

SIBYL RAE BUCHELI

ASSISTANT PROFESSOR

Sam Houston State University
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Major Research Interests

The Biology of Human Decomposition in Southwestern, Subtropical Texas

Microbial Succession on Cadavers in Southwestern, Subtropical Texas

Insect Succession on Carrion and Cadavers in Southwestern, Subtropical Texas

Molecular and Morphological Evolution of Lepidoptera, Coleoptera, and Diptera

Use of Ecological and Behavioral Data in Phylogenetic Studies

Evolution of Insect Genitalia and their Utility as Phylogenetic Characters

Academic Employment

2008-Present	Assistant Professor, Sam Houston State University (Graduate Advisor since Fall 2010).
2007-2008	Visiting Assistant Professor, Sam Houston State University.
2005-2007	Post-doctoral Researcher, The Ohio State University, Dr. John Wenzel. Evolution of the Lepidopteran superfamily Gelechioidea.

Education

2005	The Ohio State University, Department of Entomology, Doctor of Philosophy, Advisor: John W. Wenzel.
1999	The Ohio State University, Department of Entomology, Master of Science, Advisor: John W. Wenzel.
1996	Hiram College, Department of Biology, Bachelor of Arts.

Publications

- ZHANG, X. C.L. GLENNIE, **S.R. BUCHELI**, N.K. LINDGREN, AND A.M. LYNNE. Terrestrial Laser Scanning and a Degenerated Cylinder Model to Determine Gross Morphological Change of Cadavers under Conditions of Natural Decomposition. *Journal of Forensic Science*. In Review.
- BUCHELI, S.R.**, Z. PAN, C.L. GLENNIE, A.M. LYNNE, D.P. HAARMANN, AND J.M. HILL. Terrestrial laser scanning to model sunlight irradiance on cadavers under conditions of natural decomposition. *International Journal of Legal Medicine*. In Review.
- HYDE, E.R., D.P. HAARMANN, A.M. LYNNE, **S.R. BUCHELI**, AND J.F. PETROSNO. 2013. The Living Dead: Bacterial Community Structure of a Cadaver at the Onset and End of the Bloat Stage of Decomposition. *PLoS ONE* 8(10).
- LEWIS, M.L., **S.R. BUCHELI**, AND A.M. LYNNE, 2012. Use of Microthemes to Increase Writing Content for Introductory Science Laboratory. *Journal of Microbiology and Biology Education* 13:1.
- RAGHAVENDRA R., C.P. RANDLE , AND **S.R. BUCHELI** 2011. Identification of a deathscene maggot using standardized molecular methods: *Sarcophaga bullata* Parker 1916 (Sarcophagidae) Out-numbers Blowflies (Calliphoridae) on an Urban Cadaver in Southeastern Texas. *Journal Forensic Research* 2:135.
- VAN NIEUKERKEN, E.J., KAILA, L., KITCHING, I.J., KRISTENSEN, N.P., LEES, D.C., MINET, J., MITTER, C., MUTANEN, M., REGIER, J.C., SIMONSEN, T.J., WAHLBERG, N., YEN, S.-H., ZAHIRI, R., ADAMSKI, D., BAIXERAS, J., BARTSCH, D., BENGTSOON, B.Å., BROWN, J.W. , **BUCHELI, S.R.**, DAVIS, D.R., DE PRINS, J., DE PRINS, W., EPSTEIN, M.E., GENTILI-POOLE, P., GIELIS, C., HÄTTENSWILER, P., HAUSMANN, A., HOLLOWAY, J.D., KALLIES, A., KARSHOLT, O., KAWAHARA, A. KOSTER, S.(J.C.), KOZLOV, M., LAFONTAINE, J.D., LAMAS, G., LANDRY, J.-F., LEE, S., NUSS, M., PENZ, C., ROTA, J., SCHMIDT, B.C., SCHINTLMEISTER, A., SOHN, J.C., SOLIS, M.A., TARMANN, G.M., WARREN, A.D., WELLER, S., YAKOVLEV, R., ZOLOTUHIN, V., AND ZWICK, A. 2011. Order Lepidoptera Linnaeus, 1758. In: Zhang, Z.-Q. (Ed.), *Animal Biodiversity: an Outline of Higher-Level Classification and Survey of Taxonomic Richness*. *Zootaxa* 3148: 212–221.
- BUCHELI, S.R.**, S.C. PASSOA AND J.W. WENZEL. 2010. A Phylogenetic Test of Ehrlich and Raven's Theory of Escape and Radiation in Insects that Feed on Toxic Plants, Based on Nearctic Depressaria Moths (Gelechioidea: Elachistidae: Depressariinae), with Discussion of the Evolution of Genitalia. *Entomologica Americana* 116(3&4):1–24.
- LINDGREN, N.K., **S.R. BUCHELI**, A.D. ARCHAMBEAULT, AND J.A. BYTHEWAY. Exclusion of forensically important flies due to burying behavior by the red imported fire ant (*Solenopsis invicta*) in southeast Texas. *Journal of Forensic Science International* 204(1-3):e1-e3.
- BUCHELI, S.R.**, J. FLORENCE, D. GANGITANO AND J.A. BYTHEWAY. 2010. Necrophagous caterpillars provide human mtDNA evidence. *Journal of Forensic Science* 55(4):1130-1132.
- SONG, H. AND **S.R. BUCHELI**. 2010. The utility of insect genitalia in morphological analyses. *Cladistics* 26(1), 23-35. Published Online: Aug 25 2009 5:18AM.

