

Roland Shelby -  
Millipedes - Virginia -

North Carolina

Tom Stewart -  
1969 - TSS

OFFICIAL PROGRAM  
OF THE  
91ST ANNUAL TECHNICAL MEETING

## OKLAHOMA

## ACADEMY OF SCIENCE

Affiliated with the  
American Association for the Advancement of Science



FRIDAY  
November 1, 2002

OKLAHOMA CHRISTIAN UNIVERSITY  
Oklahoma City, Oklahoma

# OKLAHOMA ACADEMY OF SCIENCE

Established in 1909

"The purpose of the Academy shall be to stimulate scientific research; to promote fraternal relationship among those engaged in scientific work in Oklahoma; to diffuse among the citizens of the State a knowledge of the various disciplines of science; and to investigate and publicize the human, natural and educational resources of the State."

## Article 1, Section 2 OAS Constitution

### Activities of the Academy

- Publishes the *Proceedings of the Oklahoma Academy of Science*, *Annals of the Oklahoma Academy of Science* and *Transactions of the Oklahoma Junior Academy of Science*.
- Hosts the Annual Technical Meeting for the presentation of scientific papers by both professional and collegiate scientists.
- Sponsors symposia on selected topics of timely and vital interest to the State and Nation.
- Arranges spring and fall field meetings in different biogeographic regions of the State.
- Coordinates and promotes the activities of the Oklahoma Junior Academy of Science.
- Supervises the activities of the Oklahoma Collegiate Academy of Science.
- Provides research grants and scholarship awards to outstanding proposals submitted by secondary school and undergraduate college students.
- Provides scientific consultation services to governmental and private agencies throughout the State.

# NINETY-FIRST ANNUAL TECHNICAL MEETING OKLAHOMA ACADEMY OF SCIENCE OKLAHOMA CHRISTIAN UNIVERSITY

## TABLE OF CONTENTS

OAS Statement of Purpose and Sponsored Activities .....	Front Cover
Program Summary .....	2
General Information .....	3
Parking (Please use designated areas)	
Preregistration	
Membership Dues	
Guidelines for Submitting Manuscripts to <i>POAS</i>	
Lodging Information	
Future Meetings	
Assistance	
Sectional Meeting Programs	
Biological Sciences - Botany .....	5
Biological Sciences - Zoology .....	8
Geology .....	11
Physical Sciences .....	11
Social Sciences .....	12
Science Education .....	13
Geography .....	14
Fish and Wildlife Conservation .....	16
Microbiology .....	20
Engineering Sciences .....	21
Biochemistry and Biophysics .....	22
Microscopy .....	25
Mathematics and Computer Science .....	27
Environmental Sciences and Planning .....	28
Biomedical Sciences .....	29
OAS Presidents Past and Present .....	31
Map of the Campus of Oklahoma Christian University .....	Inside Back Cover



**NINETY-FIRST ANNUAL TECHNICAL MEETING  
OKLAHOMA ACADEMY OF SCIENCE  
OKLAHOMA CHRISTIAN UNIVERSITY**

**PROGRAM SUMMARY**

**Thursday, 31 October 2002**  
Executive Council Dinner and Meeting

Goucher Room  
University Center

**Friday, 1 November 2002**  
Registration for Technical Meeting

Lobby  
Prince Engineering Center

8:00 a.m. - 11:00 a.m.	<b>Concurrent Scientific Paper Sessions</b>	
Section A	Biological Sciences - Botany	*PEC Room 204
Section B	Biological Sciences - Zoology	PEC Room 203
Section C	Physical Sciences	Vose Hall Room 202
Section D	Social Sciences	Vose Hall Room 203
Section E	Science Education	PEC Room 200
Section F	Geography	*HSH Room 202
Section G	Fish and Wildlife Conservation	HSH Room 209
Section H	Microbiology	PEC Room 101
Section I	Engineering Sciences	PEC Room 206
Section J	Biochemistry and Biophysics	HSH Room 204
Section K	Microscopy	PEC Room 100
Section L	Mathematics & Computer Science	PEC Room 206
Section M	Environmental Sciences & Planning	HSH Room 211
Section N	Biomedical Sciences	HSH Room 202
All Sections Posters		HSH Room 201

\*PEC Prince Engineering Center  
\*HSH Herold Science Hall

**11:00 a.m. - 11:20 a.m.** Section Meetings Meeting Rooms Above  
Election of Section Vice-Chair.

**11:30 a.m. - 12:00 p.m.** All Academy Business Meeting Room 203  
All OAS members are encouraged to attend. Prince Engineering Center  
Visitors are welcome.

**12 noon - 1:30 p.m.** OAS BANQUET Bartlesville-Cordell Room  
Admission by ticket only. University Center  
Tickets available at registration.

**Dr. Joseph J. Ferretti**  
**George Lynn Cross Research Professor and**  
**Provost of the University of Oklahoma Health Sciences Center**  
**"Oklahoma, A Center for Microbial Genome Sequencing Projects"**

**1:45 p.m. - 5:00 p.m.** Concurrent Scientific Paper Sessions

**GENERAL INFORMATION**

**Name Badges:** Name badges, provided upon registration, must be worn at all times by all individuals attending Academy sectional programs, business meetings, and banquet. If your badge is not visible, you may be asked to leave by the persons in charge. Lost badges may be replaced at the registration desk upon verification of your registration documents. All presenters must register and wear an official name badge.

**Parking:** OAS parking at Oklahoma Christian University will be clearly marked. Parking is free to all OCU visitors on that day.

**On-site Registration Fees:** Members - \$15.00; Non-members - \$20.00; Students \$10.00  
Banquet tickets (if available) \$15.00

**2002 and 2003 Dues are Payable:** The OAS registration desk will accept dues payments.  
Regular - \$25.00; Graduate Student - \$5.00; Family - \$30.00  
Collegiate Student - \$10.00; Sustaining - \$100.00; Life - \$500.00

**Academy Business Meeting:** The 91st Annual Business Meeting of the Oklahoma Academy of Science will be held in Room 203 of Prince Engineering Center at 11:30 a.m.

**Academy and Award Banquet:** This gala affair will begin at noon Friday in the Bartlesville-Cordell Room in the University Center. There will be a special speaker and award presentations.

**Guidelines for Paper Publication:** Papers may be published in the *Proceedings of the Oklahoma Academy of Science*, subject to the editorial policies as stated in *POAS*, Volume 81 and review of the Editorial Board. OAS members are charged \$30-\$35 per page and non-members are charged \$90-\$105 per page.

**Executive Secretary-Treasurer:** Inquiries concerning upcoming OAS activities and membership may be directed to David Bass, OAS Executive Secretary-Treasurer, Campus Box 90, University of Central Oklahoma, Edmond OK 73034, 405-974-5772, dbass@ucook.edu.

