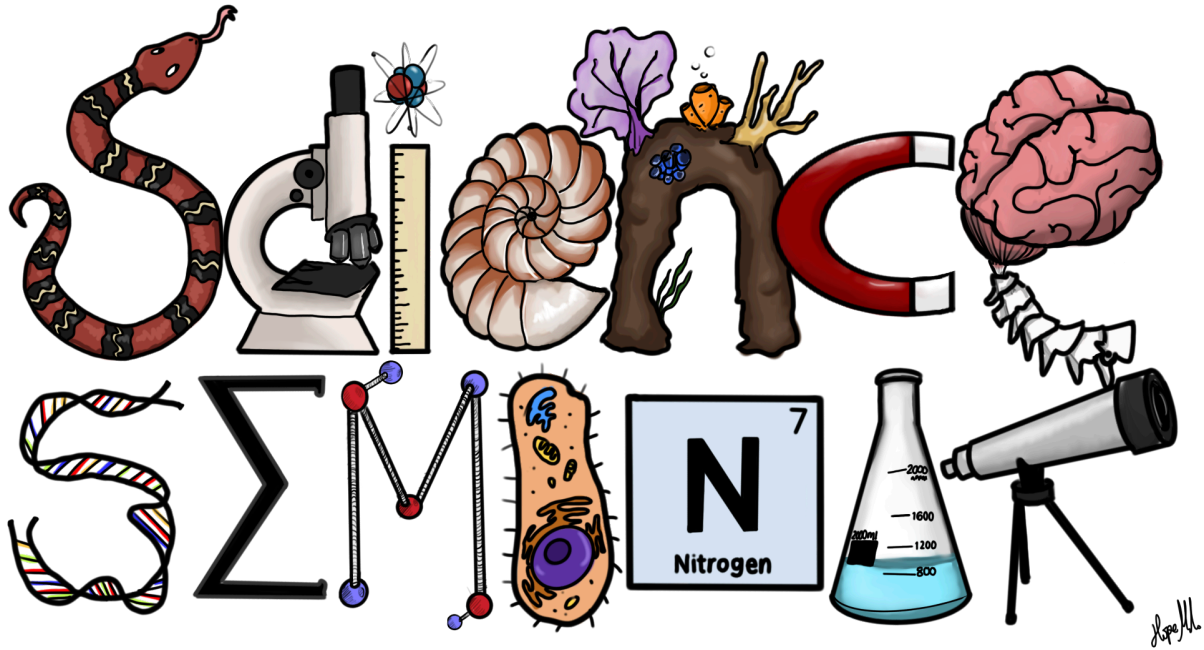# Hollins

Science Seminar

Hollins University

64th Annual Science Seminar

April 25th - 28th, 2022

Schedule of Events

Poster Session
Monday, April 25th, 4:30-6:00 pm, Dana
Science Seminar launches with its annual poster session in the upper hall of Dana, followed by a reception on the Dana Patio. The Ella Faith Mode Award will be presented. Posters will be available for viewing throughout the week of Science Seminar. Please see abstracts below.

Conversations about Research with Students of Science & Math
Tuesday, April 26th, 5:00-6:00 pm, VAC Auditorium
Please join us for a conversation about engaging in research with some of the students of Math and Science. Students will discuss how they found research opportunities, what their experiences with research have been like, and how this research has shaped their future goals.

Panelists (*Please see bios at the end of the program*): Shayla King '23 (Environmental Studies), Soha Munir '23 (Psychology), Tram Nguyen '24 (Chemistry), Uyen Nyugen Thanh '23 (Chemistry), and Ellie Song '24 (English)

Senior Research Presentations
**Wednesday, April 27th, 4:30-6:00 pm, VAC Auditorium**
Please join us for two research presentations from students in biology. (*Please see bios and abstracts at the end of the program*).

