ENVIRONMENTAL MUTAGEN SOCIETY

Eighteenth Annual Meeting

April 8-12, 1987
Hilton Hotel, San Francisco, CA

The ENVIRONMENTAL MUTAGEN SOCIETY was founded in 1969 and incorporated under the laws of the District of Columbia. It is operated to encourage the study of mutagens in the human environment - particularly as they may affect public health - and to engage in and sponsor research, study, and dissemination of information related to this problem. Membership is open to all interested scientists.

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The San Francisco-Oakland Bay Bridge celebrated its 50th birthday on November 15, 1986 with a fireworks display. It took 3.5 years and 6,500 workers to build at a cost of $77,200,000. At the time it was built, it was the longest bridge over navigable water in the world - 8 miles including its two approaches. It contains more than 70,000 miles of cable which holds the double deck 216 feet above the water. As the bridge crosses from San Francisco to Oakland and Berkeley, its roadway passes through a 540 foot tunnel on Yerba Buena Island. Although the bridge carries more than 40 million cars a year, the average rush-hour trip takes much longer than the ferry running time of the 1930s. Visitors to San Francisco in 1987 can enjoy the night-time beauty of a special chain of lights celebrating the anniversary of this great bridge.

PLEASE DON'T FORGET YOUR PROGRAM OR ABSTRACT BOOKLET

Extra copies will cost $5.00 each.

-NOTES-

1. All sessions will be held in the Continental Ballroom area of the Hilton.

2. Smoking is not permitted in the Session Rooms.

3. All coffee breaks will be in the Ballroom Foyer or Poster Sessions.

4. The phone number of the San Francisco Hilton Hotel is: 415-771-1400.

5. Council Meetings are scheduled as follows:

   Tuesday, 7 April    2:00 pm - 9:00 pm    Rosewood Room
   Sunday, 12 April   9:00 am - 1:00 pm    Rosewood Room

6. PLEASE REMEMBER to check the Message Board in the Registration Area (Ballroom foyer) frequently. Changes in the Program, including room assignments, special announcements, and messages will be posted there. In addition, please feel free to use the Message Board to leave messages for other attendees. If you wish to post any other material, please check at the Registration Desk first.
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The Council of the Society may elect a corporation a Patron or Sustaining Member as a result of demonstrated and substantiated acts benefiting the Society and its purposes.

The following is a list of corporations making contributions or joining the Society as Patrons or Sustaining Members. This listing contains 1986 Members as well as new 1987 Members.

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WEDNESDAY, 9:00 am  WORKSHOP

RESEARCH NEEDS FOR THE GENOTOXICITY TESTING OF INDUSTRIAL CHEMICALS
Ballroom 5
9:00 am - 11:30 am
A.P. Li, Presiding

9:00  INTRODUCTION: PAST, PRESENT, AND FUTURE OF GENETIC TOXICOLOGY IN INDUSTRY
A.P. Li, Monsanto Company

9:20  NEED TO FILL PRESENT DATA GAPS
L.D. Kier, Monsanto Company

9:40  HUMAN TESTING SYSTEMS
F.B. Oleson, Bristol-Myers

10:00  BREAK

10:20  METABOLIC APPROACHES
R.H. Heffich, National Center for Toxicological Research

10:40  MOLECULAR APPROACHES

11:00  ROLE OF BASIC RESEARCH IN GENETIC TOXICOLOGY
R.J. Preston, Oak Ridge National Laboratory

11:20  GENERAL DISCUSSION

11:30  

WEDNESDAY, 9:00 am  WORKSHOP

PERSONAL COMPUTERS AND DATA MANAGEMENT SYSTEMS IN GENETIC TOXICOLOGY
Ballroom 6
9:00 am - 11:30 am
L. Williams and L.D. Claxton, Presiding

9:00  AVAILABILITY OF PC SOFTWARE FOR GENETIC TOXICOLOGY LABORATORIES
L. Claxton, U.S. EPA

9:45  DATA MANAGEMENT SYSTEMS IN GENETIC TOXICOLOGY - DEVELOPMENT OF SOFTWARE
T.K. Rao, Integrated Lab Systems

10:00  SALMONELLA ASSAY WORK GROUP RECOMMENDATIONS
L. Kier, Monsanto Company

10:20  BREAK

10:30  STATISTICAL PROCEDURES/SOFTWARE DESIGN AND DEVELOPMENT FOR THE SALMONELLA ASSAY
B. Shah, Research Triangle Institute and N. Adams, Integrated Lab Systems

11:15  GENERAL DISCUSSION

11:30  
THE SPOT TEST WITH MICE
Parlors 1-3
9:00 am - 11:30 am
R. Fahrig and L.B. Russell, Presiding

