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HensonNews

Produced by Salisbury University's Henson School of Science and Technology

Student-Powered, Peer-Reviewed:
HENSON SCHOOL STUDENTS PUBLISH 17 PAPERS

Thirty-three Henson School students are authors on 17 peer-reviewed publications on topics that range from flood mapping and oyster identification to pediatric care and pure mathematics.

At Salisbury University, students don't just read about research. They do it. Since 2024, 32 undergraduates and one graduate student in the Richard A. Henson School of Science and Technology have co-authored 17 papers that were published or accepted for publication after review by independent experts outside SU. Every one of those papers has at least one student author, and each project was guided by a faculty mentor.

The work has appeared in journals in aquatic science, biology, computing, endocrinology, mathematics, microbiology, pediatrics, and forensic science education. It has also been presented at IEEE and SPIE conferences, including the IEEE International Conference on Data Mining, one of the leading international meetings in its field. Much of it addresses questions that matter right here on the Eastern Shore.

From the Henson Dean's Office



When I was a student at Salisbury (then State) University in the late 1980s and early 1990s, my professors were crystal-clear about one immutable fact – your research is not complete until you have disseminated the results, either through publishing in an academic journal, presenting at an academic conference, or usually both. Beyond your own edification, we engage in the process of knowledge discovery in the lab or in the field so that we can share the results with others. The entire process of the advancement of scientific discovery rests on the commitment to take what you've learned and put it before the community of scholars so that they can take it and build upon it.

Here in the Richard A. Henson School of Science and Technology, our faculty have continued to instill that commitment of dissemination to a new generation of young scholars. In this issue of the newsletter, you can read about the many research topics, fascinating objects of study, and overall impressive productivity of our student and faculty researchers. And remember, most of these authors are undergraduates. The amount of hard work and dedication contained within these few pages is impressive and I couldn't be prouder. Bravo to both the student authors and the faculty mentors who made this work possible!

– Dr. Michael Scott, Dean

Why Peer Review Matters

Before a paper is published in a peer-reviewed journal or conference, independent experts outside SU evaluate it. They check whether the methods are sound, the evidence supports the conclusions, and the work adds something new. Many submissions are revised several times, and many are rejected.

That outside judgment is what gives these accomplishments their weight. SU is not grading its own work; the broader scholarly community is. For students, peer review teaches them to defend their reasoning and respond to expert critique. It also gives them a credential that graduate programs and employers recognize.

For the University, a steady record of peer-reviewed scholarship is independent evidence that teaching and research at SU meet the standards of higher education nationally. It supports accreditation, competitive grants, and the reputation that makes an SU degree worth more to every graduate.

Anchoring Our Region, Advancing Our Future

SU's 2026-2031 strategic plan names research as a high-impact practice and calls for highlighting research and creative work to demonstrate student learning outcomes, regional engagement, and the University's reputation. This work shows those goals in practice.

STRATEGIC PLAN GOAL	WHAT THESE STUDENTS DELIVERED
Pillar 1, Goal 2: Make experiential learning the defining feature of an SU education	33 students carried their research from first idea to publication
Pillar 1, Goal 4: Advance knowledge and strengthen the region through faculty, staff, and student research	17 peer-reviewed publications across the sciences, mathematics, and health
Pillar 1, Goal 1 (strategy): Incentivize interdisciplinary teaching, research, and community-engaged work	AI applied to water quality, radar imaging applied to flooding, a student on a pediatric healthcare study
Pillar 1, Goal 3: Align programs with workforce and regional needs	Skills in AI, data science, environmental monitoring, and healthcare
Pillar 3, Goal 1 (strategy): Expand applied research in regional priority areas	Coastal flooding, salinity, algal blooms, oysters, and community hospital care

In her message introducing the plan, President Carolyn Lepre observed that much of what the plan aspires to is already happening at SU. The students of the Henson School are proof. Prospective students can expect the same opportunity: SU's mission states that virtually every student can do research or experiential learning with a faculty mentor, and these students show what that looks like.