**Motel Accommodations:** The headquarters motel for the 91st Annual Technical Meeting will be the Sleep Inn, 3608 S. Broadway, Edmond, OK (405-844-3000). Telephone for reservations and rate confirmation. Inform the desk that you are an OAS delegate.

Other motels in the vicinity of Oklahoma Christian University are:

Comfort Inn	4625 NE 120 <sup>th</sup> , OKC	405-478-7282
Broadway Suites	1305 S. Broadway, Edmond	405-341-6068
Hampton Inn	13500 Plaza Terrace, OKC	405-752-7070
Holiday Inn Express	13520 Plaza Terrace, OKC	405-755-8686

Rates are generally comparable, ranging from about \$55-\$75/night for a single room.

**No Smoking:** Please, no smoking in any of the buildings on the campus. Also, food and drink are not permitted in any meeting room. Thank you.

**Refreshments:** Food and drink will be served only in designated areas adjacent to the meeting rooms from 8:00 - 10:30 a.m. and from 2:00 - 3:30 p.m.

**Assistance or Information:** Look for individuals with OAS badges or host ribbons. These are OCU faculty and staff assigned to assist you.

#### Upcoming Meetings:

2003 Spring Field Meeting  
2003 Fall Field Meeting  
2003 Annual Technical Meeting  
hosted by University of Science and Arts of Oklahoma

April 2003  
September 2003  
November 2003

### SECTION A: BIOLOGICAL SCIENCES - BOTANY 204 Prince Engineering Center

Morning Session - Moderator: Constance Murray,  
Tulsa Community College

- 8:30 A Floristic Inventory of the Ozark Plateau National Wildlife Refuge, Adair County, Oklahoma. Charriss Hayes, Oklahoma State University.
- 8:45 The Efficacy of Floristic Inventories: Results from Recent Surveys. Bruce Hoagland and Amy Butlod, University of Oklahoma.
- 9:00 \*The Lichen and Bryophyte Collections of the Robert Bebb Herbarium. Amy C. Ramsey, The University of Oklahoma.
- 9:15 Flora of the Pushmataha Wildlife Management Area. Kaelene Crandall, Oklahoma State University.
- 9:30 \*Characterization of the Type I Casein Kinase Gene Family of *Arabidopsis*. Guillermo I. Albornoz, Oklahoma City University.
- 9:45 Break
- 10:00 The Molecular Systematics of *Gaura* (Onagraceae): *Stenosiphon* returns to *Gaura*. Gloria Hoggard and Paul Kores, University of Oklahoma.
- 10:15 The Molecular Systematics and Biogeography of Plantaginaceae. Ron Hoggard, University of Oklahoma.
- 10:30 Concordance of Phylogenetic Signal from Crossing Data and Nuclear ITS Sequence Variation Among Climbing Snagdragons. Wayne Elisens and Paul Kores, University of Oklahoma.
- 10:45 CCMV Wraps Up its Genes - A Viral Triggered RNA Folding. Jennifer M. Johnson and Adam Zlotnick, University of Oklahoma Health Sciences Center.
- 11:00 Section A Business Meeting, 203 PEC
- 11:30 Academy Business Meeting, 203 PEC
- 12:00 Academy Banquet, Bartlesville-Cordell Room, University Center

\*Collegiate Academy; Undergraduate Competition

SECTION A: BIOLOGICAL SCIENCES - BOTANY  
204 Prince Engineering Center

Afternoon Session - Moderator: Stanley Rice,  
Southeastern Oklahoma State University

- 1:45 A Survey of the Macro-Fungal of Pontotoc Ridge Nature Preserve. David L. Miller and Clark L. Overbo, University of Central Oklahoma.
- 2:00 Mushroom of Lawn and Garden in Oklahoma. Clark L. Overbo, University of Central Oklahoma.
- 2:15 \*Analysis of Photon Distribution in Light Gaps of a Tropical Rainforest. Melissa Hall, Southern Nazarene University.
- 2:30 \*Tree-fall Light Gaps: Total Percent Area and Average Size in a Costa Rican Cloud Forest. Brad Christoffersen, Southern Nazarene University.
- 2:45 Population Dynamics of *Echinacea pallida* at the Tall Grass Prairie, Oklahoma. Adam K. Ryburn, Mark E. Payton, and Michael W. Palmer, Oklahoma State University.
- 3:00 Break
- 3:15 Anti-herbivore Defense in Male and Female Boji-d'arc Trees (*Machura pomifera*). Stanley A. Rice, Southeastern Oklahoma State University.
- 3:30 \*Effects of Fire Ants on Growth of Peanuts. Roger E. Nelson, Southeastern Oklahoma State University.
- 3:45 \*Comparative Antiherbivore Activity of Seaside Alder, Hazel Alder, and Black Willow. Carol Richards, Southeastern Oklahoma State University.
- 4:00 Ion Channels of the Vacuolar Membrane. Gerald Schoenkecht, Oklahoma State University.
- 4:15 Flora of Oklahoma Project. Editorial Committee.

\*Collegiate Academy; Undergraduate Competition

SECTION A: BIOLOGICAL SCIENCES - BOTANY  
204 Prince Engineering Center  
(continued)

Posters (201 HSH):

- \*Environmentally Friendly Extraction Procedure for Carotenoids. Stephanie Stetbenz, Southeastern Oklahoma State University.
- \*Enhancing Potassium Uptake in Watermelon. Kristi Perez, Southeastern Oklahoma State University.
- \*Stability of Lycopen in Fresh-cut Watermelon. Bobbie Carroiti, Southeastern Oklahoma State University.
- \*Comparison of Photosynthetic Responses for *Zizyema* (Chlorophyta) Acclimated to High and Low Irradiance Levels. Jerce Burnett and Steven W. O'Neal, Southwestern Oklahoma State University.
- \*Spatial Variability and Relationships among Selected Soil and Forage Traits in a Winter Wheat Pasture. J.A. Gressett, C.T. Mackown, B.K. Northup, and R. Slagell-Gossen, Redlands Community College, USDA-ARS Grazinglands Research Lab.

