

1989

## 73rd Annual Meeting, 1989. Program

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# **PROGRAM**

## **Arkansas Academy of Science**

Seventy-third Annual Meeting

UNIVERSITY OF ARKANSAS AT LITTLE ROCK

Little Rock, Arkansas

Meeting concurrently with sessions of

The Collegiate Academy of Science

*Friday, 7 April*

SENIOR & COLLEGIATE ACADEMIES -- Registration

SENIOR ACADEMY -- Executive Board Meeting

SENIOR ACADEMY -- First General Business Meeting

SENIOR AND COLLEGIATE ACADEMIES: Papers [Concurrent Sessions]:

Biomedical I  
Botany  
Chemistry  
Computer Science, Track I  
Computer Science, Track II  
Environmental and Aquatic  
Microbiology and Immunology  
Vertebrate Zoology

SCIENCE EDUCATION COMMITTEE

SENIOR AND COLLEGIATE ACADEMIES -- Banquet

POST BANQUET SPEAKER -- Dr. Joycelyn Elders, Director  
Arkansas State Health Department

*Saturday, 8 April*

SENIOR AND COLLEGIATE ACADEMIES -- Registration

SENIOR AND COLLEGIATE ACADEMIES: Papers [Concurrent Sessions]:

Biomedical II  
Computer Science, Track I  
Computer Science, Track II  
Graduate Student Competition  
Physics, Geology & Science Education

SENIOR ACADEMY -- Second General Business Meeting

## SECTION PROGRAMS

[\*Undergraduate Student Competition; \*\*Graduate Student Competition]

### BIOMEDICAL I

Session Chairpersons: Dr. Cliff Orr and Dr. John Sorenson

**\*STRUCTURE, FUNCTION, AND PURIFICATION OF G-PROTEINS ASSOCIATED WITH ADRENERGIC SECOND MESSENGER SYSTEMS.**

Patric Anderson, John Exton, and Janet Atkinson, Dept. Molecular Physiology, Vanderbilt University, Nashville, TN and Dept. of Biology, Hendrix College, Conway, AR.

**\*BIOLOGICAL EFFECTS OF OXAZOLIDINES DERIVED FROM EPHEDRINE.**

D. Mark Wood, M. Mateen Akmal, and Richard B. Walker, Chemistry Dept. UAPB, Pine Bluff, AR.

**\*THE POTENTIAL FOR NONGLYCOLYTIC ENERGY PRODUCTION IN DIVING AND NONDIVING VERTEBRATES.**

Bryant Turbeville, Dennis Baeyens, W. Grady Smith, C. Bhuvaneshwaran, Dept. of Biology, UALR, Little Rock, AR and Dept. of Biochemistry, UAMS, Little Rock, AR.

**SUBUNIT AFFINITY OF HEMOGLOBIN: A DETERMINANT OF HEMOGLOBIN A2 LEVEL IN THALASSEMIA SYNDROMES.**

A. Mansouri, Dept. Medicine, LRVA Hospital and UAMS, Little Rock, AR.

**CHARACTERIZATION OF SECONDARY STRUCTURE IN HEN OVALBUMIN mRNA.**

Darren K. McGuire, Charles D. Liarakos, and Randall A. Kopper, Dept. of Chemistry, Hendrix College, Conway, AR.

**NEUROTRANSMITTER EFFLUX FROM THE SALAMANDER RETINA: EVIDENCE FOR HOMOEXCHANGE, BUT NOT HETEROEXCHANGE, OF GABA AND GLYCINE.**

Chris D. Melton, Hendrix College, Conway, AR and Jeanne M. Frederick, Samuel Wu, and Joe G. Hollyfield, Baylor College of Medicine, Houston, TX.

**METAL COFACTOR REPLACEMENT AND ACTIVITY OF ALKALINE PHOSPHATASE.**

Rhonda L. Primm and Randall A. Kopper, Dept. of Chemistry, Hendrix College, Conway, AR.

**PHOTOREACTIVATION OF THE EFFECT OF UV LIGHT ON GAMMA RAY INDUCED CHROMOSOME ABBERATION PRODUCTION IN G1 PHASE XENOPUS CELLS.**

Rebecca A. Rowe and H. Gaston Griggs, Dept. of Biology, John Brown University, Siloam Springs, AR.

**PHOTOREACTIVATION OF CHROMATID DELETIONS INDUCED BY UV-IRRADIATION OF G1 PHASE HAMSTER X *Xenopus* HYBRID CELLS.**

Joel E. Stagers and H. Gaston Griggs, Dept. of Biology, John Brown University, Siloam Springs, AR.

