Department of Surgery

Dr. Leigh Neumayer
Chair, Department of Surgery

Presented:
March 18, 2015
DEPARTMENT OVERVIEW

Dr. Leigh Neumayer
Professor and Chair, Department of Surgery
Mission, Role & Scope

• Attain national prominence in clinical service, education and research

• Top tier, academically distinctive department
  – Clinical innovation
  – New technologies
  – Complete spectrum of research
Mission, Role & Scope

- Growth targeted to complex patient case services

- Advancement of unique multidisciplinary clinical, research and educational programs
  - Collaborations
  - Partnerships
Historical Perspective

• Department founded in 1969 with first chair Erle Peacock, MD

• Long clinical and research history in abdominal transplantation, lymphology, ignorance, surgical biology and cardiovascular endeavors

• Originally included Orthopedics, Ophthalmology, Anesthesia
Historical Perspective

- One of initial accredited vascular fellowships and vascular integrated residency

- World leader in cardiac surgery and devices including artificial hearts

- Recent advancements in care of trauma patients
  - Traumatic brain injury
  - Transfusion/resuscitation
Who we are

52 Faculty (49.8 FTE)

10 Research Faculty (8.1 FTE)

24 Research Staff (21.4 FTE)
5 Post Doctorate (5.0 FTE)

77 Residents
- 52 General Surgery
- 7 Neurosurgery
- 7 Vascular
- 5 Urology
- 4 Trauma
- 1 MIS
- 1 CT

Students
- Graduate
- Undergraduate
- High School Students

33 Support Staff (31.3 FTE)
FY15 Funding Sources

FY15 Budgeted Funding Sources (in thousands)

- $33,487 (76%)
- $8,444 (19%)
- $2,253 (5%)

Banner (UAHN)
Univ of AZ
Endowments
Research Awards

Research Awards by Fund Group

- FY11
- FY12
- FY13
- FY14
- FY15

Yr to Date

- Federal
- Non Federal
- State

$0

$1,000,000

$2,000,000

$3,000,000

$4,000,000

$5,000,000

$6,000,000

$7,000,000
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<thead>
<tr>
<th>Title</th>
<th>Faculty</th>
<th>Endowment</th>
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<tbody>
<tr>
<td>Margaret E. and Fenton L. Maynard Endowed Chair in Breast Cancer Research</td>
<td>Dr. Leigh Neumayer</td>
<td>~1.1M</td>
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<tr>
<td>Gluck Martin Endowed Chair in Surgery</td>
<td>Dr. Peter Rhee</td>
<td>1.75M</td>
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<tr>
<td>The Jack G. Copeland, MD, Endowed Chair of Cardiothoracic Surgery and the Michael Drummond Distinguished Professor of Cardiovascular and Thoracic Surgery</td>
<td>CT Division Chief</td>
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<td>The Tony Marnell Endowed Chair for Research in Cardiothoracic Surgery</td>
<td>Dr. Zane Khalpey</td>
<td>1.6M</td>
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<td>George Drach, MD Endowed Chair in Urology</td>
<td>Urology Division Chief</td>
<td>~$200K</td>
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<tr>
<td>Carmona Endowed Chair</td>
<td>TBA</td>
<td>~$12K</td>
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## Other Endowments

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<tr>
<td>McLane Endowment</td>
<td>Support Education and Research</td>
<td>~1.5M</td>
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<td>Kresse Endowment</td>
<td>Support the Artificial Heart Program</td>
<td>~$144K</td>
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<td>Friends of UA Trauma Center</td>
<td>Support Education and Research in Trauma</td>
<td>~$210K</td>
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<td>Charles F. Zukoski Endowment</td>
<td>Support Post Graduate Surgical Education</td>
<td>~$55K</td>
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<td>Charles L. Witte Surgery Endowment</td>
<td>Support a Professorship in Surgery</td>
<td>~53K</td>
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<td>Jack &amp; Rosemary Dunn Endowment</td>
<td>Support Education and Research in Neurosurgery</td>
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<tr>
<td>Raczkowski Cardiothoracic Surgery Education</td>
<td>Support Education and Training of Residents and Fellows in CT Robotics</td>
<td>~$10K</td>
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</table>
Building an intentional culture where everyone flourishes: A vision for the University of Arizona Department of Surgery

Leigh Neumayer, MD, MS, FACS
Professor of Surgery
(from the April 2014 presentation)
Importance of Alignment
WE HAVE NEVER SETTLED.
NEVER WILL.