\*Collegiate Academy; Undergraduate Competition



SECTION A: BIOLOGICAL SCIENCES - ZOOLOGY  
203 Prince Engineering Center

Morning Session - Moderator: John Barthell,  
University of Central Oklahoma

- 8:30 Thermal Stratification in Temporary Ponds and its Potential Impacts on Resident Species. Chad Boeckman and Steven Schwartz, Oklahoma State University.
- 8:45 The Effects of Predation on the Size of *Streptocephalus senti*. Sherri McClure and Steven S. Schwartz, Oklahoma State University.
- 9:00 Comparison of Ephemeral Wetland Microcrustacean Community Assemblages Among the Terrestrial Ecoregions of Oklahoma. Gabriel B. Cosyleon and Steven S. Schwartz, Oklahoma State University.
- 9:15 New Records for Helminth Parasites of the Sequoyah Slimy Salamander, *Plethodon sequoyah* (Caudata: Plethodontidae) from McCurtain County, Oklahoma. Chris T. McAllister and Charles R. Bursey, Texas A&M University-Texasarkana and Pennsylvania State University-Shenango Valley Campus.
- 9:30 Male Territoriality and Size Variation in the Large Carpenter Bee *Xylocopa virginica*. John Barthell and Troy Baird, University of Central Oklahoma.
- 9:45 Break
- 10:00 \*Testing of Novel Baits and Traps for Attractancy to Oklahoma Yellowjackets. Anne Schlick, Oral Roberts University.
- 10:15 \*Optimum Chemical Bait and Dose for Attracting Oklahoma Yellowjackets. Megan Utz, Oral Roberts University.
- 10:30 \*Testing of Relative Attractiveness of Butyrate Compounds to Yellowjackets in Northern Michigan. Justin Henson, Oral Roberts University.
- 10:45 \*A Tulsa County Survey of a Possible Correlation between Feline Sarcoma and Vaccination Sites. Kris Brantlett, Oral Roberts University.
- 11:00 Section A Business Meeting, 203 PEC
- 11:30 Academy Business Meeting, 203 PEC
- 12:00 Academy Banquet, Bartlesville-Cordell Room, University Center

\*Collegiate Academy, Undergraduate Competition

SECTION A: BIOLOGICAL SCIENCES - ZOOLOGY  
203 Prince Engineering Center

Afternoon Session - Moderator: David McNeely,  
Langston University

- 1:45 New Geographic Distribution Records for Centipedes (Chilopoda) and Millipeds (Diplopoda) of Oklahoma. Chris T. McAllister and Rowland M. Shelley, Texas A&M University-Texasarkana and North Carolina State Museum of Natural Sciences.
- 2:00 Allometry of Metabolic Rate and Performance in Collared Lizards (*Crotaphytus collaris*). Day B. Ligon, Jerry F. Husak, and Charles C. Peterson, Oklahoma State University.
- 2:15 \*Effect of Size at Birth on Size at Maturity of the Western Mosquitofish, *Gambusia affinis*. Courtney D. Wallace, University of Oklahoma.
- 2:30 \*Diurnal Regulation in Memory but not Learning in the Rat. John Bury, Oral Roberts University.
- 2:45 Break
- 3:00 Effects of Diet History on Cannibalism in the Western Mosquitofish, *Gambusia affinis*. Melody Brooks, Rae Deaton, and Edie Marsh-Matthews, University of Oklahoma and Sam Noble Oklahoma Museum of Natural History.
- 3:15 First Record of *Leptodontomys* (Rodentia: Eomyidae) in the Late Miocene (Clarendonian) of the Southern Great Plains. Kent S. Smith and John Makipour, University of Oklahoma.

Posters listed on following page.

\*Collegiate Academy, Undergraduate Competition

SECTION A: BIOLOGICAL SCIENCES - ZOOLOGY  
203 Prince Engineering Center  
(continued)

Posters (201 HSH):

Effects of Metal Contamination on Energetics of the Red-Eared Slider Turtle (*Trachemys scripta*) and Their Implications For The Species as a Biomonitor: Lee Anne Tome and Joseph R. Bidwell, Oklahoma State University.

*Cyprinodon rubroflavialis*, Red River Pupfish, is Established in the Cimarron River Drainage in Oklahoma. Argenta L.N. Doss, David L. McNeely, William Caire, Victor Harris, and Toure Rider. Langston University and University of Central Oklahoma.

The Fishes of Traders Creek, a Hardwater Stream in Northwestern Oklahoma. Victor Harris, David L. McNeely, William Caire, Argenta L. N. Doss, and Toure Rider. Langston University and The University of Central Oklahoma.

Hiding from Grazers in Crevices: A Useful Mechanism for Stream Algae. Elizabeth Bergey, University of Oklahoma.

SECTION B: GEOLOGY

No papers are being presented in this section.

SECTION C: PHYSICAL SCIENCES  
202 Vose Hall

Morning Session - Moderator: James, S. Meyer,  
St. Gregory's University

9:45 A New Instrument for Mars Dust Particles Measurement. Albert Chen, Oklahoma Baptist University.

10:00 Bohr Quantization of the Charge-Magnetic Dipole Bound State. Weldon J. Wilson, University of Central Oklahoma.

10:15 Nitrate Anion Photocleavage in Aqueous Environments: A Complete Active Space Multiconfiguration Self Consistent Field (CASSCF) Computational Analysis. William Kelly and Aimee Slajer, Southwestern Oklahoma State University.

10:30 \*Nitrogen Compounds in Northeastern Oklahoma Scenic Rivers. Scott Evans, Myron L. Cherry and Michael Turner, Northeastern State University.

10:45 A Geometric View of the Regression Normal Equations Displayed in Various Implementations of MathML. James S. Meyer, St. Gregory's University.

11:00 Section C Business Meeting

11:30 Academy Business Meeting, 203 PEC

12:00 Academy Banquet, Bartlesville-Cordell Room, University Center

Poster (201 HSH):

\*Regioselective Synthesis of Indoles. Justin Kamplain, Oklahoma Christian University.

\*Collegiate Academy, Undergraduate Competition

SECTION D: SOCIAL SCIENCES  
203 Vose Hall

Morning Session - Moderator: Lois E. Albert,  
Oklahoma Archeological Survey

- 9:30 The Fabrication and Utilization of Bone Digging Implements. Casey R. Carmichael, University of Oklahoma.
- 9:45 The Thompson Site: Some Preliminary Observations. Paul Gattis, University of Oklahoma.
- 10:00 \*The Relationship Between Language Use and the Big Five Personality Factors. Jodi Abshire, Cameron University.
- 10:15 \*The Fundamental Attribution Error with Effects of Gender, Perspective, and Beneficiary of a Lie on Perceived Blame. Kelly Lawson, University of Central Oklahoma.
- 11:00 Section D Business Meeting
- 11:30 Academy Business Meeting, 203 PEC
- 12:00 Academy Banquet, Bartlesville-Cordell Room, University Center

SECTION E: SCIENCE EDUCATION  
200 Prince Engineering Center

Morning Session - Moderators: Dania Hundley,  
Western Heights High School, and Kathi A. McDowell,  
Northeastern State University