Isabella Jessee, '22 (Biology) - "Investigating the Antimicrobial Properties of Multifloral Honey in Southwestern Virginia"

Zoë Jordan, '22 (Biology) - "Anthropogenic Noise and its Impacts on Plants, Pollinators, and People"

Thursday, April 26th

Keynote Address: 6:30 - 8:00

Babcock Auditorium

"Understanding ticks and tick-borne diseases through surveillance and modeling"
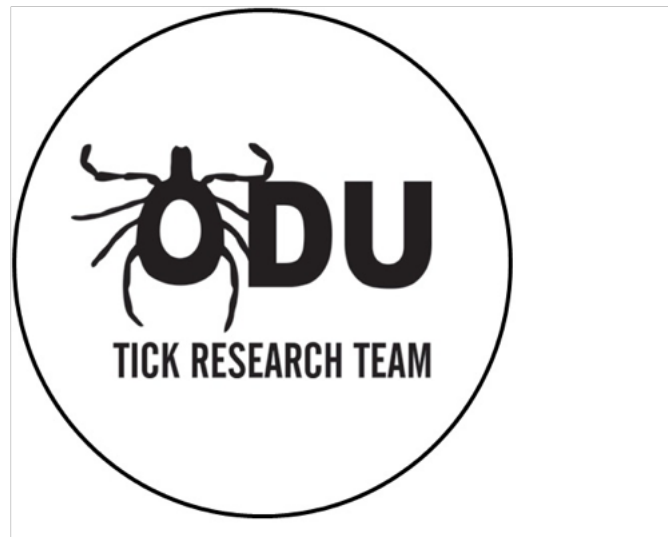
We are delighted to conclude the 64th Annual Science Seminar with a Keynote Address from Dr. Holly Gaff. Dr. Holly Gaff is a Professor in the Department of Biological Sciences at Old Dominion University. Dr. Gaff earned her Ph.D. in Mathematics at the University of Tennessee, Knoxville. Dr. Gaff's research interests have focused mainly on studying the ecology of ticks and tick-borne diseases through an active surveillance project and mathematical modeling. She has published more than 75 peer-reviewed articles and has had funding from NIH, CDC, DOD, USDA, and others. She currently leads the ODU Tick Research Team, which is a team of faculty, graduate and undergraduate students that have been working to better understand the ecology of ticks and tick-borne pathogens in Virginia for more than 10 years. The ODU Tick Research Team has been running a long-term active tick surveillance program in Virginia since 2009, which has led to the discovery and mapping of tick populations moving into and across Virginia as well as spanning many other related projects. Dr. Gaff also holds an honorary appointment at the University of KwaZulu-Natal and works with scientists throughout southern Africa on the challenges of ticks and tick-borne pathogens there.

Poster Session Abstracts

Dirhenium Compounds Containing the Diphosphine Ligands Ph$_2$PCH$_2$PPh$_2$, Ph$_2$PCH(CN)PPh$_2$, or Ph$_2$PCH(CH$_3$)PPh$_2$: a Comparative Study

Hannah Arthur
Under the direction of Dr. Dan Derringer

When M$_2$L$_{10}$ complexes containing two rhenium(III) atoms in a quadruple bond react with an excess of a bridging diphosphine ligand Ph$_2$PCH$_2$PPh$_2$, the bond order decreases and the rhenium is reduced to rhenium(II). The diphosphine ligands can adopt a *cis-cis*, *cis-trans*, or *trans-trans* configuration. NMR spectra of compounds that adopt the *cis-cis* arrangement show unusually large downfield shifts for one of the bridgehead methylene hydrogens (P-CH$_2$-P). To understand the unusual chemical shift, the hydrogens first have to be assigned. The strategy for making these assignments has been to try to make compounds where one of the hydrogens has been replaced with another group (e.g., CH$_3$ or CN). All efforts to make *cis-cis*-type compounds containing Ph$_2$PCH(CH$_3$)PPh$_2$ (dppmMe) or Ph$_2$PCH(CN)PPh$_2$ (dppmCN) have been unsuccessful. However, reactions of rhenium-containing starting materials with these derivatized ligands have produced compounds with many unforeseen properties, including unexpected solubilities and colors. These reactions may also have produced a sample with the characteristics of a *trans* configuration of ligands.

