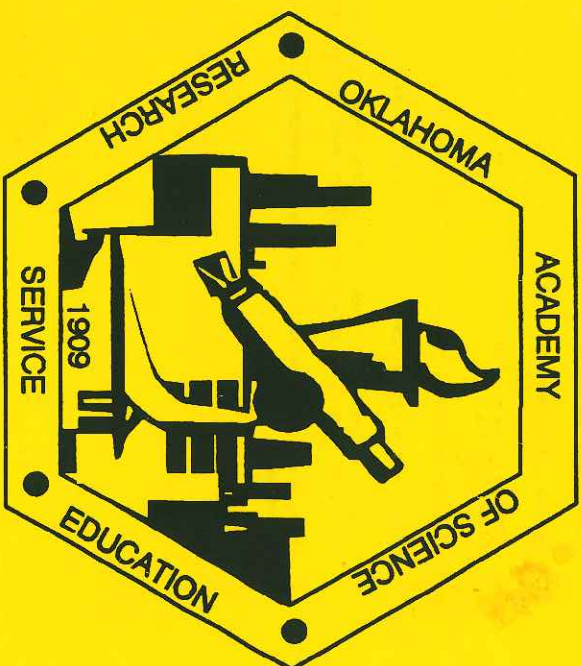


Official Program
of the
81st Annual Meeting

**OKLAHOMA
ACADEMY OF SCIENCE**

Affiliated with the
American Association for the Advancement of Science



November 12 and 13 1992
Cameron University
Lawton, Oklahoma

OKLAHOMA ACADEMY OF SCIENCE
OFFICE of EXECUTIVE SECRETARY - TREASURER
P.O. BOX 701915 TULSA, OK 740170-1915

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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 departments of science; and to investigate and make known the material, educational and other resources of the State.

From Article I, Section 2 of the Constitution

Activities of the Oklahoma Academy of Science

1. Publication of the Proceedings and Annals of the Oklahoma Academy of Science and Transactions of the Oklahoma Junior Academy of Science.
2. Host annual fall meeting for presentation of scientific papers.
3. Sponsor symposia on selected topics of vital interest to the State.
4. Arrange spring and fall field meetings in various State floral and faunal habitats.
5. Coordinate the Junior Academy of Science activities.
6. Supervise Collegiate Academy of Science activities.
7. Provide research grant funds for outstanding research proposals submitted by State secondary and undergraduate college students.
8. Provide science consultation services to governmental and private agencies.

81st ANNUAL TECHNICAL MEETING
OKLAHOMA ACADEMY OF SCIENCE
CAMERON UNIVERSITY

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FUTURE ANNUAL FALL MEETINGS

13 November 1993

East Central University, Ada

81ST ANNUAL FALL TECHNICAL MEETING
Oklahoma Academy of Science
Program Summary

Thursday, 12 November 1992

6:30 p.m.

Executive Council Dinner and Meeting. Will Rogers Dining Room

Friday, 13 November 1992

7:30 a.m. - 3 p.m.

Registration for Technical Meeting, Shepler Mezzanine

7:30 a.m. - 11 a.m.

Registration for Junior Academy Research Workshop, Cameron Theater

8 a.m. - 9 a.m.

Committee Meetings

9 a.m. - 11:15 a.m.

Concurrent Scientific Sessions

11:15 a.m. - 12 noon

OAS Annual Business Meeting, Cameron Theater
All OAS members are encouraged to attend.

12 noon - 1:15 p.m.

OAS Banquet, Shepler Mezzanine
Speaker: Dr. Hans Brisch, Chancellor, Oklahoma System of Higher Education
Presentation of 1992 OAS Meritorious Service to Science in Oklahoma Awards
Individual:
Organization:

1:30 p.m. - 5 p.m.

Concurrent Scientific Sessions

ACADEMY NAME BADGES

An OAS name badge, obtained by registering, is required for all individuals attending Academy workshops, meetings, and banquet. All presenters must register and wear badges.

MEETING ROOMS

The Oklahoma Junior Academy of Science Research workshop will be held in Cameron Theater. All other OAS sessions, including the Posters, will be held as indicated in the sectional program listings. The banquet will be in the Shepler Mezzanine. Any changes or special announcements will be posted in the Registration area.

GENERAL INFORMATION

Parking: Refer to the campus map in the back of this program for parking locations on campus. Parking is not reserved. First come, first parked.

Pre-Registration: Individuals who have pre-registered can obtain their registration packets at the Registration Desk. The registration desk will be located in the Shepler Hall Mezzanine.

On-site Registrations: On-site registration fees: OAS members - \$6.00; Guests - \$12.00; Students - \$4.00; Banquet (if tickets available) - \$11.00.

1992 and 1993 Dues are Payable: The OAS registration desk will accept dues payments. Professional Dues - \$25.00; Student Dues - \$5.00; Family Memberships - \$30.00; Sustaining Memberships - \$100.00; Library Memberships - \$27.50; Lifetime Memberships - \$300.00

Academy Business Meeting: The 81st Annual Business Meeting of the Oklahoma Academy of Science will be held in the Cameron Theater (see program summary). All OAS members are encouraged to attend.

Academy and Award Banquet: The annual banquet will be held at noon Friday in the Shepler Mezzanine. There will be a speaker and special awards presentation.

Guidelines for paper publication: Papers may be published in the Proceedings of the Oklahoma Academy of Science, subject to editorial policies (P.O.A.S., 69:77-79, 1989) and review of the Editorial Board. Manuscripts (an original and two copies) should be mailed to: Professor Franklin R. Leach, Editor, P.O.A.S., Dept. of Biochemistry, Oklahoma State University, Stillwater, OK 74078. Manuscripts received after December 15 will be accepted for publication the following year. OAS members can expect an average charge of \$30 to \$35 per page.

Executive Secretary-Treasurer: Inquiries concerning the OAS should be directed to the Executive Secretary-Treasurer, P.O. Box 701915, Tulsa, OK 74170-1915.