- BUCHELI, S.R.** 2009. Annotated review and discussion of phylogenetically important characters for families and subfamilies of Gelechioidea (Insecta: Lepidoptera). *Zootaxa* 26(1), 23 – 35.
- BUCHELI, S.R., J.A. BYTHEWAY, S.M. PUSTILNIK, AND J. FLORENCE.** 2009. Insect successional pattern of a corpse in cooler months of subtropical southeastern Texas: A case report. *Journal of Forensic Sciences* 54 (2), 452 – 455.
- BUCHELI, S.R., D. HORN, AND J.W. WENZEL.** 2006. Biodiversity of Gelechioidea (microlepidoptera): An assessment of a re-established Appalachian forest in southern Ohio, *Biodiversity and Conservation* 15 (1), 503 – 516. *Themed Issue: Looking after the Woof and Weft of Life: Arthropod Diversity and its Conservation.*
- BUCHELI, S.R. AND J.W. WENZEL.** 2005. Gelechioidea (Insecta: Lepidoptera) systematics: A reexamination analysis using combined morphology and mitochondrial DNA data. *Molecular Phylogenetics and Evolution* 35, 380-394.
- BUCHELI, S.R., J.-F. LANDRY, AND J.W. WENZEL.** 2002. Cladistic Analysis of Larval Case Architecture and Implications of Host-Plant Associations for North American *Coleophora* (LEPIDOPTERA: COLEOPHORIDAE). *Cladistics* 18, 71-93.

Grants

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| 2013 | CoPI. Enhancement Research Grant, “Human Decomposition Volatile Measurement For Microbiological Correlation,” prepared jointly with Donovan Haines, Ph.D. \$15,000 |
| 2012 | CoPI. National Institute of Justice # 2012-DN-BX-K023 “Human decomposition: A mosaic model for community succession and implications for future forensic research,” prepared jointly with Aaron Lynne, Ph.D. and coauthored by Joseph Petrosino, Ph.D. and Mathew Ward, Ph.D. \$304,961.00 |
| 2012 | CoPI. National Science Foundation # 1154018 Grant “PEERS Exploring Biology, Mathematics and Statistics,” prepared jointly with Melinda Holt, Ph.D. and Brian Loft, Ph.D. \$599,249. |
| 2012 | CoAuthor. NIJ/FSF Student Research Grant-2011- 2012, “A molecular approach: Species composition of the maggot mass in human cadavers in the pineywoods ecoregion of southeastern Texas,” Ashleigh Faris BS, Sibyl Bucheli, PhD, and David Gangitano, PhD.; \$7000 |
| 2011 | CoPI. Enhancement Research Grant, “Microbial Metagenomic Analysis of Human Decomposition,” \$15,000 |
| 2010 | PI. Enhancement Research Grant, “Investigation of Calliphoridae across the 10 ecoregions of Texas,” \$12,558 |
| 2009 | PI. Faculty Research Grant, “Systematics and Diversity of Gelechioidea (Lepidoptera),” \$5,000 |
| 2008 | CoPI. Beckman-Coulter Inc. Genomics Educational Grant, prepared jointly with Dr. Christopher Randle, Dr. Raelynn Deaton, Dr. Anne Gaillard, and Dr. Todd Primm; \$100,000 |

