PROGRAM UPDATES

● **The Science House (TSH)** had another incredible year providing STEM outreach programs to K-12 students and teachers throughout North Carolina. COVID precautions were still a major consideration across the year, but many programs were able to return to in-person formats. TSH student programs directly served 11,250 students and reached over 50,000 students. Teacher professional development programs served 1,693 teachers. The Rural and Equipment Loan program supplied technologies to perform STEM investigations to 211 schools serving 10,980 students. 180 undergraduate or graduate NCSU students and 1,235 volunteers from the community and other partner organizations volunteered in TSH programs. TSH staff spent 4,308 hours preparing and implementing student and teacher programs in 72 North Carolina counties during the 2021-2022 fiscal year.

● **NC Science Olympiad** received an Ad Hoc grant from Burroughs Wellcome Fund to champion equity, diversity, and inclusion by expanding the program to the most rural counties in North Carolina. Grant funds were used to host two New Team Institutes, establish a new tournament in Elizabeth City, NC, and provide scholarships to participate in tournaments.

● Through the generous support of the **NC Science Olympiad** community, NC Science Olympiad provided 42 team kits to students with our first-ever Crowdfunding campaign. The kits provided safety supplies, forensics kits, rocket launchers, and much more to underserved students across NC so that they could participate in STEM extracurricular activities. One middle school team emailed us the following: "Because of you we will be able to participate in more Science Olympiad events without any financial barriers."

● **The NC Science Olympiad** ran 19 elementary tournaments and 12 middle and high school tournaments across North Carolina. 549 teams participated, which included 750 coaches and 8,235 students.

● The Science House hosted the **NC Science Olympiad** State Tournament in-person for the first time since 2019. Over 1,200 middle and high school students participated and were inspired and empowered to pursue a degree and career in STEM at NC State University.
The NC Science Olympiad provided virtual STEM content to thousands of elementary students across NC unable to participate in-person due to the pandemic. The Bite Size SO program provided fun, hands-on learning opportunities that covered a wide array of topics including weather, forensics, coding, and more.

The Mountain Satellite Office continued its collaboration with the NC Center for the Advancement of Teaching (NCCAT), leading 4 weeklong workshops including Using STEM to Enhance Literacy, Environment and Genetics: The Science Connection, Scientific Literacy: Navigating Digital Media in Science, and Ecosystems and Environment Science.

The Mountain Satellite Office prioritized teacher support, professional development, and classroom assistance this year. Ninety-nine percent of over 300 participants responded that the workshops they attended were effective and they planned to implement the training into their own lessons. Here are some of the specific quotes from participating educators:

○ “This has reminded me why I love teaching! I have forgotten the love I felt for this profession for the first 20 years! It's even made me question my early retirement. I feel revived and excited!!!”

○ “This is my 30th year teaching (20 in NC) and I really questioned if I could still teach effectively as exhausted as I am with everything still going on... This experience has really helped rejuvenate me! Again, MANY thanks!”

○ “I thoroughly enjoyed Michelle Benigno. She has an energy and sense of humor that made everything so fun and engaging. And I'm leaving this week feeling so much more motivated to get back into my classroom and use everything I learned. And I'm not only motivated but confident in SO many new strategies to use in my classroom.”

In July of 2021, The Science House kicked off a three-year $1,345,466 NSF ITEST project entitled Connecting Students with Autism to Geographic Information Science & Technology (GIST) Careers. In its first year, GIST refined its theory of action, recruited 32 high school student participants for each planned cohort, finalized research instruments, began collecting the first round of data, modified drone curricula for students with autism, and successfully completed 10 online drone classes and four Saturday Academy Sessions for students during the Spring of 2022. The project is planning to hold a week-long Summer GIST Institute in June of 2022. During the institute, students will go on two all-day field trips: one to
● Fayetteville State University and one to the US Army base at Fort Bragg.

