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EAST TENNESSEE STATE  
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# 2021 Appalachian Student Research Forum

March 19 – April 8, 2021  
Digital Commons

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# About the ASRF

The Appalachian Student Research Forum is an annual event hosted by East Tennessee State University. The Forum brings together undergraduate, graduate, medical and pharmacy students, post-doctoral fellows and medical residents to present their original research in a formal, juried setting.

Beginning in 1985 as a program within the Medical School with only 19 participants, the 2021 Forum will host over 70 participants from East Tennessee State University presenting in fields as diverse as nursing, medicine, pharmacy and public health; chemistry, biology, economics and other natural, physical and social sciences; computing and engineering; education, and the humanities.

A cadre of distinguished researchers, faculty and physicians evaluate and award top prizes for presentations for which all levels of participant are eligible.

In past years the Forum culminated with an awards presentation, a moment of recognition for ASRF partners, and a keynote address given by a nationally-recognized researcher. In 2019 the Forum was honored to partner with The Tennessee Valley Authority (TVA) to promote an environmentally sustainable Forum and foster environmental education. Past presenters include Dr. Shilpa Buch, a leading researcher in the connection between HIV and drug abuse; Dr. Richard Ignace, an ETSU professor in the Department of Physics and Astronomy; Dr. Karl H. Hasenstein, whose research into the use of high-gradient magnetic fields as surrogate for gravity resulted in a successful space experiment onboard a Space-X3 flight.

The Forum is organized by the ETSU Office of Research and Sponsored Programs Administration with input from the ASRF Faculty Advisory Committee. To learn about past ASRF events, please visit:

<https://www.etsu.edu/studentresearch/default.php>.

# Thank You ASRF Partners!

## Platinum

ETSU Educational Leadership & Policy Analysis

## Bronze

### East Tennessee State University's:

- Biomedical Sciences
- Clemmer College
- College of Arts and Sciences
- College of Public Health
- Family Medicine
- Internal Medicine
- Pediatrics
- Psychology
- Office of the Provost

## Contributors

### East Tennessee State University's:

- College of Business & Technology
- Communication & Performance
- Computing
- Educational Foundations & Special Education
- Geosciences
- Philosophy & Humanities
- Physics & Astronomy
- Political Science, International Affairs & Public Administration
- Sherrod Library
- The McNair Program

# ASRF Judges

We gratefully acknowledge the following faculty and staff for giving their time and expertise to serve as ASRF Judges

