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<td>37</td>
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I. Emory Transplant Center
Mission and Vision

MISSION STATEMENT

The Emory Transplant Center is committed to providing and improving access to quality clinical care and support services for patients with organ failure, and to developing new transplant therapies to prevent or delay organ failure through basic, translational, and clinical research.

VISION STATEMENT

The Emory Transplant Center will be the leader in the field of transplantation in the United States as defined by clinical volume, transplant outcomes, and research endeavors.
II. A Word from the Director

Over the past several years, the Emory Transplant Center has marked extraordinary accomplishments in both the clinical and academic arenas, and as is our hallmark, in the integration of the two. Thanks to the generosity of the Carlos and Marguerite Mason Trust, our clinical programs now reside in a new multidisciplinary outpatient clinic which triples our outpatient capacity and provides long-awaited outpatient evaluation suites as well as a dedicated research space. Offering state-of-the-art care, patient and staff education facilities, natural lighting, a spacious waiting room with beautiful views of the campus and downtown Atlanta, our new clinic is allowing us to more effectively serve the transplant patients in our community. Our adult clinical transplant programs are thriving and at the same time, Emory Transplant Physicians and Surgeons continue to perform pediatric transplants at Children’s Healthcare of Atlanta, which as of May 2006 is the second largest pediatric transplant center in the US, ranking in the Top 5 for the sixth consecutive year. Moreover, for the past two years, Children’s has ranked among the Top 3 pediatric kidney transplant programs in the country.

On the academic side, our program continues to show strong growth, despite declining federal funding trends. Our number of NIH awards has grown from 16 to 22 in just three years and our total program funding is now over $9.25 million (FY 06). This vitality stems from unparalleled collaborations among the Center’s now 28 faculty. Our surgeons, nephrologists, pulmonologists, immunologists, pediatricians, nurses and many others work together clinically and academically to address the most pressing unmet needs in our field, continuing our focus on our central theme of developing new approaches to overcome the debilitating problems created by the toxicities of the drugs we use to prevent rejection.

The Emory Transplant Center has a clear opportunity to expand its clinical and research programs to achieve national leadership over the next five years. Given strong local and regional competition, the clinical program must continue to recruit key faculty for growth while ensuring continued differentiation through our basic, translational, and clinical research. Given the reality of constraints on the NIH budget, increased competition for shrinking research dollars is a reality. We must continue to submit competitive proposals at the federal level while also continuing to seek funding from philanthropic and other non-federal sources for sustained long-term success.

The achievements of the Emory Transplant Center are a shining example of what can happen when a diverse and dedicated team pursues a common goal of transforming health and healing. New challenges and numerous opportunities await us in the year ahead. I applaud the remarkable and collaborative work of all the members of the Emory Transplant Center and am pleased and proud to present the outcome of our work for fiscal year 2006 in this Annual Report.

Christian P. Larsen, MD, D Phil
III. KEY CENTER STATISTICS

The Emory Transplant Center is one of the most advanced and comprehensive transplant centers in the Southeast, bringing together Emory University’s transplantation programs in heart, lung, liver, kidney, pancreas and islet. The Center is active in full-service patient care and support services, as well as in groundbreaking research.

- The Center has been a leader in fostering inter-departmental, multi-disciplinary grants from both federal sources (like the NIH) and private foundations. Center research funding continues to grow and for FY05-06 totals $9,252,832 exclusive of philanthropic support (see Research Funding, page 36).

- The Center has 28 faculty who include basic scientists and clinical researchers across departments ranging from surgery to pediatrics (see Faculty Listing and Highlights, page 15).

- Despite the severity and scope of the conditions that the Emory Transplant Center treats, patient and graft survival are consistently above the national average.

- In 2005 and 2006, the Emory Transplant Center supported Children’s Healthcare of Atlanta in ranking in the Top 3 pediatric kidney transplant programs in the United States.

TOTAL NUMBER OF TRANSPLANTS PERFORMED PER PROGRAM SINCE INCEPTION

<table>
<thead>
<tr>
<th>PROGRAM</th>
<th>TOTAL # OF TRANSPLANTS PERFORMED*</th>
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<tbody>
<tr>
<td>Heart</td>
<td>475</td>
</tr>
<tr>
<td>Heart-Lung</td>
<td>4</td>
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<tr>
<td>Islet</td>
<td>15</td>
</tr>
<tr>
<td>Kidney</td>
<td>2368</td>
</tr>
<tr>
<td>Liver</td>
<td>1138</td>
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<tr>
<td>Lung</td>
<td>176</td>
</tr>
<tr>
<td>Pancreas or Kidney-Pancreas</td>
<td>290</td>
</tr>
</tbody>
</table>

*Note: January, 1988 – May, 2006 (Adult and Pediatric) as reported on www.optn.org
### TOTAL NUMBER OF TRANSPLANTS PERFORMED IN FY 2005 AND FY 2006*

<table>
<thead>
<tr>
<th>PROGRAM</th>
<th># ADULT TRANSPLANTS, FY 2005</th>
<th>ACTUAL # ADULT AND PEDIATRIC TRANSPLANTS, FY 2006 (through July**)</th>
<th>PROJECTED # ADULT AND PEDIATRIC TRANSPLANTS, FY 2006</th>
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</thead>
<tbody>
<tr>
<td>Heart</td>
<td>19</td>
<td>29</td>
<td>32</td>
</tr>
<tr>
<td>Islet</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Kidney</td>
<td>142</td>
<td>166</td>
<td>181</td>
</tr>
<tr>
<td>Pancreas</td>
<td>16</td>
<td>17</td>
<td>19</td>
</tr>
<tr>
<td>Liver</td>
<td>87</td>
<td>94</td>
<td>104</td>
</tr>
<tr>
<td>Lung</td>
<td>25</td>
<td>25</td>
<td>27</td>
</tr>
<tr>
<td>TOTAL</td>
<td>292</td>
<td>333</td>
<td>365</td>
</tr>
</tbody>
</table>

* As reported on [www.optn.org](http://www.optn.org)

**Note: Fiscal Year (FY) 2006: September 1, 2005 – August 30, 2006

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**Mason Outpatient Transplant Clinic Opens**

The Emory Transplant Center opened the new Mason Outpatient Transplant Clinic. The new clinic space is located on the 6th floor of Emory Clinic Building B, and triples the size of the transplant clinic's former space. The new clinic has a wait room capacity of more than 80, with patient computer and internet access, patient education classrooms, and six patient-friendly evaluation suites with multi-media education capability. Patient visits are projected to increase from 17,000 in 2005 to 20,000 this year and 23,000 in 2007. The clinic was funded by a gift from the Carlos and Marguerite Mason Trust to support transplant care and research and to help make transplant available to all Georgians who need it.

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**Collaboration: Savannah Outpatient Transplant Clinic**

The Emory Kidney/Pancreas Transplant Program joins the Emory Liver Transplant Program in collaboration with St. Joseph's/Candler Hospital in Savannah, Georgia. This partnership has made it possible for Emory to offer an outpatient transplant clinic in Savannah. The clinic enables us to see selected pre- and all post-transplant patients from Savannah and surrounding areas at the Candler Hospital location. Providing a clinic in the Candler location allows Emory the opportunity to remove the distance barrier to the Atlanta transplant center for many individuals living in Savannah and surrounding areas and will improve patient access to transplant care.
IV. RESEARCH PROGRAM GROWTH AND HIGHLIGHTS

The breadth and scope of the work of the Emory Transplant Center spans basic science, immunology research, clinical practice and trials, and social and public health studies. A central theme of the Center is its interdisciplinary structure, and a major focus is creating an environment that promotes natural synergies and a multi-disciplinary approach to transplantation. The strength of the program can be seen in its continued growth: from just over $8 million to over $9.25 million over three years.