- 8:20 Circle of [Critical] Friends: Laying the Groundwork for Enhancing Higher Education Teaching Practices. Robbie V. McCarty, Southwestern Oklahoma State University.
- 8:40 Eisenhower Physics Teachers' Workshop: Demonstrations and Lab Exercises. Jerry McCoy and Sabhal Mitra, University of Tulsa.
- 9:00 Exploring Human-Animal Interactions and Bonding Processes: Summer Science Academy for High School Students. Sherril M. Stone, Rogers State University.
- 9:20 Teaching about DNA and Evolution with Computer Science Analogies. Stanley A. Rice, Southeastern Oklahoma State University.
- 9:40 St. Gregory's University Summer Academy in Conservation Biology and Biostatistics. Doyle L. Crosswhite and Andrea K. Sagely, St. Gregory's University.
- 10:00 Exploring Atomic and Molecular Orbitals in Freshman Chemistry Using Computations Chemistry. J. Conceicao and Jonathan T. Kosciński, St. Gregory's University.
- 10:20 Layer-by-Layer Assembly of Single Wall Carbon Nanotubes. Arif A. Mamedov, Oklahoma State University.
- 10:40 Making Evolutionary Theory Exciting and Relevant: An Interdisciplinary Approach Used with High School Students. Erik Terdal, Mike Wilds, and Kathi McDowell, Northeastern State University.
- 11:00 Section E Business Meeting
- 11:30 Academy Business Meeting, 203 PEC
- 12:00 Academy Banquet, Bartlesville-Cordell Room, University Center

Poster (201 HSH):

\*Applications of Capillary Electrophoresis in the Undergraduate Chemistry Laboratory. Justin Kamplain, Oklahoma Christian University.

\*Collegiate Academy, Undergraduate Competition



SECTION F: GEOGRAPHY  
202 Herold Science Hall

Afternoon Session - Moderators: Edward J. Pugh,  
University of Central Oklahoma and Gregory A. Plumb,  
East Central University

- 1:45 Integration of Spatial and Temporal Interpolation for Map Animation. Gregory A. Plumb, East Central University.
- 2:00 \*A New Design for East Central University's Campus Kiosk Maps. William Jordan, East Central University.
- 2:15 \*Building a Property Parcel GIS Database for the Absentee Shawnee Tribe. Dale Cole and Russel Taylor, East Central University.
- 2:30 \*Tree Species Map of the East Central University Campus. James Baker, East Central University.
- 2:45 Calpon: A Simulation Exercise in Sustainable Development. Robert E. Newcomer, East Central University.
- 3:00 Break
- 3:15 \*Changing the Course of the South Canadian River: An Application in Surveying and Remote Sensing. Stanley Drannon and Mark Micozzi, East Central University.
- 3:30 Black Neighborhood and Business Locations in Oklahoma City, 1889-1920. Edward J. Pugh, University of Central Oklahoma.
- 4:00 The Use of Poster Papers in Undergraduate Geographic Education. Edward J. Pugh and Gregory A. Plumb, University of Central Oklahoma and East Central University.
- 4:15 Section F Business Meeting

\*Collegiate Academy, Undergraduate Competition

SECTION F: GEOGRAPHY  
202 Herold Science Hall  
(continued)

Posters (201 HSH):

- Prison Population and Type of Crime in the United States, 1960 to 1998. Jamie Shelton, University of Central Oklahoma.
- Use of Internet in the United States. Naitsuko Yamamoto, University of Central Oklahoma.
- Sexually Transmitted Diseases in Canada and the United States, 1996-2000. Bryan Head, University of Central Oklahoma.
- Asian Americans. Akihiro Haba, University of Central Oklahoma.
- \*A New Design for East Central University's Campus Kiosk Maps. William Jordan, East Central University.
- \*Building a Property Parcel GIS Database for the Absentee Shawnee Tribe. Dale Cole and Russel Taylor, East Central University.
- \*Tree Species Map of the East Central University Campus. James Baker, East Central University.

\*Collegiate Academy, Undergraduate Competition

**SECTION G: FISH AND WILDLIFE CONSERVATION**  
**209 Herold Science Hall**

**Morning Session – Moderator: Tim Patton,  
 Southeastern Oklahoma State University**

- 8:15 **Larval Striped Bass Abundance in Lake Texoma, Oklahoma-Texas.** Jason J. Schaffter and Dana Winkelman, Oklahoma Cooperative Fish and Wildlife Research Unit, Oklahoma State University.
- 8:30 **Factors Influencing First Year Recruitment of Striped Bass in Lake Texoma.** Matt Mauck and Dana Winkelman, Oklahoma Cooperative Fish and Wildlife Research Unit, Oklahoma State University.
- 8:45 **\*Characterizations of Reservoir Food Webs Along a Lateral and Longitudinal Gradient (Lake Texoma OK-TX).** Tim Birdsong, Southeastern Oklahoma State University and University of Oklahoma.
- 9:00 **Species-Specific Ecosystem Effects Enhance Growth of a Primary Consumer.** Raelyn Deaton, Chad W. Hargrave, Raul Ramirez, Melody Brooks, Michael Eggleton, Katy Sutherland, and Heather Galbraith, University of Oklahoma.
- 9:15 **Break**
- 9:30 **Electrofishing Effort and Fish Species Richness and Relative Abundance in Ozark Highland Streams in Arkansas.** Daniel C. Dauwalter and Edmund J. Pert, Oklahoma Cooperative Fish and Wildlife Research Unit, Oklahoma State University.
- 9:45 **\*Investigating the Fish Fauna of Crutcho Creek.** Courtney M. Vidacovich, Oklahoma Christian University.
- 10:00 **Effects of Environmental Gradients on Benthic and Midwater Habitat Guild Fishes in the Neosho River, Lyon County, KS.** David Gillette, Jeremy Tiemann, David Edds, and Mark Wildhaber, Emporia State University and USGS Columbia Environmental Research Center.