BECAUSE WE'RE THINKERS AND DOERS, ALWAYS MOVING FORWARD, UPWARD.
University of Arizona Strategic Plan

Building on Our Strengths

- Defense and Security
- Space Systems
- Water and the Arid Environment
- Population Health and Health Outcomes
- Healthcare Disparities
- Precision Health
- Neuroscience

SPACE & OPTICS | ENVIRONMENT | TRANSLATIONAL BIOMEDICAL
IMAGING AND INFORMATICS

Support Structure: Talent, Identity, Information Technology, Communications
AHCS 5 Year Goals

- Increase AHSC Biomedical Research Revenue (+$220M)
- Successfully compete for a NIH Clinical Translational Science Award
- Improve National Ranking in Research for each College
- Increase US News & World Report Clinical Ranking
- Increase AHSC Student, Trainee and Faculty Diversity
- Increase the Titer of Physician Scientists in the AHSC
- Establish National Leadership in Interdisciplinary Education & Practice
Vision

Building an intentional culture where everyone flourishes

- Enable and encourage faculty, residents, students and staff to obtain their personal and professional goals
- Create and relate a culture of honor, respect and passion
- Alignment with AHSC goals
Vision

The place where people want to be

• Patients want to get their care
• Faculty want to work
• Residents want to train
• Medical students want to be educated
An Intentional Culture

- People first
- Leadership at all levels
- Relentless transparency
- Generative solutions
Operationalizing the Vision

• Formal Faculty Development Plan
  – Mentoring and being mentored

• Academic Enterprises

• Strategic recruiting

• Seeking and valuing inclusion
Operationalizing the Vision

• Formal Faculty Development Plan
  – Mentoring and being mentored

• Academic Enterprises

• Strategic recruiting

• Seeking and valuing inclusion
Mentoring throughout the career

- College
- Medical school
- Residency/fellowship
- First few years in practice
- Middle years in practice or during transitions
- Later years (exit planning)
- Senior Mentoring Teams
Formal Faculty Development

- ON-TRAK
  - Formal faculty development plan for new faculty
- On boarding for surgeons
  - Clinical
  - Research
  - Education
Operationalizing the Vision

• Formal Faculty Development Plan
  – Mentoring and being mentored

• Academic Enterprises

• Strategic recruiting

• Seeking and valuing inclusion
Operationalizing the Vision

- Formal Faculty Development Plan
  - Mentoring and being mentored
- Academic Enterprises
- Strategic recruiting
- Seeking and valuing inclusion
Strategic Recruiting

- SWOT analysis of department
  - Clinical
  - Scholarly/Academic
  - Education/training
- Mission-based planning
  - What areas need attention
  - Current faculty strengths
  - Use data
Strategic Recruiting

• Alignment with AHSC vision and priorities
  – Target recruitments that fulfill both clinical and academic need
  – Department goals to assist in achieving AHSC goals
    • # K or equivalent awards
    • Identify mid to senior career funded investigators
      – Currently in place
      – Potential recruitments (sometimes joint with other dept)
Operationalizing the Vision

- Formal Faculty Development Plan
  - Mentoring and being mentored
- Academic Enterprises
- Strategic recruiting
- Seeking and valuing inclusion
Seeking and Valuing Inclusion

• 5 year AHSC goal

• Targeted recruitments
  – Including from U of A SOM and training programs
  – Pipeline programs
  – Active “labs” involving students at all levels

• Respectful of diverse opinions
Diversity

Faculty

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<tr>
<td>White</td>
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Residents

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<tr>
<td>Male</td>
<td>71%</td>
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<tr>
<td>African American</td>
<td>8%</td>
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<tr>
<td>Hispanic/Latino</td>
<td>11%</td>
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<tr>
<td>Asian</td>
<td>27%</td>
</tr>
<tr>
<td>White</td>
<td>48%</td>
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How will we measure our success?

