

Official Program
of the
80th Annual Meeting

of the

OKLAHOMA
ACADEMY of SCIENCE

Affiliated with the
American Association for the Advancement of Science



OKLAHOMA ACADEMY OF SCIENCE
OFFICE of EXECUTIVE SECRETARY - TREASURER
Department of Biology, ORU Tulsa, OK 74171

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TULSA, OK
PERMIT NO. 539

November 7 and 8, 1991
Southeastern Oklahoma State University
Durant, Oklahoma

Official Program - \$1.00

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.

80th ANNUAL TECHNICAL MEETING
OKLAHOMA ACADEMY OF SCIENCE
SOUTHEASTERN OKLAHOMA STATE UNIVERSITY

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FUTURE ANNUAL FALL MEETINGS

13 November 1992 Cameron University, Lawton

80TH ANNUAL FALL TECHNICAL MEETING Oklahoma Academy of Science

Program Summary

Thursday, 7 November 1991

6:30 p.m.

Executive Council Dinner and Meeting. Quality Inn, 2121 West Main, Durant

Friday, 8 November 1991

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

Registration for Technical Meeting, Student Center, Ballroom
Registration for Junior Academy Research Workshop, Morrison Hall, Montgomery Auditorium

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, Fine Arts Little Theater
All OAS members are encouraged to attend.

12 noon - 1:15 p.m.

OAS Banquet, Student Center Ballroom
Speaker: Dr. Michael R. Waller, Former Research Director, AMOCO
Presentation of 1991 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 Morrison Hall, Montgomery Auditorium. All other OAS sessions, including the Posters, will be held as indicated in the sectional program listings. The banquet will be in the Student Center Ballroom. 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. More than adequate parking space is available on the west side of 7th Avenue and on the east side of 4th Avenue. 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 Student Center on University Blvd. between 3rd and 4th Avenues.

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

1991 and 1992 Dues are Payable: The OAS registration desk will accept dues payments. Professional Dues - \$15.00; Student Dues - \$5.00; Family Memberships - \$20.00; Sustaining Memberships - \$100.00; Library Memberships - \$17.50; Lifetime Memberships - \$300.00

Academy Business Meeting: The 80th Annual Business Meeting of the Oklahoma Academy of Science will be held in the Fine Arts Little 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 Student Center Ballroom. 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, Department of Biology, ORU, Tulsa, OK 74171.

Membership: 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 Student Center from 8:00 to 10:30 a.m. and 2:30 to 3:30 p.m. for OAS technical meeting registrants. Refreshments for the OAS participants will be available in the OAS registration area in Morrison Hall, Montgomery Auditorium.

Motels: The designated hotel for the OAS Technical Meeting is the Quality Inn. Rates are \$27.00 a night for one or two people in a room. For reservations call (405) 924-5432 and inform the desk you will be attending the OAS meeting at SOSU.

Several motels in the immediate vicinity of SOSU are:

Budget Inn (405) 920-0411
 Marlita Inn (405) 924-7676
 Capitol Motel (405) 924-1918
 Downtown Motel (405) 924-0788

When calling these motels for reservations, inform the desk you will be attending the OAS meeting at SOSU.

Assistance or Information: Look for individuals with OAS staff badges. Persons wearing these badges are members of the SOSU community and will assist you in any way they can.

Name Badge: Name badges, provided upon registration, must be worn by all individuals attending Academy Sectional Scientific Sessions, the business meeting and banquet. Without a registration name badge, you will be asked to leave. Should you lose your badge, please see about a replacement at the registration desk.

Official Program: Bring this program with you. Additional copies will be available at the registration desk for \$1.00.

1992 Spring Field Meeting: The 1992 Spring Field Meeting is scheduled for April 10-12 at a youth camp near Meers, OK, just north of the Wichita Mountains National Wildlife Refuge. Bob Ziegler, Cameron University (405) 581-2220, is in charge of arrangements for the meeting. Be certain to mark this date on your calendar and, should you have any questions, ideas, or suggestions, feel perfectly free to contact Bob.

No Smoking: Please, no smoking in any of the buildings on campus. Thank you.

SECTION A: BIOLOGICAL SCIENCES
 SUBSECTION: I BOTANY
 SCIENCE, ROOM 316
 MORNING SESSION: MODERATOR: ROBERT ZEIGLER, CAMERON