The effects of Covid-19 and online experience on preschoolers' emotional development

Emma Dalton, Vanity Hernandez, Zoe Raba, and Ainsley Burchette
Under the direction of Dr. Seunghee Han

COVID-19 presents familial and online stressors in young children that may increase risk to mental health and wellbeing. There is a higher prevalence of negative indicators of wellbeing for children receiving virtual instruction or familial stressors that come with COVID-19 as opposed to children not experiencing it. Research surrounding this topic have highlighted the need to address emotional distress for children during the epidemic, provide researchers with scientific fundamentals to formulate targeted interventions based upon the significant influencing facts. The purpose of the current study is to examine associations between preschoolers' emotional reactivity and anxiety in relation to their family members with covid and online presence. There were significant differences in children's emotional reactivity by family member's covid experience, online school experience, and owning an electronic device. Children's anxiety was also significantly different due to family member's covid-19 experience, online school experience, and owning an electronic device. Children are inevitably going to encounter adverse experiences when they use digital technology, this is not directly related to

the time they spend online, rather what they are taking in recreationally. This brings up the point that more attention should be paid to what young children *do* online, the content they encounter, and their life environment and support networks in general.

Snake Reciprocation in Terms of Classical Conditioning: Scent and Auditory Stimuli

Zeina Y. Ghanem
Under the direction of Dr. Bonnie Bowers

This study explored the classical conditioning of a snake in order to understand and interpret the physiological responses and behavior exhibited. The conditioning process involved scent and auditory stimuli where the snake was exposed to running water sounds and a mouse scent. The purpose of this research study is to examine how the snake will later associate the scent of the mouse with the sound and how it would react when sound was the only stimuli administered. The type of snake species used was a young Brook's Kingsnake. The snake was placed in a test tank and the experiment was split into four conditioning sessions and one additional session throughout four days of the week to test the outcome. The first session consisted of familiarization with foreign objects and new placement. The following sessions are followed by a series of conditioning the snake to the sound with the mouse scent. The results indicate that the length of conditioning affected the snake. The results could have been more satisfactory if it was shortened to about four or five tests conducted through two sessions in about two days instead since it was twice as long. This conclusion was based on the second day's data where the snake was most responsive to the stimuli (Average tongue flicks = 102, duration spent near stimuli = 3 minutes, and speed reaction was moderate).

Do parents' emotions affect their preschoolers'? A cross cultural study between Native American and European American families

Vanity Hernandez, Emma Dalton, Ainsley Burchette, and Zoe Raba
Under the direction of Dr. Seunghee Han

Past research has found that Native Americans are more susceptible to depression and, therefore, suicide. The present study investigated the effects that parental stress and depression have on their preschoolers' stress problems and whether there is a difference between Native American and European American parents' effects on their respective children. All participants (N = 248) completed surveys measuring their parenting stress and depression, as well as their child's behavior relating to stress. A significant difference was not found between Native and European American children's stress problems. However, we did find a significant difference between parental depression in that Native parents are more likely to experience depressive symptoms than their European American counterparts. These findings will aid the progress of development for mental health resources within Native American

communities, which will likely limit their susceptibility to depression and other mental health disorders.

