Plastic and Reconstructive Surgery, we use the most advanced procedures to reshape tissues, and thus to restore lives after disfiguring illness, accident, or other trauma. Daily, we join with specialists across Hopkins—from pediatricians and dermatologists to neurosurgeons and orthopedists—to provide each patient with the best likelihood of a successful outcome, and to push forward the frontier of what is possible.
A FOCUS ON SOLUTIONS

Challenges arising in patient care drive research in the Department of Plastic and Reconstructive Surgery. We are perpetually seeking solutions to daunting clinical problems, and devising new, state of the art methods to achieve the previously impossible. Our approach is both patient-centered and solution-focused.

The targets below represent areas in which we are poised for breakthrough— we have the talent, the ideas, and the collaborative relationships necessary to overcome these hurdles. The missing ingredient is funding for infrastructure and faculty—to support studies that will translate insights and inspiration into new, feasible, and effective clinical methods.

PROBLEM: IMMUNE SYSTEM REJECTION OF TRANSPLANT TISSUE

Functional outcomes achieved by our transplant surgeons have exceeded all expectations. Amazing results come at a cost, however. These heroic surgeries require patients to be on long-term, toxic, high-dose, multidrug immunosuppression. The adverse effects of these regimens inhibit broad performance of life-changing transplants such as hand, face, and nerve.

SOLUTION: We are working first to uncover the immunological principles that govern all forms of life, and that allow for naturally occurring tolerance such as seen in maternal-fetal acceptance during pregnancy. This understanding will translate into safer immunosuppression techniques that can be used in reconstructive transplantation. In addition to solving issues such as transplant rejection, cancer immune evasion, and autoimmune diseases, the methods we envision will allow unlimited use of donor tissue for reconstruction and restoration of various body parts.

PROBLEM: REGENERATION OF INJURED NERVES

After nerve injury and surgical repair, or after reconstructive transplant surgery, a patient can only regain function if the nerves in the affected area regenerate. The brain, too, must successfully reorganize its internal connections to reintegrate new, or newly repaired, tissues with the body. It was once thought that damaged nerves could not regain their function. We now know that nerves can, indeed, be revitalized and even regrown, but as yet we lack methods to hasten these processes.

SOLUTION: As a first step, we are analyzing post-injury cortical reorganization and reintegration in real time, using novel imaging techniques that examine both central and peripheral nerve pathways. We will then develop stem cell-based protocols, paired with molecular and bioengineered adjuncts, to improve and enhance nerve regeneration. The result will be a dramatically improved function for our patients who undergo transplantation and other reconstructive surgeries.

These are just a couple of the active inquiries underway at the Department of Plastic and Reconstructive Surgery. Our team of surgeons and scientists continuously seek to solve new problems which our patients present, while always attending to their immediate needs with highest quality care.

A FIELD WITH HIGH IMPACT

The role of plastic and reconstructive surgery is never trivial. Heroic procedures have immeasurable impact on our patients. We are also just beginning to realize the gains for patients by integrating our clinical and scientific efforts with those of other specialists. For example, to complement what breast cancer surgeons can do, plastic and reconstructive surgeons employ microvascular techniques to reconstruct the breast using the patients own tissue. Our collaborative research with other specialties benefits patients outside of our own domain. For example, we are working hard to develop new methods and strategies that allow patients to tolerate, rather than reject, transplanted tissues. These approaches will make life considerably easier for our patients undergoing hand, limb, or face transplants—but also for patients seen in Transplant Surgery for liver or kidney transplants.

Breast plastic surgeon, Dr. Gedge Rosson, conducts research aimed at improving outcomes for breast cancer patients. His particular focus is reducing post-operative complications when Deep Inferior Epigastric Artery Perforator (DIEP) flaps and Superior Gluteal Artery Perforator (SGAP) flaps are used for reconstruction. Hopkins was one of the pioneers in the use of DIEP flaps, and still performs more DIEP procedures than most other institutions. Dr. Rosson works on advancing methods to decrease infection, donor site morbidity, and recipient site complications, and to improve the patient’s quality of life. He is also a leader in sensate reconstruction, a technique in which nerves are sewn together to increase sensation in reconstructed breasts.