- | | |
|--------|--|
| 9:00 | Effect of concentration, application, timing, and hormone type on development of carrot. B. Russo and T. Abney, SEOSU.
Student Competition |
| 9:15 | Substrate specificity in bryophyte communities on logs in the North Carolina piedmont. S. McAlister, OSU. **Student Competition** |
| 9:30 | Southeastern Oklahoma Bottomland Forest Survey. L. Sorrells and B. Hoagland, Ok. Nat. Her. Inv. |
| 9:45 | Flora of North America, Oklahoma and Grasses. R. Thompson, ECU, J. Estes, OU. |
| 10:00 | Coffee Break |
| 10:15 | Nomenclature Problems in the Poaceae: The use of <u>Sorghastrum nutans</u> . R. Tyril, OSU, J. Estes, OU. |
| 10:30 | Russian wheat aphid (<u>Diuraphis noxia</u> Mordvilko) effects of chlorophyll fluorescence in resistant and susceptible hard red winter wheat. K. Jobst, J. Burd, and G. Todd, OSU. |
| 10:45 | The interactions of Mycorrhizae, <u>Telodermma harzianum</u> and <u>Pseudomonas cepacia</u> on sorghum. K. McNamara and K. Conway, OSU. |
| Poster | Biological Control Research. K. Conway, OSU. |
| 11:00 | Biological Section Business Meeting, Science 317 |
| 11:15 | OAS Annual Business Meeting, Fine Arts - Little Theater |
| 12:00 | OAS Banquet, Student Center Ballroom |
- SECTION A: BIOLOGICAL SCIENCES
 SUBSECTION: II BOTANY
 SCIENCE, ROOM 316
 MORNING SESSION: MODERATOR: JOE ANDERSON, NSU
- | | |
|------|--|
| 1:30 | Spatial variability and species richness following windstorm disturbance in two Minnesota forests. M. Palmer, D. Zhang, and S. McAlister, OSU. |
| 1:45 | Taxonomic relationships in <u>Cuscuta</u> : <u>C. attenuata</u> and its relatives. R. Tyril, OSU, L. Prather, UT. |
| 2:00 | Partial characterization of a factor stimulatory to <u>Bradyrhizobium japonicum</u> in broth culture. M. Mallick, IJ. |
| 2:15 | Coffee Break |
| 2:30 | The Flora of Oklahoma Project. |

SECTION A: BIOLOGICAL SCIENCES
 SUBSECTION: II ZOOLOGY
 SCIENCE, ROOM 317
 MORNING SESSION: MODERATOR: CRAIG CLIFFORD, NSU

- 9:00 Comparison of three substances as elicitors of peritoneal macrophages in cotton rat. T. Probst, R. Lochmiller, and S. McMurry, OSU.
- 9:15 The influence of aspirin, ethanol, and cysteine on the viability of isolated rat enterocytes. D. Thompson and J. Pento, OUHSC.
- 9:30 Influence of dietary protein on selected measures of immunocompetence in Sigmodon hispidus. M. Vestey, R. Lochmiller, and S. McMurry, OSU.
- 9:45 Food habits of Peromyscus and Reithrodontomys in the Wichita Mountains Wildlife Refuge. A. Stancampiano and W. Caire, UCO.
- 10:00 Coffee Break
- 10:15 Current status and habitat requirements of the Ouachita Rock Pocketbook Mussel. C. Vaughn and M. Pyron, Ok. Biol. Sur.
- 10:30 Population trends of gray bat (Myotis grisescens) maternity colonies in Northeastern Oklahoma. K. Martin, Rogers State, E. Grigsby, NSU, W. Puckette, Colcord HS.
- 10:45 Influence of cotton rat genotype on various immunological traits. S. Schweitzer and R. Lochmiller, OSU.
- 11:00 Biological Section Business Meeting, Science 317
- 11:15 OAS Annual Business Meeting, Fine Arts - Little Theater
- 12:00 OAS Banquet, Student Center Ballroom

SECTION A: BIOLOGICAL SCIENCES
 SUBSECTION: ZOOLOGY
 SCIENCE, ROOM 317
 AFTERNOON SESSION: MODERATOR: TBA

- 1:30 Use of lectins for subtyping lymphocytes in Sigmodon hispidus. R. Davis and R. Lochmiller, OSU.
- 1:45 The theoretical distribution of sightings within the home ranges of territorial and non-territorial lizards. K. McCoy and S. Fox, OSU.
- 2:00 The role of holistic and reductionistic approaches in ecological studies. D. Zhang, OSU.

- 2:15 Sexual selection in the Collared Lizard: Foreplay. S. Fox, OSU, K. McCoy, OSU, T. Baird, UCO.
- 2:30 The range and status of the Neosho madtom (Noturus placidus) in Oklahoma. G. Luttrell, A. Eschelle, and A. Zale, OSU.
- 2:45 Current status of the American burying beetle of Oklahoma. C. Creighton, OU.
- 3:00 Coffee Break
- 3:15 Changes in population dynamics of Palaeomonetes kadiakensis (Crustacea:Decapoda) 1982-1987. N. Cheper, ECU.
- 3:30 Preliminary and proposed studies of oocyte development in daily spawning Caribbean fishes. J. Peoples and T. Baird, UCO.
- 3:45 Phenotypic variability induced by outcrossing in house flies. T. Cluck, F. Plapp, and S. Johnston, ECU.
- 4:00 Changes in the ichthyofauna of the North Canadian River: An impacted Oklahoma river. J. Pigg, OS Dept. of Health.
- 4:15 Channel catfish nesting and survival of the young in farm ponds: Phase II. D. Noble, ECU.
- 4:30 Preliminary studies on hydrocarbons of selected Oklahoma waters. R. Kuehn, D. Berlin, and G. Ostrander, OSU.

SECTION B: GEOLOGICAL SCIENCES

SCIENCE: ROOM 115

THEME: RESOURCES AND ENVIRONMENTAL ISSUES
IN SOUTHEASTERN OKLAHOMA

MORNING SESSION: MODERATOR: Ken Johnson, Oklahoma Geological Survey

- 8:45 a.m. Geology and non-petroleum mineral resources of southeastern Oklahoma. K. S. Johnson, OK Geological Survey.
- 9:05 a.m. Petroleum resources of southeastern Oklahoma. J. A. Campbell, OK Geological Survey.
- 9:25 a.m. Water resources of southeastern Oklahoma. K. D. Peters, U.S. Geological Survey.
- 9:50 a.m. Coffee Break
- 10:00 a.m. Floods on the Red River and its tributaries Spring 1990. R. L. Tortorelli, U.S. Geological Survey.
- 10:40 a.m. The importance of mapping in southeastern Oklahoma. L. A. Hemmih, OK Geological Survey.
- 11:00 a.m. Section B: Geological Sciences Business Meeting.
- 11:15 a.m. OAS Annual Business Meeting. Fine Arts: Little Theater.
- 12:00 noon - 1:15 p.m. OAS Banquet, Student Union Ballroom.