Noise, NOISE, Noise: Impacts on Plants & Pollinators

Zoë Jordan, Shayla King, and Breanne Sharp
Under the direction of Dr. Renee Godard

Recent studies have shown that anthropogenic noise can have significant impacts on the species composition of ecosystems, plant physiology, and animal behavior. While past studies have examined impacts on different organisms separately and often in the lab, this study compared responses of pollinators and plants exposed to two different locations (HT – high traffic and LT – low traffic) separated by 200 m on the Hollins University campus. Average noise levels at the HT site were 10 dB louder than at the LT site with the average maximum levels greater than 90 db. Unlike previous studies, we found that the above and below ground biomass of plants grown in HT and LT microcosms did not differ nor was there any difference in leaf stomatal density after 58 days. Before harvesting, pollinator activity at the microcosms at the HT and LT site was videotaped simultaneously on five different occasions. Analysis of these videos revealed no difference in visitation rates by pollinators between the LT and HT sites; however, a greater diversity in pollinator taxa was seen on marigolds at the LT site during July. This multilayered field study indicated that noise may have impacts on biological organisms but further study is warranted.

K-Means Clustering for Instacart Recommendations

Shuvechchha Kunwar
Under the direction of Dr. Molly Lynch

This paper is inspired by the extensive use of Recommendation Systems in this digital era. It draws concepts from Machine Learning and Data Science to develop a recommendation model employing Instacart's User Dataset. It aims to utilize the concept of collaborative filtering which predicts relevant products based on the behavior patterns of similar users. K-Means Clustering is used to split customers into distinct groups depending on their attributes. The predictions are made for each cluster of users based on the cluster's collective purchase pattern.

The Influence of Prior Suspect Familiarity on the Cross-Race Effect

Soha Munir
Under the direction of Dr. Alex Wooten

The purpose of this study was to test whether the typical cross-race effect (CRE) could be extended to conditions where the suspect is casually familiar. To test this, participants studied a series of faces of white and Black males to create familiarity. Later, participants (N = 1170) took part in a multiple-block eyewitness paradigm in which they encoded a target face, followed by a distractor task, and then received a lineup where the suspect was Black or white, familiar or unfamiliar, and either guilty or innocent. We replicated the CRE but only when the suspect was familiar. Furthermore, the CA relationship was strong in all conditions except for the familiar Black suspect lineup. Follow-up research is underway to examine why the typical unfamiliar CRE was not found and to address other limitations.

Do positive Covid-19 cases within a family affect preschoolers' screen time?

Zoe Raba, Ainsley Burchette, Vanity Hernandez, and Emma Dalton
Under the direction of Dr. Seunghee Han

COVID-19 has impacted our lives in numerous ways, and with the conversion to online learning and working from home, the amount of time individuals are spending on electronic devices has only increased. In our study, we wanted to examine multiple factors that may contribute to the increase of screen time specifically within young children between the ages of three and six. After collecting data through an online survey, we investigated whether the diagnosis of COVID-19 within a child's immediate or extended family would lead to any increase of time spent recreationally on an electronic device. Through our findings, we learned that the diagnosis of COVID-19 did not have a statistically significant impact on children's screen time; however, we did discover that screen time significantly increased with children who owned their own device. With the results of our current study, we hope to dive deeper into other factors that could be related to increases in children's screen time, such as the overall well being of children's mental health, or other developmental factors such as the impact of stress from quarantine, loss of a loved one at a young age, or prolonged side effects of childhood sickness (COVID-19 related illness or otherwise.)

Time Series Analysis to Predict COVID-19 Mortality in the United States

Prakriti Pandey
Under the direction of Dr. Molly Lynch

Predictive modeling can help us quantitatively better understand diseases like COVID-19, aid in decision making, and take preventive measures sooner than we otherwise would. In this research, I predict the evolution of COVID-19 in the United States. Using a response variable of the first developed stage of COVID-19, I apply statistical and mathematical models, including time-series analysis, ARIMA modeling, and best fit modeling, to predict the number of COVID-

19 cases at the later stages. The predictions and results show that the predictions remain constant after a few values. The performance of the learning models is examined and values such as the mean absolute error are used to determine the effectiveness of the model. I also discuss several time-series analyses previously performed by other statisticians for various countries using models such as ARIMA and kth moving average. Similar predictions were done annually by the quadratic time-trend model for a different epidemic called Lassa Fever in Liberia in the 2000s. Non-time series regression for COVID in Sao Paulo, Rio de Janeiro, and Manaus was also performed by several researchers using statistical and cluster analysis to find the best explanatory variables for predictive models. In addition, I consider the work by Fokas et al., 2020 which predicts the time evolution of the cumulative number of individuals reported to be COVID infected in a given country.