Memberships: Membership application forms will be available at the registration desk and/or by contacting the Executive Secretary-Treasurer at the above address. For your convenience, a membership form is included in this program.

Refreshments: Coffee and donuts will be served in the registration area in the Shepler Mezzanine from 8:00 to 10:30 a.m. and 2:30 to 3:30 p.m. for OAS technical meeting registrants. Refreshments for the OJAS participants will be available in the OJAS registration area in the Student Center Room 111.

SECTION A: BIOLOGICAL SCIENCES

South Shepler 403
Moderator: M.A.
Morning Session
Botany Subsection

- 9:00 Effects of Desiccation on Pine Seedling Water Status and Root Growth Potential. Stephen Hallgren, David Ferris, Memon Himer, Gezahagne Bushra and Scott Noble, OSU
- 9:15 Interesting Mushrooms and Fungi Found During Fall and Spring Field Meetings of the O.A.S. Ken Conway, OSU.
- 9:30 A Growth Inhibitor From Common Lambquarter. M.A.B. Malik and Cleovia Watson III, Langston University.
- 9:45 The Fruiting and Phenology of Laureaceae at High Elevations in Costa Rica. Lisa Bail, Southern Nazarene University (Collegiate Academy*).
- 10:00 Optimization of Paulownia, Intercropping Combinations in China, Jianping Jiang, Luguang Wu, and Tingzhi Liu, OSU.
- 10:15 Break
- 10:30 Peroxidase Regulation of Acer mono Seed Dormancy, Luguang Wu, OSU.
- 10:45 Nomenclature Problems in the Poaceae: The Use of *Bromus catharticus* Vahl Instead of *Bromus unioloides* (Willd), H.B.K. Ron Tyrl and James Estes, OSU.
- 11:00 Business Meeting - Section A Biological Sciences, South Shepler 402.
- 11:15 OAS Annual Meeting - Cameron Theater
- Afternoon Session
Botany Subsection
- 1:30 Flora of Oklahoma Project meeting. South Shepler 403

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OAS-35424/25

SECTION A: BIOLOGICAL SCIENCES

South Shepler 402
Moderator: M.A.
Morning Session
Zoology Subsection

- 9:00 Lost Tails of Mexican Lizards. Stanley Fox and Rubin Castro, OSU.
- 9:15 *Consolidated* The Use of Isolated Intestinal Enterocytes to Evaluate Drug Toxicity. Van Doan, J. Thomas Pents, Gina Hurt, and David Thompson, OU Health Sciences Center.
- 9:30 Calcium Channel Antagonist Drug Effects on Calcium Uptake Using the Isolated Enterocyte Model. Gina Hurt, Charles Jones, J. Thomas Pents.
- 9:45 BREAK
- 10:00 Is mate choice present in orange throat darters? Mark Pyron, OU.
- 10:15 Genetic Introgression in Pup Fish. Michael Childs, Anthony Echelle, and Thomas Dowling, OSU.
- 10:30 Fishery Research in Southwest Oklahoma. Larry Cofer, Dept. of Fish and Wildlife.
- 11:00 Business Meeting, Section A: South Shepler, 402.
- 11:15 OAS Annual Business Meeting, Cameron Theater.

SECTION A: BIOLOGICAL SCIENCES

Afternoon Session - South Shepler 402
Zoology Subsection

- 2:00 The Evolution of Sexual Dimorphism to Avoid Competition: Empirical Evidence Using *Drosophila*. J. Kelly McKay and Stanley Fox, OSU.
- 2:15 Sleeping Lizards: A Study of the Pre- and Post-mating Activity Patterns of Beaded Lizards (*Heloderma horridum*) at the Tulsa Zoo. Carrie McDowell, OSU.
- 2:30 A Holocene Mammalian Fauna from Box Elder Creek, Caddo County, Oklahoma. Kent Smith, OU.
- 2:45 Study of Complete Tertiary Camel Skull. Henry Kirkland and Julian Hiliard, SWOSU.
- 3:00 Influence of sex, and age on use of space and social behavior in the collared lizard, *Crotaphytus collaris*, Troy Baird and Mark Areel, UCO.

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OAS-35424/25

SECTION B: GEOLOGY
SOUTH SHEPHERD 223
MORNING SESSION (*Collegiate Academy): MODERATOR: Vernon Scott, OSU

- 9:00 Well Head Protection (Delineation).
*Wesley P. Hill, Phillips U.
- 9:15 Characterization of Temperature and Ground Water Quality in a Shallow Unconfined Aquifer.
*Robert L. Knighten, OSU.
- 9:30 The Use of Remote Sensing and GIS for the Development of a Water Resources Management Plan.
*Richard Shields, OSU.
- 9:45 Transport of Agricultural Chemicals in an Alluvial Terrace Aquifer.
*Shelle Van Alstine, OSU.
- 10:00 Break. Visit Exhibits.
- 10:30 Conodont Bifacies and Eustatic Events in the Admire Group, of Kansas.
*Bradley W. Vann, OSU.
- 10:45 (Title to be announced)
*James Rothgeb, OSU.
- 11:00 Section Business Meeting. Election of Vice-chair.
- 11:15 OAS Annual Business Meeting, Cameron Theater
- 12:00 OAS Banquet, Shepler Mezzanine
- AFTERNOON SESSION: MODERATOR: Vernon Scott, OSU
- 1:15 Glacial-Eustatic Sea-level Curve for the Latest Carboniferous-Earliest Permian.
Darwin Boardman, OSU.
- 1:30 Justification for Teaching "Hypothetical" Geo-cycles in Earth Science Courses.
Vernon P. Scott, OSU.
- 1:45 Encouraging Field Activities for Oklahoma Earth Science Students.
Lyman O. Williams, Phillips U.
- 2:00 Refractory Granite-Headquarters Granite Relationships.
J.P. Hogan, M.C. Gilbert, OU
- 2:15 Intrusive Style of A-type Sheet Granite in the Wichita Mountains.
M. Charles Gilbert, J.P. Hogan, OU