Dr. Manik Ahuja

Dr. Katie Baker

Dr. Kate Beatty

Dr. Patrick Bradshaw

Dr. John Bossaer

Dr. Myra Carew

Dr. Alyson Chroust

Dr. Ivy Click

Dr. Suman Dalal

Dr. Anthony Delucia

Dr. Julia Dodd

Dr. Felipe De Oliveira Fiuza

Dr. Chaya Guntupalli

Dr. Jennifer Hall

Dr. Jean Hemphill

Dr. Jessica Hudson

Dr. Ying Li

Dr. Evan Los

Dr. Sharon Loury

Dr. Abbey Mann

Dr. Stephanie Mathis

Dr. Diana Morelen

Dr. Shunbin Ning

Dr. Victoria Palau

Dr. Matt Palmatier

Dr. Jodi Polaha

Dr. Ashana Puri

Dr. Megan Quinn

Dr. Dane Scott

Dr. Darshan Shah

Dr. Candice Short

Dr. Sanjay Singh

Dr. Michael Smith

Dr. Jill Stinson

Dr. Jeffrey Summers

Dr. Alexey Vasiliev

Dr. Wesley Wehde

Dr. Mick Whitelaw

Dr. Valentin Yakubenko

# ASRF Advisory Committee

**Dr. Ingrid Luffman, ASRF Chair**  
Asst. Professor, Geosciences

**Dr. Joseph Shrestha, ASRF Co-Chair**  
Asst. Professor, Engineering, Engineering Technology and Surveying

Candace Bright,  
Asst. Professor of Sociology

John Bossaer Asst. Professor,  
Pharmacy Practice

William R. Duncan  
Vice Provost for Research

Wendy Eckert  
Director, Research & Sponsored Programs

Ruth Facun-Granadozo  
Asst. Professor, Early Childhood Education

Retha Gentry  
Asst. Professor, Nursing Graduate Programs

Cuihong Jia  
Asst. Professor, Biomedical Sciences

Ying Li  
Assoc. Professor, Environmental Health

Abigail Mann  
Asst. Professor, Family Medicine

Brooks Pond  
Assoc. Professor, Pharmaceutical Sciences

Ashley Sergiadis  
Asst. Professor, Library Administration

Christopher Wallace  
Assoc. Professor, Computing

Advisory Committee Administrative Support:  
Ms. Lindsay Keitzer and Ms. Camille Josey, Office of Research & Sponsored Programs

# Appendix: Presentation Schedule

Subject Area, Presenter Class, Presenter Name, Presentation Title, Link to Abstract

## Biological, Physical & Earth Sciences Presentations

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### Graduate Student-Master's

**Adebiyi, Jeremiah**

*Current Practices and Methodologies of Calculating Road User Costs Based on a National Survey*

<https://dc.etsu.edu/asrf/2021/presentations/7/>

**Babanyinah, Godwin**

*Theranostic Nanoparticles Folic acid-Carbon Dots-Drug(s) for Cancer*

<https://dc.etsu.edu/asrf/2021/presentations/40/>

**Clark, Sarah**

*Mammal Community Structure Analysis of the Gray Fossil Site, TN*

<https://dc.etsu.edu/asrf/2021/presentations/63/>

**Dzaye, Irene**

*Investigating The Role of Charge Separation in Triplet State Formation in Zinc Dipyrrin Photosensitizers*

<https://dc.etsu.edu/asrf/2021/presentations/28/>

**Ekwudo, Millicent**

*The Effect of Chronic Mild Intermittent Hypoxia, and 2, 4-Dinitrophenol on Longevity and Gene Expression in Daphnia magna*

<https://dc.etsu.edu/asrf/2021/presentations/35/>

**Fashina, Lukman**

*WATER QUALITY ASSESSMENT OF KARST SPRINGWATER AS A PRIVATE WATER SUPPLY SOURCE IN NORTHEAST TENNESSEE*

<https://dc.etsu.edu/asrf/2021/presentations/14/>

**Gautam, Deepshila**

*Characterization of changes in lipid profile during development of the moss Physcomitrium patens*

<https://dc.etsu.edu/asrf/2021/presentations/3/>

**Nohoesu, Oviavo**

*Characterization of SIP428: a NAD<sup>+</sup>-Dependent Deacetylase Enzyme, in Abiotic Stress.*

<https://dc.etsu.edu/asrf/2021/presentations/38/>

## **Case Studies Presentations**

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### **Medical Resident or Clinical Fellow**

**Bhattad, Pradnya Brijmohan**

*Plesimonas Shigelloides Induced Crohn's Disease Flare-A Rare Entity*

<https://dc.etsu.edu/asrf/2021/presentations/50/>

**Cecchini, Amanda**

*Hemiplegic Migraine Presenting as Acute Cerebrovascular Accident: A Difficult Differentiation*

<https://dc.etsu.edu/asrf/2021/presentations/44/>

**Cecchini, Arthur**

*Cerebrovascular Accident, Cervical Myelopathy, or Both?*

<https://dc.etsu.edu/asrf/2021/presentations/58/>

**Kamireddy, Chandana**

*Non Secretory Multiple Myeloma*

<https://dc.etsu.edu/asrf/2021/presentations/5/>

**Kim, James**

*Pancoast Tumor in a Case of Newly Diagnosed Non-small Cell Lung Cancer*

<https://dc.etsu.edu/asrf/2021/presentations/29/>

**Mhadgut, Hemendra**

*Innumerable bone lesions: An atypical presentation of Acute Myeloid Leukemia*

<https://dc.etsu.edu/asrf/2021/presentations/19/>

### **Medical Student**

**Faust, Bethany**

*Cystic Nephroma in a Child with DICER1 Mutations*

<https://dc.etsu.edu/asrf/2021/presentations/48/>

**Nicholson, Caitlin**

*Atypical Covid-19-Associated Pneumonia in a Pediatric Patient*

<https://dc.etsu.edu/asrf/2021/presentations/42/>



## **Post-doctoral Fellow**

**Khazrik, Hakam**

*Hyper eosinophilia with cardiomyopathy as manifestation of Churg Strauss syndrome*