- 2004** **Author.** National Science Foundation #0415061 Grant “Collaborative Research: A Global Framework for the Phylogeny of Gelechioid Moths, a Megadiverse Radiation of Herbivores,” prepared with John W. Wenzel, Ph.D. and Richard Brown, Ph.D. \$150,000
- 2004** **Author.** Alumni Grants for Graduate Research and Scholarship, The Ohio State University
- 2001** **Author.** DeWind Award for Lepidoptera Research and Conservation, Xerces Society, \$2,000
- 2000** **Author.** Theodore Roosevelt Memorial Fund, American Museum of Natural History, \$2,000

Presentations

Invited Presentations and Workshops:

- 2013** Seminar, University of Colorado Boulder
- 2013** Lecture, United Unitarians, Huntsville, Texas
- 2012** Forensic Science Educational Conference, Sam Houston State University
- 2012** Writing in Biology. College of Humanities and Social Sciences Annual Teaching Conference, Sam Houston State University
- 2011** Southwestern Association of Forensic Scientists 2011 Conference, Houston Texas.
- 2011** Forensic Science Educational Conference, Sam Houston State University in conjunction with The American Academy of Forensic Science and STAFS
- 2010** Forensic Science Educational Conference, Sam Houston State University in conjunction with The American Academy of Forensic Science and STAFS
- 2009** Forensic Science Educational Conference, Sam Houston State University in conjunction with The American Academy of Forensic Science and STAFS
- 2007** The Field Museum, Chicago, Illinois
- 2006** University of California, Riverside, California
- 2006** Sam Houston State University, Huntsville, Texas
- 2006** Entomological Society of America, Indianapolis, Indiana
- 2005** Entomological Society of America, Ft. Lauderdale, Florida

Submitted Oral Presentations:

- 2013** The Annual Meeting of the Entomological Society of America, Austin, Texas, 13 – 16 November (1 title)
- 2012** The Annual Meeting of the Entomological Society of America, Knoxville, Tennessee, 11 – 14 November (4 titles)
- 2011** Sam Houston State University Biological Sciences Research Symposium, Huntsville Texas, Spring Semester
- 2011** Annual North American Forensic Entomology Meeting, College Station, Texas, 20-23 July (2 titles)
- 2011** The Annual Meeting of the Entomological Society of America, Reno, Nevada, 13 – 16 November (2 titles)
- 2010** Entomological Society of America Annual Meeting, San Diego CA, 12-15 December.
- 2010** North American Forensic Entomology Annual Meeting, Windsor, Ontario 7-9 July

2009 National Entomological Society of America Annual Meeting, Indianapolis, Indiana (3 titles)
2009 North American Association of Forensic Entomologists, Miami, Florida
2008 National Entomological Society of America Annual Meeting, Reno, NV
2008 The Lepidopterists Society Annual Meeting, Starkville, Mississippi
2007 The Willi Hennig Society Meetings, XXV, New Orleans, Louisiana
2006 The Lepidopterists Society Annual Meeting, Gainesville, Florida
2006 The Willi Hennig International Meetings, XXIV, Oaxaca, Mexico
2005 Presented in partial fulfillment of the Doctor of Philosophy at The Ohio State University
2005 *Symposium presentation*, National Entomological Society of America Annual Meeting, Fort Lauderdale, Florida
2004 *Harry Clench Award*, The Lepidopterists' Society Annual Meeting, College Park, Maryland
2004 National Entomological Society of America Annual Meeting, Salt Lake City, Utah
2003 National Entomological Society of America Annual Meeting, Cincinnati, Ohio
2002 The Lepidopterists Society Annual Meeting, Charleston North Carolina
2000 Evolution Annual Meeting, Bloomington, Indiana
2000 National Entomological Society of America Annual Meeting, Montreal, Quebec
1999 Presented in partial fulfillment of the Degree of Masters of Science at The Ohio State University

Submitted Poster Presentations:

2013 The Annual Meeting of the Entomological Society of America, Austin, Texas, 13 – 16 November (5 titles)
2013 American Society of Microbiologists Texas Branch, New Orleans, Louisiana, 29 – 31 October (1 title)
2013 American Society of Microbiologists, Denver, Colorado, 10 – 15 May (1 title).
2012 The Annual Meeting of the Entomological Society of America, Knoxville, Tennessee, 11 – 14 November (4 titles)
2012 American Academy of Forensic Sciences Annual Meeting Student Presentations—Atlanta GA, February 2012
2011 Texas Academy of Sciences Annual Meeting, St. Edward's University in Austin, Texas, 3 - 5 March
2011 Sam Houston State University Biological Sciences Research Symposium, Huntsville Texas, Spring Semester (2 titles)
2011 Annual North American Forensic Entomology Meeting, College Station, Texas, 20-23 July (5 titles)
2011 The Annual Meeting of the Entomological Society of America Annual Meeting, Reno, Nevada, 13 – 16 November (7 titles)
2010 Entomological Society of America Annual Meeting, San Diego, CA 12-15 December
2010 North American Forensic Entomology Annual Meeting, Windsor, Ontario 7-9 July
2010 Microbial Genomics and Metagenomics Workshop. Walnut Creek, CA. October
2009 National Entomological Society of America Annual Meeting, Indianapolis, Indiana (2 titles)

2009	North American Association of Forensic Entomologists, Miami, Florida (3 titles)
2008	National Entomological Society of America Annual Meeting, Reno, NV (2 titles)
2008	The Lepidopterists Society Annual Meeting, Starkville, Mississippi
2005	The Lepidopterists Society Annual Meeting, Sierra Vista, Arizona
2004	The Lepidopterists Society Annual Meeting, College Park, Maryland
2002	The Willi Hennig International Meetings, XXI, Helsinki, Finland
2001	National Entomological Society of America Annual Meeting, San Diego, California
1998	National Entomological Society of America Annual Meeting, Las Vegas, Nevada
1999	<i>President's Prize Award Winner</i> , National Entomological Society of America Annual Meeting, Atlanta Georgia
1996	The Ohio Academy of Sciences, Undergraduate Thesis

Awards and Recognition

2011	Sam Houston State University Mentoring Award
2004	Dean's Award for Excellence as Graduate Teaching Assistant, The Ohio State University
2004	Edward J. Ray Travel Award for Scholarship and Service, The Ohio State University
2004	Graduate Teaching Associate Graduate Assistant Teaching Award, The Ohio State University
2004	Harry Clench Award for Best Student Talk. Lepidopterists Society of America, College Park, Maryland
2003	DeLong Research Award, Ohio State University, Department of Entomology
2002	Fred W. Hink Research Award, Ohio State University, Department of Entomology
2002	Professional Development Fund, Ohio State University, Graduate Committee
2002	Clive Edwards Travel Fund, Ohio State University, Department of Entomology
2002, 2004	Knull Fund, Ohio State University, Department of Entomology, Insect Collection
1999	Introductory Biology Program Student Teaching Award, The Ohio State University
1999	President's Prize for Best Student Poster, First Place; Entomological Society of America, Atlanta, Georgia

Symposia Organized

2005	"Issues of Homology", First Annual Student Symposium, The Lepidopterist's Society of America, with Jennifer Zaspel
2005	"The Phallic Cult", Program Symposium and Section Symposium, National Entomological Society of America, with Hojun Song

Teaching Experience

Lecturer	2007 – Present. Sam Houston State University. Contemporary Biology BIO134; Economic Entomology BIO364; Forensic Entomology BIO530, General Entomology BIO431; Invertebrate Zoology BIO471; Introduction
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to Evolutionary Biology BIO461; Insect Evolution BIO571; Scientific Illustration BIO595

Graduate Teaching Assistant 1999 – 2004. The Ohio State University. General Biology for Nonmajors BIO101; Nonmajors Plant Biology BIO101; Nonmajors Entomology ENT101; Human Biology BIO102, Head Graduate Teaching Associate; General Biology for Majors BIO114, Head Graduate Teaching Associate; Evolution BIO440; Entomology for Science Teachers ENT520; Advanced Economic Entomology ENT620; Insect Systematics ENT621; Insect Morphology ENT632; Insect Ecology ENT641; Medical Entomology ENT680