SECTION C: PHYSICAL SCIENCES
SOUTH SHEPHERD ROOM 322
MORNING SESSION A: MODERATOR: JAMES P. WICSTEDT, OSU

- 9:00 Transition metal dihydroxide and derivative complexes: an undergraduate research experience.
Dale A. Williams, St. Cloud St. Univ.
- 9:15 Fluorescent behavior of quinaldin-8-ol-5-sulfonic acid in amino-alkylate sol-gel systems.
Diane Archibut and E.T. Knobbe, OSU.
- 9:30 Photochemical ozone production in oxygen at 248nm.
John A. Guthrie, Xuan X. Wang, and Leon J. Radziemski, UCO.
- 9:45 Break
- 10:00 Study of the structure and thermal properties of acrylic copolymers.
Lisa Phegley and Robert White, CU and OU.
- 10:15 Reactions of 1,4-bisdiarobutane with acyclic ketones.
Karen Hall and Terrill D. Smith, UCO.
- 10:30 Preparation of potential antiviral compounds.
Daniel Bolton and Terrill D. Smith, UCO.
- 10:45 Isolation of cyclic peptides from *Halosquilla patella*.
Jeffery Lavender and Fritz Schmidt, CU and OU.
- SECTION C: PHYSICAL SCIENCES
MORNING SESSION B: MODERATOR: BAHADDIN JASSEMMEJAD, UCO
SOUTH SHEPHERD ROOM 222
- 9:00 Stabilization of associated silicon trimers by He.
David L. Martin, UCO.
- 9:15 1-d non-Newtonian fluid displacement in porous media.
Weldon J. Wilson, UCO.
- 9:30 General calculations of phase matching parameters for three frequencies interaction.
Jie Shi and Bahaddin Jassemmejad, UCO.
- 9:45 Break
- 10:00 PEUT studies w/QUAT and NDS.
Danielle Sanford and Sherill D. Christian, CU and OU.
- 10:15 Gramicidin A Channels: Effects of amino acid sequence change.
Anthony Jude and Roger E. Koeppe, CU and UA.

10:30

Determination of CO₂ hydrate grown with little methanol, H₂O-D₂O shift of CO₂, and possible methanol dangling -OH group.
Chris Abshire and Paul Devlin, CU and OSU.

10:45

Thermal diffusivity of oxide glasses.
Zare Doyle and George Dixon, OSU.

SECTION C: PHYSICAL SCIENCES
AFTERNOON SESSION: MODERATOR: JAMES P. WICKSTED, OSU
SOUTH SHEPHER ROOM 322

1:30

Computer molecular modeling, an asset to teaching.
E. Ann Malley and L. Mathias, CU and USM.

1:45

Products from AP chemistry by satellite. (Invited)
John I. Gaidar, Nancy S. Gettys, and Judd Wheeler, OSU.

2:05

AP physics by satellite and high school physics education in the United States. (Invited)
Peter O. Shull, OSU.

2:25

Break

2:40

J. J. Callahan and the Foucault pendulum.
James S. Meyer, St. Gregory College.

3:00

Photoluminescence studies of poly (p-phenylene sulfide) films.
James P. Wicksted and Zhongda Pan, OSU.

Section D: Social Science
South Shepherd Room 222

Afternoon Session: Moderator: Leider, OSU

1:30 Archeology in the Lee Creek Valley, Sequoyah County, OK
Lois E. Albert

1:45 The Resurgence of Comparative Social Welfare Studies
Thomas D. Watts

2:00 Elder Abuse: Developing Indicators at the County Level--Arkansas Perspective
Daniel Martin

2:15 Social Adaptation and Cultural Conflict--Chinese Students in Stillwater, OK
Jian Guan

2:30 Capitol Townsite Historic District, Guthrie, OK: A Case Study 1980-1986
Charles L. Leider

SECTION E: SCIENCE EDUCATION
SOUTH SHEPHER / 406

MORNING SESSION: MODERATOR: DAVID LOLLIS, MIDWEST CITY HIGH/RS

9:00

Panel discussion of the implementation of outcome based education in secondary science. Moderator, David Lollis
Panel members: Ed Cusato and Lorraine Minto of Geronimo High and Joe Ferguson of Wetumka High School.

9:45

How technology can be used in the implementation of OBE.
Joe Ferguson, Wetumka High School.

10:00

Translating the genetic code. Terry Cluck, ECU.

10:15

How state science objectives correlate with the ACT test.
Joe Ferguson, Wetumka High School.

10:30

New applications of the updated Scantron grading machine combining essays, etc. with objective questions. David Lollis, Midwest City High/RS.

10:45

Business meeting of Section E

SECTION G: FISH AND WILDLIFE CONSERVATION

SOUTH SHEPHER: ROOM 302

MORNING SESSION: MODERATOR: BRENDA S. CLARK, SEOSU

- 8:30 Status of the speckled chub in the Arkansas River drainage. Geoff R. Luttrell, Tony A. Echelle, and Alexander V. Zale, OSU Coop Unit.
- 8:45 Migrating shorebird habitat use of burned marshes in south-central Kansas. Kelli L. Stone and David M. Leslie, Jr., OSU Coop Unit.
- 9:00 Foraging activity of Ozark big-eared bats during the post-maternity season. Traci A. Wethington and David M. Leslie, Jr., OSU Coop Unit.
- 9:15 Compatibility of selenite crystal digging and breeding ecology of least terns at Salt Plains National Wildlife Refuge. Russell Benes Utych and David M. Leslie, Jr., OSU Coop Unit.
- 9:30 Contrast of two methods used to census American avocets, least terns, and snowy plovers. Sara H. Schweitzer and David M. Leslie, Jr., OSU Coop Unit.
- 9:45 Coffee Break
- 10:00 Seasonal variation in selected immunological parameters of *Silmodon hispidus*. Randy L. Davis and Robert L. Lochmiller, Department of Zoology, OSU.
- 10:15 Use of mesocosms to monitor mammalian immunotoxicity. Tim Probst and Robert L. Lochmiller, Department of Zoology, OSU.
- 10:30 Mountain plover breeding activity in cultivated fields. John S. Shackford, Oklahoma City.
- 10:45 Tolerance of cotton rats to various bacterial lipopolysaccharides. Jing-Ren Zhang and Robert L. Lochmiller, Department of Zoology, OSU.
- 11:00 Section G Business Meeting
- 11:15 OAS Annual Business Meeting
- 12:00 OAS Banquet