Health and the Living World

A. A. Orr, working with faculty member Veera Holdai, is part of a research team whose study on weight-based use of high-flow nasal cannula, a form of breathing support for children, was accepted by the *International Journal of Pediatrics and Neonatology*. The study looks at care on a community hospital pediatric ward and how it affects transfers to larger tertiary care centers. That question matters to families across a rural region.

J. P. Jensen joined a 13-author team, including faculty member Kirsten Guckes, that showed how strains of the bacterium *Vibrio fischeri* use type VI secretion to inhibit one another's growth. *V. fischeri* is a widely used model for studying symbiosis. The paper is forthcoming in *Microbiology*.

K. M. Mitzel co-authored a review with Angela Freeman in *General and Comparative Endocrinology*. It examines how the pesticide chlorpyrifos can affect the brain's oxytocin and vasopressin systems, and why researchers studying wild mammals should account for it.

Two projects mentored by faculty member Dana Price focus on Maryland's beetles. P. Becnel documented the biodiversity of scarab beetles and their relatives in two urban ecosystems (*The Coleopterists Bulletin*, 2025). Undergraduate K. Beauchamp and graduate student I. Garrison studied how mammals' diets shape the attraction and community structure of dung beetles, in a paper accepted by the same journal.

Improving How Science Is Taught

Students are also shaping how their discipline is taught. P. Nelson, J. Wallace, and H. Justice worked with faculty member Jocelyn Bunting on "Nailing the Scale Cast: Visualizing Hair Cuticle Patterns." The paper presents a classroom technique for revealing the scale patterns on hair, which forensic scientists examine when comparing hair evidence. It will appear in the November/December 2026 issue of the *Journal of Forensic Science Education*.

The Foundations Beneath the Applications

Not every advance has an immediate application, and the plan commits SU to the broad intellectual foundations of a comprehensive education. Students in computing and mathematics are contributing to that foundation.

Working with Lu, O. Beabout, A. Dodd, and T. Murphy tackled catastrophic forgetting, in which an AI system loses what it learned earlier as it learns new tasks (IEEE ICDM, 2025). A. Kyritsis, S. Wynn, and S. Cesar-Alberi, also mentored by Lu, improved an algorithm for stable matching, the mathematics behind problems like pairing medical residents with hospitals (*International Journal of Computer Applications*, 2024). D. O'Brien and S. Presley, working with X. Wang and S. Wang, explored how large language models can help identify user requirements in software projects (IEEE MIT URTC, 2024).

In pure mathematics, C. Bean co-authored two papers with faculty member Ryan Shifler on the geometry of odd symplectic partial flag varieties. One, with B. Cruikshank, appears in the *Rocky Mountain Journal of Mathematics*. The other, with C. Shank, is forthcoming in the *Journal of Algebra and Its Applications*. Undergraduate co-authors are uncommon in research mathematics journals, which makes this work especially notable.

Publications

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** Undergraduate student author ** Graduate student author*

Published

Beabout, O.*, Dodd, A.*, Murphy, T.*, & Lu, E. (2025, November). Mitigating catastrophic forgetting using improved clustering-based episodic memory. In *Proceedings of the 25th IEEE International Conference on Data Mining* (ICDM). IEEE.

Bean, C.*, Cruikshank, B.*, & Shifler, R. (2026). Curve neighborhoods and combinatorial property O for a family of odd symplectic partial flag manifolds. *Rocky Mountain Journal of Mathematics, 56*(3), 621–637.

Becnel, P.*, & Price, D. L. (2025). Scarabaeoidea (Coleoptera) biodiversity in two urban ecosystems of Maryland, USA. *The Coleopterists Bulletin, 79*(4), 607–617.

Kyritsis, A.*, Wynn, S.*, Cesar-Alberi, S.*, & Lu, E. (2024). Selection improvements on the parallel iterative improvement algorithm for stable matching. *International Journal of Computer Applications, 186*(43), 49–56.