Hyperbolic Geometry and Exploration of Mathematical Topology Through Crochet

Isabella Palmisano
Under the direction of Dr. Molly Lynch

The goal of exploring mathematical forms through crochet is to produce and explain mathematical objects and concepts to a general audience by allowing them to interact with a variety of crocheted items. Crochet was chosen as the method for representing the objects due to the sturdiness of crocheted surfaces and the ability to manipulate the crocheted objects in a way computer graphics cannot be manipulated. By crocheting different variations of a hyperbolic plane, with varying stitch ratios, one can observe how a hyperbolic plane is affected by exponential growth rate. One can observe that the less stitches a hyperbolic crochet pattern has between stitch increases, the more pronounced a hyperbolic plane's "curls". By having two crocheted mobius bands that are mirror-imaged, one can also illustrate the concept of how a Klein bottle is formed. Where one might have difficulty imagining a surface that has no distinction between inside and outside, by providing a craft-based visual representation, one can highlight the mathematical properties that go into composing the object.

Senior Research Presentations

Investigating the Antimicrobial Properties of Multifloral Honey in Southwestern Virginia
Isabella Jessee
Under the Direction of Dr. Mary Jane Carmichael

The antimicrobial properties in multifloral honey have been utilized for centuries in wound healing, as well as infection treatment and prevention. The chemical properties from the nectar source, enzymes produced by the bee, as well as the digestive activity of the microorganisms in the bee gut all contribute to the antimicrobial activity of honey. Honeybee farms in four locations across southwestern Virginia (Fincastle, Covington, Troutville, and Martinsville) were visited in the fall of 2021 to collect honey (fall and spring), worker bees, and pollen pellets. Disk diffusion assays were used to assess the antimicrobial activity of fall and spring honey against ESKAPE pathogens. Zones of inhibition of fall and spring honeys across sites closely matched that of Manuka honey, which was used as a positive control in assays due to its potent antimicrobial activity. Pollen analysis was completed on the spring honey and fall pollen pellets to identify the plant species on which the bees were foraging at each time of year. Fincastle had the most species diversity across sites and among all spring honey. Fincastle and Troutville had the most species diversity across sites and among all fall pollen pellets. Lastly, the honeybee gut was dissected, and the microorganisms within the midgut and hindgut were isolated and identified using 16S rRNA gene sequencing to identify the cultivable microbial community in the bee gut. There were 10 species identified across sample sites, including Bacillus megaterium, Paenibacillus alvei, Bacillus thuringiensis, Bacillus anthracis, Bacillus mycoides, Serratia marcescens, pantoea vagans, Bacillus weidmannii, Bacillus cereus, and Pantoea agglomerans. The products of these microbes, the variance in pollen source, and other chemicals have supplied mutlifloral honey in southwestern Virginia with its antimicrobial properties.

Anthropogenic Noise and its Impacts on Plants, Pollinators, and People
Zoë Jordan
Under the Direction of Dr. Renee Godard

Recent studies have shown that anthropogenic noise can have significant impacts on the species composition of ecosystems, plant physiology, animal behavior, and physiology in addition to acute and chronic impacts on human health and well-being. While past studies have examined impacts on different organisms separately and often in the lab, this study compared responses of pollinators, plants, and people exposed to two different locations (HT - high traffic and LT - low traffic) separated by 200 m on the Hollins University Campus. Average noise levels at the HT site were 10dB louder than at the LT site with the average maximum levels greater than 90bB. Unlike previous studies, we found that the above and below-ground biomass of HT plants and LT plants grown in microcosms did not differ nor was there any difference in leaf

stomatal density after 58 days. Before harvesting, pollinator visitation rates at the microcosms at both sites (HT & LT) were videotaped simultaneously on five different occasions.