**\*\*DIGESTION OF PARTIALLY PURIFIED ALPHA 1 - ADRENERGIC RECEPTOR BY *Staphylococcus aureus* V-8 PROTEUS.**

R. E. McGehee, Jr., A. A. Nash, J. S. Norris and L. E. Cornett, Dept. of Physiology and Biophysics, UAMS, Little Rock, AR.

**THE EFFECTS OF SOLVENT POLARITY ON ENZYME ACTIVITY.**

Giovanni Chiechi and Randall A. Kopper, Dept. of Chemistry, Hendrix College, Conway, AR.

### BOTANY

Session Chairperson: Dr. Gary Tucker

**SEM ANALYSIS OF VARIOUS WHEY-DERIVED ADHESIVE RESINS.**

W. Bowen, T. Viswanathan, D. Prince, W. Coutts, G. Lindsey, and A. Toland, UALR, Little Rock, AR.

**FLORISTIC NOTES ON THE ARKANSAS CRUCIFERAE (BRASSICACEAE).**

Edwin B. Smith, Dept. of Botany and Microbiology, UAF, Fayetteville, AR.

**INDICATORS OF MINIMALLY DISTURBED PRAIRIES IN NORTHWEST ARKANSAS.**

Edward E. Dale, Jr., Dept. of Botany and Microbiology, UAF, Fayetteville, AR.

**BLACKLAND PRAIRIES OF SOUTHWESTERN ARKANSAS.**

Thomas L. Foti, Arkansas Natural Heritage Commission, Little Rock, AR.

**STATUS OF *Halesia diptera* ELLIS (STYRACACEAE) IN ARKANSAS.**

Raymond G. Erickson, Soil Conservation Service, Lewisville, AR.

**ALLELOPATHIC ACTIVITY IN RICE (*Oryza*) GERMPLASM.**

R. H. Dilday, P. Nastasi, and R. J. Smith, Jr. USDA/ARS Stuttgart, AR and Dept. of Agronomy, UAF, Fayetteville, AR.

**\*PRELIMINARY EVALUATION OF A DODDER ANTHRACNOSE FUNGUS FROM CHINA AS A MYCOHERBICIDE FOR DODDER CONTROL IN THE U.S.**

D. K. Cartwright and G. E. Templeton, Plant Pathology Dept., UAF, Fayetteville, AR.

**\*\**In vitro* CULTURE OF ARKANSAS RICE CULTIVARS.**

A. F. Mirlohi, F. H. Huang, J. M. Ali-Khayri, and L. F. Thompson, Depts. of Agronomy, and Horticulture and Forestry, UAF, Fayetteville, AR.

**\*\*FURTHER STUDIES ON POPULATIONS AND SUCCESSION OF PROTOSTELIDS.**

S. W. Miller and F. W. Spiegel, Dept. of Botany and Microbiology, UAF, Fayetteville, AR.

**A MODIFIED VACUUM EXTRACTION SYSTEM FOR PLANT TISSUE ETHYLENE.**

Forrest E. Lane, Dept. of Botany and Microbiology, UAF, Fayetteville, AR.

**THE ROOT PULLING RESISTANCE TECHNIQUE FOR THE SELECTION OF DROUGHT TOLERANCE IN RICE (*Oryza sativa* L.) GENOTYPES.**

M. Price, Dept. of Agriculture, UAPB, Pine Bluff, AR, R. H. Dilday, USDA/ARS Rice Research Station, Stuttgart, AR, and A. L. Allen, Agricultural Expt. Station, UAPB, Pine Bluff, AR.

**GENETIC AND PLANT GROWTH REGULATOR MANIPULATION OF RICE (*Oryza sativa* L.) MESOCOTYL AND COLEOPTILE LENGTHS.**

Ronnie S. Helms and Robert H. Dilday, University of Arkansas Southeast Research and Extension Center, Monticello, AR.

**THE PROTOSTELIDS: A HISTORY OF TAXONOMIC POINTS OF**

## VIEW.

Frederick W. Spiegel, Dept. of Botany and Microbiology, UAF, Fayetteville, AR.

REPRODUCTION OF *Lindera melissifolia* IN ARKANSAS.

Robert D. Wright, UCA, Conway, AR.