SECTION G: FISH AND WILDLIFE CONSERVATION

SOUTH SHEPHER: ROOM 302

AFTERNOON SESSION: MODERATOR: KEITH THOMAS, ODMC

- 1:15 Reproduction and fawn survival in an overpopulated white-tailed deer herd in northeastern Oklahoma. Michael G. Sams, Robert L. Lochmiller, David M. Leslie, Jr., and Charles W. Qualls, Jr., Department of Zoology, OSU.
- 1:30 Nutritional quality of selected cottontail rabbit (*Sylvilagus floridanus*) foods. David G. Peitz, David M. Leslie, Jr., David M. Engel, and Robert L. Lochmiller, Department of Zoology, OSU.
- 1:45 Selected measures of bobwhite quail immune function. Brad C. Dabbert and Robert L. Lochmiller, Department of Zoology, OSU.
- 2:00 An assessment of striped bass habitat in Robert S. Kerr Reservoir. Michael L. Wilkerson and William L. Fisher, OSU Coop Unit.
- 2:15 Status of the interior least tern on the Arkansas River. Gordon Keith Wood and David M. Leslie, Jr., OSU Coop Unit.
- 2:30 Coffee Break
- 2:45 An assessment of great blue heron rookeries in Oklahoma. Bruce A. Corley, William L. Fisher, and David M. Leslie, Jr., OSU Coop Unit.
- 3:00 Proposed study: effect of piscivorous birds on Oklahoma's reservoir and aquacultural fishes. Robert L. Simmons, Alexander V. Zale, and David M. Leslie, Jr., OSU Coop Unit.
- 3:15 Community structure of grassland small mammals in southeastern Oklahoma. Byron K. Clark, Brenda S. Clark, Todd R. Homending, and Walter E. Munsterman, Department of Biological Sciences, SROSU.
- 3:30 Abundances and population structures of stream-dwelling flathead catfish. Roger P. Lemmons, Loren G. Hill, and Aaron Milligan, Department of Zoology, OU.
- 3:45 "Harsh" environments and fish populations in northwestern Oklahoma. Jimmie Pigg, Oklahoma State Department of Health.
- 4:00 Protection of Oklahoma's Natural Areas: Lessons from other states. Melissa Nagel, Oklahoma Chapter of The Nature Conservancy.

SECTION H: MICROBIOLOGY
SOUTH SHEPLER, ROOM 202

MORNING SESSION I: MODERATOR: Dr. Moses Vijayakumar, OSU

- 9.00 Extracellular proteinase (erythrogenic toxin B) is not essential for viability of *Streptococcus pyogenes*. Michael S. Chaussee and Joseph J. Ferretti, OUHSC.
- 9.15 Molecular analysis of the unique target site for the insertion of the conjugative transposon, Tn5252, in pneumococci. Sahn Ayalow and Moses Vijayakumar, OSU.
- 9.30 Molecular biology of the *Enterococcus faecalis* activator protein. Mary C. Booth and Michael Gilmore, OUHSC.
- 9.45 An activity gel assay for DNA metabolic enzymes. Sanjay K. Shukla and David McCarthy, OU.
- 10.00 Coffee break.
- 10.15 Diurnal cycling of recA in marine environments. Anthony Ferrante and Robert V. Miller, OSU.
- 10.30 Effects of ultraviolet radiation on immunity within mouse skin. Kim Burnham, Ty Voss, and Stephanie Pickard, OSU.
- 10.45 Delayed hypersensitivity response to eluted antigens of *Pneumocystis carinii*. Sujatha P. Paul and Don C. Graves, OUHSC.
- 11.00 Molecular characterization of the enterococcal cytolytic toxin. Charles Bogie and Michael Gilmore, OUHSC.
- 11.15 Section H Business meeting, Election of Officers.
- 11.30 OAS Business Meeting, Cameron Theater

SECTION H: MICROBIOLOGY
SOUTH SHEPLER, ROOM 314

MORNING SESSION II: MODERATOR: Dr. Michael Gilmore

- 9.00 Proteolytic activation of the alpha toxin produced by *Clostridium septicum*. Jimmy D. Ballard, Rodney K.

Tweten, and Jami L. Cody, OUHSC.

- 9.15 Directed mutagenesis of the Mn-stabilizing protein of the photosystem II reaction center complex. Robert Burnap, OSU.
- 9.30 The role of glucan-binding proteins in *Streptococcus mitis* virulence. Jeffrey A. Barnes and Joseph J. Ferretti, OUHSC.
- 9.45 Effect of differentiation-inducing agents on polio virus infection of human erythroblastoid cells. Patti A. Benton and Richard E. Lloyd, OUHSC.
- 10.00 Coffee break
- 10.15 Molecular epidemiology of ocular infection derived isolates in *Enterococcus faecalis*. Laura Williams, Bradley D. Jett, and Michael S. Gilmore, OUHSC.
- 10.30 PCR for detection of high-level gentamicin resistance among clinical isolates of *Enterococcus faecalis*. Keeta S. Gilmore, Mark M. Huxley, and Thomas Verville, Veterans Administration Hospital, Oklahoma City.
- 10.45 Incubation chambers for the study of matrix potential and temperature effects on fungistasis in heated soils. Alex Filonov, OSU.
- 11.15 Section H Business meeting, Election of Officers. Room 202, South Shepler.
- 11.30 OAS Business Meeting, Cameron Theater

SECTION H: MICROBIOLOGY
SOUTH SHEPLER, ROOM 202

AFTERNOON SESSION I: MODERATOR: Dr. Robert Miller, OSU

- 1.15 Factors affecting growth and sporulation of *Actinoplanes* spp. N.I. Khan, Alex M. Filonov, and L. L. Singleton, OSU.
- 1.30 Characterization of strains of *Actinoplanes* spp. that are potential biocontrol agents. F. Chen, L. L. Singleton, and Alex B. Filonov, OSU.

