Advancing and Translating Research

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Georgia Research Alliance
GRA: A unique public-private partnership of research universities, industry and government
What does university research give us?

A foundation for **major advances** – in medicine, energy, agriculture, national security, more

A way to **prepare students** to become a workforce of innovators

A mechanism that generates **major economic activity** (research grants, skilled workers)

A pipeline of discoveries, inventions that launch **new companies** / create jobs

= **Reputation for Georgia**
WHAT WE DO:
Propel new kinds of growth for Georgia’s economy

HOW WE DO IT:

1. Expand research capacity at universities
2. Seed and shape new companies around inventions, discoveries
3. Accelerate growth of the best start-ups
#1: Expand research capacity at universities

"Share" of Federal Research $ to States

- **CA** – 12.4%
- **NY** – 8.0%
- **MD** – 7.5%
- **PA** – 5.9%
- **MA** – 5.7%
- **TX** – 5.4%
- **NC** – 4.3%
- **IL** – 3.6%
- **OH** – 3.4%
- **MI** – 3.1%
- **GA** – 3.0%
- **FL** – 2.9%
- **WA** – 2.8%
- **CO** – 2.4%
- **VA** – 2.0%
- **WI** – 1.8%

Federal R &D Expenditures at Georgia Universities

ANNUAL $ | NATIONAL SHARE (%)
--- | ---
$1.4B | 3.5
$1.2B | 3.0
$1.0B | 2.5
$800M | 2.0
$600M | 1.5
$400M | 1.0
$200M | 0.5
$0 | 0

GRA Founded

TRENDING UPWARD
TRENDING DOWNWARD
HOLDING STEADY
Expanding capacity: investing in research leadership

GRA Academy of Eminent Scholars (est. 1990, 67 members)

- **average h-index of 50** (45 for Nat’l Academy members)
- Last 5 years: **193** patents, **270** provisional patents and copyrights
- Over **$525 million** / year in research grants to Georgia

Georgia’s University Research Enterprise

- **$2 billion** / year in research universities (12th in the U.S.)
- **20% growth** since 2012 (5th in U.S., 1st in South)
#2: Seeding and shaping new companies

- **Venture Development:** create sustainable companies based on inventions from university labs (since 2003)
- **180** new companies, **1,500** high-value jobs
- **>$1 Billion** in outside venture capital
#3: Accelerating growth of the best start-ups

- **GRA Venture Fund, LLC** (est. 2009)
- 14 companies to date, **600+** employees
- **$473 million** in outside venture capital invested raised by companies
GRA’s venture development process

• James Lillard – MSM point person

• Begins with initial assessment of opportunity (IP, technical feasibility, market dynamics, regulatory issues, management needs, etc.)

• Relevant and measurable milestones

• Budget follows milestones
  – **Phase I “Proof of concept” phase:** $25K - $100K grant to university; “Does it make sense to form a company?”
  – **Phase II “Prototype” phase:** $100K - $200K grant to university. Requires 1:1 match for prototype manufacture, demonstration of utility in animal model, etc.
  – **Phase III loan to company:** typically $250K for developing initial customers, recruiting management, initiating IND-enabling studies, etc.
Example – Axion BioSystems

- Developed/commercialized research instruments to assess electroactive human cells, aka “Save the beagles”
- Technology invented at Georgia Tech

<table>
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<th>Phase</th>
<th>Date</th>
<th>Amount</th>
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<tr>
<td>IA</td>
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<td>IIIIC</td>
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- $6M investment in 2016 (including GRA Venture Fund LLC)
Lessons Learned

- Run out of funds
  - Cash mismanagement ability
  - Unable to attract follow-on funds
  - Adverse funding market conditions

- Poor business model
  - Model inconsistent with market structure
  - Inappropriate pricing model

- Technology fails
  - Development takes too long
  - Failure in trials
  - Non-reproducible product

- Management dysfunction
  - Poor start-up team “chemistry”
  - Incomplete or non-complementary skill set of team

- Failed IP protection
  - Misjudgment during due diligence
  - Insufficient claims awarded

- Market related issues
  - Misjudged market dimensions or dynamics
  - “Stolen market” (i.e., new competitor)
  - Adverse market dynamics

- Relocation
  - Faculty member relocates
  - Company moves out of state

Percentage:
- Run out of funds: 6%
- Poor business model: 10%
- Technology fails: 29%
- Management dysfunction: 27%
- Failed IP protection: 3%
- Market related issues: 20%
- Relocation: 5%
GRA and Morehouse School of Medicine

Expanding research capacity

Recruit Eminent Scholar to lead the Satcher Health Institute (SHLI)

- Continue transformative work to advance global health equity
- Expand research collaborations with other GRA institutions
GRA and Morehouse School of Medicine

Venture development at MSM

- James Lillard
- 6 projects funded by GRA over time

NutriGlobal – new project in 2017
- Founded by Dr. Jacqui Hibbert
- Develop an affordable nutritional supplement for sickle cell anemia patients
- Phase I grant: work with UGA Food Center to address taste & texture issues, maximize shelf life