<https://dc.etsu.edu/asrf/2021/presentations/39/>

## **Health Measures & Outcomes Presentations**

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### **Graduate Student-Master's**

**Adeyemi, Emmanuel**

*Predictors of Malaria-Anemia Comorbidity among Under Five Children in Nigeria: A Cross Sectional Study*

<https://dc.etsu.edu/asrf/2021/presentations/71/>

**Cox, Jessica**

*Telehealth Implementation in Family Planning Clinics in Two Southeastern States During COVID-19*

<https://dc.etsu.edu/asrf/2021/presentations/37/>

**Fortmann, Joshua**

*Domestic Violence as a Risk Factor in HIV Positivity: An Analysis of Mozambican Women*

<https://dc.etsu.edu/asrf/2021/presentations/11/>

**Okoro, Joy**

*Prevalence of Provider Anticipatory Guidance Reported by Adolescents in Rural Appalachia: A Descriptive Study*

<https://dc.etsu.edu/asrf/2021/presentations/36/>

**Rahman, Aurin**

*Perceived Impact of Contraceptive Trainings on Performance and Patient Care Among Safety Net Clinics in South Carolina*

<https://dc.etsu.edu/asrf/2021/presentations/8/>

**Tremblay, Johnathan**

*Examining the Impact of Police Practices on the Mental Health of Black Americans*

<https://dc.etsu.edu/asrf/2021/presentations/9/>

**Uchendu, Ogechukwu**

*Cardiovascular disease and its role on general health of the adult population in the United States.*

<https://dc.etsu.edu/asrf/2021/presentations/24/>

**Wolff, Megan**

*Taking Care of the Caregivers*

<https://dc.etsu.edu/asrf/2021/presentations/32/>

## Graduate Student-Doctoral

**Adeniran, Esther**

*Age and Days Waiting to Enter Treatment Facility are Significant Predictors of the Number of Previous Substance Use Treatment Episodes: Results from a National Representative Sample*

<https://dc.etsu.edu/asrf/2021/presentations/31/>

**Awasthi, Manul**

*Association of Satisfaction with Care and Presence of Chronic Disease with Care Seeking Behaviors among Medicare Beneficiaries*

<https://dc.etsu.edu/asrf/2021/presentations/10/>

**Oke, Adekunle**

*Association between Home Blood Pressure Monitoring and Total Office Visits among Medicare Beneficiaries with self-reported High Blood Pressure.*

<https://dc.etsu.edu/asrf/2021/presentations/30/>

**Okwori, Glory**

*Health Care Burden and Expenditure Associated with Adverse Childhood Experiences in Tennessee and Virginia*

<https://dc.etsu.edu/asrf/2021/presentations/72/>

## Healthcare Education & Delivery Presentations

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### Graduate Student-Doctoral

**Barker, McKayla**

*I.M.P.A.C.T. of Interprofessional Student Teams at a Remote Area Medical Clinic in Rural Appalachia*

<https://dc.etsu.edu/asrf/2021/presentations/26/>

**Fox, Kendal**

*Aspects of Counseling Influencing Hearing Aid Acceptance in Tinnitus Management*

<https://dc.etsu.edu/asrf/2021/presentations/49/>

**Grammer, Kyndal**

*Perceived Need for Medical Care and Patient Satisfaction: Does Rurality Matter?*

<https://dc.etsu.edu/asrf/2021/presentations/46/>

**Lesley, Abigail**

*Assessing self-efficacy in families of children with hearing concerns through an audiological early intervention training*

