Welcome

Charles Craig
President, Georgia Bio

David S. Stephens, MD
Principle Investigator, ACTSI
Professor of Medicine, Microbiology & Immunology, Epidemiology
Vice President for Research
Robert W. Woodruff Health Sciences Center
Emory University
Academic & Industry Intersection: Accessing Partners

Exhibitors

- Atlanta Clinical & Translational Science Institute
- BHP Corp.
- BIMCORE - Emory School of Medicine
- CDC Federal Credit Union
- CUH2A, A Division of HDR
- Emory / GRA Genomics Center
- Fort Valley State University
- Georgia Bio
- Georgia Institute of Technology
- Kennesaw State University
- Medical College of Georgia
- Morehouse School of Medicine
- Robert P. Apkarian Integrated Electron Microscopy Core - Emory University
- SBIR GA / ATDC
- UGA Bioexpression and Fermentation Facility
- BioPharma Regulatory Affairs Department
- University of Georgia Research Foundation, Inc.
- U.S. Centers for Disease Control & Prevention
Atlanta Clinical & Translational Science Institute (ACTSI)

David S. Stephens, MD
Principal Investigator
Professor of Medicine, Microbiology & Immunology, Epidemiology
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Emory University
Clinical and Translational Science Awards (CTSAs)

- The NIH Roadmap Initiative launched in September of 2004 to Re-engineer the Clinical Research Enterprise
Currently, 46 institutions are part of the consortium, spanning 28 states and a broad range of scientific expertise. Consortium members represent each geographic region of the country. When fully implemented, 50 institutions will be linked together to energize the discipline of clinical and translational science.
Strategic Goals Guiding the Consortium

**Goal 1:** Build national clinical and translational research capability

**Goal 2:** Provide training and improve career development of clinical and translational scientists

**Goal 3:** Enhance consortium-wide collaborations

**Goal 4:** Improve the health of our communities and the nation

**Goal 5:** Advance T1 translational research to move basic laboratory discoveries and knowledge into clinical testing
Atlanta Clinical and Translational Science Institute (ACTSI)

- Major Partners
  - Morehouse School of Medicine
  - Georgia Tech
  - Children’s Healthcare of Atlanta
Other Collaborative Partnerships

- Department of Veterans Affairs
- Georgia Research Alliance
- Kaiser Permanente
- Yerkes National Primate Research Center
- Emory University
- CDC
- Centers for Disease Control and Prevention
- Emory Healthcare
- Children's Healthcare of Atlanta
- Georgia Bio
- Grady Health System
- The University of Georgia

ACrTsi

Discovery
Training
Community
ACTSI Goals

- Promote *discovery* in clinical and translational collaborative research through innovative initiatives and emerging, novel technologies

- Improve the health of *communities* by working *with* rather than *on* research participants

- *Train* transformative scientists and promote multidisciplinary research teams
Keynote Speaker

Dennis W. Choi, MD, PhD
Director, Emory Neuroscience Center
Vice President of Academic Health Affairs,
Woodruff Health Sciences Center

Academic & Industry Intersection: Accessing Partners
Partnerships

(Opening remarks)
ACTSI and Georgia Bio Conference:
*Academic and Industry Intersection: Accessing Partners*
Feb 3, 2010

Dennis Choi
A paradigm shift is needed

- The problem: “the POC Wall”, “Valley of Death” etc.
  - 32 NCEs in 1979 driven by < $2B; 26 NCEs in 2009 driven by >$50B

- The solutions include enhancing inter-sector partnerships
  - Academic-Industry-Government-NGOs
    - Greater bandwidth: more “shots on goal”
    - Stronger basic-clinical interactions
    - Roadbuilding in “precompetitive space”
New Partnerships: Academia, Foundations, NIH, and Industry

Non-profit Foundations

NIH

Academia

Industry

Linear model

Partnership model in precompetitive space
Disease Foundations: Transitioning from academic funding agencies to non-profit therapeutic companies

Focus shifting from academic funding to the proactive discovery, development, and delivery of therapies.