● The Science House’s year-long program for high school students with disabilities, Catalyst, in partnership with the NC Department of Health and Human Services and Pre-Employment Transition Services served 36 students in its 6th year of operation and received the 2021 STEM Program of Excellence Award from the International Technology and Engineering Educators Association. The Catalyst program provides participants with job exploration counseling, workforce readiness training, work-based learning experiences, counseling on post-secondary training options, and instruction in self-advocacy. Students attend a STEM summer camp, Fall and Spring STEM Academies, and STEM internships totaling over 100 hours of instruction, exploration, and training.

● North Carolina First Lady Kristin Cooper and Secretary of Commerce Machelle Baker Sanders visited The Science House at NC State on Wednesday, July 28. They met with students in the Catalyst program, which focuses on creating opportunities in STEM for high school students with disabilities.

● Joann Blumenfeld, Director of TSH’s Catalyst and GIST programs, was named one of TIME Magazine’s Innovative Teachers of 2022.

● In September of 2021, The Science House began work on a four-year $2,596,576 NSF DRK-12 grant project entitled Supporting Implementation of Modeling Instruction in Rural Schools (SIMIRS). Over the past academic year, TSH has worked closely with ten high school Biology and Chemistry mentor teachers as they help faculty and staff from the NCSU College of Sciences and the College of Education prepare the upcoming professional development courses and examine the curricular materials through the lens of the Next Generation Science Standards. During the summer of 2022, this project will offer three weeks of high-quality professional development based on Modeling Instruction to rural Biology & Chemistry teachers in western North Carolina while expanding educational research in the area of Pedagogical Content Knowledge (PCK).

● Under the new direction of Dr. Alonzo Alexander, the Imhotep and Kyran Anderson Academies’ notable achievements for the year included:
  ○ Expanding partnerships with colleges within the University, including specific programmatic offerings fully funded by the Wilson College of Textiles and the College of Natural Resources. Each of these programs will provide a full week of funded STEM programming (equalling more than $15,000 in funding) for more than 70 students.
Increasing engagement and service to STEM outreach across NC, including at the Granville County Science where more than 300 families participated.

Developing partnerships with graduate students from biomedical engineering to develop STEM outreach curricula based on their current research to support Imhotep and Kyran program offerings while acquiring valuable expertise in developing the aspects of broader impacts for their research.

Being named a 2022 CADRE Fellow. The Community for Advancing Discovery Research in Education (CADRE) provides opportunities for early career researchers whose work centers on diversity, inclusion, equity, and/or justice in pre K-12 STEM education. As a Fellow, Dr. Alexander is making connections that will benefit the program’s long-term objectives in promoting diversity and inclusion.

- **Imhotep Academy** had 5 sessions, including 4 in-person offerings and 1 virtual session. 150 students participated from 7 counties in NC. Imhotep students also participated in the 2022 FIRST Lego and Future City STEM competitions. Session offerings during the year included: a session focused on neuroscience and the brain; a sustainability and ecology session; a makerspace-themed session focused on 3D printing; and an engineering session on prosthesis design.

- **Kyran Anderson Academy** was offered virtually and focused on forensic science and served 50 students primarily from NC, with several from Georgia, and 2 international students (Brazil and The Netherlands). In data collected from participating families, parents felt that after participating in the program their students: were more excited about STEM (91%); were more knowledgeable about STEM concepts (87%); and would recommend the program to their peers (100%).

- **Imhotep and Kyran Anderson Academies** continued to reach underserved students. 78% of participants were African-American, Latino, or Native American students; 55% of the participants were girls; and 70% requested financial support to participate in the program.

- The Science House is excited to host the **2022 AgDiscovery Camp** on campus this year at NC State in the final two weeks of June. TSH, along with the US Department of Agriculture (USDA), will welcome 16 high school students from CA, GA, IL, MD, MO, NC, NJ, and VA. This two-week residential camp will be packed with educational experiences and fun. Students will experience a host of activities which include a tour of the new Plant Sciences Building and the Dairy Farm, a visit to the NCSU Compost facility, and a visit to the Conservator's Center. The students will
also participate in a Food Science Lab which will teach them different ways to make ice cream. The two weeks will be packed with educational experiences and fun.