- 1.45 Persistent infection of human erythroblastoid cells by poliovirus. Michael L. Bovee and Richard E. Lloyd, OUHSC.
- 2.00 Break
- 2.15 Synthesis and dynamics of F-pilin as a membrane and filament protein in *Escherichia coli* K-12. William D. Falva and Philip M. Silverman, OU/OMRF.
- 2.30 Are the regulatory genes *tfpR* and *tfds* the same? Udayakumar Matrubutham and Alan R. Harker, OSU.

SECTION H: MICROBIOLOGY SOUTH SHEPLER, ROOM 314

AFTERNOON SESSION II: MODERATOR: Dr. Moses Vijayakumar, OSU

- 1.15 Molecular analysis of streptococcal A-FR22, a hemolytic from *Streptococcus pyogenes*. Wayne L. Hynes and Joseph J. Ferretti, OUHSC.
- 1.30 Cloning and analysis of human *Pneumocystis carinii*. Michelle K. Becker-Hapek and Don C. Graves, OUHSC.
- 1.45 Infectious cDNA clones of maize chlorotic mottle virus. Kay Scheets, OSU.
- 2.00 Break
- 2.15 Effect of suspended particulates on transduction in freshwater environments. Steven Ripp and Robert V. Miller, OSU
- 2.30 Localization of a transfer related region in the 47 kb streptococcal conjugative transposon, Tn3252. Surian Al-Khaldi and Moses Vijayakumar, OSU.

SECTION I: ENGINEERING SCIENCE SOUTH SHEPLER, ROOM 321 MORNING SESSION: MODERATOR: ASHARE AITALAY, OU

Due to circumstances beyond his control the section chair failed to get his program copy to the program editor by press time. The Section chairman will continue to assemble the program for Engineering Science in order to have multiple copies available to participants at the annual meeting in the room designated above.

He may still be able to mail copies to the presenters upon request directly to him. You may call the chairman, Dr. Ashare Aitalay at (405) 325-5911 or write to him at the Dept. Civil Engineering, 302 West Boyd, Norman OK 73019.

The editor deeply regrets this turn of events, but he felt it was necessary to take this course of action so the other members of OAS will get their programs in sufficient time to plan their arrival in Lawton.

SECTION J: BIOCHEMISTRY/BIOPHYSICS/MOLECULAR BIOLOGY

SOUTH SHEPLER: ROOM 214

MORNING SESSION: MODERATOR: CHARLES SANNY, COM-OSU

- 9:45 a.m. Coffee Break
- 10:15 a.m. The chloroplast genome in heat-bleaching *Euglena gracilis*. William Ortiz, Brandon A. Conkling, and Eric J. Thomas, OU.
- 10:30 a.m. Site-directed Mutagenic Analysis of the Somatic 5S Ribosomal RNA. Monty A. Porter, James F. Smith, and Jay S. Hanes, OU Health Sciences Center, Department of Biochemistry and Molecular Biology AND OCU.
- 10:45 a.m. Length and Distribution of Gene Conversation Tracts in Gap Repair of a Double-Strand Break. Melissa R. Arbuckle, Southern Nazarene University.
- 11:00 a.m. Section J Business Meeting
- 11:15 a.m. OAS Annual Meeting, Cameron Theater
- 12:00 noon - 1:15 p.m. OAS Banquet, Shepler Mezzanine

AFTERNOON SESSION: MODERATOR: CHARLES SANNY, COM-OSU

- 1:30 p.m. Application of RFLC Techniques to Tarantula Venom Fractionation. Scott McHam, John N. Millies, and George Odell, OSU AND OBU.
- 1:45 p.m. A Role for Citrate in Snake Venoms. George Odell, Susan Hudiburg, Charlotte Ourby, John Mills, and Scott McHam, Biochemistry and Physiological Sciences, OSU and Natural Sciences, OBU.
- 2:00 Analysis of Protein-protein Binding using HPIC. Charles G. Sanny, and Joseph A. Price, OSU College of Osteopathic Medicine.

SECTION K: ELECTRON MICROSCOPY

ROUTE SHEPLER, ROOM 203

MORNING SESSION: MODERATOR: PAUL RICHARDSON, OSU

9:00 A new approach to pollen sculpture terminology using image-analysis measurements of SEM micrographs. E.L. Vezey and J.J. Skvarla, OU.

9:15 Removal of "exine pepper" from thin sections of pollen grain walls. W.F. Chissee and J.J. Skvarla, OU.

9:30 Manufacture and care of diamond knives. Bernard Hess, MicroEngineering, Huntville, Texas.

10:00 Break

10:15 Development of a spray freezing apparatus for the rapid cryofixation of a fragile, unicellular alga. S.F. Fields, G.W. Strout, and S.D. Russell, OU. **Student Competition**

10:30 Behavior of lithophile trace elements and tin peraluminous granitic systems: an experimental study. J. Icenhower and D. London, OU. **Student Competition**

10:45 Mitochondria entrapped within the sperm nucleus of *Nicotiana glauca*. H.Yu and S. Russell, OU. **Student Competition**

11:00 OKSEM Business Meeting

11:15 OAS Annual Business Meeting

12:00 OAS Banquet

SECTION K: ELECTRON MICROSCOPY

ROUTE SHEPLER, ROOM 203

AFTERNOON SESSION: MODERATOR: BILL WEEK, OSU-COH

Announcement of Timpano Award Winner

1:25 Low voltage cryoSEM and high pressure freezing. Potential for seeing the molecular organization of the cell surface. Stanley L. Erlendson, University of Minnesota Medical School, Minneapolis.