SECTION C: PHYSICAL SCIENCES

ROOM 218D

MORNING SESSION: MODERATOR: Baba Jassemejad, UCO

- 9:00 a.m. Optical Absorption by C_2^{3+} Ions in Synthetic Spinel: $MgAl_2O_4:C_2^{3+}$. M. H. Hennessey, B. Jassemejad, UCO
- 9:15 a.m. Radiation Damping in the Mechanical Oscillator. D. S. Carlstone, UCO
- 9:30 a.m. Raman Spectroscopy Study of LiCAF and LISAF Crystals. P. A. Watson, C. E. Hasty, and J. P. Wicksted, OSU
- 9:45 a.m. Hamilton's Principal Function for Some Variable Mass Problems. J. Meyer, St. Gregory's College
- 10:00 a.m. Coffee Break
- 10:15 a.m. Degenerate Four-Wave Mixing in CdS Quantum Dots in Sol-Gel Glasses. C. Porter, UCO, and R. Reeves, OSU
- 10:30 a.m. The Interaction of Copper(II) with Heterocyclic 2-Thiones. E. R. Stracener, M. Higdon, and S. Hardy, SEOSU
- 10:45 a.m. A Study of Thermally Stimulated Current in Updoped and Fe-doped Bismuth Germanium Oxide. K. L. Chappell, UCO; J. J. Martin, and C. A. Hunt, OSU
- 11:00 a.m. Electromagnetic Levitation and Propulsion in the Geomagnetic Field of the Earth. W. J. Polson, SEOSU
- 11:15 a.m. OAS Annual Business Meeting
- 12:00 noon OAS Banquet

SECTION C: PHYSICAL SCIENCES

ROOM 218D

AFTERNOON SESSION: MODERATOR: Baba Jassemejad, UCO

- 1:30 p.m. A Classical Trajectory Study of Acetylene Dynamics on a Diamond(111) Surface. J. Petloski, L. Raff, and D. Thompson, OSU
- 1:45 p.m. Evaluation of a Slurry Nebulizer for Atomic Absorption. C. Stinson, R. Gray, and R. Fietkau, SEOSU
- 2:00 p.m. Chromospherically active binary stars. B. Taylor, OU. **Student Competition**

SECTION D: SOCIAL SCIENCE
SCIENCE ROOM 126
MORNING SESSION: MODERATOR: WILL FOCHT, OSU

9:00 A case study of the Thomas Berry Estate: Historic design landscape. Charles Leider, OSU.

9:20 State environmental program quality: A comparative political analysis. Will Focht, David Wright, and Scott Nelson, OSU.

9:40 Chaos theory and complex organization: Shifts of authority. David Camp, OSU.

10:00 Coffee Break

10:30 Section D: Social Science Business Meeting
Elect officers, chair and vice-chair for 1992.
Membership development

11:30 OAS Annual Business Meeting - Fine Arts - Little Theater

12:00 OAS Banquet - Student Union Ballroom

SECTION E: SCIENCE EDUCATION
SCIENCE: ROOM 329

MORNING SESSION: MODERATOR: DR. DAVID LOLLIS

9:00 a.m. The science club: Its uses, organization and benefits. David Lollis, Midwest City H.S.

9:15 a.m. Telling the world: tips on science fair display boards. Jeff L. Smith, Oklahoma City Public Schools.

9:30 a.m. Paleontology in the classroom: a unifying interdisciplinary theme. Becky Johnson, Doren Recker & Martin Worthington, OSU.

9:45 a.m. Testing for best test. Priva Shanmugamani (sponsored student paper - Pige), Alva H.S.

10:00 a.m. Coffee Break

10:15 a.m. Summer Science Academy:
1. Planning, organizing and supervising the grant. Anna Wilson, OCCC.
2. Organizing, scheduling and conducting field trip activities. Ron Scribner, OCCC.
3. Learning and practicing the scientific method using the physiograph and Spec. 20. Dennis Anderson, OCCC.
4. Using videotape recordings to enhance lab performance of students and teachers. John W. Perry, OCCC.

10:45 a.m. Holistic pedagogy: Concepts to questions--carcinogenesis. Mark Weber, ORU.

11:00 a.m. Science Education Section Business Meeting, Science 329

11:15 a.m. OAS Business Meeting, Fine Arts, Little Theater.