Li, M., **Verduzco, J. Z.***, Wang, X., Costa, P. R., & Glibert, P. M. (2026). Using a large language model to automate harmful algal bloom prediction. *Limnology and Oceanography Letters, 11*, e70177. https://doi.org/10.1002/lol2.70177

Mitzel, K. M.**, & Freeman, A. R. (2025). Chlorpyrifos and neuroendocrine function: Concerns for research with free-living mammal populations. *General and Comparative Endocrinology, 373*, 114807. https://doi.org/10.1016/j.ygcen.2025.114807

Nnebedum, B.*, Albana, A.*, Jin, Y., Lu, E., Mulrooney, T., & Yang, Z. (2026). Flood area segmentation using deep learning and UAVSAR. In *Proceedings of SPIE Defense + Security* (Vol. 14032). SPIE.

O'Brien, D.*, Presley, S.*, Wang, X., & Wang, S. (2024). Identifying user requirements using LLMs. In *2024 IEEE MIT Undergraduate Research Technology Conference (URTC)* (pp. 1–5). IEEE. https://doi.org/10.1109/URTC65039.2024.10937613

Pham, V.*, Wang, S., & Wang, X. (2024). Detecting abnormal salinity values in one-dimensional time-series data. In *2024 IEEE MIT Undergraduate Research Technology Conference (URTC)* (pp. 1–4). IEEE. https://doi.org/10.1109/URTC65039.2024.10937612

Tang, K.*, Gonzalez, C. A. P.*, Lieberman, N.*, Lee, S.*, Jin, Y., & Lu, E. (2025, November). Change detection and land cover classification of flooded regions in UAVSAR imagery using deep learning. In *Proceedings of the 25th IEEE International Conference on Data Mining (ICDM)*. IEEE.

Vukov, N.*, Essandoh, J.*, Straus, M.*, Jin, Y., & Lu, E. (2024, December). Visual identification of oysters using machine learning. In *Proceedings of the IEEE International Conference on Big Data*. IEEE.

Accepted/In Press

Bean, C.*, Shank, C.*, & Shifler, R. (in press). On the quantum parameter in the quantum cohomology of a family of odd symplectic partial flag varieties. *Journal of Algebra and Its Applications*.

Beauchamp, K.*, Hagadorn, M. A., **Garrison, I.****, & Price, D. L. (in press). Dung beetle (Coleoptera: Scarabaeoidea) attraction and community structure influenced by mammalian dietary guilds in Maryland. *The Coleopterists Bulletin*. Accepted September 2026.

Manalai, G. G., Nawa, A. N., Holdai, V., Owusu-Bohen, O., Osmani, G. M., Chance, M. P., Pietras, S., Mitchel, K., **Orr, A. A.***, & Joyner, R. L. (in press). Effective weight-based use of high-flow nasal cannula in community hospital pediatric ward and its impact on transfers to tertiary care centers. *International Journal of Pediatrics and Neonatology*. Accepted March 2026.

McNeil, A. E., Teeter, L., Burkhart, J. I., Flores, N. J., Shabana, Y. A., Giacobe, E. J., Moore, P. J., **Jensen, J. P.***, Donnelly, A. R., Murtha, A. N., Aslan, H., Guckes, K. R., & Miyashiro, T. I. (in press). Type VI secretion drives reciprocal growth inhibition among symbiotic *Vibrio fischeri* strains. *Microbiology*. Accepted September 2026.

Nelson, P.*, Wallace, J.*, Justice, H.*, & Bunting, J. (in press). Nailing the scale cast: Visualizing hair cuticle patterns. *Journal of Forensic Science Education*. To appear in the November/December 2026 issue.

Villanueva, C.*, Wang, S., Wang, X., & Butz, S. (Poster). Data-driven schedule optimization for seasonal boat operations. In *2026 IEEE MIT Undergraduate Research Technology Conference (URTC)*.

Studying the Water That Shapes the Shore

Several student teams used data science and artificial intelligence to tackle problems facing coastal communities.

J. Z. Verduzco, working with faculty member Sophie Wang, co-authored a study in *Limnology and Oceanography Letters* on using a large language model to automate harmful algal bloom prediction. Algal blooms affect fisheries, recreation, and public health along coastal waters. V. Pham, mentored by X. Wang and S. Wang, developed methods to detect abnormal values in salinity records, an essential step in making environmental monitoring data trustworthy. That work was presented at the 2024 IEEE MIT Undergraduate Research Technology Conference (URTC).