2:30 Break

2:45 Cytoskeletal organization within the embryo sac before and after fertilization in *Nicotiana*. B. Huang and S.D. Russell, OU.

3:00 Pollen exine structure in Tribe Anthemideae (Asteraceae)--a quantitative comparison using computer-generated straight-line measurements. E.L. Vezey, J.J. Skvarla, L.E. Watson and J.R. Estes, OU.

3:15 Hexamethyldisilazane (HMDS) as a drying agent for pollen in scanning electron microscopy. W.F. Chissee, J.J. Skvarla, and E.L. Vezey, OU.

3:30 Stratiolziaceae pollen morphology and nature of thread-like associations. J.J. Skvarla, J.R. Rowley, W.F. Chissee and E.L. Vezey, OU.

3:45 3D EM: Digital graphics reconstruction of keratin densities in serially sectioned mitotic WISH cells. W.D. Week and D.A. Henderson, OSU-COH.

SECTION L: MATHEMATICS, COMPUTER SCIENCE AND STATISTICS

SOUTH SHEPLER ROOM 303

Morning Session Moderator: Anita M. Walker, ECU

8:45 *Mutual Embeddings in the Projective Plane*
Scott Randby, SEOSU

9:00 *A Lagrange Method for Subsurface Chemical Transport Modeling*
Shawn C. Wilson, ECU **Collegiate Academy**

9:15 *Ada and Object-Oriented Development*
William C. Massey, ECU **Collegiate Academy**

9:30 *Module Diagrams for Ada Tasks*
Martha A. Williams, ECU **Collegiate Academy**

9:45 *Introduction to Formal Programming Methods*
Neal A. Hale, ECU **Collegiate Academy**

10:00 Break

10:15 *Binary Search*
Bill K. Walker, ECU

10:30 *On Levine's Weak*-Continuity*
David A. Rose, ECU and Roy A. Minna

10:45 *An Examination of Subprogram Inviting in C++*
John G. McGrew, ECU

11:00 Mathematics, Computer Science and Statistics Section Meeting

Afternoon Session Moderator: Scott Randby, SEOSU

1:30 *Variant Records Instead of Pointers*
Jimmy Keil, ECU **Collegiate Academy**

1:45 *An Evaluation of the MINIMUP Computer Program: Advantages and Disadvantages*
John C. Knouse, ECU **Collegiate Academy**

2:00 *An Examination of Random Number Generation Techniques*
Paul A. Thiele, ECU **Collegiate Academy**

2:15 Break

2:30 *A Weaker Form of Paracompactness*
Ray Hamlett, ECU and Dragan Janković, ECU

2:45 *When is the Lattice of Closed Subsets of a Topological Space Algebraic?*
Dragan Janković, ECU

SECTION N: BIOMEDICAL SCIENCES
SOUTH SHEPLER, ROOM 209
MORNING SESSION: MODERATOR: LOREN MARTIN, OSU-COM

- 9:00 Update on environmental sampling for pathogenic free-living amebae.
Marsha J. Howard and David T. John, OSU-COM.
- 9:15 Mice as a model for experimental primary amebic meningoencephalitis.
David T. John and Marsha J. Howard, OSU-COM.
- 9:30 Calcium channel antagonist drug effects on calcium uptake using the isolated enterocyte model.
Gina M. Hurt, Charles W. Jones and J. Thomas Pento, OHSU.
- 9:45 Coffee Break
- 10:15 A comparison of Theraphosidae spider venom components.
Sherrie Dixon, Seguyah George Odell, Susan Hudiburg and Charlotte Ownby, OSU, John Hille and Scott McHam, OSU.
- 10:30 Comparative analyses of lipopolysaccharides from *Pseudomonas aeruginosa* strains with varying susceptibilities to anti-microbials.
Robert S. Conrad, OSU-COM.
- 10:45 Microsurgical efficiency comparison among HO:YAG, Nd:YAG, CO₂ laser and electromagnetic field focusing (EFF) system.
William S. Yamashita, Frank S. Letcher and J. Michael McGee, OUCHT.
- 11:00 Section Business Meeting and Election of Vice Chair for 1992-1993.
- 11:15 OAS Business Meeting, Cameron Theater
- 12:00 OAS Banquet, Shepler Merzanne
- AFTERNOON SESSION: MODERATOR: WILLIAM YAMASHITA, OUCHT
- 1:30 Transdermal iontophoresis of ephedrine.
Scott Gareis and Rob Lyon, Bishop Kelley, George Brenner and Steve Phillips, OSU-COM.
- 1:45 The use of isolated intestinal enterocytes to evaluate drug toxicity.
West Moore, J. Thomas Pento, Gina M. Hurt and David L. Thompson, OHSU.
- 2:00 Aerosol amphotericin in cystic fibrosis patients colonized with *Aspergillus*.
Christy D. Mayfield, ORU, John C. Kramer, Utica Square Medical Center. **Student Collegiate Competition**
- 2:15 Laparoscopic cholecystectomy--Initial experience.
J. Michael McGee, Mark A. Randel and Rocky M. Morgan, OUCHT.