12:00 noon-1:15 p.m. OAS Banquet, Student Union, Ballroom

SECTION F: GEOGRAPHY

SCIENCE: ROOM 333

MORNING SESSION: MODERATOR: Tom Wike, OSU

- 9:00 a.m. Short-term factors associated with river recreation demand. Tom Wike, OSU.
- 9:15 a.m. The Oklahoma mesonetwork: A resource for scientists. S. Stadler, OSU; F. Brock, OU; K. Crawford, OU; G. Cuperus, OSU; C. Doewell, NSSU; R. Elliot, OSU; H. Johnson, OU.
- 9:30 a.m. The spatial distribution of manufacturing in eastern Oklahoma. C. Ziehr, NSU.
- 9:45 a.m. Vignetting for computer-generated maps. G. Plumb, OU
- 10:00 a.m. Oklahoma population trends: the 1990 census. S. Higley, OSU
- 10:15 a.m. Erosion related to major changes in agriculture. S. McIntyre, USDA-ARS; P. Wilhok, U. Iowa; P. King, USDA-ARS
- 10:30 a.m. The conservation reserve program and land-cover changes in the southern high plains. B. Baker, OSU.
- 10:45 a.m. The Asian newly industrializing countries: The success of export-oriented development. I. Ng, OSU
- POSTER The atlas of Oklahoma. Tom Wike, OSU
- 11:00 a.m. Section F Business Meeting
- 11:15 a.m. OAS Annual Business Meeting, Fine Arts, Little Theater
- 12:00 noon-1:15 p.m. OAS Banquet, Student Center, Ballroom
- AFTERNOON SESSION: MODERATOR: Tom Wike, OSU
- 1:30 p.m. Philmont Scout Ranch route network: An application of GIS technology for resource management. J. Gao, OSU.

SECTION G: WILDLIFE CONSERVATION

FINE ARTS - LITTLE THEATER

MORNING SESSION: MODERATOR: JAMES E. SCHOOLEY, NSU

- 9:00 Fecal nitrogen as a predictor of diet quality in West African Antelope. James R. Schutte, David M. Leslie, Jr., and Robert L. Lochmiller OSU COOP Unit.
- 9:15 Nesting characteristics of loggerhead sea turtles at the northern edge of their breeding range. Katherine DeGroot and James Shaw, OSU.
- 9:30 Use of stomach digesta to evaluate dietary amino acids in small rodents. Dave Peltz, Robert Lochmiller, and David Leslie, Jr., OSU.
- 9:45 Environmental variables affecting angler harvest of white crappie in an Oklahoma tailwater fishery. Kenneth E. Cunningham and Alexander V. Zale, OSU.
- 10:00 Coffee Break
- 10:15 - 11:00 "Work in progress" - A series of short informal presentations of research projects that are being proposed or have just begun.
- Brown trout introduction into the lower Mountain Fork River. Steven O'Donnell, ODWC.
- Survey of walleye genetics in Oklahoma reservoirs. Keith Thomas, ODWC.
- Private lands deer management in Oklahoma: A new concept. Mike Shaw, ODWC.
- Status of Florida largemouth bass in Oklahoma reservoirs. Rick Horton, ODWC.
- Shadathon 1991. Jeff Borruker, ODWC.
- Rainbow trout exploitation in the lower Mountain Fork River. Greg Summers, ODWC.
- 11:00 Section Business Meeting - Fine Arts - Little Theater
- 11:15 OAS Business Meeting - Fine Arts - Little Theater

SECTION G: WILDLIFE CONSERVATION
FINE ARTS - LITTLE THEATER
AFTERNOON SESSION: MODERATOR: BRANDA CLARK, SEOSU

- 1:15 Effect of in situ environmental contamination on lymphoproliferative response of adult cotton rats to in vitro mitogenic stimulation. Scott McMurry, Michelle Vestey, Charles Qualls, Jr., and Robert Lochmiller, OSU.
- 1:30 Hydropower at Kaw dam: Is it affecting striped bass spawning success? Marvin K. Shuttars and Alexander V. Zale, OSU.
- 1:45 The effects of dietary protein quality on body condition of bobwhite quail. Jon Boren, Robert Lochmiller, and David Leslie, Jr., OSU.
- 2:00 A comparison of the 1991 revised federal wetlands delineation manual with the 1989 version. Steve Henaley, U.S.F.W.S.
- 2:15 Relationship between maternal condition and fawn survival in an overpopulated deer herd. Michael Sams, Robert Lochmiller, David Leslie, Jr., and Charles Qualls, OSU.
- 2:30 Break
- 2:45 The vicuna: Opportunity for ecodevelopment in Ecuador. Andres Ledergerber and Stanley Fox, OSU.
- 3:00 Translocation of longnose darters (*Percina nasuta*) from Lee Creek to Black Fork Creek, Oklahoma. Steven L. O'Donnell and Gregory L. Summers, ODWC.
- 3:15 New records of rare and introduced fish in Oklahoma. Jimmie Pigg and Robert Gibbs, Oklahoma State Department of Health.
- 3:30 Management strategies for stream populations of smallmouth bass in eastern Oklahoma. William J. Stark and Alexander V. Zale, OSU Coop Unit.
- 3:45 The suitability of black-tailed prairie dog complexes in Cimarron county for reintroduction sites for black-footed ferrets. James Shaw, William McAbee, and Tracey Carter, OSU.
- 4:00 Habitat differences in female tilefish spawning frequency: An examination of three hypotheses. Troy Baird, UCO

SECTION H: MICROBIOLOGY
SCIENCE, ROOM 319
MORNING SESSION: MODERATOR: Dr. Richard Leu, Noble Foundation

