



AGENDA

IALR Board of Trustees APPLIED RESEARCH COMMITTEE

Tuesday, July 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 (Vote Required) | Dr. Guru Ghosh |
| A. April 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

October 29, 2024
January 28, 2025
April 29, 2025

Applied Research Committee Members

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

Future Plenary/BOT Meetings

August 15, 2024
November 14, 2024
February 13, 2025
May 15, 2025

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 – Tuesday, April 30, 2024 – 9:00 a.m. – IALR Conference Room 203

<p><u>Members Present</u> Dr. Guru Ghosh, <i>Chair</i> Ms. Emma Kozlowski, <i>via Zoom</i> Mr. Charles Majors Ms. Leslie Mantiply Mr. Don Merricks, <i>Ex Officio</i> Mr. Kunal Patel</p> <p><u>Members unable to attend</u> None</p>	<p><u>IALR Staff Present</u> Mr. Telly Tucker, President, IALR Dr. John Hughes, EVP, Operations Dr. Scott Lowman, Vice President of Applied Research Ms. Pam Patterson, BOT Secretary & Executive Assistant</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, April 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 would be participating electronically. Ms. Kozlowski attended via Zoom due to the distance between her principal residence and the meeting location. The committee voted to allow Ms. Kozlowski to attend the meeting via Zoom.

- **Motion:** Mr. Charles Majors made a motion to allow Ms. Kozlowski 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	-	0
Committee Votes For	-	5
Committee Votes Against	-	0
Committee Abstentions	-	0

Approval of Minutes

- **Motion** – Mr. Charles Majors made a motion to accept the Minutes for the January 30, 2024, meeting. Ms. Leslie Mantiply seconded the motion. The motion passed unanimously.

Research and Business Development Update

Dr. Scott Lowman presented the Applied Research Report (Exhibit A).

- Building Virginia's Controlled Environment Agriculture (CEA) Industry Through Targeted Research, Workforce, and Economic Development Initiatives

The research front has seen significant developments, with the Aerofarms collaboration shifting towards targeted disease testing, marked by a weekly influx of samples and plans to equip the Controlled Environment Agriculture (CEA) Center for offsite testing. Seven new research partnerships have been forged, including an herb growth project with Virginia Tech and Canon Virginia's completed expansion. Dr. Lowman's active engagement included notable presentations at events like the NASA National Plant the Moon Challenge and strategic meetings such as those with the Virginia Agriculture Development Office and Virginia Tech Legislative Breakfast. Additionally, tours organized by IALR showcased the center's capabilities to various stakeholders. Funding updates highlight both successes, like grants for strawberry production improvement, and ongoing efforts, such as grant submissions focusing on workforce optimization and stress reduction in greenhouse vegetable production. On the economic development front, initiatives like the release of the GoVA report and partnerships with state entities like the Virginia Economic Development Partnership (VEDP) and the Virginia Secretary of Agriculture and Forestry's office aim to bolster Virginia's CEA industry. Further support measures included hosting informative tours emphasizing support mechanisms for companies within the CEA sector.

- AgTech and Life Sciences Manufacturing Support to Grow Industries Through Testing, Contract Research, and Lab Access

The Bio-Manufacturing/Cell Factory/Bio-Foundry Initiative progresses with the finalization of the Summer Fermentation Workshop, attracting interest from companies like Novozymes and Agrospheres. Partnerships with institutions like Virginia Western Community College are established, supported by an NSF grant. Analytical Chemistry collaborates with JTI for testing, and new material transfer agreements are signed with biotech companies. Contracts with Research Triangle Park firms for biostimulant development and a venture capital startup are underway. In Contract Research, collaborations with Plant Response, Agrospheres, BASF, and Syngenta advance biological and contract research projects. Economic development efforts include agreements with Agrospheres and Plant Response for lab and office space rental, with potential licensing of IALR's biostimulants. Collaboration with a Mexico-based biotech firm facilitated by VEDP is anticipated.

Dr. Lowman’s report highlighted the *Controlled Environment Agriculture Strategy and Roadmap in GO Virginia Region 3*. A copy was included in the full report.

Dr. Guru Ghosh thanked Dr. Lowman for the comprehensive report.

Open Forum of Concerns, Issues, and Observations

No concerns, issues, or observations were mentioned.

Adjournment

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

- **Motion:** Ms. Leslie Mantiply made a motion to adjourn the meeting. Mr. Charles Majors seconded the motion. The meeting was adjourned at 10:01 a.m.

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, April 2024



Research Committee Report
Dr. Scott Lowman
July 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

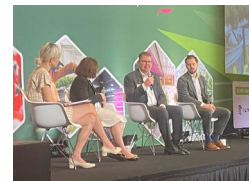
1) CEA Research

- a. A new partnership was established with BASF seed division to enhance knowledge of their lettuce cultivars. The goal is to enhance customer service by providing highly detailed growth data.
- b. A new partnership was established with Seedway to trial 16 varieties of bell peppers for CEA production.
- c. A VT PhD student will be starting in the fall, and another will start during winter break.
- d. VT/IALR Controlled Environment Agriculture Innovation Center co-founder, Dr. Michael Evans, stepped down from his role as Director of the School of Plant and Environmental Science to focus more on research and development of workforce training opportunities.
- e. A new partnership has been established with a company that has proprietary technology to sterilize seeds for CEA production.
- f. The Center is hosting 2 summer stem interns, and each is driving innovation forward with projects related variety selection of herbs and specialty crops in CEA production.
- g. The IALR team is hosting 3 summer interns. One is focused on biotechnology and the other two are focused on robotics and computer vision.
- h. Dr. Amaradasa and the research team published a peer reviewed journal article titled "Biocontrol potential of endophytic Pseudomonas strain IALR1619 against two Pythium species in cucumber and hydroponic lettuce" in the highly respected Journal POLS ONE.
- i. Dr. Mei and the research team published a peer review article titled "Beneficial bacterial endophytes promote spinach plant growth under indoor vertical hydroponics" in the highly respected journal Technology in Horticulture.

