



AGENDA

IALR Board of Trustees APPLIED RESEARCH COMMITTEE

Tuesday, April 30, 2024 - 9:00–10:30 am – IALR Conference Room 203

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| I. Convening of Meeting | Dr. Guru Ghosh |
| A. Welcome | |
| B. Call to Order and Confirmation of Quorum | |
| C. Call for Changes to Agenda | |
| II. Attendance of Committee Member(s) by Electronic Communication Means (Vote Required) | Dr. Guru Ghosh |
| III. Approval of Minutes | Dr. Guru Ghosh |
| A. January 30, 2024 | |
| IV. Research Report | Dr. Scott Lowman |
| V. Open Discussion of Concerns, Issues, and Observations | Group |
| VI. Adjournment | Dr. Guru Ghosh |

Reference material included: “Research-Related Updates”

Future Committee Meetings

Applied Research Committee Members

Dr. Guru Ghosh, *Chair*
Ms. Emma Kozlowski
Mr. Charles Majors
Ms. Leslie Mantiplay
Mr. Don Merricks, *Ex Officio*
Mr. Kunal Patel

Future Plenary/BOT Meetings

May 16, 2024

IALR Staff

Mr. Telly Tucker, President
Dr. John Hughes, Executive Vice President, Operations
Dr. Scott Lowman, Director of Applied Research
Ms. Pam Patterson, BOT Secretary & Executive Assistant



**IALR BOARD OF TRUSTEES (BOT)
APPLIED RESEARCH COMMITTEE**

Minutes – January 30, 2024 – 9:00 a.m. – IALR Conference Room 203 – In-Person

<p><u>Members Present</u> Dr. Guru Ghosh, <i>Chair</i> Ms. Emma Kozlowski, <i>via Zoom</i> Mr. Charles Majors Mr. Don Merricks, <i>Ex Officio</i> Mr. Kunal Patel</p> <p><u>Members unable to attend</u> Ms. Leslie Mantipliy</p>	<p><u>IALR Staff Present</u> Mr. Telly Tucker, <i>President, IALR</i> Dr. John Hughes, <i>EVP, Operations, via Zoom</i> Dr. Scott Lowman, <i>Vice President of Applied Research</i> Ms. Pam Patterson, <i>BOT Secretary & Executive Assistant</i></p> <p><u>IALR Staff unable to attend</u> None</p> <p><u>Guests</u> None</p>
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Call to Order / Quorum / Changes to Agenda

Dr. Guru Ghosh called the meeting to order at 9:00 a.m. on Tuesday, January 30, 2024. A quorum was present. There were no changes to the agenda.

Attendance of Committee Member(s) by Electronic Communication Means

Dr. Guru Ghosh announced that Ms. Emma Kozlowski and Dr. John Hughes would be participating through electronic communication means (via Zoom). Ms. Kozlowski attended via Zoom due to the distance between her principal residence and the meeting location. Dr. Hughes attended via Zoom from his home due to unforeseen circumstances. The committee voted to allow them to attend the meeting via Zoom.

- **Motion:** Mr. Charles Majors made a motion to allow Ms. Kozlowski and Dr. John Hughes to attend the meeting via Zoom. Mr. Kunal Patel seconded the motion. The motion passed unanimously.

The results of the vote are shown below.

Committee Members Absent	-	1
Committee Votes For	-	4
Committee Votes Against	-	0
Committee Abstentions	-	0

Approval of Minutes

- **Motion** – Mr. Charles Majors made a motion to accept the Minutes for the August 1, 2023, and the October 31, 2023, meeting. Mr. Kunal Patel seconded the motion. The motion passed unanimously.

Research and Business Development Update

Dr. Scott Lowman presented the Applied Research Report (Exhibit A). The IALR/VT team leads Virginia's Controlled Environment Agriculture (CEA) advancement with a comprehensive program, featuring research, workforce development, and economic initiatives. The Aerofarms Collaboration has shifted to targeted disease testing, reflecting innovation. New partnerships with entities like the new Invasive Species Corporation and Canon Virginia demonstrate progress in herb growth projects and student recruitment, including a VT PhD student. Collaborative efforts, such as the GO Virginia CEA Roadmap Study rollout and VALOR Leadership group visits, highlight the program's commitment. Substantial grants, including a proposed one-million-dollar State Budget allocation, signify robust financial support for CEA expansion. Economic development initiatives, SMART table installations, and JTI collaborations further enhance the program's impact. Simultaneously, the "AgTech and Life Sciences Manufacturing Support to Grow Industries Through Testing, Contract Research, and Lab Access" initiative accelerates progress in Virginia's life sciences, attracting interest from major companies and solidifying the program's impact on innovation, workforce development, and economic growth.