- A.M.
- 9:00 - 9:15 Streptomycin-Resistance Genes From Plant Pathogenic Bacteria Are Homologous to STRA and STRB From Human Pathogens--G. W. Sundin and C. L. Bender, OSU.
- 9:15 - 9:30 Parasitism of Oospores of Pythium spp. By Strains Of Actinoplanes spp.--N. I. Khan, A. B. Flonow, and L. Singleton, OSU.
- 9:30 - 9:45 The Contribution To Virulence Of The PAD-Encoded Cytolysin of *Enterococcus faecalis*--J. Bradley and M. Gilmore, UOHSC.
- 9:45 - 10:00 Purification And Characterization Of The Lethal Toxin (Alpha-Toxin) Produced By *Clostridium septicum*--J. Ballard and R. Tweten, UOHSC.
- 10:00 - 10:30 Break. Coffee, Valt Exhibits
- 10:30 - 10:45 Detection Of Human P. carinii In Induced Sputum By PCR And Dot Blot--M. Becker-Hapak and D. Graves, UOHSC.
- 10:45 - 11:00 Fractionation And Analysis Of *Cryptococcus neoformans* Culture Filtrate Antigen--W. Elliott, K. Buchanan, and J. Murphy. UOHSC.
- 11:00 - 11:15 Section Business Meeting, Election Of Officers
- 11:30 - 12:00 OAS Business Meeting
Fine Arts: Little Theater

SECTION H: MICROBIOLOGY
SCIENCE, ROOM 319
AFTERNOON SESSION: MODERATOR: Dr. Richard Leu, Noble Foundation

- P.M.
- 1:15 - 1:30 Inhibition Of *Cryptococcus neoformans* By Murine Spleen Cells Stimulated With Anti-CD3--S. Muth and J. Murphy, UOHSC.
- 1:30 - 1:45 GM CSF Production By Human Large Granular Lymphocytes--S. Wong and J. Murphy, UOHSC.
- 1:45 - 2:00 The Expression And Function Of The Complement Receptor, Type 1 (CR1) On Human T Lymphocytes--D. Yaskin and F. Waxman, UOHSC.

2:00 - 2:15 Interleukin-2 and Interferon-gamma Synergize With Soluble Recognition Factor (SRF) Produced By Tumor Targets To Activate Macrophages For Killing The Same Tumor Targets--H. Jiang and R. Leu, The Samuel Roberts Noble Foundation.

2:15 - 2:30 Break

2:30 - 2:45 Macrophage Natural Cytotoxicity For TNF-Sensitive Tumor Targets Is Elicited By Soluble Recognition Factor (SRF) Produced Constitutively By The Targets--R. Leu and B. Shannon, The Samuel Roberts Noble Foundation.

2:45 - 3:00 Modulation of Macrophage FeR-Dependent Phagocytosis By Lipid A. Role of Interferon, TNF and IL-1--J. Kim and R. Leu, The Samuel Roberts Noble Foundation.

SECTION I: ENGINEERING SCIENCES
COMPUTER SCIENCE AND ELECTRONICS ROOM 313
MORNING SESSION: MODERATOR: Asmare Atalay UO

9:00 3-D testing and constitutive modeling of coal.
Der-Hao Chen, M. M. Zaman, and A. R. Kukret, UO.

9:15 Biokinetic studies of biodegradation of pentachlorophenol in activated sludge.
Duk-Son Choi and A. Atalay, UO.

9:30 Metal absorption and purification of acid mine water using fly ash.
Mohneeth Mohammed, A. Atalay, and B. Vieux, UO.

9:45 Estimating 2, 4-D biodegradation kinetic constants using activated sludge treatment.
S. Venkataramlah and A. Atalay, UO.

10:00 Coffee Break

10:15 Surfactant-enhanced in situ soil flushing.
Serah Kimball, OSU.

10:30 Bioremediation of aviation fuel contaminated soil.
S. Veluppeyayajula and A. Atalay, UO.

11:00 Section I: Engineering Science Business Meeting.

11:15 OAS Annual Business Meeting, Fine Arts: Little Theater

12:00 noon OAS Banquet Student Union, Ballroom

1:15

SECTION I: ENGINEERING SCIENCES
COMPUTER SCIENCE AND ELECTRONICS ROOM 313
AFTERNOON SESSION: MODERATOR: Asmare Atalay UO

1:30 Influence of molecular structures of rhodamine WT on sorptive transport in subsurface media.
Bor-dier Shiau, David Sabatini, and Jeffrey Harwell

1:45 Cosolvation effects on sorption of an ionogenic compound (RW7) with subsurface materials.
David Sabatini.

2:00 Dynamic response of jointed concrete pavements to moving aircraft.
Arumugam Alveppilai and Musharraf Zaman.

2:15 Design of integral abutment bridges.
Alan A. Soltani and Anant R. Kukret.

SECTION I: ENGINEERING SCIENCES
COMPUTER SCIENCE AND ELECTRONICS ROOM 313
AFTERNOON SESSION: MODERATOR: Asmare Alalay, OU

- 1:30 Influence of molecular structures of rhodamine WT on sorptive transport in subsurface media.
Bor-jier Shiau, David Sabatini, and Jeffrey Harwell
- 1:45 Selenium speciation and absorption in coal mine spoils. K. Koll and A. Alalay, OU.
- 2:00 Cosolvation effects on sorption of an ionogenic compound (RWT) with subsurface materials.
David Sabatini.
- 2:15 Radiochemical methodology for tracing microbial mobility through porous media. D. Weirick, M. J. McInerney, and A. Alalay, OU.
- 2:30 Dynamic response of jointed concrete pavements to moving aircraft.
Arumugam Alvapillai and Musharraf Zaman.
- 2:45 Design of integral abutment bridges.
Alan A. Soltani and Anant R. Kukret.
- 3:00 Application of differential quadrature method for vibration analysis of laminated plates.
J. Fares and A. R. Kukret
- 3:15 Influence of digital terrain resolution on watershed model hydrologic response.
Baxter E. Vieux
- 3:30 Nitrate contamination of wells in Oklahoma.
N. S. Farejalla, B. Vieux, L. Canter, R. Deyle.