• Systematic analysis of visible pipelines, gap analysis.
• Identifying, supporting, and disseminating relevant technologies.
• Virtual in-house discovery programs, milestone-driven partnerships and outsourcing contracts.
• Defensive IP protection to keep key technologies widely available.
• Prospective development of biomarkers and trial strategies.
• Development of clinical trial networks.
• Early attention to potential regulatory or reimbursement hurdles.
• Recruitment of industry partners for late development and commercialization.
More direct NIH engagement

• **Train**
  – Translational scientists
  – Clinical investigators

• **Facilitate** – through the development of:
  – Small molecule libraries and screening capabilities
  – Biomarkers for target engagement and therapeutic effect
  – Trial networks and novel trial designs

• **Lead**
  – Foundation for the NIH
  – NIA: ADNI
  – NINDS: SMA Project
  – NIMH: pharmacogenomic studies in depression
PIB/PET Supplement: Alzheimer’s Association and GE Healthcare
Cerebrospinal Fluid Extension: Alzheimer’s Association, AstraZeneca, Cure Alzheimer’s Fund, Merck, Pfizer and an anonymous foundation
Genome-Wide Genotyping: Gene Network Sciences, Merck, Pfizer and an anonymous foundation
Genome-Wide Genotyping Genetic Analysis: NIBIB, Merck, Pfizer and an anonymous foundation
PROJECT STRUCTURE
To duplicate the drug discovery and development capabilities of a large pharmaceutical company, the SMA Project has assembled a core group of collaborating organizations through various subcontracts. The prime contractor, SAIC, serves as a resource center for subcontractors and provides other management and administrative services to NINDS in support of the SMA Project.
New Models for Academic Drug Development:

*Academic Centers for Exploratory Therapeutics?*

**Preclinical & Phase I Center**
- Industry-derived “lost drugs” or new candidates

**CET**
- Multiple disease platforms

**Academic POC compounds**
- Imaging
- Molecular biomarkers
- Neurophysiology
- Animal models
- Translational scientists

**Phase IIA**
- Target engagement
- Efficacy
Mortality by Treatment

D Wright et al, 2006
How can the academic partners of the ACTSI help industry?

Moderator:
Eric Tomlinson, DSc, PhD, President and CEO, Altea Therapeutics

Panelists:
Todd Sherer, PhD, Director of Technology Transfer, Emory University
Mark Allen, PhD, Senior Vice Provost for Research and Innovation, Georgia Institute of Technology
James Lillard, PhD, MBA, Assistant Dean for Research, Morehouse School of Medicine
Todd Sherer, Ph.D.

Associate Vice President for Research and Director of OTT
All Funds Budget FY10

Healthcare 53%
Academic 47%

Total Budget = $3.0 Billion

Note:
1 - Emory Healthcare is estimated
2 - Academic expenses reflect gross amounts after elimination of the financial aid reclass
Academic Expenses FY10

- Emory College: 18%
- Graduate School: 5%
- Business: 5%
- Law: 3%
- Medicine: 40%
- Nursing: 1%
- Public Health: 6%
- Oxford College: 2%
- Theology: 2%
- Yerkes: 4%
- All Other: 14%
# Students and Staff FY10

## Students

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<tr>
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<th>Count</th>
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<td>Undergrad</td>
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<td>Grad/Prof</td>
<td>5,950</td>
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<tr>
<td>Total</td>
<td>12,930</td>
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## Employees

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<td>University</td>
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<tr>
<td>Healthcare</td>
<td>11,143</td>
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<tr>
<td>Total</td>
<td>23,408</td>
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## Faculty

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<tr>
<td>Faculty</td>
<td>3,786</td>
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Total Sponsored Research FY09

$484,250,353

Federal 71%
Corporation 5%
States 16%
Private 2%
Foreign 5%
University 1%
(Rev. 10/09) Gateway to Discovery, Innovation, and Products
Total Sponsored Research FY09

$484,250,353

- Medicine: 66%
- Emory College: 12%
- Nursing: 12%
- Yerkes: 3%
- Public Health: 1%
- All Others: 1%

Gateway to Discovery, Innovation, and Products
Top Ten Departments FY09

- Medicine
- Micro & Immunology
- Surgery
- Pathology
- Pediatrics
- Psychiatry
- Genetics
- Beh. Science & Health Ed
- Epidemiology
- Neurology
## Key Statistics FY00 – FY09