As can be seen above, from FY 04 to FY 05, the overall program's direct costs decreased slightly. However, given the make-up of the direct dollars awarded, the indirect costs increased significantly, resulting in a slight increase in overall funding. The increased indirects were related to an increase in dollars from NIH, from 54% of total funding in FY 04 to 63% in FY 05 (see below). The Center participates in numerous NIH grants ranging from R01s to P01s

In FY 06, the Center received renewed funding for the JDRF Center for Islet Transplantation, resulting in an increase in the proportion of overall funding from private sources (see below). The critical factor is that the overall research program of the Center is well-funded by NIH, yet well diversified in its total program funding.
FY 04 FUNDING DIVERSIFICATION:

Industry, 14% 
$1,125,513

Private, 18% 
$1,327,103

Other Federal, 18% 
$1,280,786

NIH, 54% 
$4,407,307

FY 05 FUNDING DIVERSIFICATION:

Industry, 18% 
$1,449,129

Private, 6% 
$516,395

Other Federal, 13% 
$1,059,450

NIH, 63% 
$5,141,791
FY 06 FUNDING DIVERSIFICATION:

This diversification is likely to become even more critical in the coming years. While over the period FY 04 – FY 06, the Center's total number of NIH awards has continued to grow (from 16 to 20 to 22), our investigators are keenly aware of declining NIH funding. Recently, Dr. Elias Zerhouni, Director of the NIH, commented on these increasingly difficult funding times:

“The NIH budget growth has now decelerated to below inflation and in 2006 the NIH budget decreased slightly compared to 2005. Understandably, many are deeply concerned about the implications of these trends at a time when opportunities have never been better for progress on a broad front, and when so many scientific programs have positioned themselves to make extraordinary contributions, bringing together talented teams and committing resources to continuing discovery. Across the board scientists are worried about their chances of being funded. We share these concerns.”

(http://www.nih.gov/about/director/newsletter/Summer2006.htm)

Despite challenging times, our researchers continue to be successful in attracting funding for their work to transform health and healing. Highlights of that work, and the faculty who lead it, follow.
**Immune Tolerance and Costimulation Blockade**

The Center has a strong track record in both scientific research and clinical practice – and in their connection. Emory is at the forefront of transplant immunology research, investigating innovative strategies to stop rejection of transplanted organs. With the aid of significant grant funding, researchers Drs. Larsen, Pearson and Newell are working to establish true immune tolerance among transplant recipients. This research strives to free patients from the toxic side effects of daily immunosuppressant medicines and achieve permanent, long-term acceptance of organs. This year, they received a gift from the Carlos and Marguerite Mason Trust to continue this work through an integrated collaborative approach studying potential new agents in mice (*discovery*), non-human primates (*translation*), and humans (*application*).

The work of up-and-coming emerging faculty like Dr. Kean includes critical aspects of this work including: the study of transplantation tolerance as it applies to non-malignant hematologic disease, including sickle cell disease and beta-thalassemia; the study of the effect of natural killer cells on transplantation tolerance in both bone marrow and solid organ transplantation; and the translation of murine studies on transplantation tolerance to primate preclinical models, in particular, bone marrow transplantation in the non-human primate, the Rhesus Macaque. Dr. Rigby’s work within the Center focuses on understanding the immunologic mechanisms involved with Type 1 diabetes mellitus. His team plans to use this understanding to prevent disease and/or achieve tolerance for curative islet transplants. He received a three year Junior Faculty Award from the American Diabetes Association to study anergy and regulation in costimulation-blockade induced tolerance in autoimmune diabetes.

Dr. Newell’s laboratory continues to investigate T cell costimulatory pathways for the purposes of defining their role in the immune response to organ allografts and potentially developing new therapeutic agents. They are particularly focused on alternate costimulatory molecules that are members of the TNF receptor superfamily. In addition, the laboratory has recently begun a new project to define tissue or organ-specific factors which contribute to antigen presentation, T cell priming, and T cell trafficking within intestinal allografts in an attempt to define features of the immune system that contribute to the heightened immunity of intestinal allografts observed clinically. The clinical team has undertaken projects to monitor or interrogate the immune system following organ transplantation with the aim of developing assays which will allow the individualization of immunosuppression and potentially the withdrawal of immunosuppression following transplantation.

Drs. Larsen and Pearson have a strong track record of bringing research to the patient – their research in co-stimulation blockade has been brought from basic research in the early 1990s through the primate center and into highly successful clinical trials in humans, led by Emory.
Emory University has made a major commitment to cancer research and the treatment of cancer patients. It also has the largest systemic lupus erythematosus (SLE) patient population in the Southeastern United States. Drs. Mittler (Surgery) and Spencer (Pediatrics), with the aid of significant NIH grant funding are working toward development of highly effective novel approaches for treating neuroblastoma, melanoma, or sarcoma with a commitment to rapidly translate these approaches from basic research to clinical testing within the next two years. Dr. Mittler is equally committed to providing more effective and safer approaches for treating patients with SLE. The use of monoclonal antibodies reactive with the 4-1BB T cell costimulatory for eradicating established tumors and reversing disease progression in SLE and Rheumatoid Arthritis (RA) has met with unparalleled success. Dr. Mittler’s team is actively working on humanizing monoclonal antibodies reactive with human 4-1BB receptors. They are particularly committed to testing these reagents in clinical trials for treating childhood cancers and SLE.

**Andrew J. McKelvey Lung Transplantation Center**

The mission of the Andrew J. McKelvey Lung Transplantation Center at Emory University School of Medicine, led by Dr. Lawrence, is to improve the outcomes following lung transplantation and promote the development of novel medical treatments for complex lung disorders, especially interstitial and pulmonary vascular lung diseases. This has been accomplished by the recruitment of both laboratory investigators and clinicians as members of the McKelvey Center. Research supported by the McKelvey Center ranges from basic studies into the mechanisms of obliterative bronchiolitis following lung transplantation, to multi-center clinical trials of new immunosuppressant medications for lung transplantation and new drugs for the treatment of pulmonary hypertension.

**Heart Failure and Transplant Program**

Under the direction of Dr. Smith, Emory has a robust heart failure program with busy offices at Emory and Crawford Long Hospitals, following 1500 patients who have severe cardiac dysfunction and seeing approximately 30 new patients each month who have congestive heart failure (CHF). The program has had a major overlap with Emory and Crawford Long’s electrophysiology program in implementing new device therapies for the treatment of heart failure. The cardiac resynchronization program at Emory for CHF is arguably the premier such program in the world, with over 2000 devices inserted in Emory hospitals. Emory electrophysiologists were pivotal in the early investigation of resynchronization - the MIRACLE Trial was pivotal in leading to FDA approval of resynchronization as therapy for congestive heart failure. Emory electrophysiologists were the largest contributors to this trial, contributing 81 of the 500 patients. In addition to the robust clinical activity of this unit, it has been very active in education – training over 600 other electrophysiologists in this technique on site and multiple cardiologists through live satellite-broadcast demonstrations.
**Protective Immunity Project**

*Dr. Larsen* and other investigators at the Emory Transplant Center in collaboration with *Dr. Ahmed* and the Emory Vaccine Center, the Rollins School of Public Health, and Affymetrix, Inc. received significant funding through a contract from NIH to study immune function and biodefense in recipients of organ transplants in preclinical and clinical settings. Such knowledge will be critical to strategies for enhancing desirable immune responses while not precipitating rejection.

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**Juvenile Diabetes Research Foundation Center for Islet Transplantation**

The Emory Transplant Center is positioned to be a world leader in the search for a cure for type 1 diabetes. A primary strategy is targeted toward building upon the clinical islet cell transplant program. The long-term success of the Center’s work, which includes the goal of eliminating insulin therapy for type 1 diabetes, would revolutionize the face of diabetes treatment. *Drs. Larsen, Weber, Pearson, Chaikof, and Gangappa* lead a Center grant from the Juvenile Diabetes Research Foundation to continue the Emory Transplant Center JDRF Center for Islet Transplantation. The five year grant includes a new area of research - non-human primate models of xenotransplantation. This area of research compliments and integrates well with the ongoing studies on tolerance induction to allogenic islets in Rhesus macaque monkeys and human islet transplantation.