Analysis of these videos revealed no difference in visitation rates by pollinators between the LT and HT sites; however, greater diversity in pollinator taxa was seen on marigolds at the LT site during July. To explore human responses, 44 participants spent 15 mins seated at both sites with a visual barrier blocking the roads. These exposures were separated by at least 24 hr, and participant blood pressure was measured, before and after the 15-min exposure. In addition, participants completed the PANAS survey after each exposure. Overall, participant blood pressure dropped after the 15 min exposure in both sites, with a significantly greater drop in systolic blood pressure found at the LT site. Participants also had lower "negative PANAS scores" at the LT site. This multilayered field study indicated that noise does matter and can have impacts on multiple species and processes within a system.

Student Biographies

Isabella Jessee is a senior, pre-med student majoring in biology and minoring in chemistry. She is a commuter student, having lived in Roanoke her whole life. She has worked as a work study student in the office of admission, as an ambassador/tour guide, and has been working as a student assistant to President Hinton for the past 2 years. She is a volunteer EMT at Hollins Station 5 and teaches Lifesaving Techniques to children as Miss Roanoke Valley 2022. She stumbled across honeybees through an acquaintance and quickly became fascinated. Because she is so interested in medicine and enjoys microbiology, she wanted to research the antimicrobial properties of honey. Under the guidance of Dr. Carmichael, Isabella has worked on her thesis research project for over a year and can't wait to share what she's learned!

Zoë Jordan '22 will be receiving her degree and becoming a Bachelor of Science in Biology, but after Hollins University, she plans to get her master's degree in Environmental Science or Conservation Biology. She has always had a passion for plants and the environment but never knew she would plant her roots in the subject and blossom in the field of Environmental Sciences as a career. After taking Ecology her junior year with Dr. Renee Godard, a flame for Environmental Science was ignited within her. Since then, she has worked on many projects from trail camera data analysis to participating in the Hollins University Fellowship Research Program, investigating *Anthropogenic Noise and its Impacts on Plants, Pollinators, People & Processes.* Though one of her main goals is to inspire others to find their adoration for environment and give thanks to the place that we inhabit and call home.

Shayla R. King, class of 2023, is an Environmental Studies major with a minor in Theater. This past summer she was a part of the Summer Research Fellows Program where she collaborated on a research project with Dr. Renee Godard on how anthropogenic noise impacts plants, pollinators, and people. She also enjoys singing and is a part of the Hollins Choir.

Soha Munir is a junior from Lahore, Pakistan majoring in Psychology with a minor in Biology. Her research interests involve eyewitness identification, evaluating risk-taking in decision-making and developing better treatments for Neurodegenerative Diseases. This summer, she will be attending a research internship program in neuroscience at the University of Florida.

Tram Nguyen is an international sophomore at Hollins University with a major in chemistry with biochemistry concentration. She is a student researcher in Dr. Son H. Nguyen's research lab.

Ellie Song is a sophomore (c/o 2024) at Hollins University. She is originally from Los Angeles, California and loves sushi and dole whip.

Uyen Ngyuen Thanh is from Vietnam and is a chemistry major with a minor in physics. Following Hollins, she plans to pursue a PhD in environmental and green chemistry, as helping the environment is also a way of helping humankind. This summer, she will be interning at the University of Minnesota, where she will be working on a project using nano-filters for filtration of polluted water. She enjoys listening to meditation music, cooking for her friends, and drawing with oil pastels in her spare time.