<table>
<thead>
<tr>
<th>Category</th>
<th>Total</th>
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<tr>
<td>Research Funding</td>
<td>$3.393 Billion</td>
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<tr>
<td>Invention Disclosures</td>
<td>1,206</td>
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<td>US Patent Applications</td>
<td>885</td>
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<td>US Patents Issued</td>
<td>208</td>
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<td>AUTM Licenses</td>
<td>256</td>
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<td>Start-ups</td>
<td>26</td>
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<tr>
<td>Licensing Revenue</td>
<td>$744 Million</td>
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</table>
Partnering with Emory

We must manage:
- Conflict of Interest
- Proper use of Facilities

Technology Transfer
Sponsored Research
Clinical Trials
Faculty Consulting
Emory Contact Points

- Innovation – Todd Sherer, Assoc VP Rsch/Dir, Office of Technology Transfer
- Clinical Trials – Kris West, Assoc VP, Rsch/Dir, Research & Compliance
- Corporate Research Contracts – Michael Nichols, Assoc Director, Sponsored Programs
- Conflict of Interest – Brenda Seiton, Asst VP Rsch
- Consulting – Helen McLaughlin, Admin & Faculty Affairs, School of Medicine
- Core Facilities – Patricia Haugaard, Asst Dean, Research, School of Medicine
Over 94% of HIV patients in the US on life saving antiviral therapy take a drug developed at Emory University.
Academic & Industry Intersection: Accessing Partners

Mark Allen, Ph.D.
Senior Vice Provost for Research & Innovation
“Through our research and partnership with business and industry, we’re an economic engine for Georgia and the Southeast, with an annual impact of more than $2 billion”

- G.P. “Bud” Peterson, President, Georgia Tech
Growth of Bioscience & Biotechnology

Since 1995, Georgia Tech has invested over $200 million adding over 1 million sq ft of bioengineering and biosciences facilities.

The Wallace H. Coulter Dept of Biomedical Engineering, a joint dept. between Georgia Tech and Emory University, has rapidly grown to # 2 in the US.

IBB is the heart of the Georgia Tech bioscience & bioengineering community and a model for interdisciplinary research and education on campus, nationally and internationally

*A New Biology for the 21st Century: Ensuring the United States Leads the Coming Biology Revolution - National Research Council of the National Academies, 2009*
Major Healthcare Initiatives

Convergence of Bioscience, Engineering, & Computing

- Cardiovascular
- Orthopedics
- Medical Materials and Engineered Coatings
- Diagnostics and Sensor Technologies
- Cancer: Detection and Treatments
- Medical Devices
- Medical Electronics
- Nanomedicine
- Regenerative Medicine (cardio, ortho, neural)
- Bioinformatics, Systems Biology
- Health IT, Telemedicine, EMR, Home-based Healthcare
Industry Access: Resources and Services

- Virtual R&D Center
- High Risk R&D
- Interdisciplinary R&D
- Student Projects
- Internships
- Student Fellowships
- Track Developments
- Third Party R&D Proposals
- Co-op Students
- Ideation with Faculty
- Center Memberships
- Collaborative R&D
- Hire Students
- Roadmap with Faculty
- Stage 2: Feasibility
- Stage 3: Capability
- Diversity
- Pre-competitive R&D
- Stage 4: Transfer
- Technology Sensing
- Stage 1: Concept Dev
- Faculty Consulting
- Center Memberships
- Embedded Labs
- Test Beds
- Innovation Networks
- Unique Facilities
- Translational Research
- Consortia R&D
- Seed Grants
- Shared Equipment
- License IP
- Business Plan Competitions
- Distance Learning
- Professional Education

Adapted From Chesbrough, Dupont, and Medtronic
A service of the Enterprise Innovation Institute, the Strategic Partners Office serves as a bridge connecting companies with the resources and people at Georgia Tech

http://innovate.gatech.edu/Default.aspx?tabid=1525
Access to Faculty

Georgia Tech faculty and over 100 collaborative research centers can be used as a resource for technical and advisory expertise. Interactions with faculty may include:

- Participation on corporate advisory boards
- Consulting
- Sponsored Research
- Access to core research facilities

The Industrial Partners Program at the Parker H. Petit Institute for Bioengineering and Bioscience (IBB) is designed to maximize the intellectual exchange between industry, faculty and students.
Access to Students

Hiring

- Full Time, Internships, Co-ops
- Undergraduate, Master’s, Graduate, Post-doc

http://careerfair.bme.gatech.edu/
Access to Students

Biomedical Engineering Senior Design Teams

World’s First Voluntary Gorilla Blood Pressure Reading

Veterinary leap forward through collaboration with Zoo Atlanta, Georgia Tech, Emory and a 300-pound great ape
Last year The Patent Board ranked Georgia Tech 8th in the world amongst universities and university-based laboratories on the relative strength of its patent portfolio.