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**Educational Conferences and Inter-group Lab Meetings**

The Center hosted 21 outside speakers at its weekly Noon Conference, coordinated by *Dr. Newell*, including transplant surgery and medicine leaders in fields from adult renal transplant, pulmonary medicine, pathology, and pediatric cardiology. This year speakers included internationally renowned speakers from Japan, Mexico, Germany and Canada. Average attendance is over 75 including representatives from the kidney, liver, heart and lung groups, the HLA lab, pathology, nursing and the Transplant Center.

The Center also fosters exchange through regular joint meetings among the labs of *Drs. Ahmed, Larsen, Pearson, Mittler, and Newell*. Current research (ongoing or recently completed) is presented in an informal setting allowing for discussion and suggestions. This setting has resulted in ideas and comments from colleagues being integrated into the research. In addition, a new research meeting series brings together the labs of *Drs. Larsen, Pearson, Ahmed, Chaikof and Weber* to discuss new and ongoing major collaborative research projects and grants.
**Vaccine Induced Immunity in the Young and Aged**

Dr. Mittler is leading a component of a five-year study to generate human anthrax toxin neutralizing monoclonal antibodies. The purpose behind this proposal is two-fold. The first is proof of concept of the approach used to achieve this objective, and the second is to provide to the U.S. Government a source of anthrax toxin neutralizing antibodies that could be administered to the general, non-vaccinated (Anthrax) public in the event of a terrorist attack in which *Bacillus anthracis* spores were released as an aerosol. In such a situation untreated individuals would suffer a fatality rate exceeding 97%. While antibiotics help curtail infection and allow the immune system to contain it, the use of antibiotics must be started early in the infection to be of value, whereas administration of toxin neutralizing antibodies can be give later. Because early symptoms of *Bacillus anthracis* infection resemble those of a common respiratory virus it is unlikely, that initially, infected individuals will seek immediate medical attention and thus the use of antibiotic treatment will come too late. The first objective of this study has been accomplished and the second phase is beginning. During this period we will be testing the efficacy of these antibodies for protecting *Bacillus anthracis* infected rodents from fatal toxemia. Later studies will be carried out in which non-human primates are infected by Bacillus anthracis spore inhalation and at later time points given anti-toxin monoclonal antibodies. If these studies are successful the reagent will be produced commercially for human use.

**Transplant Rates of African Americans in Georgia**

Dr. Perryman, with colleagues in the Behavior Sciences and Health Education department of the Rollins School of Public Health, is leading a study to improve the kidney transplant rate of Georgia’s African American (AA) end-stage renal disease (ESRD) population. While the incidence and prevalence of ESRD in AA’s is high, Georgia’s overall rate of transplantation of AA’s is 35th out of 50 states plus the District of Columbia. To understand Georgia’s relatively low rate of AA transplants, a multi-pronged comparative study has been conducted by the researchers. A quantitative analysis of national, regional, and state ESRD and transplant data trending over 10 years has been performed and the qualitative analysis of data from a random sample of Georgia dialysis clinics, Georgia’s three adult kidney transplant programs, two high performing transplant centers nationally, and two other centers in the southeast is being finalized. Forty-six interviews have been conducted with healthcare professionals (37 physician, staff interviews in transplant centers, nine nephrologist and dialysis clinic staff) in addition to 17 dialysis clinic patients and two focus groups of ESRD patient family members. Interviews in three remaining clinics are being completed with an additional 15 patient interviews, three family focus groups, and 9-10 nephrologist and staff interviews projected. Based on preliminary findings, additional funds have been sought from the Division of Organ Transplantation, HHS, for an intervention study to develop and pilot test culturally-sensitive educational materials to move AA ESRD patients, family members and friends along the continuum of readiness to engage in living donation. In addition, the investigators are completing the fifth year of a R01 entitled “Organ Donation in the Black Community: A focus on Family” funded by NIDDK.
**Other Center Research Highlights**

- **Dr. Force** is collaborating in a joint effort with **Dr. Rojas** and **Dr. Brigham** utilizing a rat lung transplant model to study the effect of NFkappaB on primary graft dysfunction following lung transplantation.

- **Dr. Mittler** is testing the efficacy of altered vaccination route and dose regimens for protection against anthrax in humans and non-human primates and to correlate a number of immunological and inflammatory parameters with vaccination.

- **Dr. Perryman** is collaborating with the Rollins School of Public Health at Emory University to increase organ donation rates.

- **Dr. Pearson** is participating in a multi-site study to evaluate the safety and efficacy of solid organ transplantation in people with HIV disease.

- **Dr. Mittler** is working to define the cellular and biochemical events that are involved in the successful induction of anti-tumor immunity to established poorly immunogenic tumors following anti-4-1BB treatment.

**Other Center Activity Highlights**

- **Dr. Larsen** and the Center hosted a Non-human Primate Assays Workshop for NIH, bringing together lab personnel from more than a dozen labs across the NIH Non-human Primate Consortium to share assay protocols and techniques.

- The Center participated in its first year of the National Residency Match Program, coordinated by **Dr. Newell**, and matched its first choice, Dr. Shen from the University of Kansas.

- The GA Chapter of ITNS (International Transplant Nurses Society) has **Emory Transplant Center nurses** serving in the Board of Directors. Current Board members are: Evelyn Jirasakhiran (President), Beth Begley (Secretary), Kathy Goryca (Treasurer), and Jennie Perryman (Trustee).
V. FACULTY LISTING AND HIGHLIGHTS

The Emory Transplant Center thrives on the synergy of its numerous faculty, who span basic science and clinical investigation. The Center’s faculty includes:

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Departmental Affiliation</th>
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<tbody>
<tr>
<td>Christian P. Larsen, MD, D Phil</td>
<td>Director, Emory Transplant Center, Vice Chair for Research – Department of Surgery, and Carlos and Marguerite Mason Professor of Surgery</td>
<td>Department of Surgery, Division of Transplantation, Emory University School of Medicine</td>
</tr>
<tr>
<td>Wendy M Book MD</td>
<td>Assistant Professor</td>
<td>Department of Cardiology, Emory University School of Medicine</td>
</tr>
<tr>
<td>Patrick H. Bowen, MD</td>
<td>Assistant Professor</td>
<td>Division of Endocrinology, Emory University School of Medicine</td>
</tr>
<tr>
<td>Carlos Fasola, MD</td>
<td>Assistant Professor</td>
<td>Department of Surgery, Emory University School of Medicine</td>
</tr>
<tr>
<td>Seth Force, MD</td>
<td>Director, Lung Transplant Program; Assistant Professor and McKelvey Scholar</td>
<td>Department of Surgery, Division of Cardiothoracic Surgery, Emory University School of Medicine</td>
</tr>
<tr>
<td>Shiv Gangappa, DVM, PhD</td>
<td>Assistant Professor</td>
<td>Department of Surgery, Emory University School of Medicine</td>
</tr>
<tr>
<td>Antonio Guasch, MD</td>
<td>Medical Director, Renal Transplant and Kidney-Pancreas Transplant and Associate Professor</td>
<td>Department of Medicine, Renal Division, Emory University School of Medicine</td>
</tr>
<tr>
<td>Thomas G. Heffron, MD</td>
<td>Carlos and Marguerite Mason Chair for Liver Transplantation, Director of Liver Transplantation, and Associate Professor</td>
<td>Department of Surgery, Division of Transplantation, Emory University School of Medicine</td>
</tr>
<tr>
<td>Harsh Kapoor, MD, FRCP, FACP, FACG</td>
<td>Clinical Assistant Professor</td>
<td>Department of Medicine, Emory University School of Medicine</td>
</tr>
<tr>
<td>Hetal Karsan, MD</td>
<td>Assistant Professor</td>
<td>Department of Medicine, Emory University School of Medicine</td>
</tr>
<tr>
<td>Leslie S. Kean, MD, PhD</td>
<td>Assistant Professor of Pediatrics, Burroughs Wellcome Fellow, and McKelvey Scholar</td>
<td>Department of Pediatrics, Division of Hematology/ Oncology/ Bone Marrow Transplantation, Emory University School of Medicine</td>
</tr>
<tr>
<td>Kenneth E. Kokko, MD, PhD</td>
<td>Assistant Professor</td>
<td>Department of Medicine, Renal Division, Emory University School of Medicine</td>
</tr>
<tr>
<td>Name</td>
<td>Position</td>
<td>Department/Program</td>
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<tr>
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</tr>
<tr>
<td>S. Raja Laskar, MD</td>
<td>Assistant Professor</td>
<td>Division of Cardiology, Emory University School of Medicine</td>
</tr>
<tr>
<td>E. Clinton Lawrence, MD</td>
<td>Director, Andrew J. McKelvey Lung Transplantation Center and Augustus J. McKelvey Professor of Medicine</td>
<td>Department of Medicine/Pulmonary, Emory University School of Medicine</td>
</tr>
<tr>
<td>Robert S. Mittler, PhD</td>
<td>Associate Professor</td>
<td>Department of Surgery, Division of Transplantation, and Emory Vaccine Center, Emory University School of Medicine</td>
</tr>
<tr>
<td>Ana L. Mora, MD</td>
<td>Assistant Professor and McKelvey Scholar</td>
<td>Department of Medicine, Division of Pulmonary, Emory University School of Medicine</td>
</tr>
<tr>
<td>David Neujahr, MD</td>
<td>Associate Medical Director of Lung Transplantation and Assistant Professor</td>
<td>Department of Medicine, Division of Pulmonary, Emory University School of Medicine</td>
</tr>
<tr>
<td>Kenneth A. Newell, MD, PhD</td>
<td>Director, Living Donor Kidney Program and Associate Professor</td>
<td>Department of Surgery, Division of Kidney and Pancreas Transplantation, Emory University School of Medicine</td>
</tr>
<tr>
<td>Andres Pelaez, MD</td>
<td>Assistant Professor of Medicine, and Associate Director McKelvey Lung Transplant Center</td>
<td>Department of Pulmonary, Allergy and Critical Care</td>
</tr>
<tr>
<td>Thomas C. Pearson, MD, D Phil</td>
<td>Chief, Kidney Transplantation and Livingston Professor of Surgery</td>
<td>Department of Surgery, Division of Transplantation, Emory University School of Medicine</td>
</tr>
<tr>
<td>Allan Ramirez, MD</td>
<td>Assistant Professor and McKelvey Scholar</td>
<td>Department of Medicine, Division of Pulmonary and Critical Care, Emory University School of Medicine</td>
</tr>
<tr>
<td>Mark R. Rigby, MD, PhD, FAAP</td>
<td>Assistant Professor and McKelvey Scholar</td>
<td>Department of Pediatrics, Emory University School of Medicine; Emory Transplant Center; Clinical Care Medicine, Children’s Healthcare of Atlanta</td>
</tr>
<tr>
<td>Andrew L. Smith, MD</td>
<td>Medical Director, Heart Failure and Transplantation and Associate Professor</td>
<td>Division of Cardiology, Emory University School of Medicine</td>
</tr>
<tr>
<td>James R. Spivey, MD</td>
<td>Director of Transplant Hepatology</td>
<td>Department of Medicine, Emory University School of Medicine</td>
</tr>
<tr>
<td>Andrei C. Steiber, MD</td>
<td>Associate Professor</td>
<td>Department of Surgery, Division of Liver Transplantation, Emory</td>
</tr>
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In addition, the Center is supported by several staff in administration:

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Departmental Affiliation</th>
</tr>
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<tr>
<td>Heather Holley Hamby, MPH</td>
<td>Senior Administrator</td>
<td>Emory Transplant Center</td>
</tr>
<tr>
<td>Sara Atwater, MPH</td>
<td>Financial Manager</td>
<td>Emory Transplant Center</td>
</tr>
<tr>
<td>Jacqueline Bonnick, MBA</td>
<td>Transplant Financial Supervisor</td>
<td>Emory Transplant Center</td>
</tr>
<tr>
<td>Lisa M. Carlson, MPH, CHES</td>
<td>Academic Program Director and Adjunct Associate Professor</td>
<td>Emory Transplant Center and Rollins School of Public Health</td>
</tr>
<tr>
<td>Laura Carr, RN, BSN, MPH</td>
<td>Program Manager</td>
<td>McKelvey Lung Transplantation Center</td>
</tr>
<tr>
<td>Katharine M. Foster</td>
<td>Project Manager</td>
<td>Emory Transplant Center</td>
</tr>
<tr>
<td>Mary Gullatte, RN, MN, ANP, AOCN, FAAMA</td>
<td>Director of Nursing for Inpatient Transplant Services</td>
<td>Emory Hospitals</td>
</tr>
<tr>
<td>Evelyn Jirasakhiran, RN, MS</td>
<td>Department Director, Transplant Nursing Services</td>
<td>Transplant Surgery, 9E, Emory University Hospital</td>
</tr>
<tr>
<td>Ginny D. McGrath, BSN, RN, CCTC</td>
<td>Clinical Nurse Manager</td>
<td>Emory Transplant Center</td>
</tr>
<tr>
<td>Rick Milam, RHIA, CPC</td>
<td>Data Analyst</td>
<td>Emory Transplant Center</td>
</tr>
<tr>
<td>Robin S. Pastush, RN, BSN</td>
<td>Administrator of Operations</td>
<td>Emory Transplant Center</td>
</tr>
</tbody>
</table>
FACULTY RESEARCH HIGHLIGHTS

Wendy M. Book, MD

Dr. Book is an assistant professor in the Department of Cardiology at Emory University School of Medicine.


Patrick H. Bowen, MD

Dr. Bowen is Section Head of Endocrinology and Diabetes for Emory Healthcare and the Emory Clinic, and is an Assistant Professor in the Division of Endocrinology at Emory University School of Medicine. His clinical interests focus on management of type 1 and type 2 diabetes mellitus, insulin pump therapy, and islet cell transplantation for type 1 diabetes.

Carlos Fasola, MD

Dr. Carlos Fasola is an abdominal transplant surgeon who graduated from the Universidad de Chile Medical School, in Santiago, Chile. He trained at the University of Minnesota, where he did his General Surgery Residency, transplant research, and a multi-organ transplant fellowship. In 2003, he joined Dr. Thomas Heffron as a transplant surgery fellow for additional training and experience in split, reduced-size, and living-
donor liver transplantation for both adults and children. He joins the faculty of the Emory Department of Surgery as a liver transplant surgeon at Emory University Hospital and Children’s Healthcare of Atlanta.

**Seth Force, MD**

Dr. Force is the Surgical Director of the Adult Lung Transplant Program, and a McKelvey Scholar in Lung Transplantation. He plays an active role in the residency program and serves as an Assistant Professor in the Department of Surgery Division of Cardiothoracic Surgery.


Force SD, Miller DL, Pelaez A, Ramirez AM, Vega D, Barden B, Lawrence EC. Outcomes of Delayed Chest Closure Following Bilateral Lung Transplantation. Accepted for publication in Annals of Thoracic Surgery 1/06.

**Shiv Gangappa, DVM, PhD**

Dr. Gangappa’s work focuses on the investigation of novel immunotherapeutic strategies for transplantation tolerance in non-human primate and murine models; and mechanisms of viral latency and antiviral immunity in costimulation blockade-induced transplantation tolerance.