Science Seminar Speakers
(1957-2022)

1957-58	Dr. Michael Scriven, Swarthmore College
1958-59	Dr. Michael Scriven
1959-60	Dr. Kirtley Mather, Professor Emeritus of Geology, Harvard University
1960-61	Dr. Kirtley Mather
1961-62	No information available
1962-63	Dr. Milton D. Soffer, Professor of Chemistry, Smith College
1963-64	Dr. Henry Margenau, Physics, Yale University
1964-65	Dr. Ernst Nagel, Philosophy of Science, Columbia University
1965-66	Dr. Neil Miller, Psychology, Yale University
1966-67	No science seminar
1967-68	Dr. Andrew de Rocco, Theoretical Physics, University of Maryland
1968-69	Dr. I. J. Goode, Statistics, VPI & SU
1969-70	Dr. Peter Trower, Physics, VPI & SU
1970-71	Dr. John Cairns, Biology, VPI & SU
1971-72	Dr. Henry W. Morgan, Physics, Oak Ridge National Laboratory
1972-73	Dr. James Dumont, Biology, Oak Ridge National Laboratory
1973-74	Dr. Robert E. Lyle, Chemistry, UNH (Visiting Prof. at UVA)
1974-75	Dr. Robert Giles, Wildlife and Forestry Dept., VPI & SU
1975-76	Dr. Derek A. Davenport, Professor of Chemistry, Purdue University
1976-77	Anne Maher Matthews, Hollins '68, Division of Public Health, U. Mass.
1977-78	Dr. Henry W. Morgan, Sr. Chemist, Oak Ridge National Laboratory
1978-79	Drs. Beatrice T. and R. Allen Gardner, Professors of Physiology, U. of Nevada
1979-80	Dr. Mary Beth Hatten, Hollins '72, Asst. Professor of Pharmacology, NYU Medical Center
1980-81	Dr. Alan Goren, Chemistry, VPI & SU
1981-82	Dr. Bolling Farmer, Hollins '70, Sr. Software Engineer, E-System, Dallas, TX
1982-83	Dr. Thomas Williams, Ocean View Veterinary Hospital, Pacific Grove, CA
1983-84	David E. Gushee, Chief, Environmental and Natural Resources Policy Division Congressional Research Service and Senior Specialist in Environmental Policy, Washington, D.C.
1984-85	Dr. Dana Vardeman, Lab Supervisor, Stehlin Foundation for Cancer Research, Houston, TX
1985-86	Dr. R. Lowell Wine, Professor Emeritus, Statistics, Hollins University
1986-87	Dr. Michael Gazzaniga, Dept. of Neurology, NY Hospital, Cornell Medical Center, Southwestern
1987-88	Dr. Philip Tucker, Dept. of Microbiology, University of Texas Medical School
1988-89	Dr. Peter Anthony Cawood, Memorial University of Newfoundland *"Continental Drift and the Development of the Appalachian Mountains"*

1989-90   Dr. Neil Campbell, Biology, University of California at Riverside
         "Science Education in the 1990's: An Optimistic Forecast"

1990-91   Dr. Doris Schattschneider, Professor of Mathematics, Moravian College
         Visions of Symmetry: Mathematics in the Art of M.C. Escher"

1991-92   Dr. Derek A. Davenport, Professor of Chemistry, Purdue University
         "Early Vindication of the Rights of Woman Chemists"

1992-93   Dr. Mary Kay Hemmenway, Dept. of Astronomy, University of Texas-Austin
         "Results from the Hubble Space Telescope"

1993-94   Dr. Kennan Marsh, Hollins '78, Abbott Labs, Illinois

1994-95   Dr. Elizabeth Brownlee Kolmstetter, Hollins'85, Industrial Psychologist, FBI

1995-96   Dr. Jerry Mohrig, Dept. of Chemistry, Carleton College
         "Learning and Teaching: What's the Place for Undergraduate Research"

1996-97   Brenda Wilson, Science Editor, National Public Radio

1997-98   Dr. Muriel Lederman, Associate Professor of Biology, Virginia Tech

1998-99   Dr. Jean Chin, MD, Hollins'72, New York, NY
         "Health Issues of Importance to Young Women (especially STDs)" "Childbirth After Age 35" and "Breast Cancer and Genes"

