Evolution of Digital Pathology in the Armed Forces
• A critical shortage of specialists is a universal problem that affects all of us, military and private sectors.

• To combat this problem, we need to bring together the greatest minds and the best resources in government, academia and private industry.
UPMC

- Decreasing the time between discovery and application
- Translating advances in clinical practice, informatics and business management to relevant clinical products and services
- A commitment to collaboration has driven successful operations in the past: it still drives them now

Innovative Medical and Information Technologies Center (IMITs)

- Founded on a principle of collaboration
- Working to turn innovations into benefits
  - From disease management to disaster preparedness to combat casualty care
  - Combat applications is current focus
  - Bridges pre-clinical and clinical applications
IMITs Timeline

2001
• First initiative, Integrated Medical Information Technology System Program, $8.5M
• Created and managed by UPMC ISD
  - Telemedicine with the US Air Force

2004
• Established the DoD Programs Management Office (PMO)
  - IMITS Program continued, $10.5M
  - Diabetes initiative, $10M
  - WISER initiative, $1.5M

2005 ~ 2007
• New research programs exceeded $40M per year
• Became the UPMC Innovative Medical and Information Technologies (IMITs) Center

April 2007
• Incorporated as Non-Profit Subsidiary
  - To meet personnel and facility security requirements
  - To add flexibility for developing robust government sales/services division
Research Portfolios

- **Clinical Care and Information Technologies**
  Digital Pathology, Diabetes, Enterprise Imaging, etc.

- **Force Health Enhancement**
  Injury Prevention, Rehabilitation, etc.

- **All Hazards Research**
  Strategic Biodefense System, Radiation Detection, EMEDS Storage

- **Advanced Battlefield Medicine**
  CABMed, Concussion Mgt, HIFU, Immune Prep, etc.
Staff Expertise

- Researcher and Physician Leaders/Advisors
- Program Management
  - Program/Project Directors, Managers, Specialists
  - Process Management
  - PMP certifications through PMI Accounting and Finance
- Experience
  - Government Contracts
  - Government Contractors
  - Software Development
  - Systems and System Architecture
  - Industrial Engineering
  - Private, Academic and Non-Profit sectors
  - Healthcare, medical products,
  - Military (enlisted and officers)
Strategic Partnerships

- US Air Force
  - USAF Medical Service (SGR)
  - Wilford Hall Medical Center, San Antonio, TX

- US Army
  - Telemedicine and Advanced Technology Research Center (TATRC), Ft. Dietrich MD
  - Army Research Labs (ARL), Brooks City Base, San Antonio, TX
  - US Army Medical Research Acquisition Activity (USAMRAA), Ft. Dietrich, MD

- US Navy
  - Office of Naval Research (ONR), Arlington, VA
  - Navy Health Research Center (NHRC), San Diego, CA
Academic Partnerships

- University of Pittsburgh
- Texas A&M
- University of Hawaii
- Carnegie Mellon University
- University of Miami (FL)
- University of Mississippi
- University of Southern Mississippi
- University of Texas Health Science Center
- Vanderbilt University
Research Activities

• Clinical Care/Information Technologies
  • IMITS Program (telemedicine)
  • Diabetes Management
  • WISER, Simulation Training, Ft. Sam Houston
  • Hanu‘Ola Pacific ECMO Center, Hawaii

• Force Health Portfolio
  • Injury Prevention/Performance Enhancement – 101st Airborne
  • Injury Prevention/Performance Enhancement – Navy SEALS
  • IMPact, Traumatic Brain Injury – US Navy
  • Vaccination Research, U. of Pitt

• All Hazards Management
  • Strategic Bio-defense System
  • Metropolitan Medical Response System (Region 13)
  • UPMC Disaster Management Center (DMC)

• Advanced Battlefield Medicine (CABMed)
  • IMPact, Traumatic Brain Injury – US Army
  • Neuro-Prosthetic Devices
  • Major Traumatic Brain Injury Markers
  • Hi-Intensity Frequency Ultrasound (HIFU)
  • Battlefield Medical Simulation Center, Wilford Hall Med Cen, LAFB, San Antonio, TX
Funding Strategies

• **Tri-Focused Development**
  • UPMC or IMITs interest
  • Military/government value
  • Legislative support

• **Military Value**
  • Operational Military
  • Focus on the *Warfighter*

• **Legislative Support**
  • Leverage a strong Pennsylvania
  • Seek and obtain out-of-state partnerships
  • *Transparency*

• **Sustainability!**
### Congressional FY 08

<table>
<thead>
<tr>
<th>Topic</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Diabetes</td>
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<td>Strategic Bio-Defense</td>
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<td>TBI Bio-Markers</td>
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<td>High Intensity Frequency Ultrasound</td>
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<td>PRIME (Closed Loop Resuscitation)</td>
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<td>MTBI (ImPACT)</td>
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### Grant Requests

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<td>Enterprise Imaging Prototype</td>
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<td>Audiology/Cochlear Implant Adj</td>
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<td>Spectral Optical Coherence Tomography</td>
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<td>Open Diamond</td>
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<td>Platelet Gel Therapy/Wounds</td>
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### Other

- Brain Accustic Monitor/ImPACT
- Advanced Rural Simulation Training
- Rural Telepathology
Battlefield medicine is the treatment of soldiers in or near an area of combat. Medicine has been greatly advanced by procedures that were developed in order to treat the wounds inflicted during combat. With the advent of advanced procedures and medical technology, even polytrauma can be survivable in modern wars.

Among the notable medical advances made on the battlefield:

• The practice of Triage, by Dominique Jean Larrey during the Napoleonic Wars.
• Advances in surgery - especially amputation, during the Napoleonic Wars and first world war on the battlefield of the Somme.
• The first practical method for transporting blood, by Norman Bethune during the Spanish Civil War.
• Ambulances or dedicated vehicles for the purpose of carrying injured persons.
• The extension of emergency medicine to prehospital settings through the use of emergency medical technicians.
• The use of helicopters as ambulances, or MEDEVACs.
Establish UPMC IMITs Center for Advanced Battlefield Medicine (CABMed) as the national leader in combat casualty care, treatment, and technical innovations from pre-injury through rehabilitation; leveraging UPMC’s unique expertise in the following:

- Pre-hospital Care
- Acute Trauma Care
- Critical Care Department
- Institute for Rehabilitation Research (IRR)
- McGowan Center for Regenerative Medicine
- SAFAR Center for Resuscitation
- Disaster Management
- Information Services Division
  - ....Other UPMC Center’s of Excellence
• Vehicle for outcomes of research for long-term sustainability
• Leverage Other UPMC Intellectual Capital to US Government
• Develop Military IT and Healthcare Services Model
• Teaming Relationships with Major Defense Contractors and MBE’s
• *Revenue Supplements Research Operations*