**CHEMISTRY**

Session Chairperson: Dr. Kim Fifer

## SYNTHESIS OF CARBOHYDRATE-DERIVED CHIRIONS FROM D-ARABINOSE.

Brock K. King, Heidi E. Mills and Thomas E. Goodwin, Dept. of Chemistry, Hendrix College, Conway, AR.

## THE USE OF QUININE ACETATE IN ALDOL CONDENSATIONS.

Heidi E. Mills and Thomas E. Goodwin, Dept. of Chemistry, Hendrix College, Conway, AR.

## SYNTHESIS OF DEAZAPURINE NUCLEOSIDE PROBES OF THE MECHANISM OF ADENOSINE DEAMINASE.

Luke J. Moix, Dept. of Chemistry, Hendrix College, Conway, AR and Linda C. Kurz, Washington University, St. Louis, MO.

## \*SYNTHESIS OF TETRAHYDROCANNABINOL CONGENERS. 5-ALKYLRESORCINOL SYNTHESIS.

Robert W. Allen and Kevin M. Diamond, ATU, Russellville, AR.

## \*RESEARCH OCTANE NUMBERS BY NUCLEAR MAGNETIC RESONANCE SPECTROMETRY.

Anders Amelin and Paul Krause, Dept. of Chemistry, UCA, Conway, AR.

## \*GAS CHROMATOGRAPHIC ANALYSIS OF A MIXTURE OF SEVERAL DIHALONICOTINIC ACIDS.

H. Koshaba, A. U. Shaikh and F. L. Setliff, Dept. of Chemistry, UALR, Little Rock, AR.

## SYNTHESIS TRANSFORMATIONS OF AN ENONE DERIVED FROM D-GLUCOSE.

N. Michele Rothman and Thomas E. Goodwin, Dept. of Chemistry, Hendrix College, Conway, AR.

## PREPARATION OF A SERIES OF PYRIDYL PHENYLUREAS OF POTENTIAL AGRICULTURAL INTEREST.

Frank L. Setliff, Steve H. Rankin, and Mark W. Milstead, Dept. of Chemistry, UALR, Little Rock, AR.

SYNTHESIS OF THE <sup>63</sup>CU AND <sup>14</sup>C DOUBLE LABELED COMPLEX OF TETRAKIS-U-3,5-DIISOPROPYLSALICYLATO-DIAQUODICOPPER(II).

John R. J. Sorenson, M. V. Chidamaram, C. E. Epperson, S. Williams, and R. A. Gray, College of Pharmacy, UAMS, Little Rock, AR.

## 1,3-DIPOLAR ADDITION. AN INTERESTING REARRANGEMENT OF ISOXAZOLIDINE TOSYLATES.

Van Ahn Pham, Cheryl Lichti and Thomas E. Goodwin, Dept. of Chemistry, Hendrix College, Conway, AR.

## ENANTIOSPECIFIC PREPARATION OF A COMPLEX DIKETONE FROM A CARBOHYDRATE TEMPLATE.

Angela K. Wilson and Thomas E. Goodwin, Dept. of Chemistry, Hendrix College, Conway, AR.

**COMPUTER SCIENCE**

Section Chairperson: Hal Berghel

**Track I, Session A  
(Logic Programming)**

Chairperson: Richard Rankin

## USING PROLOG FOR MEDICAL LOGIC.

Mark Shifman, University Hospital of Arkansas, Little Rock, AR.

## LOGIC PROGRAMMING FOR INDUSTRIAL ENGINEERING.

Susan Johnsen, Industrial Engineering Dept., UAF, Fayetteville, AR.

## APPROXIMATE STRING MATCHING IN PROLOG.

David Roach, Computer Science Dept., UAF, Fayetteville, AR.

## EFFICIENT GENERATION OF LEXICAL PALINDROMES.

Tielin Xu, Taiyuan Institute of Technology, Fayetteville, AR.

**Track I, Session B****(Knowledge Based Systems for Scientific Discovery)**

Chairperson: Dr. David Sallach

## KNOWLEDGE BASE SYSTEMS AND THE SCIENCES OF COMPLEXITY.

David Sallach, Computer Science Dept., UAF, Fayetteville, AR.

## CAUSAL INFERENCE USING A TAXONOMIC MODEL.

Roger Ghormley, Computer Science Dept., UAF, Fayetteville, AR.

## CAUSAL INFERENCE AND PART-WHOLE AGGREGATION.

Girish Natarajan, Computer Science Dept., UAF, Fayetteville, AR.