Dr. Guru Ghosh applauded Dr. Lowman's efforts.

Open Forum of Concerns, Issues, and Observations

Mr. Charles Majors requested that each department provide a breakdown of staff showing the number of full-time and part-time staff as well as interns and contracted personnel. He asked that the information be presented in the departmental reports at the Board of Trustees meeting scheduled for Thursday, February 15, 2024.

Adjournment

Dr. Ghosh asked for a motion to adjourn the meeting.

- **Motion:** Mr. Charles Majors made a motion to adjourn the meeting. Mr. Kunal Patel seconded the motion. The meeting was adjourned at 10:24 a.m.

Signatures and Exhibits are shown on the following page.

Minutes Recorded By:

Minutes Approved By:

Ms. Pam Patterson
BOT Secretary

Dr. Guru Ghosh
Chairman

Date

Date

Attachments Included as Official Part of Minutes

Exhibit A – Applied Research Narrative Report, January 2024

DRAFT



Research Committee Report

Dr. Scott Lowman

April 2024

Name of Program or Initiative: Building Virginia's Controlled Environment Agriculture (CEA) Industry Through Targeted Research, Workforce, and Economic Development Initiatives

Current Activities by the IALR/VT team

1) Research

a. Aerofarms Collaboration

- i. Has moved from research to targeted testing of diseases.
 1. We are receiving samples weekly now.
- ii. The team visited the facility to see it fully operational. Most research is taking place there now and several opportunities were identified. They are going to provide the CEA Center with a number of units for offsite testing.

b. Research Partnerships

- i. Seven new research partnerships have been established.
- ii. Canon Virginia expansion is complete.
- iii. Implemented a new herb growth improvement project with Virginia Tech in the Controlled Environment Agriculture Center
- iv. Two Virginia Tech part time student workers have been hired to support the Innovation Center.
- v. A VT PhD student will be starting in the fall, and another will start during winter break.
- vi. Met with Plenty and they will be visiting soon.

c. Meetings, Tours, and Events

- i. Dr Lowman attended or presented at the following meetings.
 1. Virginia Agriculture Development Office (VADO) in Richmond.
 2. The VT College of Agriculture Center for Advanced Innovation in Agriculture's (CAIA) Big Event. Only 4 other centers were invited to present.
 3. Served as keynote speaker for NASA's National Plant the Moon Challenge.
 4. The GoVa Region 3 January Council meeting.
 5. The GoVa RISE Collaborative meeting.
 6. Attended the 52nd Agribusiness Council Annual Legislative Banquet in Richmond, Virginia with Telly Tucker and Dr. Hughes.
 7. Attended the Virginia Tech Legislative Breakfast in Richmond, Virginia with Telly Tucker and Dr. Hughes.



8. Traveled to Las Vegas to IndoorAgCon. The Secretary of Ag and Forestry along with VEDP were also in attendance. We met with 3 companies interested in locating in Virginia.
- ii. IALR hosted the following tours.
 1. Hosted a GoVa Region 3 visit and tour with Bryan David and others.
 2. Hosted a VEDP visit and tour with Shirley Dodson and Jason Evranian.
 3. Applied Research hosted a tour with 75 Governor's School students
 4. Hosted a tour group from GENEDGE.