**SECTION G: FISH AND WILDLIFE CONSERVATION**  
**209 Herold Science Hall**  
**(continued)**

- 10:15 **Temporal Variation in Fishes of the Upper Red River (Oklahoma).** Chad Hargrave, University of Oklahoma.
- 10:30 **Larval Fish Drift Ecology of a Sonoran Desert Stream.** Rachael Remington, University of Oklahoma.
- 11:00 **Section G Business Meeting**
- 11:30 **Academy Business Meeting, 203 PEC**
- 12:00 **Academy Banquet, Bartlesville-Cordell Room, University Center**

\*Collegiate Academy; Undergraduate Competition

SECTION G: FISH AND WILDLIFE CONSERVATION  
209 Herold Science Hall

Afternoon Session – Moderator: Mia Revels,  
Northeastern Oklahoma State University

- 1:45 Nest Site Characteristics of Swainson's Warblers in Northeast Oklahoma. Mia Revels, Northeastern State University.
- 2:00 Response of Nongame Birds and Terrestrial Invertebrates to Restoration and Management of Upland Grasslands in the Rainwater Basin Region, Nebraska. Jill M. Spontang, Craig A. Davis, Samuel Fuhlendorf, and David Leslie, Jr., Oklahoma Cooperative Fish and Wildlife Research Unit, Oklahoma State University.
- 2:15 Effects of Mountain Biking Activity on Foraging and Nesting Behavior of Golden-cheeked Warblers: Proposed Research. Allen E. Graber and Craig A. Davis, Oklahoma State University.
- 2:30 Associations of Eastern Redcedar and Community Structure of Small Mammals. Valerie Horncastle, Eric C. Hellgren, Paul M. Meyer, and David M. Leslie, Jr., Oklahoma Cooperative Fish and Wildlife Research Unit, Oklahoma State University.
- 2:45 Break
- 3:00 Conservation Ecology of the Texas Horned Lizard: Comparative Effects of Summer and Winter Burning. Beth Moeller and Eric C. Hellgren, Oklahoma State University.
- 3:15 Population Genetics of Canadian Wolverines (*Gulo gulo*). Derrick Chappell and Ronald Van Den Bussche, Oklahoma Cooperative Fish and Wildlife Research Unit, Oklahoma State University.
- 3:30 Population Genetics of the Endangered Ozark Big-eared Bat, *Corynorhinus townsendii ingens*. Sarah Weyandt, Ronald Van Den Bussche, David M. Leslie, Jr., and Meredith Hamilton, Oklahoma Cooperative Fish and Wildlife Research Unit, Oklahoma State University.

SECTION G: FISH AND WILDLIFE CONSERVATION  
209 Herold Science Hall  
(continued)

- 3:45 Testing a Multivariate, GIS Model of Black Bear Habitat Use at the Landscape Scale Using Bait Station Indices in the Oklahoma District of the Ouachita National Forest. Sara Bales, Eric C. Hellgren, and David M. Leslie, Jr., Oklahoma Cooperative Fish and Wildlife Research Unit, Oklahoma State University.
- 4:00 Grouping Patterns of Rocky Mountain Elk (*Cervus elaphus*) Relative to Landscape Structure on Private Land in Southwestern Oklahoma. W. David Walter and David M. Leslie, Jr., Oklahoma Cooperative Fish and Wildlife Research Unit, Oklahoma State University.

Posters (201 HSH):

Juniper Encroachment and Avifaunal Dynamics in Southern Great Plains Grasslands: A Multi-Scale Summary. Bryan Coppedge, David Engle, Samuel Fuhlendorf, Robert Chapman, Ronald Masters, and Mark Gregory, Oklahoma State University.

\*A Migratory Bird Habitat Study of the Chicago Park District, Illinois. Rosemary Vu, St. Gregory's University.



**SECTION H: MICROBIOLOGY**  
101 Prince Engineering Center

**Morning Session – Moderator:** Arden Aspedon,  
Southwestern Oklahoma State University

- 10:00 \*Expression and Characterization of the Beta-1 Adrenergic Receptor. Joshua Rodriguez, Oral Roberts University.
- 10:15 \*Microbial Diversity Along the Acid Mine Drainage Contaminated Tar Creek Watershed. Nathan T. Smith, University of Tulsa.
- 10:30 Alternate Circulation of Distinct Lineages of Equine-2 Influenza Virus. Elin Jaansson and Alexander C. Lai, Oklahoma State University.
- 10:45 Surveillance for Avian Influenza Virus in Oklahoma. Holly Patton and Alexander C. Lai, Oklahoma State University.
- 11:00 Section H Business Meeting
- 11:30 Academy Business Meeting, 203 PEC
- 12:00 Academy Banquet, Bartlesville-Cordell Room, University Center

**Posters (201 HSH):**

- \*Influence of Four *Streptococcus mutans* Genes on Biofilm Formation. Prestina J. Thompson, Oklahoma City University and University of Oklahoma Health Sciences Center.
- \*Variation in Mutation Rates Between Genetically Diverse *Escherichia coli* Strains. Andrew S. Myers, University of Tulsa.
- \*Coliform Counts in Drinking Water. Carolyn Hays, Oral Roberts University.

\*Collegiate Academy; Undergraduate Competition

**SECTION I: ENGINEERING SCIENCES**  
206 Prince Engineering Sciences

**Morning Session – Moderator:** Baha Jassemejjad,  
University of Central Oklahoma

- 9:45 \*Fluid Dynamics of a Partially-filled Cylinder. Andrea Rubio, University of Central Oklahoma.
- 10:00 Computer Simulation of the Dynamics of a Ring Laser. Mekhala Desikachar and Weldon J. Wilson, University of Central Oklahoma.
- 10:15 \*Theoretical Optimization of Selective Laser Hyperthermia Using Tissue Simulating Gel Phantoms. Chris Bailey, University of Central Oklahoma.
- 10:30 Building a Parallel Communication Interface for a Spectrophotometer Using LABVIEW. Fouad Ghadouani and Baha Jassemejjad, University of Central Oklahoma.
- 10:45 Securing Major TCP/IP Security Vulnerabilities. M. Shato and A. Kazmierczak, Oklahoma City University.
- 11:00 Section I Business Meeting
- 11:30 Academy Business Meeting, 203 PEC
- 12:00 Academy Banquet, Bartlesville-Cordell Room, University Center

\*Collegiate Academy; Undergraduate Competition

SECTION J: BIOCHEMISTRY & BIOPHYSICS  
204 Herold Science Hall

Morning Session – Moderator: Ann H. West,  
University of Oklahoma

- 8:30 \*Does Bright Regulate Human Immunoglobulin Transcription? Amy Windell,  
Oklahoma Christian University.
- 8:45 Adaptive Resistance to Anthrax Lethal Toxin. Isabelle Salles, University of  
Oklahoma.
- 9:00 Analysis of HPI-Response Regulator Interactions in the Osmotic and Oxidative  
Stress Response Pathways in *Saccharomyces cerevisiae*. Stacey W. Porter,  
Qingping Xu, Lilian Chooback, and Ann H. West, University of Oklahoma.
- 9:15 Nitroso Binding to a Bacterial Cytochrome P450. Daniel M. Copeland, Ann H.  
West, and George B. Richter-Addo, University of Oklahoma.
- 9:30 Quantitative MALDI-TOF-MS Analysis of Peptides and Proteins Using d-  
Labeled N-Ethylmaleimide. Sadamu Kurono, Satomi Niwayama, and Hiroyuki  
Matsumoto, University of Oklahoma Health Sciences Center.
- 9:45 Break
- 10:00 Mechanisms of Anthrax Toxin-Induced Cell Death. Daniel Voth, University of  
Oklahoma.
- 10:15 DNA Array Profiles of Anthrax-Intoxicated Cells. Amy Meader-Tucker,  
University of Oklahoma.
- 10:30 Effect of Cold Stress on Lipogenic Enzymes in the Pea Aphid, *Acyrtosiphon*  
*pisum*. Zhaoqiang Chen, Robin D. Madden, and Jack W. Dillwith, Oklahoma State  
University.
- 10:45 Conformational Change in Hepatitis B Virus Capsid Assembly: Is What You See  
What You Get? Stephen J. Stray, Pablo Ceres, and Adam Zlotnick, University of  
Oklahoma Health Sciences Center.
- 11:00 Section J Business Meeting
- 11:30 Academy Business Meeting, Room 203 PEC
- 12:00 Academy Banquet, Bartlesville-Cordell Room, University Center