The Universities Patent Scorecard™
Access to Technology

Translational Research Programs:
- Coulter Program
- TRIBES (coming soon)
- ACTSI

Office of Technology Licensing
Manages invention disclosures, patenting, marketing and negotiating agreements and licenses

Concept

Stage of Development

Translational Research Programs:
- Coulter Program
- TRIBES (coming soon)
- ACTSI

Internal grant programs to advance research, de-risk and assist in proof of concept studies and prototype development

VentureLab specialists assist in the advancement of innovations from faculty laboratories

Launched Company

https://techfinder.gtrc.gatech.edu/
database of technologies available for licensing

www.gtventurelab.com
current technology projects and companies
Access to Georgia Tech’s state-of-the-art research facilities is managed through a variety of mechanisms. We are happy to work with you to review your needs and direct you towards the appropriate resources.
Access to Facilities

Nanotechnology Research Center

Open Access facilities: The NRC is part of the National Nanotechnology Infrastructure Network (NNIN) designed to provide an integrated, networked partnership of user facilities serving the needs of nanoscale science, engineering and technology.

http://www.mirc.gatech.edu/gettingstarted.php

NANOFANS FORUM (Focusing on Advanced Nanobio Systems)
Bi-annual event that connects the medical/life sciences/biology and nanotechnology communities.

http://www.mirc.gatech.edu/nanofans.php

Core Competencies

• Electron Beam Lithography
• Microchip fabrication and design
• Photonics and integrated optoelectronics
• Multichip packaging and Optoelectronic packaging
• Microactuators and microsensors
• Gigascale integration
• Heterostructure materials: MBE and MOCVD
• Analog and digital microelectronics
• Computational electronics
• Gigahertz integrated electronics
• Named National Center of Excellence in Photovoltaics by the Department of Energy
• A National Science Foundation Engineering Research Center in Packaging
Access to Facilities : (coming soon)

Accelerating Innovation for the Medical Device and Technology Industry

• Non-profit partnership between Georgia Tech, St. Joseph’s Hospital/Catholic Healthcare East, Piedmont Healthcare, Georgia Research Alliance

• Focused on next-generation medical devices and medical technologies

• Pairing of clinicians with engineers and scientists to accelerate translation of medical technologies

• Top Priority: Medical Device Prototyping Center
  Serve the greater SE region
  Specific connections to GT (BME, TRIBES)
Access to Business Advice - Funding - Commercial Real Estate

Business Advice - ATDC 2.0
Help with launching and building successful technology companies

ATDC Biosciences Incubator
- wet labs/office space

ATDC at Tech Square
- office space

Multi-tenant facility

SBIR/STTR – ATDC 2.0
Provides guidance in grant preparation and submission, notification of federal RFPs

http://atdc.org/
Biosciences Doorway to Georgia Tech

Ann Schmierer, Ph.D.
Strategic Partners Office
ann.schmierer@innovate.gatech.edu
(404) 385-2259
http://innovate.gatech.edu/
# Georgia Tech Resource Contacts