d. Grants/Funding

- i. One million dollars was again included in the State Budget for CEA expansion but was removed in the end.
- ii. **Received** - Tobacco Region Revitalization Commission (TRRC) grant titled "Building a Regional Food System Through the Creation of a Value Chain Coordinator" (\$104,452 request + \$100,000 external match)
- iii. **Received** - Tobacco Region Revitalization Commission grant in partnership with Virginia Tech titled "Supporting Controlled Environment Agriculture (CEA) Growth in Southern Virginia", (\$145,841 request + \$150,000 external match)
- iv. **Received** – USDA Specialty Crop Block Grant "Biostimulants to Improve Indoor Strawberry Production" (\$54,000)
- v. **Received** – USDA Specialty Crop Block Grant "Biotechnology to Improve Indoor Strawberry Production and Disease Control"
- vi. **Received** - Agrospheres is funding a new employee for 2 years (\$110,000)
- vii. **Submitted** - The Applied Research team submitted a grant with the University of Georgia titled "The Use of Bacterial Endophytes to Improve Hydroponic Vegetable Production" (\$306,459)
- viii. **Submitted** – The applied research team along with Virginia Tech and Cornell University submitted a grant titled "Empowering Greenhouse Resiliency with an Optimized Workforce (E-GROW)" focused on introducing controlled environment agriculture to K-12. (\$149,119 sub-award)
- ix. **Submitted** - a Virginia Department of Agriculture and Consumer Services Grant focused on stress reduction in summer greenhouse vegetable production. The project is titled "A novel approach to improve heat stress tolerance in hydroponic greenhouse grown lettuce utilizing biostimulants" by Drs. Mei and Lowman. The funding amount is approximately \$60,000

2) CEA Economic Development

- a. GoVA report "Leveraging IALR and VT to Move the CEA Industry Forward" has been rolled out and is available upon request.



- b. Partnering with the Secretary of Agriculture and Forestry's office and Virginia Economic Development Partnership to solve real problems facing Virginia's CEA industry.
 - i. Worked with VEDP to highlight the CEA Innovation Center to two companies.
 - ii. Worked with the Secretary of Agriculture and Forestry's office to highlight the CEA Innovation Center to a company in Virginia.
- c. Met with Simon Chapman, VEDPs new employee focused on CEA and AgTech companies.

3) Other Items to Support the Above

- a. A SMART table has been installed at Hargrave Military Academy
- b. Applied Research hosted a visit from Bryan David, Program Director, Southern Virginia/GO Virginia Region 3. He and his team toured the labs and CEA center to highlight the various ways companies are supported.

Name of Program or Objective: AgTech and Life Sciences Manufacturing Support to Grow Industries Through Testing, Contract Research, and Lab Access

Current Activities

- 1) Bio-Manufacturing / Cell Factory / Bio-Foundry Initiative
 - a. The Summer Fermentation Workshop has been finalized and will be launched soon.
 - i. GoVa is also interested in exploring a biopharmaceutical manufacturing workforce development component.
 - ii. Multiple companies have expressed interest in participating including Novozymes, Agrospheres, and Bonumose.
 - iii. Partnership established with Virginia Western Community College.
 - 1. They received an NSF grant related to workforce training.
 - b. Analytical Chemistry is working with JTI to initiate testing.
 - c. Signed two new material transfer agreements with biotech companies related to biotechnology.
 - d. Work is underway with three new companies from Research Triangle Park to co-develop IP related to bio stimulants.
 - e. A new non-disclosure agreement has been signed with a venture capital funded startup focused on bio stimulants.
 - i. They are interested in lab and office space
- 2) Contract Research
 - a. Currently working with several new companies developing contract research projects.
 - b. Continue to do work for Plant Response.
 - c. Continue to support Agrosphere's growth.
 - i. Expansion of testing and greenhouse support for critical growth products.
 - ii. A second employee is now onsite part time.



- c. New BASF partnership established focused on biologicals and contract research – contract finalized and underway.
 - d. New Syngenta partnership established focused on biologicals and contract research – contract finalized and underway.
- 3) Economic Development
- a. An agreement has been signed and a position has been filled for Agrospheres, a company Applied Research has supported over the last four years. The company is renting lab space and office space and will be covering the cost of a new technician for two years. This partnership is expected to grow more in the future, and they are also exploring licensing some of IALR's biostimulants.
 - b. An agreement has been finalized with Plant Response, another company Applied Research has supported over the last four years. They will also be renting lab and office space in the Applied Research wing. They are also exploring licensing some of IALR's biostimulants.
 - c. Worked with VEDP and a Mexico-based biotech company interested in lab and greenhouse space. They will be visiting soon.

Highlighted Project



Controlled Environment Agriculture Strategy and Roadmap in GO Virginia Region 3



Advancing Virginia's Controlled Environment Agriculture Sector through Translational Research and Economic and Workforce Development

Grant Elements and Partners

- **Entrepreneurship Support Program**

- promote agri-entrepreneurship across the CEA sector through the translational research at IALR related to production, controls, structures, sensors, data management, business principals, marketing, access to capital, etc.