## QUERY LANGUAGE EXTENSIONS FOR SCIENTIFIC ANALYSIS.

Siongo Japit, Computer Science Dept., UAF, Fayetteville, AR.

**Track II, Session A****(Simulation and Expert Systems)**

Chairperson: Dr. Ron Goforth

## THE USE OF EXPERT SYSTEMS TECHNIQUES FOR SIMULATIONS WHICH ARE NOT CALCULATION INTENSIVE.

Ron Goforth, Computer Science Engineering Dept., UAF, Fayetteville, AR.

## EMBEDDED EXPERT SYSTEMS FOR TECHNOLOGY TRANSFER.

Rodney Tolander, Energy Techniques Inc., Fayetteville, AR.

## EMBEDDED EXPERT SYSTEMS IN CAD.

Ali Monash, Arkansas Center for Technology Transfer, UAF, Fayetteville, AR.

## COMPUTER SIMULATIONS OF THE FUTURE INCIDENCE OF SEXUALLY TRANSMITTED DISEASES.

Michael Stephens, College of Engineering, UAF, Fayetteville, AR.

**Track II, Session B****Steering Committee Meeting.****Arkansas Computer Science Conference**

Chairpersons: Hal Berghel, John Talburt

**ENVIRONMENTAL AND AQUATIC**

Session Chairperson: Dr. Edmond Bacon

**AGE ASSESSMENT OF WHITE BASS FROM OTOLITHS, DORSAL SPINES, AND SCALES.**

Raj V. Kilambi and Thoniot T. Prabhakaran, Dept. of Zoology, UAF, Fayetteville, AR.

**MERISTIC VARIATIONS IN THE CALIFORNIA KILLIFISH *Fundulus parvipinnis*.**

Alan William Newman, Dept. of Biology, Hendrix College, Conway, AR, and Stuart G. Poss, Gulf Coast Research Laboratory, Ocean Springs, MS.

**DISTRIBUTION OF YELLOW GRUB (*Clinostomum marginatum*) ALONG CROOKED CREEK (MARION CO., AR) IN SMALLMOUTH AND LARGEMOUTH BASS POPULATIONS.**

J. J. Daly, B. DeYoung, T. Hostetler, Dept. of Microbiology and Immunology, UAMS, Little Rock, AR, and E. Walker, Little Rock Veterans Administration Hospital, Little Rock, AR.

**DISTRIBUTION OF THE BASS TAPEWORM (*Proteocephalus ambloplites*) IN LARGEMOUTH, SMALLMOUTH, AND SPOTTED BASS FROM ARKANSAS RESERVOIRS AND STREAMS.**

J. J. Daly, B. DeYoung, T. Hostetler, Dept. of Microbiology and Immunology, UAMS, Little Rock, AR, and E. Walker, Little Rock Veterans Administration Hospital, Little Rock, AR.

**THE EFFECT OF THE ANTHELMINTHIC DRUG PRAZIQUANTEL ON THE SURVIVAL OF LARVAL *Clinostomum marginatum* AND *Proteocephalus ambloplites* IN CENTARCHID BASS.**

B. DeYoung, T. Hostetler, J. Daly, Dept. of Microbiology and Immunology, UAMS, Little Rock, AR, and E. Walker, Little Rock Veterans Administration Hospital, Little Rock, AR.

**WATER QUALITY MONITORING ON TWO TRIBUTARIES OF THE BUFFALO NATIONAL RIVER.**

E. Winifred Fraser, Jenifer Zimmerman and Deanna Jones, Biology Dept., Arkansas College, Batesville, AR.

**PRIVATE WATER WELL QUALITY IN CLARK COUNTY, ARKANSAS.**

Duane Cox and J. D. Bragg, Henderson State University, Arkadelphia, AR.

**\*CHANNEL TYPING THE NORTH FORK OF THE ILLINOIS BAYOU IN THE OZARK NATIONAL FOREST.**

Fred Janssen, Fisheries and Wildlife Biology Dept., ATU, Russellville, AR.

**THE IMPORTANCE OF REGIONAL COLLECTIONS IN THE STUDY OF BIOGEOGRAPHIC PATTERNS IN THE CLASS A INSECT.**

David E. Bowles and Robert T. Allen, Entomology Dept. UAF, Fayetteville, AR.

**SUCCESSION OF BENTHIC MACROINVERTEBRATE COMMUNITIES IN A SERIES OF COAL STRIPMINE LAKES OF DIFFERENT pH.**

George L. Harp and Robert S. Campbell, Dept. of Biological Sciences, ASU, State University, AR and Jefferson City, MO.