Two teams turned NASA's UAVSAR airborne radar imagery into tools for understanding flooding. B. Nnebedum and A. Albana applied deep learning to map flooded areas (SPIE Defense + Security, 2026). K. Tang, C. A. P. Gonzalez, N. Lieberman, and S. Lee used it to detect change and classify land cover in flooded regions (IEEE ICDM, 2025). Both teams worked with faculty member Enyue Lu.

N. Vukov, J. Essandoh, and M. Straus, also working with Lu, trained machine learning models to visually identify oysters, a species central to the Chesapeake Bay's ecology and economy (IEEE International Conference on Big Data, 2024). With S. Wang and X. Wang, C. Villanueva applied data-driven optimization to scheduling seasonal boat operations, in a paper accepted to the 2026 URTC.

The strategic plan names environmental vulnerability as a regional challenge. It pictures SU graduates as the scientists protecting coastal ecosystems. These students are already doing that work.

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Student Authors

STUDENT AUTHORS	FACULTY MENTOR	PUBLICATION	VENUE
O. Beabout, A. Dodd, T. Murphy	Enyue Lu	Mitigating catastrophic forgetting using improved clustering-based episodic memory	IEEE ICDM, 2025
C. Bean, B. Cruikshank	Ryan Shifler	Curve neighborhoods and combinatorial property O for a family of odd symplectic partial flag manifolds	*Rocky Mountain Journal of Mathematics*, 2026
C. Bean, C. Shank	Ryan Shifler	On the quantum parameter in the quantum cohomology of a family of odd symplectic partial flag varieties	*Journal of Algebra and Its Applications*, in press
K. Beauchamp; I. Garrison (graduate student)	Dana Price	Dung beetle (Coleoptera: Scarabaeoidea) attraction and community structure influenced by mammalian dietary guilds in Maryland	*The Coleopterists Bulletin*, in press
P. Becnel	Dana Price	Scarabaeoidea (Coleoptera) biodiversity in two urban ecosystems of Maryland, USA	*The Coleopterists Bulletin*, 2025
J. P. Jensen	Kirsten Guckes	Type VI secretion drives reciprocal growth inhibition among symbiotic Vibrio fischeri strains	*Microbiology*, in press
A. Kyritsis, S. Wynn, S. Cesar-Alberi	Enyue Lu	Selection improvements on the parallel iterative improvement algorithm for stable matching	*International Journal of Computer Applications*, 2024
K. M. Mitzel (graduate student)	Angela Freeman	Chlorpyrifos and neuroendocrine function: Concerns for research with free-living mammal populations	*General and Comparative Endocrinology*, 2025
P. Nelson, J. Wallace, H. Justice	Jocelyn Bunting	Nailing the scale cast: Visualizing hair cuticle patterns	*Journal of Forensic Science Education*, Nov/Dec 2026
B. Nnebedum, A. Albana	Enyue Lu	Flood area segmentation using deep learning and UAVSAR	SPIE Defense + Security, 2026
D. O'Brien, S. Presley	Sophie Wang & Peter Wang	Identifying user requirements using LLMs	IEEE MIT URTC, 2024
A. A. Orr	Veera Holdai	Effective weight-based use of high-flow nasal cannula in community hospital pediatric ward and its impact on transfers to tertiary care centers	*International Journal of Pediatrics and Neonatology*, in press
V. Pham	Sophie Wang & Peter Wang	Detecting abnormal salinity values in one-dimensional time-series data	IEEE MIT URTC, 2024
K. Tang, C. A. P. Gonzalez, N. Lieberman, S. Lee	Enyue Lu	Change detection and land cover classification of flooded regions in UAVSAR imagery	IEEE ICDM, 2025
J. Z. Verduzco	Sophie Wang	Using a large language model to automate harmful algal bloom prediction	*Limnology and Oceanography Letters*, 2026
C. Villanueva	Peter Wang & Sophie Wang	(Poster) Data-driven schedule optimization for seasonal boat operations	IEEE MIT URTC, 2026
N. Vukov, J. Essandoh, M. Straus	Enyue Lu	Visual identification of oysters using machine learning	IEEE Big Data, 2024

All students listed are undergraduates unless noted.