- The **FIRST Tech Challenge Robotics Program** at The Science House has rebranded as Biome Robotics and currently consists of three teams, FTC#7083 TundraBots, FTC#18190 TaigaBots, and FTC#20260 DeltaBots. The TundraBots team comprises veteran FTC students with at least one year of experience, and both TaigaBots and DeltaBots are open to both experienced and rookie students. Two teams were made up of all new, rookie students in 7th and 8th grades which will provide excellent growth for future years. Two seniors graduated this year, one of whom is planning to study engineering in college.

NEW INITIATIVES AND COLLABORATIONS

- TSH partnered with NCSU’s Data Science Academy led by Dr. Rachel Levy to create a new K-12 Data Science Coordinator position to provide high-quality, innovative **K-12 Student and Teacher Data Science Programming**.

- In February of 2022, The Science House and the NCSU Department of Physics partnered with the US Association of Young Physicists to host the **United States Invitational Young Physicists Tournament (USIYPT)** on campus. This tournament brought some of the best and brightest high school physics students from around the country to NC State University where they competed in a conversational debate competition focused on some very challenging physics problems. Faculty and staff from both TSH and Physics helped make this event a great success, which included a keynote address from Rongmon Bordoloi on Galaxy Evolution and the James Webb Space Telescope.

- Science House staff led NC State’s **Strengthening the Impacts of Research (STIR)** program this year. The STIR program provides five sessions of training to develop researchers’ capacities for an entire career integrating transformative research with equally transformative
broader impacts work. This program has proved immensely popular, with 73 applications for only 15 slots this year. STIR is highly evaluated and a Scholar in our first cohort has already received an NSF CAREER award incorporating a novel and ambitious education plan.

- The Science House and the North Carolina State Climate Office (SCO) combined their respective expertise in curriculum development and climate content to revamp the SCO’s online educational resources. Together, they developed classroom-ready lessons for North Carolina K-12 schools.

**ADMINISTRATIVE UPDATES**

**Staff Changes.** TSH said goodbye to some beloved staff members during 2021-22, and welcomed some new (and not-so-new) faces, as well:

- Dr. Pamela Gilchrist, long-time Director of Imhotep and Kryan Anderson Academies, left The Science House in August of 2021. Dr. Gilchrist joined the Virginia Tech Innovation Campus as its new director of K-12 programs. Dr. Alonzo Alexander, the new Director, follows in Dr. Gilchrist’s footsteps after working with her for several years running the academies.
- Kim Gervase, the unstoppable force driving the NC Science Olympiad for 10 years, announced in June that she has accepted a new role within NC State to become the Director for Strategic Education and Industry Partnerships for ORaCEL, a collaborative effort across Colleges working to solve energy issues and combat climate change. TSH will launch a search for the new NC Science Olympiad Direction over the summer.
- After 20 years of service to The Science House, Gina Barrier, Director of the Northwest Satellite Office, accepted a position at the NC School of Science and Mathematics Morganton as the Director of Summer Programs and Extended Partnerships. TSH is grateful for the many years of dedication and hard work Gina provided to The Science House and the impact she had on countless students and teachers in Western NC.
- TSH partnered with the NCSU Data Science Academy to create a new K-12 Data Science Coordinator position. The Coordinator will provide data science programming to K-12 students and teachers in North Carolina. The search is underway, and the new hire should be on board by late summer.
- TSH also had a transition in administrative support. Lucy Gottlieb departed TSH in August 2021 to become the Business Officer of NCSU’s Institute for Advanced Analytics. Beth Blanks joined TSH as a University Program Specialist in October 2021.

**TSH is moving!** After 26 years in the Research IV Building, The Science House has agreed to move to the first floor of the Cherry Building on Dorthea Dix campus in late Fall 2022. TSH’s move will support the College of Engineering's need for additional space on Centennial Campus while providing a promising new home for TSH’s programs and staff. The Cherry Building creates an opportunity for TSH to expand its outreach programs; provide more accessible space and parking for the K-12 students and teachers, faculty, undergraduate and graduate students, and community partners it serves; leverages outside space for non-indoor programming, and establishes a visual identity for TSH consistent with its mission. The Cherry Building’s exterior
and interior spaces mirror its past use as a K-12 school, while its location on the Dorthea Dix campus underscores the vital land-grant connection between NCSU and our public partners.