**ARKANSAS WILDLIFE RECORD: FIVE YEARS OF EVIDENCE.**

R. A. Kluender, L. C. Thompson, R. J. McFarland, and D. M. Steigerwald, Dept. of Forest Resources, UAM, Monticello, AR, and Arkansas Forestry Commission, Little Rock, AR.

**LANDOWNER REPORTS OF DEER DAMAGE IN THE ARKANSAS COASTAL PLAIN.**

T. Bentley Wigley, Richard A. Kluender, and Robert A. Pierce, Dept. of Forest Resources, Arkansas Agricultural Expt. Station, UAM, Monticello, AR, and Cooperative Extension Service, University of Arkansas, Little Rock, AR.

**\*HOME RANGE AND HABITAT USE BY RACCOONS IN ARKANSAS.**

David C. Clair and Thomas A. Nelson, Fisheries and Wildlife Biology Dept., ATU, Russellville, AR.

**MICROBIOLOGY AND IMMUNOLOGY**

Session Chairpersons: Dr. Wayne Gray and Dr. Dwight Talburt

**\*\*THE EFFECT OF PRE/POSTNATAL EXPOSURE TO CHLORDANE ON THE BODY WEIGHT AND LYMPHOCYTE ACTIVITY OF BALB/c MICE.**

B. L. Blaylock, L. S. F. Soderberg, J. Gandy, J. H. Menna, and J. B. Barnett, Depts. of Microbiology and Immunology, and Toxicology, UAMS, Little Rock, AR.

**\*\*IMAGE PROCESSING AND INSTRUMENTATION FOR *Giardia lamblia* DETECTION.**

Cy R. Tamanaha and Mark A. Gross, UALR Graduate Institute of Technology, Little Rock, AR.

**\*\*PROTECTION TO *Trichomonas vaginalis* IN THE MOUSE VIRULENCE MODEL.**

T. Hostetler, T. O'Brien, and J. J. Daly, Depts. of Microbiology and Immunology, and Obstetrics and Gynecology, UAMS, Little Rock, AR.

**\*\*ISOLATION AND CHARACTERIZATION OF PENICILLIN-ADAPTED CELLS OF *Streptococcus mutans*.**

Roghieh Radfar and Timothy A. Kral, Dept. of Botany and Microbiology, UAF, Fayetteville, AR.

**\*\*ENRICHMENT AND CHARACTERIZATION OF BONE MARROW AND NATURAL SUPPRESSOR CELLS.**

S. C. Moore and L. S. F. Soderberg, Dept. of Microbiology and Immunology, UAMS, Little Rock, AR.

**\*\*CORRELATION BETWEEN FLUORIDE RESISTANCE AND FOSFOMYCIN RESISTANCE IN FLOURIDE-RESISTANT MUTANTS OF *Streptococcus mutans*.**

Michael E. Scheinost and Timothy A. Kral, Dept. of Botany and Microbiology, UAF, Fayetteville, AR.

**\*\*ANALYSIS OF GUINEA PIG CYTOMEGALOVIRUS DNA.**

T. Pope and J. H. Menna, Dept. of Microbiology and Immunology, Little Rock, AR.

**\*\*EFFECTS OF ETHANOL ON TUMOR RESISTANCE IN RATS.**

Olcay Yeralan and Joe Jones, Dept. of Microbiology and Immunology, UAMS, Little Rock, AR.

**\*TESTING FOR ANTIBACTERIAL ACTIVITY OF CHALCONE, CHROMANONE, AND PYRAZOLE DERIVATIVES.**

Carla S. McKinney and Uttam Jagwani, UAPB, Pine Bluff, AR.

**CLONING AND EXPRESSION OF *Brucella abortus* IMMUNOGENIC PROTEINS IN *Escherichia coli*.**

R. M. Roop II, T. Bagchi, N. Sriranganathan, S. Boyle and G. Schurig, Dept. of Microbiology and Immunology, UAMS, Little Rock, AR and Dept. of Pathobiology, Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, VA.

## Program

**HUMAN SEMINAL FLUID: INHIBITORY OR STIMULATORY TO THE SURVIVAL OF THE UROGENITAL PARASITE, *Trichomonas vaginalis* ?**

Scott Briles, Terry Hostetler, J. K. Sherman, and J. J. Daly, Depts. of Microbiology and Immunology, and Anatomy, UAMS, Little Rock, AR.