Most transplant recipients harbor several human herpesviruses, which is not surprising given their wide distribution. If the recipient is seronegative for CMV, EBV, HHV-6, or KSHV, the individual is still at risk of infection from donor organs. Infections with any of these herpesviruses can threaten the survival of both the patient and the graft. EBV, KSHV, and HHV-6 have been considered etiologic agents or cofactors for several malignancies. Between 14% and 28% of kidney transplant recipients with a reactivation of KSHV may develop Kaposi’s sarcoma and the disease can be very aggressive in transplant recipients, with a mortality rate of 34% within 3 years of diagnosis. One of the limitations in studying the mechanisms by which herpes viruses affect allograft survival is the lack of a suitable small animal model owing to their species specificity. A murine herpes virus, gammaherpesvirus 68 (gHV68) is genetically related to human gammaherpesviruses and infects in-bred and out-bred mice, and therefore serves as a good small animal model to study effects of latent infection on transplant tolerance. Dr. Gangappa’s work in this animal model suggests that latent infection of donor tissue or recipients interferes with tolerance induction. Ongoing work is aimed at defining mechanisms by which viral and host factors interfere with tolerance induction, and utilize this knowledge to improve strategies for allograft tolerance.


**Antonio Guasch, MD**

Dr. Guasch's research interests are related to the pathophysiology of glomerular damage in humans. He uses a combined physiological-structural approach to understand how the glomerulus is injured and the what the mechanisms of progressive renal insufficiency are in both the native and transplanted kidney. Using clearance techniques and glomerular sieving of polydisperse dextrans, he has developed techniques to analyze glomerular hemodynamics and the filtering properties of the glomerular capillary wall. By applying histomorphometric techniques to kidney biopsies, he can quantitate the ultrastructural pathological changes and correlate them with the physiological alterations. He has applied these methods to the study of the glomerular damage caused by sickle cell anemia, chronic renal allograft rejection, and diabetic nephropathy. He is also interested in evaluating new therapies in patients with glomerulonephritis.

**Thomas G. Heffron, MD**

Dr. Heffron is the Carlos and Marguerite Mason Chair for Liver Transplantation and is the Director of Liver Transplantation, practicing at both Emory University Hospital and Children’s Healthcare of Atlanta at Egleston. His work focuses on innovative surgical techniques involved in liver transplantation with his overall research geared toward expertise in surgical techniques applicable to living donor liver transplantation. Specifically: 1) The aim of the research of Dr. Heffron's team is to develop animal models for hand-assisted laparoscopic liver resection. They are attempting to define a logical sequence of operative steps that will result in the safe resection of a liver segment. To that end, they are utilizing novel
laparoscopic instruments in a series of acute large animal experiments. 2) Other surgical research of the team is centered around novel approaches using left lateral segments for adult transplantation.

Other themes involved in their research are associated with our molecular labs which are involved with opportunistic viral infections associated with solid organ transplantation. Most recent work has been with long chain polymerase chain reaction (PCR), genomics and drug resistance of cytomegalovirus.

**Evelyn Jirasakhiran, RN, MS**

Patient education enhanced with video has been shown to improve patient knowledge and satisfaction and to reduce nursing time needed for education (Brown, Duchin & Villagomez, 1992). In March 2004, a research study done by nurses on “Testing Video Enhanced Education in an Adult Renal Transplant Sample” was completed. Video enhanced patient education has not been reported in renal transplant patients. The purpose of this study was to determine whether or not there were differences in patient satisfaction, patient knowledge scores, immune suppressive drug levels and time to process through the transplant clinic for patients receiving the usual patient teaching and those receiving the usual teaching with the addition of video tapes. Subjects were identified at the time of transplantation and asked to consent to participation. Patient satisfaction and knowledge were measured with instruments developed for the study. Knowledge scores were tested before hospital discharge and at the first clinic visit after discharge. In this study, enhancing usual education with video tapes did not significantly improve patient knowledge, satisfaction, immune suppressive drug levels or time to process through the clinic. However, it should be noted that both methods of patient education were highly effective with mean knowledge scores surpassing 85 for both groups at both time points. In addition, all immune suppressive drug levels were within the normal range, demonstrating compliance with drug regimen. On October 15, 2004, research on “Testing Video Enhanced Education in a Renal Transplant Sample” was presented as an oral presentation at the International Transplant Nurses Society’s 13th Annual Symposium and General Assembly in Vancouver, BC, Canada. Presenters were: Evelyn Jirasakhiran, RN, MS; Beth Begley, RN, BSN; and Janet Anderson, RN. The group has submitted this research study for publication.

**Hetal Karsan, MD**

Dr. Karsan received training in Transplant Hepatology at the UCLA Medical Center in Los Angeles. He had a vast array of experience managing patients before, during and after liver transplantation. He also completed formal training in gastroenterolgy and advanced endoscopic procedures at UCLA Medical
Center. He then moved with his family to Atlanta to practice Gastroenterology and Hepatology. He joined Emory University in 2005 and serves as the Medical Director of the Liver Transplant Program.

Harsh Kapoor, MD, FRCP, FACP, FACG

Dr. Harsh Kapoor completed his residency in Internal Medicine and his Gastroenterology fellowship at Dalhousie University in Halifax, Nova Scotia, Canada, prior to completion of a fellowship in Hepatobiliary disease in Sydney, Nova Scotia. From 1999 until 2000, he was on staff at Dalhousie University, where he received the best teacher award. In 2001 he moved to Atlanta to practice Gastroenterology and Hepatology. Dr. Kapoor joined Emory in 2005 as a hepatologist for the Liver Transplant Program. He is also involved with major clinical research projects in Hepatitis C and is widely published in Gastroenterology journals.

Leslie S. Kean, MD, PhD

Transplantation tolerance, defined as long-term allograft acceptance by an immunocompetent recipient in the absence of immunosuppression, remains an elusive goal of clinical transplantation. The Larsen/Pearson laboratory (of which I am a member) has been at the center of research that has focused on understanding mechanisms leading to transplantation tolerance, with the ultimate goal of translating knowledge of these mechanisms to clinical transplantation. Over the past several years, our group and others have developed strategies targeting the CD40 and CD28 T cell costimulation pathways to control allograft rejection in murine models. By providing costimulation blockade in the peri-transplant period, existing donor-reactive T cells receive “signal one” (supplied by donor cells and antigens) in the absence of “signal two” and are preferentially deleted. This leads to robust, long-term tolerance when normal mice are transplanted under the protection of costimulation blockade. However, when more immunologically complex systems are transplanted with these same techniques, true immunologic tolerance is more difficult to achieve. My work has focused on three specific questions, all related to transplantation tolerance, and its acquisition in immunologically complex model systems:

1. In a highly immunologically active model of a non-malignant hematologic disease (sickle cell disease) what are the major barriers to the acquisition of transplantation tolerance?
2. How do natural killer cells impact the acquisition of transplantation tolerance, and can control of natural-killer alloreactivity produce transplantation tolerance in otherwise resistant models?
3. In the non-human primate model, what are the major barriers to the acquisition of transplantation tolerance, and can we combine blockade of the costimulation pathway with other manipulations to achieve robust donor specific tolerance?


**Kenneth E. Kokko, MD, PhD**

Emory University maintains an active collaborative research group in the area of transplant immunobiology. Dr. Kokko is associated with the transplant immunology laboratory and studies the effects that conventional immunosuppression has on the ability of a subject to maintain protective immunologic memory to antigen presentation. At a basic science level, Dr. Kokko has explored the regulatory role of an inflammatory cytokine, interleukin-15, on the maintenance of T lymphocyte memory to a transplanted organ. In collaboration with Dr. Chris Larsen, Dr. Kokko is studying the effects of immunosuppression on the protective immunity to various viral pathogens such as BK polyoma, influenza and vaccinia. In collaboration with Dr. Kenneth Newell, Dr. Kokko is studying the utility of novel immunologic assays as a predictor of which patients can undergo immunosuppressive reduction safely. Dr. Kokko serves on the evaluation committee for renal transplantation and is a member of the renal transplant leadership group.