\*Collegiate Academy, Undergraduate Competition

SECTION J: BIOCHEMISTRY & BIOPHYSICS  
204 Herold Science Hall

Afternoon Session – Moderator: Richard Essenberg,  
Oklahoma State University

- 1:45 Enzymes of Lysine Biosynthetic Pathway: Homocitrate Synthase. Babak Andi,  
Paul F. Cook, and Ann H. West, University of Oklahoma.
- 2:00 Genomics of the Lone Star Female Tick Salivary Glands: Expression Profiling  
Using cDNA Sequence Tags. Majid Aljamali, John Sauer, and Richard Essenberg,  
Oklahoma State University.
- 2:15 The Current Status of the Wheat Leaf Proteome. Bryna E. Donnelly, Robin D.  
Madden, David R. Porter, and Jack W. Dillwith, Oklahoma State University.
- 2:30 Use of Double-Stranded RNA-Mediated Interference Studies in Gene Silencing  
in Female Ticks (*Amblyomma americanum*). Vijay Ganesh Ramakrishnan,  
Oklahoma State University.
- 2:45 Characterization of the Function of Septin Nucleotide Binding. Satish Nagaraj,  
Oklahoma State University.
- 3:00 Break
- 3:15 The Whole Looks Greater Than the Sum of its Parts. Hepatitis B Virus Capsids  
are Stable Though Intersubunit Contacts are Weak. Pablo Ceres and Adam  
Zlotnick, University of Oklahoma Health Sciences Center.
- 3:30 Characterization of the Ferredoxin-1 mRNA Instability Element(s). Sumana  
Bhat, Oklahoma State University.
- 3:45 Using Resistance-Gene-Pyramided Cotton Lines to Identify Genes Induced  
During the Hypersensitive Response. Angela Phillips, Margaret L. Pierce, Mohini  
A. Padi, and Margaret Essenberg, Oklahoma State University.
- 4:00 Rho Activation Modulates the Adhesive Capacity of P-Selectin in Shear Flow.  
Hendra Setiadi, Oklahoma Medical Research Foundation.
- 4:15 The Effect of Light on Tyrosine Phosphorylation in Bovine Rod Outer  
Segments. Trent Tadlock, Oklahoma Christian University.

Posters listed on following page.

**SECTION J: BIOCHEMISTRY & BIOPHYSICS**  
**204 Herold Science Hall**  
 (continued)

Posters (201 HSH):

- Diffusion Limited Rate for O-Acetylserine Sulfhydrylase Reaction.** Wael Rabeh and Paul Cook, University of Oklahoma.
- The Mechanism of the Oxidative Decarboxylation of L-Aspartate, an Alternative Substrate for Malic Enzyme.** Dai Li, Chi-Ching Hwang, and Paul F. Cook, University of Oklahoma.
- Regulation of the NAD-Malic Enzyme from *Ascaris suum*.** William E. Karsten and Paul F. Cook, University of Oklahoma.
- Association of Cell-Surface E-selectin with other Membrane Molecules.** Lisa Meyer, Hendra Setiadi, and Rodger P. McEver, Oklahoma Medical Research Foundation.
- \*Peptide Mass Fingerprinting Database of *Drosophila melanogaster*: Qualitative and Quantitative Application on Pigment Cell Dehydrogenase Reductase (pcdr).** Anh T. Bao, University of Oklahoma.

**SECTION K: MICROSCOPY**  
**100 Prince Engineering Center**  
 Morning Session - Moderator: Charlotte Ownby,  
 Oklahoma State University

- 9:00 **Applications of Light and Electron Microscopy to Genetic Therapy Research.** Kenneth C. Moore, University of Iowa.
- 10:15 **Characterization of Cultured *C. elegans* Neurons: Ultrastructural and Physiological Evidence for Functionality.** Stephen D. Fields and James Rand, Oklahoma Medical Research Foundation.
- 10:30 **\*\*Detection of a Recombinant Herpesvirus and Identification of Associated Cell Types in Tissues Using Light and Confocal Microscopy.** Melanie A. Breshnars, Darla H. Black, Richard Eberle, and Jerry W. Ritchey, Oklahoma State University.
- 10:45 **\*\*Layer-by-Layer Assembly of Single Wall Carbon Nanotubes.** Arif A. Mamedov, Oklahoma State University.
- 11:00 **Study of Lithium Intercalation into Carbon Nanotube Based Electrodes.** Yoshiko Katori and Melissa Riege, University of Oklahoma.
- 11:15 **Template Assisted Nanostructuring.** K. L. Hobbs, P. R. Larson, J. C. Keay, and M. B. Johnson, University of Oklahoma.
- 11:30 **Academy Business Meeting, Room 203 PEC**
- 12:00 **Academy Banquet, Bartlesville-Cordell Room, University Center**

\*Collegiate Academy; Undergraduate Competition

\*\*Timpino Competition  
 \*Collegiate Academy; Undergraduate Competition



SECTION K: MICROSCOPY  
100 Prince Engineering Center

Afternoon Session – Moderator: Paige Johnson,  
Owasso, Oklahoma

- 2:00 \*\*SEM and Autofluorescence of *E. coli* Post Lysozyme Exposure. Brian Dequoc, Oklahoma State University/
- 2:15 Applications of a Cell Culture System for Studying the Interaction of *Anaplasma marginale* with Tick Cells. Edmour F. Blouin, Jose de la Fuente, Jose C. Garcia-Garcia, John R. Sauer, Jeremiah T. Saliki, and Katherine M. Kocan, Oklahoma State University.
- 2:45 \*\*Differential Expression of Major Surface Protein 1a by the Cattle Pathogen *Anaplasma marginale* in Bovine Erythrocytes and Tick Cells. Jose C. Garcia-Garcia, Jose de la Fuente, Edmour F. Blouin, Jeremiah T. Saliki, and Katherine M. Kocan, Oklahoma State University.
- 3:00 Infection Exclusion of the Rickettsial Pathogen, *Anaplasma marginale*, in the Tick Vector, *Dermacentor variabilis*. Katherine M. Kocan and Jose de la Fuente, Oklahoma State University.
- 3:15 P5GL-1 Cytoplasmic Domain and Function. Vishwanath Ramachandran, Arkadiusz Klopocki, and Rodger McEver, Oklahoma Medical Research Foundation.