**RESPONSE OF GUINEA PIG TO INTRA-VAGINAL GUINEA PIG CYTOMEGALOVIRUS INOCULATION**

J. H. Menna, E. B. Moses, H. Ryu, T. Pope, W. Gray, and A. L. Barron, Dept. of Microbiology and Immunology, UAMS, Little Rock, AR.

**BACTERIAL SORPTION OF SELECTED HEAVY METALS.**

M. D. Mullen, D. C. Wolf, J. T. Gilmour, and D. E. Talburt, Depts. of Agronomy and Botany and Microbiology, UAF, Fayetteville, AR.

**CHARACTERIZATION OF THE SIMIAN VARICELLA VIRUS GENOME AND GLYCOPROTEINS.**

Wayne L. Gray, Dept. of Microbiology and Immunology, UAMS, Little Rock, AR.

**VERTEBRATE ZOOLOGY**

Session Chairperson: V. Rick McDaniel

**PRELIMINARY OBSERVATIONS OF THE LIFE HISTORY OF RAFINESQUE'S BIG-EARRED BAT, *Plecotus rafinesquii*, IN SOUTHERN ARKANSAS.**

Daniel R. England, David A. Saugey, Stanley M. Speight, and V. Rick McDaniel, Dept. of Biology, SAU, Magnolia, AR, U.S. Forest Service, Ouachita National Forest, Hot Springs, AR, Cossatot River State Park, Wickes, AR, and Dept. of Biology, ASU, State University, AR.

**ADDITIONAL NOTES ON THE BATS OF THE OUACHITA MOUNTAINS.**

David A. Saugey, Gary A. Heidt, and Darrell R. Heath, U.S. Forest Service, Ouachita National Forest, Hot Springs, AR, and Dept. of Biology, UALR, Little Rock, AR.

**DISTRIBUTION AND STATUS OF SHREWS IN ARKANSAS.**

Diana Garland and Gary Heidt, Dept. of Biology, UALR, Little Rock, AR.

**DENTAL PATHOLOGY IN SELECTED CARNIVORES FROM ARKANSAS.**

Renn Tumlinson, Dept. of Zoology, Oklahoma State University, Stillwater, Oklahoma, and J. D. Wilhide and V. R. McDaniel, Dept. of Biological Sciences, ASU, State University, AR.

**THE MAMMALS OF SOUTHWEST ARKANSAS PART II: THE RODENTS.**

T. W. Steward, V. R. McDaniel, and Dan England, Dept. of Biological Sciences, ASU, State University, AR and Dept. of Biological Sciences, SAU, Magnolia, AR.

**THE MAMMALS OF SOUTHWEST ARKANSAS PART III: THE CARNIVORES.**

T. W. Steward, V. R. McDaniel, and Dan England, Dept. of Biological Sciences, ASU, State University, AR and Dept. of Biological Sciences, SAU, Magnolia, AR.

**DISTRIBUTIONAL SURVEY OF THE EASTERN COLLARED LIZARD, *Crotaphytus collaris* (SAURIA: IGUANIDAE), IN CENTRAL ARKANSAS.**

Stanley E. Trauth, Dept. of Biological Sciences, ASU, State University, AR.

**FEMALE REPRODUCTIVE TRAITS OF THE SOUTHERN****LEOPARD FROG, *Rana sphenocephala* (ANURA: RANIDAE), FROM ARKANSAS.**

Stanley E. Trauth, Dept. of Biological Sciences, ASU, State University, AR.

**REPRODUCTION AND LARVAL DEVELOPMENT IN THE MARBLED SALAMANDER, *Ambystoma opacum* (CAUDATA: AMBYSTOMATIDAE), FROM ARKANSAS.**

Stanley E. Trauth, Walter E. Meshaka, and Brian P. Butterfield, Dept. of Biological Sciences, ASU, State University, AR.

**REPRODUCTION IN THE WOOD FROG, *Rana sylvatica* (ANURA: RANIDAE), FROM ARKANSAS.**

Stanley E. Trauth, Walter E. Meshaka, and Micheal E. Cartwright, Dept. of Biological Sciences, ASU, State University, AR.

**PREDATORY BIRDS IN RELATION TO AQUACULTURE FARMING.**

Earl Hanebrink and William Byrd, Dept. of Biological Sciences, ASU, State University, AR.