SECTION J: BIOCHEMISTRY/BIOPHYSICS/MOLECULAR BIOLOGY

SCIENCE: ROOM 202
MORNING SESSION: MODERATOR: William Ortiz, OU

- 9:00 a.m. Expression of photosynthesis-related chloroplast genes in bleaching Euglena. W. Ortiz, L. Newman and C. A. Price, University of Oklahoma and Rutgers University (NJ).
- 9:15 a.m. Studies on recombinant human cellular transglutaminase and its Cys 277 to Ser mutant. S. A. Arnold, K. N. Lee, M. D. Maxwell, P. J. Birchbichler, H. A. Carter and M. K. Patterson, The Samuel Roberts Noble Foundation
- 9:30 a.m. Purification of factors involved in the activation of chalcone synthase (CHS) transcription in cell cultures of *Phaseolus vulgaris* (P.V.). L. M. Yu, R. A. Dixon and C. J. Lamb, The Samuel Roberts Noble Foundation, Plant Biology Division.
- 9:45 a.m. Coffee Break
- 10:00 a.m. Do endogenous levels of cinnamic acid modulate flux through the phenylpropanoid pathway in legumes? J. D. Orr, N. L. Palva, and R. A. Dixon, The Samuel Roberts Noble Foundation, Plant Biology Division.
- 10:15 a.m. Molecular cloning and expression of plant proteins containing thioesterase-like catalytic sites. B. S. Shorrosh and R. A. Dixon, The Samuel Roberts Noble Foundation, Plant Biology Division.
- 10:30 a.m. Effects of alfalfa phytoalexin medicarpin and related biosynthetic intermediates on phytopathogenic fungal mycelial growth. J. W. Blount, N. Palva and R. A. Dixon, The Samuel Roberts Noble Foundation.
- 10:45 a.m. HPLC separation and quantitation of isoenzymes. C. G. Sanny, College of Osteopathic Medicine of Oklahoma State University.
- 11:00 a.m. Section J Business Meeting, Science 202
- 11:15 a.m. OAS Annual Meeting, Fine Arts, Little Theater
- 12:00 noon - 1:15 p.m. OAS Banquet, Student Union, Ballroom.
- 2:30 p.m. Identification and characterization of clathrin light chains from developing pea (*Pisum sativum* L.) cotyledons. H. B. Lin, S. M. Harley and L. Beevers, OU.

SECTION J: BIOCHEMISTRY/BIOPHYSICS/MOLECULAR BIOLOGY

SCIENCE: ROOM 202

AFTERNOON SESSION: MODERATOR: William Ortiz, OU

- 1:30 p.m. Analysis of the accumulation of an attenuated strain of tobacco mosaic virus in *N. tabacum*. R. S. Nelson, M. Shintaku, and G. Li, The Samuel Roberts Noble Foundation, Plant Biology Division.
- 1:45 p.m. Effect of potato alkaloids on membrane potential of frog skin. R. A. Atherton and J. T. Blankemeyer, OSU.
- 2:00 p.m. Effect of potato alkaloids on membrane potential of *Xenopus* embryos. J. T. Blankemeyer, B. K. Stinger, and J. R. Rayburn, OSU
- 2:15 p.m. Genetic transformation of green bean callus via *Agrobacterium*-mediated DNA transfer. C. I. Franklin, T. N. Trieu, K. L. Wycoll, and R. S. Nelson, The Samuel Roberts Noble Foundation, Plant Biology Division.

SECTION K: ELECTRON MICROSCOPY

SCIENCE, ROOM 102

MORNING SESSION: MODERATOR: JOE WOOD, OUHSC

- 8:45 The art and facts of tunneling and force microscopies. Knute A. Fisher and Francis I. Proctor, University of California at San Francisco.
- 9:45 Coffee Break
- 10:00 Dupuytren's disease causes a modulation in expression of extra domain A and extra domain B fibronectin sequences. Nancy Halliday and J. J. Tomasek, OUHSC.
- 10:15 Three-dimensional ultrastructure of generative cell mitosis in the pollen tubes of *Nicotiana tabacum*. Hongshi Yu and S. D. Russell, OU. **Student Competition**
- 10:30 Norepinephrine sites in adrenal medullary cell. Joe G. Wood, OUHSC.
- 10:45 OKSEM Business Meeting
- 12:00 ALL ACADEMY BANQUET

SECTION K: ELECTRON MICROSCOPY

SCIENCE, ROOM 102

AFTERNOON SESSION: MODERATOR: JOE WOOD, OUHSC

- 2:00 ESEM: A revolutionary imaging technique. Alfred Pick, Plano, Texas.
- 2:45 Break
- 3:00 Cytoskeletal organization and modification during fertilization in *Nicotiana* and *Plumbago*. Bing-Quan Huang and S. D. Russell, OU.
- 3:15 Toluidine blue positive granules in mesenteric lymphatic endothelial cells of the baboon. Robert W. Ogilvie, L. E. DeBault, A. C. K. Chang, and F. B. Taylor, Jr., OUHSC.
- 3:30 The fibronexus in a case of malignant fibrous histiocytoma. Bill Meek, COM-OSU.