<table>
<thead>
<tr>
<th>Contact</th>
<th>Phone</th>
<th>Email</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ann Schmierer, PhD</td>
<td>(404) 385-2259</td>
<td><a href="mailto:ann.schmierer@innovate.gatech.edu">ann.schmierer@innovate.gatech.edu</a></td>
<td>Strategic Partners Office, faculty, research centers, students, technology, facilities, GCMI, business advice, funding, real estate</td>
</tr>
<tr>
<td>Franklin Bost</td>
<td>(404) 385-2115</td>
<td><a href="mailto:franklin.bost@bme.gatech.edu">franklin.bost@bme.gatech.edu</a></td>
<td>BME Senior Design Teams, students, Translational Research Institute for Biomedical Engineering &amp; Science (TRIBES)</td>
</tr>
<tr>
<td>Barbara Boyan, Ph.D.</td>
<td>(404) 385-3052 (asst.)</td>
<td><a href="mailto:barbara.boyan@bme.gatech.edu">barbara.boyan@bme.gatech.edu</a></td>
<td>Translational Research Institute for Biomedical Engineering &amp; Research (TRIBES)</td>
</tr>
<tr>
<td>Julie Collins</td>
<td>(404) 385-6646</td>
<td><a href="mailto:julie.collins@innovate.gatech.edu">julie.collins@innovate.gatech.edu</a></td>
<td>SBIR/STTR - ATDC</td>
</tr>
<tr>
<td>Greg Dane</td>
<td>(404) 385-5036</td>
<td><a href="mailto:greg.dane@bme.gatech.edu">greg.dane@bme.gatech.edu</a></td>
<td>Coulter Program, Biomedical Engineering Dept.</td>
</tr>
<tr>
<td>David Gottfried</td>
<td>(404) 894-0479</td>
<td><a href="mailto:david.gottfried@nrc.gatech.edu">david.gottfried@nrc.gatech.edu</a></td>
<td>Nanotechnology facilities</td>
</tr>
<tr>
<td>Lauren MacLanahan</td>
<td>(404) 894-6900</td>
<td><a href="mailto:lauren.maclanahan@gtrc.gatech.edu">lauren.maclanahan@gtrc.gatech.edu</a></td>
<td>Intellectual Property, confidentiality agreements, license agreements</td>
</tr>
<tr>
<td>Katharine Montgomery</td>
<td>(404) 385-2105</td>
<td><a href="mailto:katharine.montgomery@ibb.gatech.edu">katharine.montgomery@ibb.gatech.edu</a></td>
<td>IBB faculty, students, IBB core facilities, IBB Industrial Partners Program, technology</td>
</tr>
<tr>
<td>Mack Reese</td>
<td>(404) 214-6905</td>
<td><a href="mailto:mackreese@gatewaydevelopmentservices.com">mackreese@gatewaydevelopmentservices.com</a></td>
<td>Technology Enterprise Park</td>
</tr>
<tr>
<td>Nina Sawczuk</td>
<td>(404) 385-1597</td>
<td><a href="mailto:nina.sawczuk@innovate.gatech.edu">nina.sawczuk@innovate.gatech.edu</a></td>
<td>ATDC, VentureLab, advanced technology projects, commercialization services, business advising, bioscience incubator</td>
</tr>
<tr>
<td>Harold Shlevin</td>
<td>(404) 385-7372</td>
<td><a href="mailto:harold.shlevin@innovate.gatech.edu">harold.shlevin@innovate.gatech.edu</a></td>
<td>ATDC, VentureLab, commercialization services, business advising, bioscience incubator</td>
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</table>
ACTSI (Morehouse School of Medicine) – Industry Intersection

James Lillard, PhD, MBA
Professor of Microbiology, Biochemistry, & Immunology
Assistant Dean for Research
(jlillard@msm.edu; 404-752-1863)
Overview

- Evolution of health disparities
- Background and history of MSM
- MSM’s mission, goals, and their implementation
- Forces driving evolution of medical practices and biotechnology
- Unmet needs of (fledgling) biotech companies and MSM’s value
- Example: MSM-Iverson Genetic Diagnostics Intersection
- Licensing Opportunities: Novel biotechnologies that address health disparities
The Long Desegregation Process in Higher (Bio-Medical) Education

*Title VI of the Civil Rights Act of 1964* - prohibited discrimination on the basis of race, color, and national origin in programs and activities receiving federal financial assistance.

*Leon Panetta, Director of the Office of Civil Rights 1970 -* wrote to the 19 “red states” (PA, MD, VA, KY, etc.) that they were in violation of Title VI.

*Adams v. Richardson 1973* - required federal education officials to enforce Title VI of the 1964 Civil Rights Act.

*MSM founded in 1975 –
Louis Sullivan (Boston U 60’);
Interim (James Goodman & Nelson McGhee);
James Gavin (Emory 70’ & Duke 75’);
David Satcher (Case-Western 70’);
John Maupin (Meharry 72’).*
Impact of Historical Segregation

**Literacy** - we currently hold fewer than 2% of PhDs in biology and chemistry.

**Wage Inequality** - higher unemployment rates (2X), $20K/family, African American men and women earn 70% and 85% of corresponding white workers.

**Asset Accumulation** - differences in wealth accumulation by African Americans reported to be one-tenth to one-fifth than that of white Americans.