- access to research space will be available for testing, and expertise in plant science will be available from various IALR and VT faculty

- join with an existing VT/IALR CEA Innovation Center partner, the Virginia Cooperative Extension, to develop, implement, and manage a pilot community-focused CEA-entrepreneur program for its offices in Region 3/Southern Virginia and elsewhere in the Commonwealth

- coordinate with the SOVA Rise Collaborative and other Virginia entrepreneur ecosystems as appropriate

- **Workforce Development Program**

- support coordination between K12 school divisions, higher education institutions, and CEA businesses using a talent pathway approach for curriculum, career exploration, and skill and credential acquisition

- partner with Virginia Future Farmers of America both in Region 3/Southern Virginia and elsewhere in the Commonwealth to develop, implement, and manage an experiential learning program for middle and high school students, including the award of a CEA-related credential approved by the Virginia Department of Education

- **CEA Residency Program**

- for post-graduate students to obtain knowledge and experience at the VT/IALR CEA Innovation Center

- accepted students will learn business principles and practices, interact with large and small CEA companies, and gain technical expertise. Upon program completion, these students will provide CEA companies with knowledgeable and skill-ready employees

- these students would be positioned to launch CEA start-up businesses based on the practical knowledge and industry contacts made during their residency.



- the overarching purpose of this program is to attract and retain highly skilled graduate-level CEA talent to support CEA business investment in Virginia

- program development, implementation, and management to be undertaken by VT/IALR CEA Innovation Center

- **CEA Target Market Assessment and Strategic Implementation Plan for Business Recruitment and Retention and Expansion Programs**

- increase CEA business investment and leverage the VT/IALR CEA Innovation Center as an industry-aligned asset for Region 3/Southern Virginia and the Commonwealth

- engage qualified subject matters experts to develop a CEA target market assessment and strategic implementation plan for use by the Region 3/Southern Virginia regional economic development organizations, the state's other regional economic development organizations, and state agencies with CEA-related economic and workforce development portfolios

- the CEA assessment and strategic plan will include existing and emerging trends in the CEA sector, sector challenges and opportunities, categorizing and topical information on existing domestic CEA companies and CEA supply chain companies

- the CEA assessment and strategic plan will include the potential for foreign domestic investment in Region 3/Southern Virginia and the Commonwealth, particularly from the European Union's established CEA sector and other emerging international CEA sectors

- coordination by VT/IALR CEA Innovation Center with support provided by Region 3/Southern Virginia regional economic development organizations (#3) and by invitation state's REDOs (#15), the Virginia Economic Development Partnership, the Department of Agriculture and Consumer Affairs, and other allied organizations

- **CEA Business Ready Sites and Buildings Inventory and Prototype Strategy**

- inventory, screen, and assess existing business sites and buildings in Region 3/Southern Virginia that may be suitable to support CEA business, both large and small-scale operations

- develop a model site and existing structure prototype for use by local economic and regional economic development organizations and entrepreneur support organizations in Region 3/Southern Virginia

- the inventory methodology and prototype strategy will be developed and laid out so that other economic development and entrepreneurial organizations can use and adapt the templates to local and regional conditions

- engage qualified subject matter experts to develop the sites and building inventory and prototype strategy

- coordination and support provided by IALR in conjunction with local economic development, regional economic development, and entrepreneur support organizations in Region 3/Southern Virginia

- **VT/IALR Innovation Center Expansion**

- to better position translational research and development services to meet industry growth and the evolving CEA marketplace aligned with industry needs and expectations

- expand the physical and programmatic space of the existing labs, offices, and greenhouses, including supporting structures, equipment, and site infrastructure

- coordination and support provided by VT/IALR CEA Innovation Center in conjunction with subject matter experts on the design, cost estimating, and construction of these specialized spaces as appropriate

- **VT/IALR CEA Innovation Center Measurement, Assessment, and Continuous Improvement**

- develop a framework, methodology, and reporting vehicle to ensure that overall project outcomes in the areas of workforce development, entrepreneurship, translational research, and economic development are measured, assessed, and refined to achieve optimal program performance

- coordination and support provided by VT/IALR CEA Innovation Center

- **Enterprise Sustainability Plan**

- develop, implement, and maintain a financial sustainability plan that supports the annual operation and capital needs of the VT/IALR CEA Innovation Center and the programs for workforce development, entrepreneurship, translational research, and economic development

- coordination and support provided by VT/IALR CEA Innovation Center