**Christian P. Larsen, MD, D Phil**

Dr. Larsen is an expert in transplantation surgery, immunology and immunotherapy. With the aid of significant grant funding, his research with Drs. Pearson and Newell works to establish true immune tolerance among transplant recipients. This research strives to free patients from the toxic side effects of daily immunosuppressant medicines and achieve permanent, long-term acceptance of organs. This year, they received a gift from the Carlos and Marguerite Mason Trust to continue this work through an integrated
collaborative approach studying potential new agents in mice (discovery), non-human primates (translation), and humans (application). Areas of primary research focus in his laboratory include: (1) understanding the fundamental mechanisms involved in the T cell response to transplant tissues, specifically the role of costimulatory pathways in T cell activation, and (2) the mechanisms involved in immunologic tolerance to self and transplanted tissues. Drs. Larsen and Pearson have a strong track record of bringing research to the patient – their research in co-stimulation blockade has been brought from basic research in the early 1990s through the primate center and into highly successful clinical trials in humans led by Emory to apply these strategies to the development of a clinically relevant means to achieving hematopoietic chimerism as a route to clinical transplantation tolerance. In addition to the investigation of novel tolerance strategies for long-term graft survival, Dr. Larsen and other investigators at the Emory Transplant Center recently received funding to study immune function and biodefense in recipients of organ transplants in preclinical and clinical settings, as well as to continue and expand their work in strategies for large scale islet replacement. Among his many appointments, Dr. Larsen is Professor and holder of the Carlos and Marguerite Mason Chair, Director of Emory Transplant Center, Vice Chairman of Research-Surgery, and Director of Mason Transplantation Biology Research Center.

**Recent Publications (2005 - 2006)**


**S. Raja Laskar, MD**

Dr. Laskar graduated from Clemson University and the Emory University School of Medicine. He went to the University of Texas Southwestern in Dallas Texas for both his Internal Medicine and Cardiology
fellowship training. During that time, he had specialized training in heart failure and cardiac transplantation under the mentorship of Dr. Clyde Yancy. His clinical interests are heart failure, cardiac transplantation, and cardiac imaging. His research interests are heart failure and cardiac MRI.

E. Clinton Lawrence, MD

E. Clinton Lawrence, a native Texan, received his BA from the University of Texas at Austin and MD from the University of Texas-SOUTHWESTERN Medical School, both in 1973. After a residency in Internal Medicine at the University of California-San Francisco, Dr. Lawrence performed immunology research at the National Cancer Institute, National Institutes of Heath, where he developed an interest in the lungs' immune system. He then pursued pulmonary subspecialty training at Baylor College of Medicine after which he joined the faculty, establishing and directing first the Rockwell-McKelvey Pulmonary Immunology Laboratory, followed by the heart-lung and lung transplantation programs. After a brief period as co-medical director of lung transplantation at Stanford University School of Medicine, Dr. Lawrence was recruited to Emory in 1993 as Professor of Medicine and Medical Director of Lung Transplantation. In 2001, Dr. Lawrence was appointed Director of the newly established Andrew J. McKelvey Lung Transplantation Center at Emory University School of Medicine. The focus of his research is to determine the mechanisms of acute and chronic rejection following lung transplantation and to develop alternative medical treatments for end-stage lung diseases. He has authored more than 80 original articles and book chapters.

Recent Publications (2005 - 2006)


Robert S. Mittler, Ph.D

The focus of Dr. Mittler’s individual research program is the study of mouse and human T-cell costimulation pathways that are essential for productive T-cell responses to foreign antigens. In this context, they hope to learn how to artificially regulate immune responses in humans, either to enhance the response in situations
of immunodeficiency and tumorogenesis or to selectively diminish the response to organ transplantation or in autoimmune diseases. They have focused upon T-cell activation regulated by the PD-1 receptor, a negative regulator of T cell activation, and the 4-1BB receptor an activator of T cells. PD-1 is a member of the CD28 family but unlike the CD28 T cell costimulatory receptor, its function is to counterbalance immune activation by turning it down. By blocking this signaling pathway, in conjunction with anti-4-1BB immunotherapy Dr. Mittler’s team hopes to enhance the establishment of anti-tumor immunity to neuroblastoma and Ewing’s sarcoma two of the most common and fatal childhood cancers. The 4-1BB receptor (CD137) is a member of the Tumor Necrosis Factor Receptor Superfamily (TNFR) that is rapidly expressed on murine T-lymphocytes and Natural Killer (NK) cells following activation. A key finding has been that in the mouse, 4-1BB receptors are preferentially used to activate CD8+ T-cells despite the fact that both CD4 and CD8 positive T cells express them. Dr. Mittler's team was also the first to show that administration of monoclonal anti-4-1BB antibodies into mice receiving skin or cardiac allografts rejected their grafts much more rapidly than mice injected with a control mAb. They were also the first to show that anti-4-1BB mAbs proved remarkably effective in completely eradicating established poorly immunogenic tumors in mice. Dr. Mittler’s group provided the first long-term comprehensive study that showed that anti-4-1BB treatment reversed the course of established SLE and RA in mice and that the treated lupus mice that normally die before one year of age survived for over two years, the normal lifespan of a mouse.

Recent Publications (2005 - 2006)


Nishimoto H, Lee SW, Hong H, Potter KG, Maeda-Yamamoto M, Kinoshita T, Kawakami Y, Mittler RS, Kwon BS, Ware CF, Croft M, Kawakami T. (2005). Costimulation of mast cells by 4-1BB, a member of the tumor necrosis factor receptor superfamily, with the high-affinity IgE receptor. Blood 106:4241


Ana L. Mora, MD

Dr. Mora joined the Division of Pulmonary, Allergy and Critical Care at the Emory School of Medicine in summer 2002, to investigate mechanisms of immunopathogenesis in Idiopathic Pulmonary Fibrosis (IPF). IPF is a progressive, fibrotic, interstitial lung disease of unknown etiology. No proven effective treatment is available, other than lung transplantation. Spontaneous remissions do not occur and death due to respiratory failure usually ensues within three to five years of diagnosis. Dr. Mora’s clinical evidence shows that more than 95% of IPF patients have chronic pulmonary infection with one or more herpesviruses. To determine the potential for developing chronic pulmonary herpesvirus infection as an animal model of IPF, Dr. Mora’s team sought information on the pathophysiologic effects of a herpesvirus infection in animals. MHV-68 is a natural pathogen of rodents that is closely related to the human gamma herpesviruses, HHV-8 and EBV. Their studies indicated that chronic lung infection with MHV68 of IFNγR/- mice causes epithelial damage and inflammatory responses that evolve into progressive pulmonary fibrosis. The histopathological features of the pulmonary disease in their experimental model coincide with many of the patterns that are described in the lungs of IPF patients. These changes in the lung were accompanied by derangement in alveolar Type II cells which has been reported in some families with familial IPF. Currently we are using this animal model to determine molecular mechanisms involved in disrepair of the injured lung and to define future treatments for IPF.
David Neujahr, MD

Dr. Neujahr joined the Mckelvey Lung Transplant Center in March of 2006 as an Assistant Professor of Medicine in the Department of Pulmonology and as the Associate Medical Director of Lung Transplantation. Dr. Neujahr is a graduate of Duke University's School of Medicine and performed his residency at New York Hospital, Weil Cornell Medical Center. He performed his Pulmonary Critical Care fellowship at the Hospital of the University of Pennsylvania. His research interest is in immune regulation in lung transplant patients.