<https://dc.etsu.edu/asrf/2021/presentations/22/>

Richart, Nicole

*Hearing Health and Listening Habits in High School Students in East Tennessee*

<https://dc.etsu.edu/asrf/2021/presentations/64/>

## Medical Sciences Presentations

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### Medical Resident or Clinical Fellow

Dsouza, Nigel

*Don't Sleep on Zolpidem: A Case demonstrating benefit of Zolpidem in Malignant Catatonia*

<https://dc.etsu.edu/asrf/2021/presentations/18/>

Dycus, Megan

*The Effectiveness of Educating Medical Residents on ACE Scores*

<https://dc.etsu.edu/asrf/2021/presentations/65/>

Jensen, Samantha

*Assessing Resident Physician Knowledge about Breastfeeding Medicine in a Rural Family Medicine Clinic*

<https://dc.etsu.edu/asrf/2021/presentations/51/>

Larsen, Jack

*Does a Single Item Alcohol Screening Test Improve Rates of Diagnosis/Referral of Alcohol Use Disorder in a Medicare Population with Diagnosis of Depression or Anxiety?*

<https://dc.etsu.edu/asrf/2021/presentations/73/>

Richardson, Joseph

*Improving Resident Physician Understanding of Requirements for Well Child Examinations in an East Tennessee Family Medicine Primary Care Clinic*

<https://dc.etsu.edu/asrf/2021/presentations/25/>

Thomas, Akesh Lung

*Cancer in Tennessee*

<https://dc.etsu.edu/asrf/2021/presentations/69/>

### Medical Student

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Crockett, Stephen "Alex"

*The State of LGBT+ Health Education: A Systematic Review of LGBT+ Curricula and Resources at M.D. Granting Institutions in the United States*

<https://dc.etsu.edu/asrf/2021/presentations/33/>

**Estes, Andersen**

*A Clinical Differentiation of Multisystem Inflammatory Syndrome in Children (MIS-C) & Kawasaki Disease (KD)*

<https://dc.etsu.edu/asrf/2021/presentations/27/>

**Gardner, Nicole**

*Pilot Study of Coping Skills-Oriented Mental Health Intervention in a Rural Appalachian School*

<https://dc.etsu.edu/asrf/2021/presentations/60/>

**Guhde, Isabel**

*The Role of Vagal Nerve Stimulation in Mitigating Heart Failure Progression*

<https://dc.etsu.edu/asrf/2021/presentations/54/>

**Noordin, Naveed**

*Atypical Presentation of Cerebral Palsy and Seizures: A case report on Rasmussen's Encephalitis in an Adolescent*

<https://dc.etsu.edu/asrf/2021/presentations/62/>

## **Pharmaceutical Sciences Presentations**

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### **Pharmacy Student**

**Bell, Regan**

*Comparing EMR Fall Risk Calculation to Performance-based Assessments*

<https://dc.etsu.edu/asrf/2021/presentations/61/>

**Frempong, Dorcas**

*Microneedle-mediated transdermal delivery of naloxone hydrochloride for treatment of opioid addiction*

<https://dc.etsu.edu/asrf/2021/presentations/41/>

**Hagood, Kendra**

*The Cytotoxic Effects of Novel Flavonoids CT1 and CT3 on Breast Cancer Cells are Independent of the Presence of ER, PR, and HER2 Receptors*

<https://dc.etsu.edu/asrf/2021/presentations/34/>

**Joshi, Nitin**

*Comparative Analysis of EMR Fall Risk Calculator to Functional Impairments*

<https://dc.etsu.edu/asrf/2021/presentations/53/>

**Phillips, Kaitlyn**

*The Influence of Long-Term Ritalin Exposure in a Female Model of Parkinson's Disease*

<https://dc.etsu.edu/asrf/2021/presentations/13/>

## Physiology Biology Presentations

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### Graduate Student-Doctoral