SECTION L: MATHEMATICS, COMPUTER SCIENCE, AND STATISTICS

MORNING SESSION: Computer Science and Electronics (ROOM 313)

MODERATOR: Anita M. Walker, ECU

- 9:00 A Loop.
Bill K. Walker, ECU.
- 9:15 Double Byte Characters.
C. M. Rowell, ECU **Student Competition**
- 9:30 Approximating Solutions of Linear Systems
W. L. Harris, ECU, and Kevin Wilson, ECU **Student Competition**
- 9:45 An Operating System Simulator.
M. Brooks, ECU, and M. K. Lewis, ECU **Student Competition**
- 10:00 Break.
- 10:15 A Different Binary Tree Algorithm.
J. S. Kerl, ECU **Student Competition**
- 10:30 Simple Assembler for Instructional Use.
M. A. George, ECU **Student Competition**
- 10:45 A General Computer System Simulation Environment
K. M. Hassan, OSU, and M. H. Samadzadeh, OSU.
- 11:00 Mathematics, Computer Science and Statistics Section Meeting.
- 11:30 OAS Annual Meeting--Fine Arts: Little Theater
- AFTERNOON SESSION: MODERATOR: Bill K. Walker, ECU
- 1:30 Object-Oriented Data Structure Animation.
S. K. Arra, OSU.
- 1:45 Number Theory Functions Over Integers.
D. Woods, UCO.
- 2:00 Embedding K(5) in 4-Connected Graphs.
S. Randy, SEOSU.
- 2:15 Break.
- 2:30 Compatible Extensions of Ideals.
R. Hamlett, ECU, and D. Jankovic, ECU.
- 2:45 A Comparison of Game Theory and Bayesian Decision Analysis
Applied to a Modified Colonel Blotto Game.
P. MacPherson, SEOSU

SECTION N: BIOMEDICAL SCIENCES

SCIENCE: ROOM 217

MORNING SESSION: MODERATOR: Loren G. Martin OSU-COM

- 9:00 a.m. Isolation of pathogenic free-living Amoebae from Oklahoma waters. M. J. Howard and D. T. John. OSU-College of Osteopathic Medicine (COM).
- 9:15 a.m. Sex steroid mediated changes in myocardial anoxic resistance. L. G. Martin, G. M. Brenner, K. L. Jarolim, M. W. Banachack, D. L. Coons, and A. K. Wolfe. OSU-COM.
- 9:30 a.m. Electromagnetic field focusing system--applications in surgery. W. Yamashita, J. M. McGee, A. Pathi and F. A. Clingan. OU College of Medicine-Tulsa.
- 9:45 a.m. Studies of opioid tolerance in amphibians. K. K. Kirkendall and C. Stevens, OSU-COM.
- 10:00 a.m. Coffee Break
- 10:15 a.m. Role of glycation in diabetic-induced osteopenia. S. W. Meyers and J. J. Tomasek. OUHSC.
- 10:30 a.m. Characterization of estrogen and progesterone receptors in uterine and adipose tissue of the sheep. J. Manes, S. E. Heck, J. S. Mayes, J. P. McCann, and G. H. Watson. OSU-COM.
- POSTER Water-soluble, boron containing polymers. S. White, D. Shipp, R. Taylor, D. Jeffcoat, and J. Wright. SOSU.
- POSTER Left-ventricular dysfunction--Additive effects of cadmium toxicity to ischemia. M. Mitchell, OSU-COM.
- POSTER Effects of cadmium on ischemic cardiac muscle. M. Mitchell, OSU-COM.
- 11:00 a.m. Section N Business Meeting, Science 217
- 11:15 a.m. OAS Annual Business Meeting, Fine Arts, Little Theater. All OAS members are encouraged to attend.
- 12:00 noon - 1:15 p.m. OAS Banquet, Student Center, Ballroom

SECTION Y: COLLEGIATE ACADEMY
SCIENCE, ROOM 329
AFTERNOON SESSION: MODERATOR: JOHN KORSTAD, ORU

- 1:30 Miocene Procarnelus of western Oklahoma. Julian G. Hilliard, SWOSU.
- 1:45 A survey of the flower moths (Noctuidae-Schinia) of Oklahoma. John D. Neely, ORU.
- 2:00 Determining the feeding habits of Tilapia aurea. Margarette L. Williams, ORU.
- 2:15 Preliminary comparison of the grey bat, Myotis grisescens in northeastern Oklahoma. David W. Smith, NSU.
- 2:30 Selection lines for the mutant allele hairy in Drosophila melanogaster. Jennifer T. Barsaloux, UCO.
- 3:00 Coffee Break
- 3:15 Variations in pH, volume, osmolality, sodium and calcium levels of the urine of hibernating Myotis velifer. Jennifer L. Shackelford, OCU.
- 3:30 Comparison of co-factor requirements for Iron reductase from E. coli Y1090. Darrel Peppers, ORU.
- 3:45 Comparison of co-factor requirements from Listeria monocytogenes Cheryl Kollin, ORU.
- 4:00 Potential effects of Red river chloride control on productivity in Lake Texoma. David Gade, OSU