Hand surgeons at transplant centers were frustrated by the challenge of immunosuppression; while their hand transplants were successful, even life-changing, their patients had to endure triple-drug immunosuppression for the remainder of their lives. Dr. W. P. Andrew Lee and Dr. Gerald Brandacher have helped develop a new protocol; they infuse bone marrow cells from the transplant donor into the recipient, thus raising the body’s capacity to regulate immunity. Now it is no longer necessary to suppress the entire immune system; patients get by with a single, non-steroidal drug.

To support cutting-edge research that leads to new solutions to clinical challenges, and specifically to streamline and facilitate basic science research in the Department of Plastic and Reconstructive Surgery, we propose to create a basic science research core. A centralized resource, the core will comprise multiple research experts including a surgeon-scientist, research fellow, clinical research coordinator, and laboratory technician whose efforts will support research throughout the Department. One function of this core will be to provide scientists with access to resources and technologies necessary for leading research in vascularized composite allotransplantation (VCA).
The Johns Hopkins Department of Plastic and Reconstructive Surgery

RISING TO THE CHALLENGE

TRAINING THE PLASTIC SURGEONS OF TOMORROW

A hallmark of Johns Hopkins Medicine is training the “clinician-scientist,” that is, individuals who are prepared both to deliver highest quality patient care and to perform important, cutting-edge research. This mission is reinforced by a dedicated research year during residency, by close collaborations between researchers in the Department and their counterparts in organ transplantation, neurophysiology, and stem cell biology; and by physical proximity of labs, which facilitates the sharing of ideas and results. As reconstructive operations—including limb and face transplants—continue to break new ground, surgeons in training are benefiting from decades of experience gained across disciplines. Education of truly exceptional plastic surgeons is a Departmental priority. The world’s first formal surgical residency, launched at The Johns Hopkins Hospital in 1889, quickly became the model that all surgery training programs in the nation strive to emulate. Ever since, Hopkins-trained surgeons have been leaders in their fields, nationally and internationally.

The Department of Plastic and Reconstructive Surgery continues the Hopkins tradition of excellence. A residency program operated jointly with the University of Maryland encompasses both diverse training tracks as well as fellowships in craniofacial surgery, burn surgery, hand surgery and microsurgery; with 27 approved residency positions, it is one of the largest plastic surgery training programs in the country. Its recently updated curriculum offers expanded grand rounds, teaching and indications conferences, dedicated aesthetic and upper-extremity sessions, cadaver dissections, journal clubs, and small-group sessions in a variety of teaching hospitals and community settings.

DEPTH OF FACULTY EXPERTISE IN PLASTIC AND RECONSTRUCTIVE SURGERY ENSURES TOP-NOTCH RESIDENT EDUCATION.

Faculty mentors include specialists at the Johns Hopkins Burn Center and the busy pediatric, craniofacial, and breast reconstruction surgeons at The Johns Hopkins Hospital. Many faculty members hold exemplary distinctions. For example, Department Director W. P. Andrew Lee led the team that performed the nation’s first double hand transplant in 2009, followed a year later by the first above-the-elbow transplant. These faculty, along with partners at the University of Maryland Medical Center’s Shock Trauma Center, the Curtis National Hand Center and Walter Reed National Military Medical Center, provide residents with unparalleled learning opportunities.

To optimally train future generations of microsurgeons, nationally, we propose to create a Microsurgery Education Center. Incorporating the best teaching protocols, the Center will employ high-fidelity models and an expert microsurgery technician to prepare medical students, residents, and fellows to use microsurgical techniques, particularly those entailed in complex surgeries such as breast reconstruction, head and neck reconstruction, and hand and face transplantation. Examples of specific uses of funds are: equipment and microsurgery instruments; a microsurgical technician, who can provide individualized attention to trainees; and, additional microscope and recording capability, to allow simultaneous recording of two operations. These recordings will allow faculty to give trainees immediate feedback and interactive skills assessment.
In academic medicine, endowed professorships are coveted and prestigious positions. They afford academic freedom and flexibility, and are thus an important institutional strategy for advancing the frontiers of research, providing the best educational opportunities, and improving patient care. These positions enable us both to recruit world-class physician/scientists to Hopkins, and to better support and retain our most talented faculty. We propose to create an *Endowed Basic Science Research Professorship* in the Department of Plastic and Reconstructive Surgery. Occupying a leadership position within the Department, this nationally recruited individual will conduct some of our most significant research, attract the best students seeking to work with a luminary in the field, further build the prestige of the Hopkins name, and press outward the limits of the possible in plastic and reconstructive surgery—to the benefit of science, learners at all levels, and most importantly, patients.
RISING TO THE CHALLENGE