- Clinical: productivity, revenue, contribution margins, patient satisfaction, outcomes
- Faculty: Best Doctors, turnover rates
- Education: clerkship rankings, teaching awards, rank lists, resident attrition, resident fellowship and job placement
- Research: NIH rank, funding amounts, K awards, endowments, industry funding
EDUCATION

Dr. Valentine Nfonsam
Program Director, General Surgery Residency
History of the Program

• University of Arizona
  – Medical school started in 1967

• Prior to 1979, 2 surgical residencies
  – University of Arizona
  – Tucson Medical Center
Associated Programs

Residencies:
• Neurosurgery Residency (1 chief)
• Urology Residency (1 or 2 chiefs)
• Vascular Residency (0–5)

Fellowships:
• Acute Care Surgery Fellowship
• Cardiothoracic Fellowship
• Minimally Invasive Surgery Fellowship
• Surgical Critical Care Fellowship
• Vascular Fellowship (2 years)
On April 2, 2012, ACGME notified our program of the following:

The Residency Review Committee for Surgery reviewed and approved our program’s request for a permanent change in resident complement. The new approved complement is: Categorical [8–8–8–8–8], designated preliminary [4–3–0] and non-designated preliminary [9–3].

Maximum number of residents: 59
In the last two years, our program has matched both PGY 1 categorical and PGY 1 preliminary spots through the NRMP.

There are currently 52 surgical residents. Our residency program is one of the most diverse training programs:

**Gender:**
- Fifteen (15) women
- Thirty-nine (37) men

**Ethnicity:**
- Fourteen (14) identified themselves as Asian
- Four (4) identified themselves as Black
- Six (6) identified themselves as Hispanic
- Three (3) identified themselves as Other
- Twenty-seven (25) identified themselves as White
Integrated Hospitals

• Banner – University of Arizona Medical Center – Tucson

• Banner – University of Arizona Medical Center – South Campus

• Southern Arizona VA Health Care System (SAVAHCS)

• Tucson Medical Center (TMC)/Carondelet St. Joseph’s Hospital
• Tuba City Regional Medical Center

• Flagstaff Medical Center
Research and scholarly activity is strongly encouraged by the Department and the Residency program.

Every year at least 2 categorical residents step out for research at times culminating in an advanced degree (MPH, MS, PhD)
General Surgery Residency Highlights

Our residents are strongly encouraged and funded to attend and present at local and national conferences.

From July 2013 to June 2014, 76 new peer review papers were published with a General Surgery Resident as an author.

As of February 2015, thirty-eight new review papers have been published.
General Surgery Residency Highlights

ABSITE Trends 2012–2015

Department of Surgery
General Surgery Residency Highlights

• All five 2014 graduates pursued fellowship training.

• Six 2015 graduates will pursue fellowship training as of July 1, 2015 with one pursuing research at The University of Arizona.
General Surgery Residency Highlights

Chief Resident Case Logs 2013-2014

Blue is RRC Minimum Requirements

Red is Program Average of PGY 5 Graduating Chiefs
Future Direction

Continue to improve outcome

ABS exam
ABSITE
Technical skills

Foster Faculty participation in residents education

Expectations
Evaluations
Mentoring
Faculty development

Prepare residents by providing the necessary tools to practice medicine in the future

Precision medicine
Population medicine

Global heath/Rural surgery
## Residency and Fellowship Overview

<table>
<thead>
<tr>
<th>Residency/Fellowship</th>
<th>Program Length</th>
<th>2013-2014 Number of Residents/Fellows</th>
<th>2013-2014 Graduate Information</th>
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<tbody>
<tr>
<td>General Surgery</td>
<td>5 years</td>
<td>47</td>
<td>5 to fellowships</td>
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<tr>
<td>Acute Care Surgery</td>
<td>1 year</td>
<td>2</td>
<td>1 to academic faculty position in Michigan; 1 to group or private practice in Arizona</td>
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<tr>
<td>Minimally Invasive and Laparoscopic Surgery</td>
<td>1 year</td>
<td>1</td>
<td>1 group or private practice</td>
</tr>
<tr>
<td>Neurological Surgery</td>
<td>7 years</td>
<td>7</td>
<td>1 to fellowship</td>
</tr>
<tr>
<td>Surgical Critical Care</td>
<td>1 year</td>
<td>2</td>
<td>2 pursuing further training - Acute Care Surgery Fellowship</td>
</tr>
<tr>
<td>Thoracic Surgery</td>
<td>2 years</td>
<td>2</td>
<td>1 to academic faculty position at UofA; one left the program early without completing</td>
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<tr>
<td>Urology</td>
<td>4 years</td>
<td>6</td>
<td>2 into private practice</td>
</tr>
<tr>
<td>Vascular Surgery</td>
<td>2 years</td>
<td>2</td>
<td>1 in group or private practice in Arizona</td>
</tr>
<tr>
<td>Vascular Surgery Integrated</td>
<td>5 years</td>
<td>6</td>
<td>1 in group or private practice in Arizona</td>
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SURGERY CLERKSHIP