Kenneth A. Newell, MD, PhD

Basic: Clinical evidence such as inferior graft survival and increased rejection demonstrates that intestinal allografts are uniquely immunogeneic. Our laboratory has shown that this is at least in part due to a strong immune response mediated by CD8+ T cells. Importantly, some biologic therapies that inhibit CD4+ T cell function do not impair CD8+ T cell function to the same degree. We have therefore explored alternative strategies for inhibiting CD8+ T cell function including detailed investigation of several TNF receptor superfamily molecules including CD154, membrane lymphotixin, 4-1BB, and LIGHT. These experiments suggest potential targets of intervening in the immune response to intestinal allografts but also provide more basic insights into the behavior of CD8+ T cells that may be applicable to other disease processes such as autoimmunity and immunity to viral infections and tumors. Recently we have also expanded our studies to include an examination of tissue specific factors that may contribute to differences in the nature of the immune response to different organs. The intestine possesses a unique immunologic microenvironment which includes organized secondary lymphoid tissues, specialized immune cell populations, and unique chemokines and integrins to regulate cell trafficking. Our data demonstrate that the secondary lymphoid organs within the transplanted intestine as well as epithelial-restricted chemokines such as CCR9 contribute to the process of intestinal allograft rejection and may contribute to the unique immunogenicity of transplanted intestines.

Clinical: Outcomes of transplantation have continued to improve dramatically over the last three decades. This is at least in part due to the development of more and better immunosuppressive agents. However, the long-term reliance upon drugs that globally suppress the immune system is associated with numerous deleterious side effects. For this reason, immunosuppressive drug minimization or withdrawal is now an
important focus of the transplant community. Two NIH funded projects seek to address this issue. In the first funded project we are studying patients who have maintained excellent graft function despite no longer taking immunosuppressive drugs. This small cohort is recruited from around the world for the purpose of gathering patient data and clinical material to evaluate potential assays predictive of “tolerance”. The results obtained will be compared to several other groups of transplant recipients. A second set of NIH-sponsored trials is intended to develop and validate assays for the purpose of guiding decisions about immunosuppressive drug management. This project is a collaboration among investigators at the Cleveland Clinic, Case Western Reserve, the University of Manitoba, Brigham and Womens’ Hospital (Harvard), the University of California San Francisco, Yale University, and Emory University. It is comprised of a number of sub-studies aimed at developing assays to monitor both the cellular and humoral response to organ allografts and then to use these assays prospectively to manage immunosuppressive medications following kidney, heart, and lung transplantation.


Andres Pelaez, MD

Dr. Pelaez joined the Emory Lung Transplant Program in May 2005 as an Assistant Professor of Medicine in the Department of Pulmonary, Allergy Critical Care and as the Associate Director of the McKelvey Lung Transplant Center. He did his residency in Internal Medicine at the University of Texas Health Science Center San Antonio, a fellowship in the specialty of Pulmonary and Critical Care Medicine at Emory University School of Medicine, and an additional fellowship in the field of Interventional Bronchoscopy and Lung Transplant back at the University of Texas Health Science Center San Antonio.

Thomas C. Pearson, MD, D Phil

T cells play a central and critical role in the rejection of transplanted organs. Dr. Pearson’s research has focused on better understanding the critical factors for T cell activation and function and the development of novel strategies to block the rejection response. These investigations have involved the development and assessment of novel immunomodulatory strategies in rodent models and pertinent pre-clinical testing in non-human primates. These investigations, on the whole of the costimulatory pathways and the alloimmune response, have the ultimate goal of developing a clinically relevant strategy to induce permanent long-term tolerance to transplanted organs in humans.

Recent Publications (2005 - 2006)


Jennie P. Perryman, RN, PhD

The focus of Dr. Perryman’s research is on the bio-psychosocial, economic and access issues related to organ transplantation and donation, including 1) the development of clinical practice models to improve
organ donation rates in acute care settings; 2) the study of donation decision making within the African American family relative to both living and deceased donation, and 3) access of African-Americans to wait listing and transplantation. Currently, Dr. Perryman is the co-primary investigator on a five-year qualitative study of the African-American family in the donation decision-making process, being conducted with colleagues in the Rollins School of Public Health (RSPH) of Emory University with funding by NIDDK. Through the analysis of qualitative data generated from family focus groups and individual family member interviews, culturally-sensitive interventional education materials have been developed and are being tested in randomly selected study sites to determine their effectiveness over time when compared with standard materials currently used in the African-American community. Dr. Perryman’s other research focus, again being conducted with colleagues from RSPH compares donation, listing and transplantation rates of African-Americans in Georgia to states nationally and in the southeastern over a ten-year period of time. Upon completion of the quantitative analyses, a qualitative study has been initiated to conduct interviews; review of selection criteria, processes, practices, and, perform content analyses of educational materials of four transplant centers within the high ranking states with comparison of Georgia transplant center. Additionally, in Georgia interviews of nephrologists, dialysis clinic staff, African-Americans on dialysis and their families are underway to identify those variables which may negatively influence transplantation of African Americans and to develop interventions to improve Georgia’s rates of donation, listing and transplantation with the African American end-stage renal disease population.

Allan Ramirez, MD

The focus of Dr. Ramirez’ research is the study of the mechanisms of chronic rejection in lung transplantation, which manifests as obliterative bronchiolitis (OB). Using a mouse model of lung transplantation, we have found that transforming growth factor-\(\beta\) is a critical molecule in the pathogenesis of (OB). In particular, signaling through Smad3 appears to be the predominant pathway through which TGF-\(\beta\) exerts its effects. In addition, we have identified the myofibroblast as an important cell type in OB, whose phenotype is largely dependent on Smad3. We are continuing to examine the factors that control the expression of Smad3 and the features that promote myofibroblast differentiation and proliferation.


Mark R. Rigby, MD, PhD, FAAP

Dr. Rigby joined the Emory Transplant Center in Summer 2003 to investigate mechanisms of immunopathogenesis and tolerance induction in Type 1 diabetes mellitus. Type 1 diabetes mellitus is an autoimmune disease directed by the pancreatic beta cells. Insulin independence can be obtained with islet transplantation. Emory Transplant Center is on the forefront of evaluating approaches and novel immunosuppressive regimens for clinical islet transplantation. Our focus is to use animal and cellular models to understand the immunopathogenesis of this disorder. By understanding these mechanisms they can be (1) interrupted to prevent disease or (2) modified to allow for immune tolerance induction and therefore allow for immunosuppressive-free islet transplantation. Specifically we are using the NOD mouse model, transgenic diabetogenic T cells, and adoptive transfer systems to identify pathways involved with cellular activation of pathogenic T cells. Other studies are using well-defined tolerance induction protocols previously identified in Larsen and Pearson laboratory – like co-stimulatory blockade – to prevent primary disease or disease recurrence after islet transplantation. In addition Dr. Rigby is assisting in the Transplant Center in the evaluation of patients receiving islet transplants for Type 1 diabetes and studies in non-human primates optimizing islet transplantation with the goal to make islet transplantation more efficacious and generalizable therapy. With these combined efforts we hope to translate “basic” research on diabetes to clinical benefit.


Andrew L. Smith, MD

Andrew L. Smith received a B.S. from Davidson College in 1980 and his M.D. from Emory University School of Medicine in 1984. A year later, he completed an internship in internal medicine at Emory University Affiliated Hospitals. He did an internal medicine residency at Temple University Hospital, where he later was a Fellow in Clinical Pharmacology, and in 1990 he completed a Cardiology Fellow at Temple. In 1991, while a junior faculty cardiologist there, Dr. Smith interviewed an Emory cardiac transplant surgeon interested in a position at Temple. Shortly thereafter, Smith was recruited to Emory to be the medical director of the Heart Failure and Transplant Program; and in 1992 he established the Emory Center for Heart Failure Therapy, a specialized program for patients with advanced heart failure. The referral program, which implements the
use of new drugs, medical devices, and educates patients in lifestyle management, has served as a model for other medical practices in Georgia. Smith’s research focus is on improving the outcomes of patients with cardiomyopathy and congestive heart failure, and also improving outcomes in patients before and after cardiac transplantation. To that end, he serves on a national steering committee whose goal is to improve outcomes of patients with heart failure through education of other healthcare professionals. His work continues to be supported by numerous grants. Smith is author or coauthor of numerous publications that include abstracts, journal articles, and book chapters. He is a manuscript reviewer for the Journal of American College of Cardiology and the Journal of International Society of Heart & Lung Transplantation. He is the recipient of the J. Willis Hurst Excellence in Teaching Award (Cardiology Fellows’ Award) and the Woodruff Fund Clinical Teaching Support Award in Medicine.