JOHNS HOPKINS IS THE MOST DYNAMIC ENVIRONMENT FOR PROGRESS IN PLASTIC AND RECONSTRUCTIVE SURGERY

Established in 2010, the Department of Plastic and Reconstructive Surgery aims to be the #1 department in our field, within the #1 academic medical center in the country. We are well on our way.

In America, the field of plastic surgery began at Johns Hopkins, and we continue to lead in its development. Among the first to dedicate his entire medical career to plastic surgery in this country was Dr. John Staige Davis. An 1889 graduate of Johns Hopkins School of Medicine, Davis joined the Johns Hopkins Hospital staff where he focused on “the care of wounds and treatment of acquired and congenital deformities.” When hostilities in Europe erupted into World War I, Davis was still America’s only plastic and reconstructive surgeon. He pioneered techniques such as z-plasty tissue transfer and small, deep grafts to heal chronic wounds. He was a founding member of the American Board of Surgery and the American Board of Plastic Surgery, and his book, Plastic Surgery is the first English-language text on the subject.

For its excellence, achievement, and importance, Plastic and Reconstructive Surgery was elevated from Division to Department in 2010, making it one of the youngest departments at Hopkins. Since 2010, our faculty has grown from 11 to over 20, with specialization in hand and upper extremity surgery, hand transplantation, craniofacial surgery, face transplantation, transplant immunology, peripheral nerve reconstruction, acute and reconstructive burn surgery, major wound reconstruction, and aesthetic surgery.

Despite being a very young Department, we have demonstrated our ability to shepherd in new and improved methods. We have convened some of country’s top specialists and researchers; synergy among these “best and brightest” minds has already led to several important breakthroughs.

WE ARE INNOVATORS. Never satisfied with what we can already do, we continually seek ways to improve patient care. Members of our clinical faculty are also deeply involved in research, with the intention of devising new methods and new treatments that allow us to better serve our patients. WE ARE ON THE CUSP OF MULTIPLE CONTRIBUTIONS. As an academic medical department, we are actively involved in research to improve patient care. Currently, we are:

• Exploring a new immunomodulatory treatment strategy that eliminates the need for long-term medication after hand and face transplantation
• Testing stem cell-based techniques to speed nerve regeneration, such as after lower leg and foot transplantation
• Developing noninvasive methods to detect graft rejection early, when it is still treatable
• Studying cortical reintegration, to understand how nerve pathways within the brain “rewire” after limb transplantation
• Establishing the first-ever large animal model to study functional, immunological, and aesthetic outcomes of maxillofacial transplants

JOHNS HOPKINS DEPARTMENT OF PLASTIC AND RECONSTRUCTIVE SURGERY

Dr. Chad Gordon specializes in allotransplantation for severe facial injuries which are difficult to reconstruct using standard techniques. With a pioneering passion to improve facial reconstruction, Gordon developed a new method to optimize the alignment of the upper and lower jaw during facial transplantation. This technique will greatly improve both aesthetic and functional outcomes in patients in need of facial reconstruction.

WHAT WILL IT TAKE?

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PHILANTHROPY CAN CATALYZE SCIENTIFIC AND CLINICAL BREAKTHROUGHS

Philanthropic funding enables clinician-researchers to move nimbly and creatively, to rapidly advance the science, and to bring new discoveries into clinical practice. Ultimately, by providing the resources needed to develop groundbreaking new methods in plastic and reconstructive surgery, philanthropy is our most efficient and effective partner in helping patients.

Though our visions are enormous, no gift is too small—or too big.
Rising to the Challenge:  
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