Dr. Rebecca Viscusi
Clerkship Director
Overview

• 6 week rotation

• 3 weeks on Trauma

• 3 weeks on – Surgical Oncology, South Campus, VA, Vascular, Transplant, MIS, Private practice (Dr Artz, Robertson, Schilling), Rural practice (Flagstaff, Winslow, Sierra Vista, Ft Defiance, Globe)

• 2 days of orientation

• One day a week dedicated to lectures and labs
• Suture lab with pigs feet

• Ultrasound lab with review of relevant anatomy and FAST exam

• ASTEC lab

• Physical exam with Dr Rappaport
Cadaver Lab

- Fresh cadavers
- 4 students, 2 faculty per lab
- Skills: intubation, cricothyroidotomy, chest tube placement, chest pigtail placement, subclavian line placement, ultrasound guided femoral vein puncture, foley placement
• Poster presentation at Association of Surgeon Educators meeting 4/2015:  
  “Integrating a flipped classroom model into a surgery clerkship”  
  Rebecca K Viscusi MD, James McClennathan MD, Lauren Beliveau, William Adamas-Rappaport MD;  

• Accepted publication:  
  “Introduction of a fresh cadaver lab during the surgery clerkship improves emergency technical skills”  
  William Adamas-Rappaport, Saman Nematollahi, BS; Stephen J Kaplan, MD, MPH; Christopher M Knapp, MD; Hang Ho, BS; Jared Alvarado, BS; Rebecca K Viscusi, MD  
  The American Journal of Surgery  

• Pending publication:  
  “Development of a fresh cadaver model for instruction of ultrasound-guided breast biopsy during the surgery clerkship: Pre-and Post-test results among third year medical students”  
  Hilary Rees, Hang Ho, William Adamas-Rappaport, Rebecca Viscusi
Quality Assessment

- GQ Survey
- Clerkship evaluations
- Faculty/resident evaluations
- Shelf exam
Outcomes

• Mean shelf scores:
  For 2013-2014
    National mean- 75.6
    UACOM mean- 75.5

• 8% of 2013-2014 class went into surgery
  7 General Surgery, 2 Ortho
Quality of Clerkship Experience

- Surgery: 84.5
- Neurology: 62.4
- Obstetrics and Gynecology: 62.4
- Internal Medicine: 80.6

Department of Surgery
RESEARCH SUMMARY

Ronald Heimark, PhD
Professor, Department of Surgery
Vice Chair Surgical Research
University of Arizona Cancer Center
NIH Ranking: College of Medicine and Department of Surgery

A. University of Arizona

<table>
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<tr>
<th>Year</th>
<th>Surgery</th>
<th>College of Medicine</th>
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<td>2013</td>
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<tr>
<td>2014</td>
<td>54</td>
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B. University of Utah

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<td>2013</td>
<td>41</td>
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<tr>
<td>2014</td>
<td>39</td>
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Blue Ridge Institute for Medical Research
Graduate Students

- Biomedical Engineering
- Cancer Biology

Medical Students

- Cell and Molecular Medicine
- Physiological Sciences

- Surgery Club
Research Training and Diversity Programs

Marlys H. Witte, MD
Professor Surgery
Director, Student Research Programs

Medical Students
NIH T35HL0749
NHLBI R25HL108837 Diversity

Undergraduate Students

High School Students
NINDS R25NS076437 Diversity
NIH R25OD010847 Global K12
NICHD R25HD080811
## Scholarly Research Activity