2) Meetings, Tours, and Events

- a. Dr. Lowman, along with Secretary of Agriculture and Forestry Matthew Lohr and Delegate Windell Walker, toured the National Center for Healthy Veterans in Altavista Virginia. Topics included integrating controlled environment agriculture into their training program.
- b. Dr. Scott Lowman presented in Richmond at the Virginia Agriculture Director Organization meeting on April 11. The focus was on CEA, and the presentation was with the Virginia Department of Agriculture and Consumer Services and the Virginia Secretary of Agriculture and Forestry, Matt Lohr.

- c. Dr. Lowman, along with the Secretary of Agriculture and Forestry, Matt Lohr, attended the Greentech Summit in the Netherlands as official guests of the Dutch Embassy. The summit featured over 12,000 attendees from companies from around globe. Secretary Lohr and Dr. Lowman met with over 20 companies to highlight the Governor’s effort to make Virginia the number one state for controlled environment agriculture companies to land.
- d. Dr. Lowman and Secretary Lohr also attended the AgTech Summit in Chicago later in the month and were joined by the Deputy Secretary of Agriculture Beth Green and VEDP’s Simon Chapman. The team met with many companies, from producers to technology suppliers, interested in Virginia. Secretary Lohr also spoke on a panel discussion and highlighted CEA research, workforce development, and incentives as Virginia’s investment in the CEA sector.
- e. Dr. Lowman presented at the GO Virginia Region 3 full council meeting on April 17 to discuss the roll-out of the CEA Roadmap and Strategy for Region 3.
- f. A research center located in Wilson NC (RIOT) toured IALR to explore partnership potential.
- g. 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.



3) 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.
 - 1. Worked with VEDP to highlight the CEA Innovation Center to two companies.
 - 2. Worked with the Secretary of Agriculture and Forestry’s office to highlight the CEA Innovation Center to a company in Virginia.
- c. The Controlled Environment Agriculture (CEA) Innovation Center is working with the National Center for Healthy Veterans to establish a greenhouse production job training program.
- d. Hosted a visit from Dov Hoch, Executive Director, Virginia-Israel Advisory Board, to explore opportunities to collaborate. The visit was also supported by Economic Development/SVRA.
- e. Met with Dr. Eddie Amos, who leads GoVa Region 2, to discuss opportunities for collaboration.
- f. Dr. Lowman attended the Roanoke Blacksburg Regional Council Tech Night in Roanoke, Va.
- g. A company from Chicago visited to learn more about the biotech capabilities at IALR. BG BIOLOGICS. LLC is interested in using IALR for PHASE II testing of a biocontrol product in hydroponics.



- h. The CEA Center recently completed a VT grant funded assessment of workforce needs in CEA. The project, lead by Dr. Kaylee South, will be leveraged for grant funding and program development in workforce training in CEA.

4) Other Items to Support the Above

- a. Update on the implementation of the CEA strategy and roadmap.
 - 1. Partnerships established for workforce development.
 - 1. Virginia Future Farmers of America (FFA)
 - 2. Cooperative Extension

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

Current Activities

1) Analytical Chemistry

- a. Analytical chemistry is working with JTI to initiate testing.
- b. Analytical chemistry kicked off a new collaboration with a biotech company for long-term testing.
- c. A new collaboration was established in analytical chemistry to test for a company developing commercially viable products from waste streams.

2) Contract Research

- b. New BASF partnership established focused on biologicals and contract research – contract finalized and underway.
- c. New Syngenta partnership established focused on biologicals and contract research – contract finalized and underway.

3) Economic Development

- a. The research team, in partnership with the SVRA and VEDP, hosted a visit from a biotech company located in Mexico that is interested in lab space and a small manufacturing facility to launch a North American facility in Danville
- b. The research team hosted a company interested in locating and starting up on-site. The company is funded by the second largest VC firm in the food and beverage industry. The company is also interested in co-developing IP and using IALR's biotechnology as a platform. The company spent two days on campus and is in the final stages of the decision-making process.



- c. An agreement is in its final stages for a company in polymer science to rent lab and hood space. The company is currently located in Raleigh.
- d. An agreement is in the final stages with a polymer consulting startup to lease space in the polymer lab. The company reported back that due to IALR's polymer testing capabilities they were able to recruit 2 new customers.
- e. An agreement is in the final stages with a VC funded polymer company to rent lab space in the polymer lab.

Grants/Funding

- f. State budget update
- g. **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)
- h. **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)
- i. **Received** – USDA Specialty Crop Block Grant "Biostimulants to Improve Indoor Strawberry Production" (\$54,000)
- j. **Received** – USDA Specialty Crop Block Grant "Biotechnology to Improve Indoor Strawberry Production and Disease Control"
- k. **Received** - Agrospheres is funding a new employee for 2 years (\$110,000)
- l. **Received** – 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 subaward)
- m. **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
- n. **Received** - A grant partnership with Virginia Western Community College focused on AgTech robotics and vegetable production resulted in an NSF grant award to develop an in-depth program for workforce training in community colleges. Dr. Lowman will serve on the advisory board.



Additional Activities



Mitchell Doss, Former Virginia Tech master student housed here at IALR, has accepted the position as Vaues Chain Coordinator. The three-year project will work to connect producers to buyers and help establish and grow a local food system.