SECTION M: ENVIRONMENTAL SCIENCE
SOUTH SHEPLER - ROOM 407
MORNING SESSION: MODERATOR: JERRY J. BLACK, BLACK & ASSOCIATES

- 9:30 Suitability of several fish species for in situ caging trials.
Larry K. Martin Jr. and Marsha C. Black, OSU.
- 9:45 Evaluation of soil parameters and ion exchange on hydrochemical patterns.
David A. Cates, Robert C. Knox, David A. Sabatini, and Jerry J. Black, OU.
- 10:00 Energy efficient residential landscape design.
Timothy J. Schmolli, OSU.
- 10:15 Break
- 10:30 Survey of various metals detected in oilfield wastes and petroleum reservoir brine.
Jerry J. Black, Black and Associates.
- 10:45 Subsurface irrigation of turf.
Timothy J. Schmolli, OSU.
- 11:00 Section business meeting, election of officers.
- AFTERNOON SESSION: MODERATOR: JERRY J. BLACK, BLACK & ASSOCIATES
- 1:30 Gel electrophoresis quantification of DNA damage in fish.
Renee C. Horning and Marsha C. Black, OSU.
- 1:45 Comparison of DNA integrity assays: Alkaline unwinding assay and agarose gel electrophoresis.
Corinne C. McMillen, Renee C. Horning, and Marsha C. Black, OSU.
- 2:00 An "instant" daphnia assay.
James T. Blankemeyer, Bradley K. Stringer, and Stephanie C. Foster, OSU.
- 2:15 Impacts of environmental changes on fish of Deep Fork River.
Jimmie Pigg, OSDH.
- 2:30 Break
- 2:45 Validation of chaw assay with fetus.
Bradley K. Stringer and James T. Blankemeyer, OSU.

RESEARCH WORKSHOP

FOR

SCIENCE TEACHERS AND HIGH SCHOOL STUDENTS (9-12)

NOVEMBER 13, 1992
CAMERON UNIVERSITY
UNIVERSITY THEATER
LAWTON, OKLAHOMA

SCHEDULE

7:30 a.m. - 8:00 a.m. Registration and Refreshment, Lobby of University Theater

8:00 a.m. - 8:15 a.m. Welcome, Jimmie Piggy, Director OJAS

8:15 a.m. - 9:00 a.m. Endangered Cave Bat Research, Dr. Everett Grigsby, Northeastern State University

9:15 a.m. - 10:10 a.m. Research in Engineering, Dr. David Ballow, School of Engineering O.U.

10:10 a.m. - 10:25 a.m. Break

10:25 a.m. - 11:10 a.m. Fishery Research in Oklahoma, Mr. Greg Summers, Okla. Fishery Research Laboratory.

11:10 a.m. - 11:25 a.m. OJAS Meeting with students and teachers. OJAS Director and officers.

11:25 a.m. - 1:45 p.m. Lunch on your own. There is a cafeteria on campus at student union and fast food outlets just off campus.

1:45 a.m. - 4:45 p.m. Students and teachers may attend any of the OAS paper session in the area below. Please check your program for titles of interest. There will be papers presented in the following areas.

- | | |
|---------------------------|----------------------------|
| A. Biological Sciences | G. Geography |
| B. Botany-Zoology | H. Wildlife Conservation |
| C. Geology | I. Microbiology |
| D. Physical Science | J. Engineering Science |
| E. Social Sciences | K. Biochemistry/Biophysics |
| F. Environmental Sciences | L. Electron Microscopy |
| | K. Computer science |

NOTES

NOTES

DESIGNATED HEADQUARTERS HOTEL
Howard Johnson's Motor Hotel
Interstate 44 and Gore Blvd.
Lawton, OK 73501
Rate: \$40.00 per night for 1-4 occupants.
Toll Free Reservation: 1-800-654-2000
Local Telephone (405) 353-0200

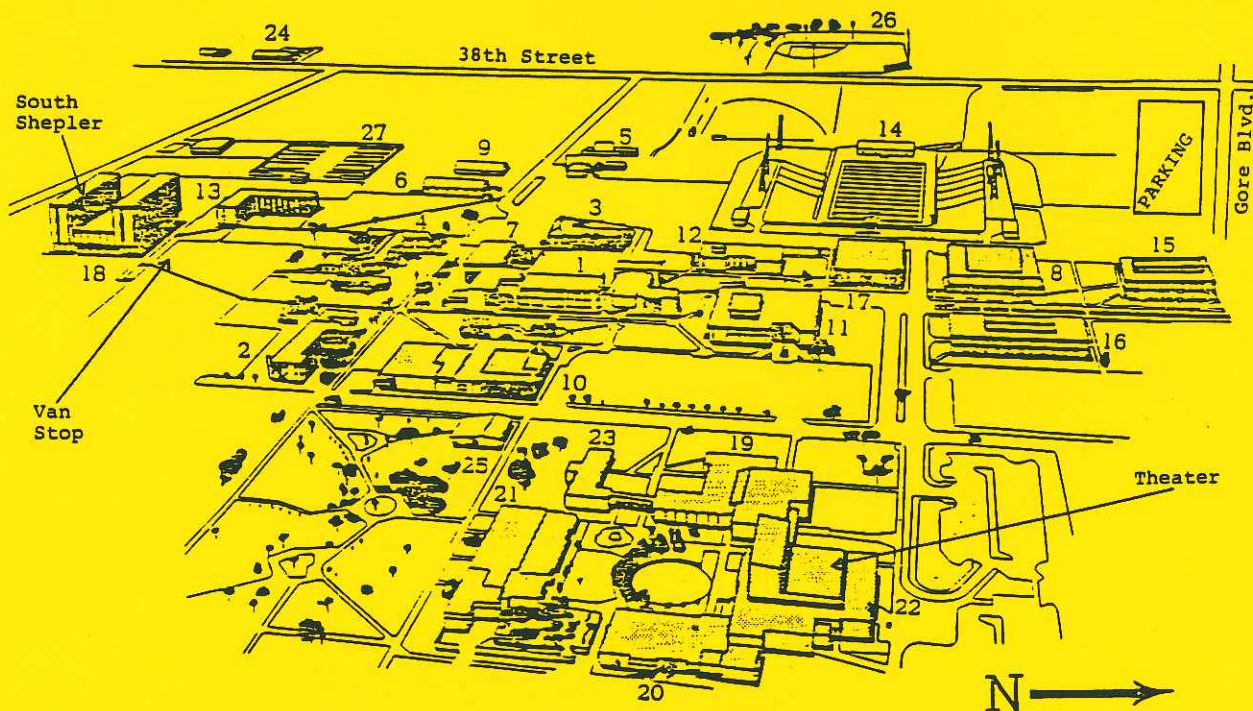
Directions from Interstate 44 are as follows: Exit west onto Gore Blvd.
Continue for several miles and take a left onto 38th Street. The next left should take you
into the stadium parking lot. Hospital shuttle busses will transport participants to their
destinations on campus: the Theater and Shepler Center. More shuttle busses will be
available (maximum of 4) during peak times, especially in the morning.