**Health Disparities or Health Inequalities** - caused by socioeconomic, environmental, access to care, disparate quality of care, and other conditions.
Impact of Historical Segregation

problems/targets

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Impact of Historical Segregation

problems/targets

Health Disparities or Health Inequalities - caused by socioeconomic, environmental, access to care, disparate quality of care, and other conditions.
Mission:

Morehouse School of Medicine is dedicated to improving the health and well-being of individuals and communities; increasing the diversity of the health professional and scientific workforce; and addressing primary health-care needs through programs in education, research, and service, with emphasis on people of color and the underserved urban and rural populations in Georgia and the nation.
Strategic Goals:

- Expand educational programs while sustaining teaching excellence and professional competence.

- Create a culture of research through all components of MSM and strengthen the competitive quality and national reputation of our research enterprise.

- Broaden the patient base while assuring the highest quality of patient care and customer service.

- Enhance community engagement and secure widespread recognition.

- Foster the highest standards of operational performance and service.

- Create a work environment that is personally and professionally rewarding and conducive to the highest levels of performance.
Multidisciplinary Focus Areas:

- Biomedical Laboratory Training / Medical Education
- Neuroscience / Stroke
- Cardiovascular Research / Heart Disease
- Cancer
- HIV/AIDS & other infectious diseases
- Clinical Research
- Primary Care/Practice-Based Research
- Community Outreach/Engagement
“Recent” Accomplishments:

- *Louis Sullivan* - named Secretary HHS 89’.
- 1992, PHD Program in Biomedical Sciences Established
- 1995, MPH Program Established
- 1997, “all internal clerkships”
- 2000, MSCR Program Established
- 2003- Present, Average Class Size of 56 Entering MD Students
- 2004, the Prevention Research Center earned the Outstanding Community-based Participatory Research Award from among the thirty-three Centers.
- Nearly 2100 graduates (> 80% AA) of the four degree programs
- MSM is one of the youngest medical schools but has secured more research funds than 36% of the older medical schools. $120M total ($54M research) per year
Unmet (workforce) Needs

Healthcare now consumes nearly 15% of the United States’ gross domestic product ($14 Trillion).

~1.2 million are employed in pharmaceutical or medical sectors and 200,000 are employed in biotech research in this region. **Biotech employment needs will triple to 600,000 by 2012.**

Science thrives on diversity: diversity of information, approaches to problems, ideas and opinions, and of ethnic, gender, and cultural perspectives.

Gaps or leaks in the pipeline – only 2.5 to 5% pursue careers in biotech/healthcare.

Moderate to poor training and no options with higher educational degree.

**Table 1. Demographic Data on American Scientists**

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Am. Ind. / Alaska Native</th>
<th>Asian</th>
<th>Black</th>
<th>Hispanic</th>
<th>White</th>
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<td><strong>Biol., Agric., Envir., Life Sci.</strong></td>
<td>45,080</td>
<td>1,010</td>
<td>22,560</td>
<td>3,550</td>
<td>3,820</td>
<td>114,550</td>
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<tr>
<td></td>
<td>(100%)</td>
<td>(0.7%)</td>
<td>(15.5%)</td>
<td>(2.4%)</td>
<td>(2.6%)</td>
<td>(78.6%)</td>
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<td><strong>Health Sciences</strong></td>
<td>23,300</td>
<td>200</td>
<td>2,750</td>
<td>1,180</td>
<td>620</td>
<td>18,450</td>
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<tr>
<td></td>
<td>(100%)</td>
<td>(0.8%)</td>
<td>(11.8%)</td>
<td>(5.1%)</td>
<td>(2.7%)</td>
<td>(79.4%)</td>
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<td><strong>US Population 2000 (%)</strong></td>
<td>284,800,000</td>
<td>2,475,956</td>
<td>10,242,998</td>
<td>34,618,190</td>
<td>35,305,818</td>
<td>211,460,626</td>
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**Table 2. Atlanta Demographics by year**

