

# Tyler Rector

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## EDUCATION

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### OLD DOMINION UNIVERSITY

Norfolk, VA

Major in Biomedical Sciences; 4th Year, GPA: 3.71

## RESEARCH EXPERIENCE

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### Mechanobiology Laboratory, Mechanical & Aerospace Engineering - Norfolk, VA

PI: Dr. Venkat Maruthamuthu, Associate Professor, Mechanical & Aerospace Engineering

January 2024 - Current

- Working on an independent project focusing on the utilization of optogenetic techniques to investigate how RHO GTPases are involved in cellular adhesion, morphology, and motility. The current project utilizes optogenetic plasmid constructs, which enable the activation and recruitment of Rac and cdc42 proteins, to initiate the formation of filopodia and lamellipodia along the leading edge of a plasma membrane.
- Utilizing Pattern Illumination to selectively activate specific regions on a biological sample. When paired with the project optogenetic plasmid constructs, this approach allows for targeted subcellular activation and recruitment of the target proteins.

### Brachova Alavez Laboratory Eastern Virginia Medical School - Norfolk, VA

PI: Dr. Nehemiah S. Alvarez, Assistant Professor, Biological and Translational Science; Dr. Pavla Brachova, Assistant Professor, Physiological Science

June 2025 - Current

- Work on a project investigating how mitochondrial stress alters gene expression and alternative splicing in ovarian tissue, utilizing long-read RNA sequencing.

### Research In Pathogen Biology Biological Sciences - Norfolk, VA

PI: Dr. David Gauthier, Professor, Biological Science, August 2024 - June 2025

- Research course studying the population genetics of the invasive, disease carrying (*Rickettsia parkeri*) tick *Amblyomma maculatum*.
- Utilized in silico primer design and testing to build a primer set for Microsatellite loci. Currently preparing an analysis of the dataset generated from selected Microsatellite loci.

**Other:** COVA CCI Cybersecurity Research Writing Project, "A Review of Threat Vectors to DNA Sequencing Pipelines"

## GRANTS AWARDED/PRESENTATIONS

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Fall 2023	COVA CCI Undergraduate Cybersecurity Research Grant
Spring 2024	Poster Presentation ODU Undergraduate Research Symposium
Summer 2024	Honors Research & Creativity Fellowship
Fall 2024	Honors Research & Creativity Fellowship (Renewal)
Spring 2025	Honors Research & Creativity Fellowship (Renewal)
Spring 2025	Dual Poster Presentation ODU Undergraduate Research Symposium
Summer 2025	Poster Presentation In Vitro Biology Conference
Fall 2025	Virginia Space Grant Consortium STEM Bridge Scholar
Fall 2025	Poster Presentation Biomedical Engineering Society Conference
Fall 2025	Poster Presentation Network for Undergraduate Research in Virginia Conference

## VOLUNTEER EXPERIENCE

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### VIRGINIA BEACH RESCUE SQUAD

Virginia Beach, VA

EMT Provider (NREMT ID: E3824316)

May 2024- April 2025

- Provided Basic Life Support (BLS) care in prehospital settings as part of a collaborative EMS team. Assisted with patient assessment, treatment, and transport, contributing towards effective and timely delivery of care.

### ODU MODEL UNITED NATIONS SOCIETY

2022-Current

Secretary Treasurer

- Managed \$70,000 in revenue from over 50 high schools for an 800 delegate Model United Nations conference. Automated the generation and printing of awards, invoices, and other conference materials.
- Previously held the position of Chief of Staff managing the staffing and recruitment of 60+ volunteer staff members from ODU, Regent, Hampton University, and TCC.

### STUDENT GOVERNMENT ASSOCIATION

Transportation & Safety Director

2022-2023

- I worked with the City of Norfolk to improve crosswalk safety, represented students on the State Council of Higher

Education for Virginia to promote college affordability through measures like extending COVID relief grants, and led a campus-wide map project to restore awareness of ODU's transportation system after ridership declines.

**AMERICORP, AMERICAN CONSERVATION EXPERIENCE**

Asheville, NC

Corp member

Summer 2022

- Worked in remote mountain sites in Pisgah and Cumberland Gap controlling invasive species and building trails. Restored fire-damaged wetland and grassland sites in Cherokee National Forest.

**REFERENCES**

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**Venkat Maruthamuthu**

Associate Professor, Department of Mechanical & Aerospace Engineering, Old Dominion University

Relationship: Principal Investigator & Research Advisor

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Norfolk, VA 23529

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**David Gauthier**

Professor, Biological Sciences Department, Old Dominion University

Relationship: Research Advisor

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**Nehemiah S. Alvarez**

Assistant Professor, Department of Biological and Translational Science, Eastern Virginia Medical School

Relationship: Principal Investigator & Research Advisor

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**Aaron Karp**

Senior Lecturer, Political Science Department

Relationship: Club Advisor

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