INTRODUCTION
L.B. Russell, Oak Ridge National Laboratory

CURRENT DEVELOPMENT OF THE METHOD
R. Fahrig, Fraunhofer-Institut fur Toxikologie unik Aerosolforschung, FRG

CORRELATION OF TRANSPLECTALLY INDUCED GENETIC ALTERATIONS AND TUMOR INCIDENCE
A. Neuauser-Klaus and A. Luz, Gesellschaft fur Strahlen- und Umweltforschung, FRG

PRACTICAL APPLICATION TO INDUSTRY
R. Lang, Schering AG, Berlin

REGULATORY RULES AND IMPROVEMENT OF APPLICABILITY
J. Hart, National Agency of Environmental Protection, Copenhagen

GENERAL DISCUSSION
1:00 -----------------------------
BIOEFFECTS OF PURE EXOGENOUS SINGLET OXYGEN (\(^1\text{AgO}_2\)): POTENT CYTOTOXICITY AND FAILURE TO CAUSE MUTATIONS IN BACTERIA

1:15 -----------------------------
MUTATIONAL SPECIFICITY OF MNU AND ENU IN THE lacI GENE OF E. coli
P.A. Burns, A.J.E. Gordon, B.W. Glickman, York University, Toronto, Ontario, Canada

1:30 -----------------------------
ANALYSIS OF DNA BASE CHANGES IN SALMONELLA REVERTANTS INDUCED BY MUTAGENS DERIVED FROM FOODS
R. Wu, N.H. Shen, S.K. Healy, J.C. Fuscoe, J.S. Felton (Introduct. by M. Mendelsohn), Lawrence Livermore National Laboratory, Livermore, CA

1:45 -----------------------------
BLEOMYCIN-INDUCED BASE SUBSTITUTIONS IN THE LAMBDA cI GENE
L.F. Povirk, Medical College of Virginia, Richmond, VA

1:00 -----------------------------
PRE-EXPOSURE OF HUMAN LYMHPHOCYTES TO 1 RAD (1cGy) OF X RAYS DECREASES THE CYTOGENETIC DAMAGE INDUCED BY AGENTS THAT INDUCE DNA DOUBLE STRAND BREAKS AND CROSSLINKS, BUT ACT SYNERGISTICALLY WITH MMS
S. Wolff, V. Afzal, J. Wiencke, G. Oliver, University of California, San Francisco, CA and University of Rome, Rome, Italy

1:15 -----------------------------
THE INDUCTION OF THE ADAPTIVE RESPONSE IN HUMAN LYMHPHOCYTES BY X RAYS IS DEPENDENT ON RADIATION INTENSITY
J.K. Wiencke, J.D. Shadley, University of California, San Francisco, CA

1:30 -----------------------------
THE EFFECT OF INCORPORATION OF BASE ANALOGUES ON THE NUMBER AND TYPE OF X-RAY INDUCED CHROMOSOME ABERRATIONS
G.J. Hook and R.J. Preston, University of Tennessee and Oak Ridge National Laboratory, Oak Ridge, TN

1:45 -----------------------------
ANTIPAIN MEDIATED SUPPRESSION OF X-RAY-INDUCED CHROMOSOMAL ABERRATIONS IN HUMAN LYMPHOCYTES
V. Afzal, J.K. Wiencke, S. Wolff, University of California, San Francisco, CA
WEDNESDAY, 1:00 PM
Parlors 1-3

HUMAN POPULATION MONITORING
B. Brandriff and G.R. Douglas, Presiding

1:00
VALIDITY OF THE AUTORADIOGRAPHIC ASSAY FOR QUANTITATING MUTANT T-LYMPHOCYTES IN HUMAN BLOOD
C.J. Greene, L.M. Sullivan, J.K. Berman, J.P. O'Neill, R.J. Albertini, University of Vermont, Burlington, VT

1:15
VARIANT FREQUENCIES: CONFIDENCE INTERVALS AND STUDY GROUP COMPARISONS IN EPIDEMIOLOGICAL INVESTIGATIONS USING RATIO ESTIMATORS
E.B. Whorton, Jr., M.M. Ammenheuser, J.B. Ward, Jr., The University of Texas Medical Branch, Galveston, TX

1:30
HUMAN MUTAGENS: EVIDENCE FROM PARENTAL EXPOSURE?