RESEARCH WORKSHOP
FOR
SCIENCE TEACHERS AND HIGH SCHOOL STUDENTS (9-12)
NOVEMBER 8, 1991
SOUTHEASTERN OKLAHOMA STATE UNIVERSITY
MORRISON HALL, MONTGOMERY AUDITORIUM
DURANT, OKLAHOMA

SCHEDULE

- 7:30 a.m. - 8:00 a.m. Registration and Refreshment, Lobby of Morrison Hall.
- 8:00 a.m. - 8:15 a.m. Welcome. Jimmie Pigg, Director OJAS
- 8:15 a.m. - 9:00 a.m. How to Write Your OJAS Research Paper.
- 9:15 a.m. - 10:10 a.m. Dr. Ronald Tyrl, Botany Department, Oklahoma State University.
- 10:10 a.m. - 10:25 a.m. How to Use Statistics in Your OJAS Research Paper.
- 10:25 a.m. - 11:10 a.m. Dr. Mike Duggan, Mathematics Department, East Central University.
- 11:10 a.m. - 11:25 a.m. Break
- 11:25 a.m. - 1:45 p.m. Research in Stream Ecology.
- 1:45 a.m. - 4:45 p.m. Dr. Steven Golladay, University of Oklahoma Biological Station.
- 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 the student union and fast food outlets are just off-campus.
- 1:45 a.m. - 4:45 p.m. Students and teachers may attend any of the OJAS paper sessions in the area below. Please check your program for titles of interest. There will be papers given in the following areas:

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

OJAS OFFICERS

Travis Jackson
President OJAS

Stuart Tidball
Vice President OJAS

Angi Rhodes
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OKLAHOMA ACADEMY OF SCIENCE COMMITTEES 1991

1. GENERAL ARRANGEMENTS

Fall Technical Meeting, 1991
Junior Academy, 1991
Spring Field Meeting, 1992
Fall Field Meeting, 1992
Fall Technical Meeting, 1992

Connie Taylor, S.E.O.S.U.
Jimmie Pigg, Okla. Dept. Health
Robert Ziegler, Cameron
David Lollis, Midwest City Schools
Robert Ziegler, Cameron

2. Archives Committee

T. H. Milby, Chair
Richard Couch
L. Vernon Scott

8. Fund-Raising

Mary Carpenter, Chair
Mary Grula
David Ringer
Scott Russell

3. Awards Committee

Elroy Rice, Chair
Barbara Shirley
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9. Publications Committee

Franklin R. Leach, O.S.U.
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Mary Carpenter, Chair
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5. Membership Committee

James Estes, Chair
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11. Science Education

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6. Resolutions Committee

Steve Hallgren, Chair
Harold Nemminga
Elmer Brown

12. Long-Range Planning Committee

Everette Grigsby, Chair
Gary Wolgamott
Jeff Burkhardt
James McPherson

7. Necrology

Jerry Wilhm, Chair

13. Investment Committee

Kenneth Conway, Chair
Edward Nelson
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Glenn Todd

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Collegiate Academy Associate Director
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Fall Annual Technical Meeting
Coordinator

John Korstad, O.R.U.
Jimmie Pigg, State Dept. of Health
David W. Lollis, Midwest City Schools
Connie Taylor, S.E.O.S.U.

Section A: Biological Sciences

Chair:

Section B: Geology

Chair:

Section C: Physical Sciences

Chair:

Section D: Social Sciences

Chair:

Section E: Science Education

Chair:

Section F: Geography

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Section G: Wildlife Conservation

Chair:

Section H: Microbiology

Chair:

Section I: Engineering Sciences

Chair:

Section J: Biochemistry/Biophysics

Chair:

Section K: Electron Microscopy

Chair:

Section L: Mathematics, Computer Science, and Statistics:

Chair:

Section M: Environmental Sciences

Chair:

Section N: Biomedical Sciences

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Anita M. Walker, E.C.U.
George Hedrick, O.S.U.
Douglas Jester, O.W.R.B.
Loren G. Martin, C.O.M.-O.S.U.

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1910	H. L. Lane, OU	1951	H. W. Larsh, OU
1911	D. W. Ohern, 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. Whittenton, 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	C. D. Riggs, OU
1927	J. H. Cloud, OAMC	1968	E. A. Reynolds, SWSC
1928	C. N. Gould, OU	1969	L. V. Scott, OUHSC
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1930	A. Richards, OU	1971	Paul Buck, TU
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1937	B. D. Barclay, TU	1978	George Odell, OSU
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1939	H. D. Chase, TU	1980	Gary Wolgamott, SWSU
1940	G. L. Cross, OU	1981	Elroy Rice, OU
1941	R. W. Jones, OAMC	1982	Everett Grigsby, NEU
1942	H. I. Featherly, OAMC	1983	Jack Sokatch, OUHSC
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1945	J. R. Nielsen, OU	1986	Jerry Wilham, OSU
1946	O. C. Dermer, OAMC	1987	Marford K. Patterson, Noble Foundation
1947	J. T. Self, OU	1988	Mary P. Carpenter, OU
1948	L. S. McLeod, TU	1989-1990	Kenneth E. Conway, OSU
1949	J. C. Shirley, PU	1991-1993	James K. McPherson, OSU
1950	Howard Taylor, OCU		