**FOODS UTILIZED BY DUCKS IN WOODRUFF COUNTY, EASTERN ARKANSAS, DURING THE 1985-86 WINTER DUCK SEASON.**

Mitchell K. Marks and V. Rick McDaniel, Dept. of Biological Sciences, ASU, State University, AR.

**SEASONAL STATUS OF THE RUFIOUS-CROWNED SPARROW.**

William Shepherd and Douglas James, Arkansas Natural Heritage Commission, Little Rock, AR and Dept. of Zoology, UAF, Fayetteville, AR.

**\*ACTIVITY PATTERNS OF RACCOONS IN ARKANSAS.**

Michael Rodgers and Thomas Nelson, Fisheries and Wildlife Biology Dept., ATU, Russellville, AR.

**BIOMEDICAL II**

Chairperson: Dr. Parimal Chowdhury

**MATERNAL AGE-SPECIFIC SPONTANEOUS ABORTION RATES AND CHRONIC ENVIRONMENTAL EXPOSURES.**

Marge A. Brewster and Kirby S. Russell, Arkansas Reproductive Health Monitoring System, Arkansas Dept. of Health, UAMS and UALR, Little Rock, AR.

**INFLUENCE OF DIETARY PROTEIN CONTENT IN REGULATION OF BODY WEIGHT.**

P. Chowdhury, J. Pasley, and P. L. Rayford, Dept. of Physiology and Biophysics, UAMS, Little Rock, AR.

**SEM STUDIES OF THE RODENT INNER EAR.**

W. Coutts<sup>1</sup>, W. Bowen<sup>1</sup>, B. Good<sup>1</sup>, M. Fazekas-May<sup>2,3</sup>, E. Walker<sup>2,3</sup>, and R. McGrew<sup>2</sup>; <sup>1</sup>UALR, <sup>2</sup>UAMS, and <sup>3</sup>LRVA Hospital, Little Rock, AR.

**ACETAMINOPHIN-INDUCED ALTERATIONS OF PANCREATIC BETA CELLS AND SERUM INSULIN LEVELS.**

D. Ferguson, D. W. Roberts, H. Han-Shu, A. Andrews, R. W. Benson, J. Crowell, T. Bucci and J. A. Hinson, NCTR, Jefferson, AR and UALR, Little Rock, AR.

**EVALUATION OF 3-(CYSTEIN-S-YL) ACETAMINOPHEN IN THE NEPHROTOXICITY OF ACETAMINOPHEN IN RATS.**

T. A. McRae, K. Furuhashi, D. W. Roberts, T. A. Getek, and J. A. Hinson, NCTR, Jefferson, AR.

**DEVELOPMENT OF IN VIVO PHOSPHOROUS-31 NMR OF HUMAN PROSTATE GLAND.**

Michael S. Mullins, Dept. of Chemistry, Hendrix College, Conway, AR and Richard Komorowski, UAMS, Little Rock, AR.

Arkansas Academy of Science

COMPUTER SCIENCE

Track I, Session C (AI and Expert Systems)

Chairperson: Dr. John Talburt

CONCEPT DECOMPOSITION.

Walter Sedelow, Computer and Information Science Dept., UALR, Little Rock, AR.

CONCEPT ASSOCIATION.

Sally Sedelow, Computer and Information Science Dept., UALR, Little Rock, AR.

A KNOWLEDGE-BASED SYSTEMS APPLICATION TO AN INTELLIGENT COMPUTER-AIDED ADVISING SYSTEM.

Donna Mooney, Computer and Information Science Dept., UALR, Little Rock, AR.

KNOWLEDGE ELICITATION FOR EXPERT SYSTEMS.

Frederick Jelovsek, UAMS, Little Rock, AR.

SEMANTICS OF LOGIC.

Robert Kent, Computer and Information Science Dept., UALR, Little Rock, AR.

INTEGRATION OF AI AND DATABASE TECHNOLOGY.

Ray Hashemi, Computer and Science Information Dept., UALR, Little Rock, AR.

Track II, Session C

(Computer Applications in Engineering and Industry)

Chairperson: Dr. Rama Reddy

COMPUTER AIDED DESIGN, A VALUABLE ENGINEERING TOOL.

Mike Stewart, Engineering Technology Dept., UALR, Little Rock, AR.

COMPUTER AIDED MANUFACTURING AND THE FACTORY OF THE FUTURE.

M. Bakr, Engineering Technology Dept., UALR, Little Rock, AR.

COMPUTER APPLICATION IN MANUFACTURING WORK - PROGRAMMING AML/2 LANGUAGE.

