

## Division of Research & Economic Development

Board of Trustees Academic Affairs Committee

April 19, 2013



North Carolina Agricultural and Technical State University



North Carolina Agricultural and Technical State University

## NC A&T Bioenergy Center

### Overview

- **Mission:**
  - » A resource in interdisciplinary bioenergy research
  - » Provide outreach services in bioenergy, biofuels, and bioproducts
  - » Foster links among institutions of higher education, government agencies and private companies
- **Multidisciplinary Research**
  - » Located organizationally within DORED
  - » Faculty contributions from Biological Engineering, Chemistry, Chemical and Bioengineering, Economics, Energy and Environmental Systems, and Mathematics
- **Dr. Abolghasem Shahbazi (SAES): Center Director**
  - » Dr. Debasish Kuila (CAS): Research Director
  - » Dr. Keith Schimmel (CAS): Education Director



## NC A&T Bioenergy Center

### Thrust Areas

- Research objectives
  - » Advanced thermochemical biomass conversion
  - » Efficient /economical production of liquid transportation fuels and hydrogen
- Education/Outreach objectives
  - » Opportunities for faculty and students to spend time at industrial and government labs
  - » Education and training in the fields of bioenergy sciences and engineering for underrepresented students, postdocs and young faculty
    - Sustainable bioenergy program in STEM
    - Pipeline for careers in bioenergy-related STEM disciplines
    - Bioenergy Summer Camp

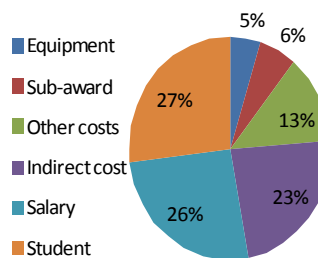
3



## NC A&T Bioenergy Center

### Anticipated Costs and Sources

- NSF CREST funding (\$2M/5 years).
  - » Student support = 27%
- Space usage:
  - » Bioenergy lab in Sockwell Hall
  - » Gasification lab at the farm
  - » 314 Hines Hall renovation for a biofuel processing lab
  - » IRC lab for membrane development and fuel cell research



4



## NC A&T Bioenergy Center

### Expected Outcomes

- **Exceptional Multidisciplinary Research in Bioenergy**
  - » Training graduate and undergraduate students, post-docs
  - » Address key issues in the gasification of biomass and the synthesis and purification of alcoholic biofuels
- **Consistent with A&T Preeminence 2020**
  - » Interdisciplinary focus
    - Concentration in Bioenergy within EES PhD program
  - » Engage university with community partners
    - REU programs for 5 K-12 teachers and outreach to 1,500 K-12 students
    - Advisory Board comprises members from National Labs, leading research universities and key companies in biofuels research
- <http://www.ncat.edu/research/bioenergy/index.html>

5



## DORED 3<sup>rd</sup> Quarter FY13 report

### Sponsored funding

- Funding processed through 3/31: \$31.84 million, 146 awards.
  - » FY12: \$31.54 million, 151 awards.
- Proposals submitted: 310 for \$113.24 million.
  - » FY12: 324 proposals for \$158.17 million.
- Among the highlights: DoD HBCU program will fund four proposals, total of \$2.1 million.

6



## DORED 3<sup>rd</sup> Quarter FY13 report

### Research Services

- Facilitated Phase II of Triad Inter-university Project Planning collaborative proposal competition
  - » Collaboration with UNCG, WFU, and WSSU
  - » \$100,000 grant to be awarded to team of researchers from all 4 schools.
- Initiated project to increase funding from National Institutes of Health by organizing a Health Sciences Research Interest Group to facilitate multidisciplinary NIH research proposals.

7



## DORED 3<sup>rd</sup> Quarter FY13 report

### Research Services

- Initiated two programs to increase the success rate of research funding proposals.
  - » Faculty Mentoring Program for new faculty preparing their first proposals.
  - » Proposal Resubmission Program to provide one-on-one assistance to faculty. Resubmissions are funded at a higher rate than new proposals.
- Reviewed 237 proposal budgets to ensure compliance with fiscal regulations of the program sponsor and UNC system (vs. 240 in first three quarters of FY12).

8



## DORED 3<sup>rd</sup> Quarter FY13 report

### Research Compliance & Ethics

- The Institutional Review Board and Graduate School implemented a research clearance process for graduate students.
  - » All dissertations and theses of graduating students were cleared for compliance with human-subjects regulations.
- The Institutional Review Board developed a new process for in-class training and project reviews for four classes in research methods (three undergraduate, one graduate, 94 students total).

9



## DORED 3<sup>rd</sup> Quarter FY13 report

### Research Compliance & Ethics

- The Public Health Service/National Institutes of Health renewed the university's assurance on use of animals in research for three years.
- The U.S. Department of Health and Human Services renewed the university's registration for human-subjects research for three years.

10



## DORED 3<sup>rd</sup> Quarter FY13 report

### Economic Development

- One spin-off company
  - » Bio-Adhesive Alliance (Dr. Ellie Fini, sustainable pavement technology).
  - » Company is a finalist in the PTP Next Business Competition, semi-finalist in Charlotte Venture Challenge, and has entered the MegaWatt Ventures clean-energy competition.
- Expanded the annual Innovation Challenge for students to include sophomores as well as freshmen.
- Strengthened the university's relationship with GE Corp. by engaging the company as the lead sponsor for the Innovation Challenge.
  - » Sponsorships covered 80% of program costs (vs. 0% in FY12).

11



## DORED 3<sup>rd</sup> Quarter FY13 report

### Intellectual Property

- 2 U.S. Patents issued
  - » Dr. Shamsuddin Ilias (Engineering)
  - » Dr. Jianmei Yu (Agriculture)
- 1 U.S. Patent allowed, to be issued in FY14
  - » Dr. Stephanie Luster-Teasley (Engineering)
- 6 U.S. patent applications filed
  - » 4 SAES, 1 COE, 1 JSNN
  - » Vs. 4 in FY12
- 7 invention disclosures submitted
  - » 3 SAES, 3 COE, 1 JSNN
  - » Vs. 8 in FY12

12



## DORED 3<sup>rd</sup> Quarter FY13 report

### Research Communications

- Secured continuing, high-visibility coverage in *The Business Journal* for research by Dr. Ellie Fini.
  - » Front-page news article
  - » Inclusion on "10 to Watch in 2013" list
  - » "40 Leaders Under 40" award.
  - » Additional coverage in *News & Record*.