Posters (201 HSH):

- \*Locating Nerve Growth Factors in Paraffin Embedded Rat Retina by Immunohistochemistry. Katie Partridge, Oral Roberts University.
- \*Locating Nerve Growth Factors in Paraffin Embedded Rat Retina by Immunohistochemistry. Amber Doyle, Oral Roberts University.
- \*An Investigation of Locard's Exchange Principle with Respect to Trace Evidence in Rural and Urban Locations Within South Tulsa Oklahoma. Dence Sutherland, Oral Roberts University.

\*\*Timpiano Competition  
\*Collegiate Academy; Undergraduate Competition

SECTION L: MATHEMATICS & COMPUTER SCIENCE  
206 Prince Engineering Center

Morning Session – Moderator: Baha Jassemnejad,  
University of Central Oklahoma

- 10:45 Securing Major TCP/IP Security Vulnerabilities. M. Shato and A. Kazmierczak, Oklahoma City University.
- 11:00 Section L Business Meeting
- 11:30 Academy Business Meeting, 203 PEC
- 12:00 Academy Banquet, Bartlesville-Cordell Room, University Center

SECTION M: ENVIRONMENTAL SCIENCES & PLANNING  
211 Herold Science Hall

Morning Session – Moderator: Daniel M. McInnes,  
East Central University

- 8:45 A Comparison of Suburban Bird Populations of Tallinn, Estonia and Tulsa, Oklahoma. Stephen Herr, Oral Roberts University.
- 9:00 \*Repellent Quetzal Population Census in the Rio Sevegre River Valley of Costa Rica. Michael McNabb, Southern Nazarene University.
- 9:15 \*Peter Walker: Minimalist Landscape Architect. Luke Willis, Oklahoma State University.
- 9:30 \*Sir Geoffrey Jellicoe: Britians' Premier Landscape Architect. Rebecca S. Bailey, Oklahoma State University.
- 9:45 \*Luis Barragan: Latin America's Premier Landscape Architect. Mike Albert, Oklahoma State University.
- 10:00 \*Edward Stone: Changing the Resort Community. Brian Beach, Oklahoma State University.
- 10:15 \*George Hargreaves: Landscape Architect of the 21<sup>st</sup> Century. Sean Rohbacker, Oklahoma State University.
- 10:30 \*Lawrence Halprin: Landscape Architect of the Twentieth Century. R. Adam Laughlin, Oklahoma State University.
- 10:45 Conservation of Ephemeral Wetlands. Roshini Nambiar, Dr. Steve Schwartz, Dr. Dana Winkelman, Oklahoma State University.
- 11:00 Section M business meeting
- 11:30 Academy Business Meeting, 203 PEC
- 12:00 Academy Banquet, Bartlesville-Cordell Room, University Center

\*Collegiate Academy; Undergraduate Competition

SECTION N: BIOMEDICAL SCIENCES  
202 Herold Science Hall

Morning Session – Moderator: David R. Wallace,  
Oklahoma State University Center for Health Sciences

- 8:00 \*Effect of Stereotaxic Implantation of Corticosterone onto the Amygdala on Visceral and Somatic Pain. Kale Dittmeyer, Oklahoma Christian University.
- 8:15 \*A Study to Determine Whether Spinal Cord Stimulation Changes Enteric Nervous System Activity in the Rat Colon. Christopher Newey, Oklahoma Christian University.
- 8:30 \*Neurohumoral Changes After Cardiovascular Deconditioning. Alicia Haught, University of Missouri School of Veterinary Sciences.
- 8:45 Differential Instability of the GAA Triplet Repeat in a Prokaryotic Replication Model. Laura Hern and Sanjay Bidichandani, University of Oklahoma Health Sciences Center.
- 9:00 Alu Elements are a Significant Source of GAA Triplet Repeats in the Human Genome. Rhonda Clark, Jim Taylor, and Sanjay Bidichandani, University of Oklahoma Health Sciences Center.
- 9:15 Selective Photothermal Laser-tissue Interaction Using Chicken Breast Tissue and Rat Tumors. Sang-Won Jeong and Wei R. Chen, University of Central Oklahoma.
- 9:45 Laser Tissue Welding. Hemanthkumar Athiraman and Wei R. Chen, University of Central Oklahoma.
- 10:00 \*Generating Nested Deletions in Genomic Clones Housed in pCPAC-MAM2. Kyle J. Moore, Southwestern Oklahoma State University.
- 10:15 Comparative Activity of Azithromycin and Amphotericin B Against *Naegleria fowleri* *in vitro* and in a Mouse Model of Primary Amebic Meningoencephalitis. Shannon Goswick and George Brenner, Oklahoma State University Center for Health Sciences.

\*Collegiate Academy; Undergraduate Competition

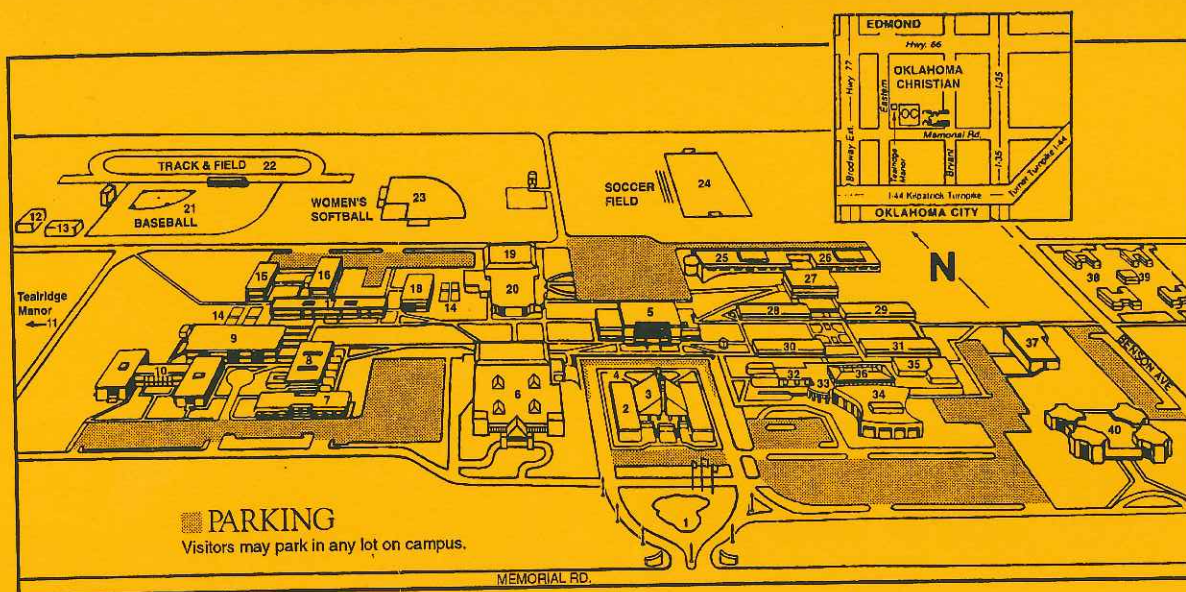
**SECTION N: BIOMEDICAL SCIENCES**  
**202 Herold Science Hall**  
**(continued)**