Barrett, Cindy

*Microsporidial Attachment and Host Cell Signaling*

<https://dc.etsu.edu/asrf/2021/presentations/4/>

Behera, Jyoti

*NOVEL STRUCTURAL CHARACTERISTICS OF OIL BIOSYNTHESIS REGULATOR PROTEIN IN AVOCADO*

<https://dc.etsu.edu/asrf/2021/presentations/21/>

Gravitte, Amy

*Estrogen treatment protects mice from C. muridarum infection*

<https://dc.etsu.edu/asrf/2021/presentations/16/>

Holman, Miranda

*Development and Validation of a Liquid Chromatography-Mass Spectrometry Based Analytical Assay for Determination of Cromolyn Sodium in Skin Permeation Studies*

<https://dc.etsu.edu/asrf/2021/presentations/45/>

McKinney, Mariah

*Pharmacokinetics of Synthetic Cathinones Found in "Bath Salts" in Mouse Brain and Plasma Using High Pressure Liquid Chromatography – Tandem Mass Spectrometry*

<https://dc.etsu.edu/asrf/2021/presentations/15/>

Raza, Muhammad Ummear

*Effect of typical and atypical antipsychotics on the 40 Hz auditory steady-state response*

<https://dc.etsu.edu/asrf/2021/presentations/17/>

Shook, Paige

*Long-Term Cardioprotective Potential of Exogenous Ubiquitin in the Treatment of Post-Myocardial Ischemia/Reperfusion Injury of the Heart*

<https://dc.etsu.edu/asrf/2021/presentations/12/>

## Psychology Presentations

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### Graduate Student-Doctoral

Braun, Kelsey

*Intersectional Sexual Minority Stress and Recognition of Macro-Level Dynamics*

<https://dc.etsu.edu/asrf/2021/presentations/56/>

**Byerley, Shana**

*Racial Discrimination, Psychache, and Perceived Vitality in Diverse College Students: Is Mindfulness Protective?*

<https://dc.etsu.edu/asrf/2021/presentations/23/>

**Carpenter, Rachel**

*Asphyxiation, Non-Fatal Strangulation, and Firearms within IPV: Prevalence and Screening*

<https://dc.etsu.edu/asrf/2021/presentations/66/>

**Castelblanco, Samantha**

*The Effects of Virtual Nature Exposure on State Social Motivation*

<https://dc.etsu.edu/asrf/2021/presentations/70/>

**Collie, Christin**

*What Are You Really Asking? Readability of Internet Gaming Disorder Measures*

<https://dc.etsu.edu/asrf/2021/presentations/20/>

**Mahan, Kristin**

*A brief characteristic analysis of a small sample of female youth who have engaged in sexually abusive behaviors*

<https://dc.etsu.edu/asrf/2021/presentations/52/>

**Sullivan, Thalia**

*The Association Between ENDS Use and First-Degree Family History of Addiction*

<https://dc.etsu.edu/asrf/2021/presentations/57/>

## **Undergraduate Research Presentations**

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### **Undergraduate Student**

**Archer, Allen**

*Using Funeral Listings and Newspaper Obituaries as Early Indicators of Excess Mortality*

<https://dc.etsu.edu/asrf/2021/presentations/47/>

**Bruce, Lindsay**

*Effects of Spaceflight on the Muscular Layers of Mouse Uterine Tissue*

<https://dc.etsu.edu/asrf/2021/presentations/2/>

**Collie, Hannah**

*Omega-3 Fortification of Marinara Sauce*

<https://dc.etsu.edu/asrf/2021/presentations/59/>

**Dang, Tiffany**

*The role of social media in the attitudes of Euroscepticism in Italy in comparison to those in Germany and Hungary*

<https://dc.etsu.edu/asrf/2021/presentations/68/>

**Maupin, Taylor**

*Ancient Egyptian Beautification Practices: Production, Application, and Importance*

<https://dc.etsu.edu/asrf/2021/presentations/55/>

**McKinley, Shelby**

*The Revision of the Student Alcohol Questionnaire: A Validation Study*

<https://dc.etsu.edu/asrf/2021/presentations/67/>

**Snipes, Chelsie**

*Sound transmission by the hyoid apparatus during echolocation in bats*

<https://dc.etsu.edu/asrf/2021/presentations/6/>