1999-00   Robert Hansen, Professor Emeritus, Computer Science, Hollins University

2000-01   Dr. Mary D. Ellison, Hollins '76, Dir. of Research, United Network for Organ Sharing, Richmond, VA

2001-02   Dr. Arlan Mantz, Oakes Ames Professor of Physics, Dept. of Physics and Astronomy, Connecticut College, New London, CT

2002-03   Col. Frank Borman, USAF, Retired
         "The American Space Program"

2003-04   Dr. David Bressoud, DeWitt Wallace Professor of Mathematics, Macalester College, St. Paul, Minnesota
         "Proofs and Confirmations: The Story of the Alternating Sign Matrix Conjecture"

2004-05   Dr. Kevin Shinpaugh, Director, Research and Cluster Computing, Virginia Tech
         "System X: Virginia Tech's SuperComputer"

2005-06   Dr. Bonnie Bowers, Associate Professor of Psychology, Dr. Randy Flory, Professor of Psychology, and Dr. Erika Latty, Assistant Professor of Biology, Hollins University
         "The Relative Effectiveness of Dim Green Light and Bright White Light for Treating Seasonal Affective Disorder"
         "Comparisons of the Biological Communities in Old-Growth and Previously Logged Forests"

2006-07   Dr. Thomas A. Jenssen, Associate Professor, Department of Biological Sciences, Virginia Tech
         "Infanticide in curly-tailed lizards: Selection to avoid eating your young"

2007-08   Dr. Arthur M. Greene, Associate Research Scientist at Columbia University's International Research Institute for Climate and Society, Columbia University
         "Applied Climate Research at the IRI: Intersection of Climate and Society"

2008-09   Dr. David Mullins, Assistant Professor of Microbiology, Surgery and Human Immune Therapy, University of Virginia
"Immune Therapy in the Treatment of Metastatic Melanoma"

2009-10   Dr. Larry Riddle, Professor of Mathematics, Agnes Scott College
"Pioneering Women in Mathematics"

2010-11   Dr. Greg Morrisett, Professor of Computer Science, Harvard University
"RoboBees"

2011-12   Dr. David Harrison, Virginia Tech Behavioral Neuroscience Laboratory,
"Emotion, the Angry, Hostile and Violent-Prone, A Functional Neural Systems Approach"

2012-13   Dr. Sue A. Tolin, Professor Emerita Virginia Tech, *"Viruses and Global Food Security"*

2013-14   Dr. Kennan Marsh, Director of Experimental Sciences, AbbVie formerly Abbott Laboratories, *"Neglected Tropical Disease Research: a new model for corporate citizenship"*

2014-15   Dr. Per Carlson, Royal Institute of Technology, *"Alfred Nobel and the Nobel Prizes"*

2015-2016   Dr. Linda Powers, Biomedical Engineering, Graduate Faculty at the University of Arizona*, "Sensors and Diagnostics for Microbial Health Hazards"*

2016-2017   Dr. Talitha Washington, Associate Professor of Mathematics at Howard University *"How Modeling Can Explain Our World"*

2017-2018   Michelle Ferebee, NASA Langley Research Center, *"Women of NASA: Past, Present, and Future"*

2018-2019   Dr. Suzanne E. Dorsey, Assistant Secretary, Maryland Department of the Environment, *"Touching Sea Turtles: Research collaboration and leadership in conservation"*

2019-2020   CANCELLED due to COVID-19

2020-2021   Dr. Susan Campbell, Assistant Professor of Animal and Poultry Sciences at Virginia Tech, *"Mechanism of Seizure Development: Switching Roles and Gut Feelings"*

2021-2022   Dr. Holly Gaff, Professor in the Department of Biological Sciences at Old Dominion University, *"Understanding ticks and tick-borne diseases through surveillance and modeling"*