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<td>David Armstrong</td>
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<td>Peter Rhee</td>
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<td>Rick Kittles</td>
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<td>37</td>
<td>Marlys Witte</td>
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<td>35</td>
<td>Joe Mills</td>
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<td>Leigh Neumayer</td>
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<td>31</td>
<td>Ronald Heimark</td>
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<td>23</td>
<td>Bijan Najafi</td>
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<tr>
<td>20</td>
<td>Robert Krouse</td>
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<td>Klearchos Papas</td>
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<td>Randall Friese</td>
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<td>Rifat Latifi</td>
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<td>8</td>
<td>Bellal Joseph</td>
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<td>6</td>
<td>Marlon Guerrero</td>
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<td>5</td>
<td>Carlos Galvani</td>
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<tr>
<td>Citation Number</td>
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<td>573</td>
<td>Gale, N.W., Thurston, G., Hackett, S.F., Renard, R., Wang, Q., McClain, J., Martin, C., Witte, C., Witte, M.H., et al., Angiopoietin-2 is required for postnatal angiogenesis and lymphatic patterning, and only the latter role is rescued by angiopoietin-1. Developmental Cell 3:411,2002</td>
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Selected Research Awards

2015
Zain Khalpey
Fulbright distinguished chair in Medical Sciences

2014
Zain Khalpey
International Society for Cardiovascular Translation Research Award
Marlys Witte
Visiting professor “Carrera de Especialization en Flebigia y Linfolgia” Buenos Aries Argentina
Co-President 25th World Congress of Lymphology

2013
2012
David Armstrong
1st place award Clinical Research from the Symposium for the advancement of Wound/Care

2011
Klearchos Papas
President elect of the Cell Transplantation Society

2010
Ersillia Anghel
Goldwater Scholarship
### Patents

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<th>FY2014</th>
<th>Inventors</th>
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<tr>
<td></td>
<td>B. Najafi, N Toosizadeh, MJ Mohler</td>
<td>Upper Extremity Frailty Assessment Method. Provisional UA14-153</td>
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<td></td>
<td>P. Kuo, B. Najafi, M. Kupinski</td>
<td>Systems, methods, devices for performing motion artifact correction 61/987, 178, 2014</td>
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<td></td>
<td>A.J. Hamilton</td>
<td>A portable Low Cost Computer Assisted Surgical Trainer and Assessment System. 13-210-US</td>
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<td></td>
<td>C.A. Galvani</td>
<td>Devices for Intracorporeal Retraction for single Incision Surgery/Notes</td>
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### Invention Disclosures

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<th>Year</th>
<th>Invention Disclosures</th>
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Team Research/Collaboration

Translational Innovations

DOS Basic Science Faculty → DOS Clinical Faculty

Precision Therapeutics and Devices
Research Faculty

SALSA, iCAMP, Gait and Motion Sensing, Assessment of Frailty, Toe to flow
David Armstrong, Joseph Mills and Bijan Najafi

Cell transplantation, Implantable Islet Devices
Klearchos Papas and Tun Jie

Telemedicine
Peter Rhee, Rifat Latifi

Trauma - Peter Rhee
Sepsis and Sleep – Randall Friese
Coagulation management/Tranfusion (PROPPR trial) - Terrence O’Keeffe
Traumatic Brain Injury, Aging - Bellal Joseph

Regenerative Medicine  Zain KHALPEY, Raymond Runyan (CMM)
Research Faculty

Gene Discovery in Squamous Cell Carcinoma of the Lung
Samuel Kim, Jesse Martinez

Gene Discovery in Early Colorectal Cancer
Valentine Nfonsam, Mark Nelson (Pathology)

Gene Discovery in Lymph Vascular disease
Marlys Witte, Robert Erickson

Health Care Outcomes
Leigh Neumayer, Robert Krouse

Prostate Cancer Health disparities
Rick Kittles, Ron Heimark
Informal Forum for Young Investigators

iFYI Group

Goal: Development of a Collaborative Research Environment
Hosted by Dr. Leigh Neumayer, Chair of Surgery

“It is axiomatic that today’s biomedical research is highly collaborative. But how does the (busy) young investigator hear about, network with, and establish collaborations with other like-minded scientists - especially those in other departments, centers or campuses – having diverse interests, aptitudes and expertise?”