Seminars Designed 1999 – 2005. The Ohio State University. Trends in Insect Evolution ENT795 (2004); Model-based Phylogenetics ENT795 (2006); Modern Techniques of Entomological Illustration (part of Insect Morphology ENT632)

Student Advising

Graduate Research

Major Advisor, graduated

Natalie Lindgren, Major Advisor, Sam Houston State University

Alan Archambeault, Major Advisor, Sam Houston State University

Brent Rahlwes, Major Advisor, Sam Houston State University

Michelle Lewis, Major Advisor, Sam Houston State University

Melissa Sisson, Major Advisor, Sam Houston State University

Janalynn West, Graduate Committee Member/Major Advisor, Sam Houston State University

Committee Member, graduated

Ashley Morgan, Committee Member, Sam Houston State University

Katey Estill, Committee Member, Sam Houston State University

Mallory Mardock, Committee Member, Sam Houston State University

Amber Bartelt, Committee Member, Sam Houston State University

Jessica Sanchez, Committee Member, Sam Houston State University

Stephanie Staicer, Committee Member, Sam Houston State University

Committee Member, In Progress

Christopher Wilson, Committee Member, Sam Houston State University

Clayton Sublett, Committee Member, Sam Houston State University

Undergraduate Research

Raymond Berry, BIOL 4095 (Fall 2013) The use of florescent dyes to track maggot movement.

Kylee Kliener, BIOL 4095 (Fall 2013) Insect macrophotography and development of a laboratory manual for General Entomology.

Kaylin Henson, BIOL 4095 (Fall 2013) The microbiome of cadaver flies.

Chelsea Hernandez, BIO495 (Spring 2012) Ability of phorid flies to access tight-sealing containers

James Willet, BIO495 (Fall 2011 – Spring 2012) Identification of a phorid fly on human remains

Araceli Rosillo, McNair Scholar, BIO495 (Spring 2012) Biodiversity of Carrion Beetles in Southeast Texas

Beth Ferguson, Honors Scholar, BIO495 (Spring 2012) Effects of Neen Oil on White Flies

Melissa Sisson, BIO495 (Fall 2009), Biodiversity of Carrion Beetles

Eric Mikolajchak, BIO495 (Summer 2009), Inset Biodiversity of a Mitigated pond in East Texas

Orry Martin, BIO495 (Spring 2009), Sam Houston State University. An investigation of the free-living lifestyle of Planaria with special attention paid to personal observations

Alan Archambeault, BIO495 (Fall 2008), Sam Houston State University. Molecular characterization of filth flies in Texas

Savannah Witt, BIO495 (Fall 2008), Sam Houston State University. A survey of current techniques used in insects collection

Natalie Lindgren, Independent Research (2008), Sam Houston State University. "The Thicket of Life" All Taxon Bioinventory (ATBI)

Alan Archambeault, Independent Research (2008), Sam Houston State University. "The Thicket of Life" All Taxon Bioinventory (ATBI)

Juan Garcia, McNair Scholar (2008), Sam Houston State University. Molecular and morphological evolution of Gelechioidea (Lepidoptera)

Olinda Cardenas, BIO495 (Fall 2007), Sam Houston State University. Postmortem Interval determination of a carcass using insect developmental rate models and insect successional models

Phillip Torres, Research Experience for Undergraduates (Summer 2007), Sam Houston State University. Diversity of Lepidoptera at the Center for Biological Field Studies, Sam Houston State University

Professional Society Memberships, past and current

American Association of Forensic Scientists, current
American Society for Microbiology, current
Entomological Society of America, current
North American Association of Forensic Entomologists
Lepidopterists' Society of America
Willi Hennig Society
Society for the Study of Evolution

Committees Served

2012	Snodgrass Award Committee, Entomological Society of America
2009	Forensic Science Educational Conference Steering Committee, Sam Houston State University in conjunction with The American Academy of Forensic Science
2009 – 2010	HAVEN a GLTBQ safe zone program, Sam Houston State University Student-run Committee
2009 – 2012	Master of Science Forensic Science Committee, Sam Houston State University
2008 – 2012	Scientific Advisory Committee, The Big Thicket National Preserve
2008 – 2010, 2012	Curriculum Committee, Sam Houston State University
2008 – 2010, 2012	Field Station Committee, Sam Houston State University
2007 – Present	Graduate Committee, Sam Houston State University, CHAIR
2007 – Present	Student Research Award Committee, Sam Houston State University
2004 – Present	Awards Committee, The Lepidopterist's Society of America
2002 – 2005	Graduate Studies Committee Graduate Student Representative, Voting Member
1998 – 2000	Entomology Graduate Student Association: Secretary, President

Manuscript Reviewing

Zootaxa; The Washington Entomological Society; The Journal of the Lepidopterists' Society; Annals of the Entomological Society of America; Invertebrate Systematics; Biological Journal of the Linnaean Society; Cladistics.