James Brown, AT&T, Little Rock, AR.

A REVIEW OF AFFORDABLE EXPERT SYSTEM SHELLS.

Gaylord Northrop, GIT/UALR, Little Rock, AR.

COMPUTER APPLICATION IN QUALITY CONTROL.

Kris Anderson, Engineering Technology Dept., UALR, Little Rock, AR.

COMPUTER APPLICATIONS IN PLANT MAINTENANCE.

Burt Henderson, Engineering Technology Dept., UALR, Little Rock, AR.

GRADUATE STUDENT COMPETITION

Session Chairperson: Dr. Frederick Spigle

MICROPROCESSOR CONTROLLED PROGRAMMABLE PULSE GENERATOR.

Bill Russell and Roger M. Hawk, UALR/GIT, Little Rock, AR.

ESTRADIOL (E2) INFLUENCES CHOLECYSTOKININ (CCK) STIMULATED AMYLASE RELEASE FROM RAT PANCREATIC ACINI.

G. T. Blevins Jr., Y. S. Huang, D. W. McKay, P. Chowdhury, and P. L. Rayford, Dept. Physiology and Biophysics, UAMS, Little Rock, AR.

<sup>31</sup>LI NMR OF ERYTHROCYTES.

Rao P. Gullapalli and Roger M. Hawk, GIT/UALR, Little Rock, AR, and Richard A. Komoroski, UAMS, Little Rock, AR.

STEADY STATE mRNA LEVELS REFLECT THE RATIO OF ALPHA 1- AND BETA 2-ADRENERGIC RECEPTORS IN ADULT RAT LIVER.

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AN INEXPENSIVE POTENTIOSTAT DESIGN FOR ELECTRO-CHEMICAL STUDIES.

Gary Fuller and Roger Hawk, GIT/UALR, Little Rock.

AQUATIC MACROINVERTEBRATES OF AN INTERMITTENT OZARK STREAM, INDEPENDENCE COUNTY, ARKANSAS.

Phoebe A. Harp, Harvey E. Barton and George L. Harp, Dept. of Biological Sciences, ASU, State University, AR.

A SYNOPSIS OF THE GENUS *Laccophilus* (COLEOPTERA: DYTISCIDAE) IN ARKANSAS.

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A PRELIMINARY SURVEY OF THE COLLEMBOLA OF MAGAZINE MOUNTAIN, LOGAN CO., ARKANSAS.

S. A. Tedder and R. T. Allen, Entomology Dept., UAF, Fayetteville, AR.

BONDING OF GOLD TO AL/CU/SI, AL, AL/CU IN SEMI-CONDUCTOR PROCESSING.

Kamesh Gadepally and Roger M. Hawk, UALR/Graduate Institute of Technology, Little Rock, AR.

PHYSICS, GEOLOGY, AND SCIENCE EDUCATION

Session Chairperson: Dr. Robbin Anderson

THE DESIGN OF AN AUTOMATED INTERNAL FRICTION SPECTROPHOTOMETER.

Lance Raney, OBU, Arkadelphia, AR.

INTERNAL FRICTION IN HIGH TEMPERATURE SUPER-CONDUCTORS.

Thomas J. Turner, OBU, Arkadelphia, AR and Don Avery, Henderson State University, Arkadelphia, AR.

SERIES ANALYSIS OF FIRST ORDER PHASE TRANSITIONS.

M. J. George and L. A. Mink, Dept. of Computer Science, Mathematics, Physics, ASU, State University, AR.

THIN SECTION ANALYSIS OF AN ALFISOL DEVELOPED IN A TERRACE OF THE WHITE RIVER, NORTHWEST ARKANSAS.

Dianne Phillips and Peggy Guccione, Dept. of Geology, UAF, Fayetteville, AR.

COMPUTER INTERFACING TO MEASURE TEMPERATURE: A COMPARISON OF THREE BRANDS.

Rudolph J. Eichenberger, Southern Arkansas University, Magnolia, AR.

SUCCESS RATE IN PASSING THE ARKANSAS BASIC SKILLS TESTS: A COMPARISON OF THREE TEACHING METHODS IN SIXTH GRADE SCIENCE.

Rudolph J. Eichenberger, SAU, Magnolia, AR, Marilyn Jones, and Joe Thomason, Magnolia Central School, Magnolia, AR.

COMPUTER ASSISTED INSTRUCTION IN INTRODUCTORY PHYSICAL SCIENCE.

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