James R. Spivey, MD

Dr. James Spivey comes to Emory as the new Medical Director of the Liver Transplant Program after 12 years with the Mayo Clinic where he served as a consultant in the division of Gastroenterology and Assistant Professor of the Mayo Medical School. Dr. Spivey moved to the Mayo Clinic in Jacksonville, FL where, in 1998, he helped begin their solid organ transplant programs. Dr. Spivey served as Chief of the Division of Transplant Medicine in the Department of Transplantation. He is a graduate of Tulane Medical School and completed his Hepatology fellowship at the University of Miami.

Andrei C. Steiber, MD

Dr. Steiber is an active participant in clinical research and focuses his time on the teaching of residents and fellows. He was recently awarded a Golden Apple award by the Chief Residents.

Paul L. Tso, MD

Dr. Paul Tso is a provider of surgical care for the kidney and pancreas transplant patients of The Emory Transplant Center. He also provides dialysis access for the renal failure patients in the community. His areas of interest include the increased utilization of expanded criteria donors to help meet the increased demand for transplantable organs, and pulsatile preservation. In 2006, Dr. Tso became a charter member of the Vascular Access Society of the Americas.


J. David Vega, MD

Dr. Vega is currently serving as the Vice-Chairman, OPTN/UNOS Thoracic Organ Transplantation Committee for the United Network for Organ Sharing, July 1, 2004 – June 30, 2006. His major research themes include mechanical circulatory support, cardiac transplantation, organ preservation, immunosuppression and lung transplantation.


Collin J. Weber, MD, DM, Sci

Dr. Weber’s research focus is pancreatic islet transplantation. The long-term goal is to develop techniques for safe and durable islet cell replacement for large numbers of patients with insulin dependent diabetes mellitus. For the past several years, this research has concentrated on the use of xenogeneic tissues as sources of donor islets and microencapsulation plus selective immune modulation of hosts as the means to accomplish cross species islet graft survival. A second focus of research is cause(s) of human parathyroid tumors and their functional characteristics. These studies have concentrated on secreted products of human parathyroid tumors including neuropeptides and cytokines and analyses of replication of parathyroid tumors of differing histopathology.

Researchers Dr. Weber and Dr. Susan Safley are studying transplantation of endocrine cells, such as pancreatic islets and parathyroid cells. Unlike whole organ transplants, cell transplants may be protected from host immune responses by use of microcapsules as immunosolation barriers. To block islet xenograft rejection, diabetic NOD mice were given CTLA4-Ig (a soluble fusion protein that blocks B7/CD28
interactions) and/or MRI (a mAb that interferes with CD40/CD154 binding). Microencapsulated islets functioned (bg<250 mg/dl) 13 ± 2 days (n=38); MRI treatment (days 0,2,4, and 6) did not prolong survival (11 ± 1 days) (n=8). CTLA4-Ig (every other day for 21 days) extended graft survival to 24 ± 3 days (p<0.002, n=29); MRI + CTLA4-Ig further prolonged function to 57 ± 5 days (p<0.001, n=14). In all groups, graft failure was accompanied by a profuse peritoneal cellular infiltrate of macrophages, neutrophils, eosinophils, CD4+ and CD8+ T cells, suggesting that failure was due to rejection. By contrast, chronic treatment with MR1 + CTLA4-Ig extended graft survival to 111 ± 12 days (p<0.002, n=9), over 200 days in some animals. The profile of PEC from these mice was similar to untransplanted control diabetic NODs and was not characteristic of immunologic rejection. Biopsies of 3 mice with functioning grafts (days 130, 144, and 169 post-transplant) revealed intact microcapsules containing healthy islets with no apparent host cellular reaction. These data show that islet microencapsulation plus costimulatory blockade of host immune responses promotes long-term to indefinite survival of porcine islet xenografts.

A second area of research involves studies of secreted products of parathyroid tumors. Parathyroid hormone (PTH) stimulates osteoblasts to produce the proinflammatory cytokine interleukin-6 (IL-6), causing bone resorption. In patients with primary hyperparathyroidism, elevated serum levels of IL-6 normalize after resection of parathyroid tumors. Since IL-6 is also expressed in normal parathyroids and in other endocrine cells (adrenal and islet), we hypothesized that parathyroid tumors might contribute directly to the elevated serum IL-6 levels in patients with hyperparathyroidism. Immunohistochemistry identified IL-6, PTH, and chromogranin-A (an endocrine and neuroendocrine tumor marker) in normal, adenomatous, and hyperplastic parathyroids. By immunofluorescence and confocal microscopy, IL-6 co-localized with PTH and with chromogranin-A in parathyroid cells. All cultured parathyroid tumors secreted IL-6 at levels markedly higher than optimally stimulated peripheral blood mononuclear cells. Supernates from cultured parathyroids stimulated proliferation of an IL-6-dependent cell line, and anti-IL-6 mAb abolished this stimulatory effect. IL-6 mRNA was documented in cultured parathyroid tumors, cultured normal parathyroids, fresh operative parathyroid tumors, and fresh operative normal specimens. In conclusion, these data show that parathyroid tumors and normal parathyroids contain, produce, and secrete IL-6. Our findings present a novel pathway by which human parathyroids may contribute markedly to IL-6 production and elevation of serum IL-6 levels in patients with hyperparathyroidism. The physiologic relevance of IL-6 production by human parathyroids remains to be determined, but IL-6 secretion by parathyroid tumors may contribute to bone loss and to other multi-system complaints observed in these patients.
### VI. RESEARCH FUNDING

The following table provides a breakdown of our funding.

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<td>$6,230,976</td>
<td>$5,687,338</td>
<td>$6,984,574</td>
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<td>TOTAL INDIRECTS</td>
<td>$1,909,733</td>
<td>$2,479,427</td>
<td>$2,268,258</td>
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<tr>
<td>TOTAL RESEARCH FUNDING</td>
<td>$8,140,709</td>
<td>$8,166,765</td>
<td>$9,252,832</td>
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</table>

The Center has been the fortunate recipient of significant private and foundation funding *not reflected* in the specific investigator awards. For FY05-06, these gifts total **$2,097,000.**
# VII. CONTACT INFORMATION

<table>
<thead>
<tr>
<th>CONTACT</th>
<th>PHONE AND EMAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Emory Transplant Center</strong>&lt;br&gt;Christian P. Larsen, MD, D Phil&lt;br&gt;Director&lt;br&gt;Heather Holley Hamby, MPH&lt;br&gt;Senior Administrator&lt;br&gt;Gina White&lt;br&gt;Program Coordinator</td>
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<td><strong>Academic Program</strong>&lt;br&gt;Lisa M Carlson, MPH, CHES&lt;br&gt;Academic Program Director&lt;br&gt;Griselda McCorquodale&lt;br&gt;Senior Research Project Coordinator</td>
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<td>404.712.4993&lt;br&gt;<a href="mailto:Jennie.Perryman@emoryhealthcare.org">Jennie.Perryman@emoryhealthcare.org</a></td>
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<tr>
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<td>404.727.8778&lt;br&gt;<a href="mailto:jalawso@rmy.emory.edu">jalawso@rmy.emory.edu</a>&lt;br&gt;404.727.8608&lt;br&gt;<a href="mailto:kluehrs@rmy.emory.edu">kluehrs@rmy.emory.edu</a></td>
</tr>
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<td><strong>Inpatient Transplant Nursing Services</strong>&lt;br&gt;Evelyn Jirasakhiran, RN, MS&lt;br&gt;Department Director&lt;br&gt;Transplant Services/Rollins Pavilion</td>
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