OKLAHOMA ACADEMY OF SCIENCE PRESIDENTS

| | | | |
|------|---------------------------|-----------|--|
| 1910 | H. L. Lane, OU | 1951 | H. W. Larsh, OU |
| 1911 | D. W. O'Brien, OK City | 1952 | V. B. Monnett, OAMC |
| 1912 | S. W. Reeves, OU | 1953 | S. P. Massie, LU |
| 1913 | C. W. Shannon, OU | 1954 | A. N. Murray, TU |
| 1914 | No meeting | 1955 | R. E. Olson, OU |
| 1915 | C. W. Shannon, OU | 1956 | A. M. Stebler, OAMC |
| 1916 | C. N. Gould, OU | 1957 | D. E. Howell, OAMC |
| 1917 | L. C. Relford, Iowa State | 1958 | G. J. Goodman, OU |
| 1918 | No meeting | 1959 | Elmer Lucas, OU |
| 1919 | No meeting | 1960 | P. E. Smith, OUMS |
| 1920 | M. M. Wickham, Norman | 1961 | E. M. Hodnett, OSU |
| 1921 | A. F. Reller, PU | 1962 | H. B. Barclay, TU |
| 1922 | J. B. Thoburn, OK City | 1963 | G. A. Moore, OSU |
| 1923 | R. O. Whitten, OAMC | 1964 | A. D. Buck, NOJC |
| 1924 | S. Weidman, OU | 1965 | J. E. Webster, OSU |
| 1925 | (Spring) C. E. Sanborn | 1966 | C. R. Williams, PU |
| 1926 | (Fall) H. L. Dodge, OU | 1967 | E. A. Reynolds, SWSC |
| 1927 | J. H. Cloud, OAMC | 1968 | L. V. Scott, OUHSC |
| 1928 | C. N. Gould, OU | 1969 | C. C. Carpenter, OU |
| 1929 | O. M. Smith, OAMC | 1970 | Paul Buck, TU |
| 1930 | A. Richards, OU | 1971 | W. A. Carter, ECSU |
| 1931 | Leroy Long, OK City | 1972 | C. J. Mankin, OU |
| 1932 | A. O. Weese, OU | 1973 | N. N. Durham, OSU |
| 1933 | Herbert Patterson, OAMC | 1974 | C. J. Mankin, OU |
| 1934 | J. E. Knowles, PU | 1975 | Barbara Shirley, TU |
| 1935 | F. G. Brooks, OCU | 1976 | G. W. Todd, OSU |
| 1936 | C. E. Decker, OU | 1977 | D. E. Kizer, Noble Foundation |
| 1937 | H. J. Harper, OAMC | 1978 | George Odell, OSU |
| 1938 | B. D. Barclay, TU | 1979 | Richard Couch, ORU |
| 1939 | C. M. Perry, OU | 1980 | Gary Wolgemott, SWSU |
| 1940 | H. D. Chase, TU | 1981 | Elroy Rice, OU |
| 1941 | G. L. Cross, OU | 1982 | Everett Grigsby, NSU |
| 1942 | R. W. Jones, OAMC | 1983 | Jack Sokatch, OUHSC |
| 1943 | H. I. Featherly, OAMC | 1984 | Mary Whitmore, OU |
| 1944 | O. F. Evans, OU | 1985 | Jeff Black, OBU |
| 1945 | V. G. Heller, OAMC | 1986 | Jerry Wilkin, OSU |
| 1946 | J. R. Nielsen, OU | 1987 | Manford K. Patterson, Noble Foundation |
| 1947 | O. C. Dermer, OAMC | | |
| 1948 | J. T. Self, OU | 1988 | Mary P. Carpenter, OU |
| 1949 | L. B. McLeod, TU | 1989-1990 | Kenneth E. Conway, OSU |
| 1950 | J. C. Shirley, PU | 1991-1992 | James K. McPherson, OSU |
| | Howard Taylor, OCU | 1993-1994 | James R. Estes, OU |

Cameron University

1. Nance-Bover Hall
2. South Hall
3. West Hall
4. Cameron Hall
5. Phys. Facilities/Security
6. Maintenance
7. Biology
8. Gymnasium
9. Engineer/Grounds Shop
10. Clarence E. Davis Student Union
11. Library
12. Physical Science
13. Smith Building
14. Cameron Stadium
15. Burch Hall
16. Howell Hall
17. Administration
18. Shepler Center
19. Music
20. Speech-Drama
21. Art
22. Theater
23. Haggard Hall
24. Agriculture Complex
25. Student Government Center
26. McCord Field
27. Tennis Complex



PROGRAM

ALL ACADEMY BANQUET

CAMERON UNIVERSITY
NOVEMBER 13, 1992

INVOCATION.....TBA

INTRODUCTIONS AND OPENING REMARKSJAMES K. McPHERSON

INVITED ADDRESS

OKLAHOMA HIGHER EDUCATION: OPENING DOORS OF SUCCESS
THROUGH SCIENCE AND MATHEMATICS

HANS BRISCH

CHANCELLOR, OKLAHOMA STATE SYSTEM OF HIGHER EDUCATION

AWARDS.....JAMES K. McPHERSON

INSTALLATION OF 1993-1994 OFFICERS

ANNOUNCEMENTS