Grant Reviewing

National Institute of Justice External Reviewer
Encyclopedia of Life External Reviewer
Encyclopedia of Life Panel Reviewer
National Science Foundation External Reviewer
National Science Foundation Panel Reviewer
Texas Academy of Science Student Research Award
Women in Science Student Research Award

Professional Consultation

2012 Forensic Taphonomist, Montgomery County, TX, District Attorney's Office

Expert Witness

2012 Forensic Taphonomist, Montgomery County, TX, Larry Ray Swearingen,
Appellant v. The State of Texas

Curation

Sam Houston State University, Huntsville, Texas
The Canadian National Collection, Ottawa, Canada
The Ohio State University, Columbus, Ohio

Major Collections Studied

The Canadian National Collection, Ottawa, Canada
The Carnegie Museum, Pittsburgh, Pennsylvania
The National Museum of Natural History, Smithsonian Institute, Washington, DC
The Smithsonian Tropical Research Institution, Panama City, Panama
The Missouri Botanical Gardens, St. Louis, Missouri
The University of Arizona Herbarium and Insect Collection
Kirstenbosch Botanical Gardens, Cape Town, South Africa
Museum National d'Histoire Naturelle, Paris, France
The Finnish Museum of Natural History, Helsinki, Finland

Field Experience

Powdermill Nature Preserve, Pennsylvania
Texas and surrounding states (permit holder)

Ohio and surrounding states
Ontario, Canada
Sonoran Desert, Arizona (permit holder)
Chihuahuan Desert, Arizona and New Mexico (permit holder)
Chiricuan Mountains, Arizona (permit holder)
Western Cape, South Africa (permit holder)
All Taxon Bio-Inventory of the Great Smoky Mountain National; Park, Lepidoptera branch, Twig Leader (permit holder)
All Taxon Bio-Inventory of local Columbus Parks, Columbus, OH
All Taxon Bio-Inventory of Hocking Hills area, Hocking County, OH
Arthropods of Le Salva All Taxon Bio-Inventory, Costa Rica (permit holder)
Big Bend National Park, Texas (permit holder)
“Thicket of Life” All Taxon Bio-Inventory of The Big Thicket National Preserve, TX (PI)

Internet Resources

Bucheli, S.R. 2006. <http://www.shsu.edu/~srb009/>. Information website designed to summarize current systematic and taxonomic information for the Lepidopteran superfamily Gelechioidea. Maintained in conjunction with The Mississippi State University Entomological Museum and supported by NSF grant # 0415061

Education Outreach

Development of Forensic Science online training course for high school teachers

Featured in Popular Media

National Public Radio, September 23, 2013 [“Could Detectives Use Microbes To Solve Murders?”](#) Rob Stein

Science News Web Edition: Tuesday, November 18th, 2008 [“Forensics’ next tool: Hair-collecting caterpillars”](#) Susan Milius

Science News Print Edition: December 20th, 2008 [“Clothes moths offer forensic clues by building fuzzy, hair-flecked cases”](#) Susan Milius

Artistic Exhibitions

Entomology Display Cases for use by The C. A. Triplehorn Insect Collection, Ohio State University
Department of Entomology

Community Service

Exterminator Consultant, Huntsville, TX

Saturdays at Sam, Sam Houston State University, Huntsville, TX

Naturalist for Boy Scouts and Girl Scouts of America, Columbus, OH

Insect Outreach Program with local grade schools, Columbus, OH

Docent, Columbus Zoo, Annual Insect Fair, Columbus, OH

Founding member of Graduate Women in Science, The Ohio State University, Columbus, OH

Science Fair Judge Duties included judging science projects for area school, Columbus, OH