- 10:30 **High Throughput Sequencing of the Baboon Cytomegalovirus Genome.** Tami G. Ross, Susan R. Neubauer, and Earl L. Blewett, Oklahoma State University Center for Health Sciences.
- 10:45 **Analysis of the Junction Between the Unique Long and Unique Short Regions of the Baboon Cytomegalovirus Genome.** Susan R. Neubauer, Tami G. Ross, and Earl L. Blewett, Oklahoma State University Center for Health Sciences.
- 11:00 Section N Business Meeting
- 11:30 Academy Business Meeting, 203 PEC
- 12:00 Academy Banquet, Bartlesville-Cordell Room, University Center

**OKLAHOMA ACADEMY OF SCIENCE PRESIDENTS**

1910	H. L. Lane, OU	1954	A. N. Murray, TU
1911	D. W. O'Brien, Ok. City	1955	R. E. Olson, OU
1912	S. W. Reeves, OU	1956	A. M. Stebler, OAMC
1913	C. W. Shannon, OU	1957	D. E. Howell, OAMC
1914	No meeting	1958	G. J. Goodman, OU
1915	C. W. Shannon, OU	1959	Elmer Lucas, OU
1916	C. N. Gould, OU	1960	P. E. Smith, OUMS
1917	L. C. Ratford, ISU	1961	E. M. Hordeth, OSU
1918	No meeting	1962	H. B. Barclay, TU
1919	No meeting	1963	G. A. Moore, OSU
1920	M. M. Wickham, Norman	1964	A. D. Bouck, NOIC
1921	A. F. Reiter, PU	1965	J. E. Webster, OSU
1922	J. B. Thoburn, Ok. City	1966	C. R. Williams, PU
1923	R. O. Whitten, OAMC	1967	C. D. Riggs, OU
1924	S. Weidman, OU	1968	E. A. Reynolds, SWSC
1925	(spring) C. E. Sanborn (fall) H. L. Dodge, OU	1969	L. V. Scott, OUHSC
1926	J. H. Gould, OAMC	1970	C. C. Carpenter, OU
1927	C. N. Gould, OU	1971	Paul Buck, TU
1928	O. M. Smith, OAMC	1972	W. A. Carter, ECSU
1929	A. Richards, OU	1973	C. J. Mantin, OU
1930	Leroy Long, Ok. City	1974	N. N. Durham, OSU
1931	A. O. Weese, OU	1975	Barbara Shirley, TU
1932	Herbert Patterson, OAMC	1976	G. W. Todd, OSU
1933	J. E. Knowles, PU	1977	D. E. Kizer, Noble Found
1934	F. G. Brooks, OCU	1978	George Odell, OSU
1935	C. E. Decker, OU	1979	Richard Couch, ORU
1936	H. J. Harper, OAMC	1980	Gary Wolgamott, SWSU
1937	B. D. Barclay, TU	1981	Elroy Rice, OU
1938	C. M. Perry, OU	1982	Everett Grigsby, NSU
1939	H. D. Chase, TU	1983	Jack Sokatch, OUHSC
1940	G. L. Cross, OU	1984	Mary Whitmore, OU
1941	R. W. Jones, OAMC	1985	Jeff Black, OBU
1942	H. I. Featherly, OAMC	1986	Jerry Wilkins, OSU
1943	O. F. Evans, OU	1987	Mamford K. Patterson, Noble Found
1944	V. G. Heller, OAMC	1988	Mary P. Carpenter, OU
1945	J. R. Nielsen, OU	1989-1990	Kenneth E. Conway, OSU
1946	O. C. Derritt, OAMC	1991-1992	James K. McPherson, OSU
1947	J. T. Self, OU	1993	James R. Estes, OU
1948	L. S. McLeod, TU	1994-1995	Jack D. Tyler, CU
1949	J. C. Shirley, PU	1996-1997	Connie Taylor, SEOSU
1950	Howard Taylor, OCW	1998-1999	Ronald I. Tyrl, OSU
1951	H. W. Larsh, OU	2000-2001	David Bass, UCO
1952	V. B. Monnett, OAMC	2002-2003	Craig Clifford, NSU
1953	S. P. Mastie, LU		





## CAMPUS

1. Main Entrance
2. Allison Biblical Studies Center (ABS)
3. Scott Chapel
4. Thelma Gaylord Forum
5. Mabee Learning Center/Library (LC)
6. Gaylord University Center (UC)
7. Reba Davisson Hall
8. Tinius-East Hall
9. Tinius-West Hall
10. Gunn-Henderson Hall
11. Tealridge Manor Retirement Center
12. Maintenance Center
13. The Barn (Old Gymnasium)
14. Tennis Courts
15. Falls Hall
16. Warlick Hall
17. Wilson-East Hall
18. Wilson-West Hall
19. Payne Physical Education Building
20. Fitness Center/Swimming Pool
21. Men's Baseball
22. Vaughn Track
23. Women's Softball
24. Soccer Field
25. Prince Engineering Center (PEC)
26. Herold Science Hall (HSH)
27. Davisson American Heritage (DAH)
28. Gaylord Hall (GH)

29. Vose Hall
30. Benson Administration Building
31. Cogswell-Alexander Hall (CAH)
32. Mabee Communications
33. Garvey Center for Liberal Arts (LA)
34. Hardeman Auditorium
35. Judd Theatre
36. McIntosh Conservatory/  
The Recital Hall & Art Gallery
37. Harvey Business Center (HBC)
38. Heritage Heights Apartments  
(Four Complexes)
39. Nowlin Center
40. Enterprise Square, USA

## PHONES

Courtesy Phones are located in the lobbies of Allison Biblical Studies, The Garvey Center, & Gaylord University Center. For Campus Security dial: 5500

## OKLAHOMA CHRISTIAN UNIVERSITY

2501 E. Memorial Road  
Box 11000  
Oklahoma City, OK 73136-1100  
(405)425-5000