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<td>African-American</td>
<td>279,323</td>
<td>286,310</td>
<td>289,076</td>
<td>294,945</td>
<td>255,689</td>
<td>316,630</td>
<td>320,812</td>
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<tr>
<td></td>
<td>(65.7%)</td>
<td>(66.3%)</td>
<td>(69.6%)</td>
<td>(70.0%)</td>
<td>(61.4%)</td>
<td>(71.0%)</td>
<td>(67.0%)</td>
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<tr>
<td>Caucasian</td>
<td>136,500</td>
<td>136,948</td>
<td>126,405</td>
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<td>138,352</td>
<td>129,328</td>
<td>158,011</td>
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<td></td>
<td>(32.1%)</td>
<td>(32.4%)</td>
<td>(30.4%)</td>
<td>(30.0%)</td>
<td>(33.2%)</td>
<td>(29.0%)</td>
<td>(33.0%)</td>
</tr>
<tr>
<td>Other</td>
<td>9,199</td>
<td>8,353</td>
<td>22,663</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.2%)</td>
<td>(2.2%)</td>
<td>(6.4%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>425,022</td>
<td>431,611</td>
<td>415,481</td>
<td>421,350</td>
<td>416,704</td>
<td>445,958</td>
<td>478,823</td>
</tr>
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</table>
Forces driving the maturation of healthcare, biotechnology, and pharmaceutical industries
Unmet (fledgling company) Needs

Healthcare now consumes nearly 15% of the United States’ gross domestic product ($14 Trillion).

~1.2 million are employed in pharmaceutical or medical sectors and 200,000 are employed in biotech research in this region. Biotech employment needs will triple to 600,000 by 2012.

Biotech has ~40% growth rate, but fledgling companies struggle to meet highly skilled workforce, infrastructure, cutting edge technology/R&D, flexible/affordable space needs.

Biomedical Training & Access to Research Cores/Expertise, through ACTSI (MSM, Gtech, Emory), MSM provides a mix of office and laboratory space as well as access to state of the art core R&D equipment and world class scientists and clinicians. Together with ATDC et al. will provide biotechnology business assistance, guidance, mentoring.
ACTSI-MSM Platform to reduce Health Disparities: Comprehensive Personalized Medical Enterprise – Operations

- Health Policy & Advocacy
- Community Outreach & Engagement
- Clinical Affairs & Services
- Primary Care & Networks
- Biotechnology & Healthcare Training
- Basic Research
- Translational Res of Diagnostics & Drugs
- Tech Transfer & Commercialization

* Acorda, IGD
* MSM value-add & IP equity
* GRA, ATDC, etc.

Flow of IP

Strategic Partners

R-CTR
ACTSI-MSM Value

• RCMI-funded Core Facilities
• Health Policy & Advocacy
• Physicians, scientists and patients served
  – ~100 physicians (Grady/Eastpoint)
  – Practice/community-based physician networks
  – ~80 scientists
• Phase I/II testing
• Health IT for disparities
• Post-market surveillance
Problem (warfarin dosing):
- achieving a stable INR (coagulant response time) in patients who take warfarin is a challenge. Too little warfarin can lead to thrombosis and too much can promote adverse bleeding events
- VKORC1 and CYP2C9 polymorphisms influence warfarin, which are disproportionately expressed by African Americans compared to other ethnic groups.

Solution
- IGD develops genetic tests for VKORC1, CYP2C9, etc. polymorphisms.
- Collaborates with MSM’s Dr. Elizabeth Ofili (Chief of Cardiology, recipient of the Preventive Cardiology Academy Award) to gain CLIA/CAP accreditation and FDA approval.
Licensing Opportunities

• **Cancer**
  – Anti-chemokine antibodies
  – Viral proteins
  – BRCA1/2 functional assay and PCa/BrCa/OvCa (state I-IV) biomarkers.

• **HIV/AIDS & other infectious diseases**
  – HIV Nef, *Chlamydia, Pneumococci* and *Trypanosome* vaccines
  – Tropical disease and HIV/AIDS biomarkers
  – HIV, hepatitis, malarial and trypanosome therapeutics

• **Stroke/Neuroscience**
  – Neuregulin (Acorda)
  – Retinal cell preservation

• **Heart Disease / Cardiovascular**
  – Salt-sensitivity blood test
  – Genetic tests (e.g., warfarin dosing, smooth muscle cell hyperplasia)
ACTSI-MSM Platform to reduce Health Disparities:
Comprehensive Personalized Medical Enterprise – Operations

1) RCMI-funded Core Facilities
2) Health Policy & Advocacy
3) Community & Patients served
4) Phase I/II testing
5) Health IT for disparities
6) Post-market surveillance

Flow of IP

*Acorda, IGD
*GRA, ATDC, etc.

MSM value-add & IP equity