1:45
MONITORING CYTOGENETIC DAMAGE IN MAN: MICRONUCLEATED ERYTHROCYTES IN CIRCULATING BLOOD ARE A SENSITIVE INDEX OF CHROMOSOMAL DAMAGE IN SPLENECTOMIZED SUBJECTS
J.T. MacGregor, C.M. Wehr, P.A. Smith, K. Hooper, L. Goldman, D. Smith, C. Becker, R. Hiatt, B. Peters, R. Everson, University of California, Berkeley, CA; California Department of Health Services, San Francisco General Hospital, San Francisco, CA, Kaiser-Permanente Medical Care Program, Oakland, CA, and NIEHS, RTP, NC

1:00
MAMMALIAN CELL MUTAGENESIS
M.L. Meltz and C.J. Rudd, Presiding

1:15
MULTIPLE END-POINT ANALYSIS OF GENOTOXICITY AND CYTOTOXICITY OF ERYTHROSINE IN V79 CELLS
B.G. Boyes, C.G. Rogers, T. Matula, C. Heroux-Metsaif, Health and Welfare Canada, Ottawa, Ontario, Canada

1:15
USE OF 6TG-RESISTANCE IN WILD TYPE MOUSE LYMPHOMA L5178Y CELLS FOR GENE-MUTAGEN SCREENING
R.C. Garner, J. Campbell, D.J. Kirkland, J.C. Kennelly, Microtest Research Limited, Heslington, York, United Kingdom

1:30
AN IN SITU ASSAY FOR CHEMICALLY-INDUCED TRIFLUOROTHYMIDINE (TFT) RESISTANT MUTANTS OF L5178Y TK- MOUSE LYMPHOMA CELLS

1:45
THE ROLE OF TARGET GENE LOCATION IN THE RECOVERY OF INTRALOCUS VS. INTERLOCUS MUTATIONS IN MAMMALIAN CELLS
WEDNESDAY, 2:00 PM
Ballroom 5

MOLECULAR MECHANISMS - PROKARYOTES
B.W. Glickman and E.C. McCoy, Presiding

2:00
FRAMESHIFT MUTAGENESIS BY CHLOROQUIN PHOSPHATE IN SALMONELLA TYPHIMURIUM AND ESCHERICHIA COLI
D.G. Macphee, S.M. Thomas, K.A. Silburn, La Trobe University, Bun- doora, Victoria, Australia

2:15
INTERACTION OF MISMATCH REPAIR WITH 2-AMINOPURINE MUTAGENESIS
R.G. Fowler, San Jose State University, San Jose, CA

2:30
MUTAGENIC ACTIVITY OF N-NITROSOMETHYLAMINILINE AND N-NITROSODIPHENYLAMINE IN SALMONELLA TYPHIMURIUM TA104 AND RELATED STRAINS
M. Zielenska, J.B. Guttenplan, New York University, New York, NY

2:45
SALMONELLA TYPHIMURIUM TA100 DERIVATIVES WITH AN UNUSUAL SPECTRUM OF MUTAGENIC RESPONSES
E.C. McCoy, M.A. McCartney, M.E. Anders, Case Western Reserve University, Cleveland, OH

2:00
WEDNESDAY, 2:00 PM
Ballroom 6

CYTOGENETIC MECHANISMS
W.J. Bodell and M.E. Gaulden, Presiding

2:00
MONOFUNCTIONAL ALKYLATING AGENT-INDUCED INCOMPLETE DNA REPLICATION: POSSIBLE RELATION TO CYTOGENETIC DAMAGE
J.L. Schwartz, University of Chicago, Chicago, IL

2:15
DIRECT ACTION OF MUTAGENS ON SPECIFIC CHROMOSOMAL PROTEINS (TOPOISOMERASE II AND PERIPHERAL PROTEINS) IS RESPONSIBLE FOR CHROMOSOME STICKINESS
M.E. Gaulden, University of Texas Health Science Center, Dallas, TX

2:30
QUANTITATIVE SCE ANALYSIS BY COUPLING METABOLIC RESTRICTION WITH TRICOLOR DIFFERENTIAL FOG STAINING
R.J. DuFrain, W.T. Biecher, Jr., Allied-Signal Incorporated Morris-town, NJ

2:45
MOLECULAR DOSIMETRY OF SISTER CHROMATID EXCHANGE INDUCTION BY ALKYLATING AGENTS AND ITS IMPLICATIONS FOR ENVIRONMENTAL MONITORING
W.J. Bodell, University of California, San Francisco, CA

3:00 - 3:30 COFFEE BREAK
WEDNESDAY, 2:00 PM
Parlors 1-3

HUMAN POPULATION MONITORING
B. Brandriff and G.R. Douglas, Presiding

2:00 -----------------------------------
COMPARISONS OF SISTER CHROMATID EXCHANGES, CHROMOSOMAL ABERRATIONS, AND GLYCOPHORIN-A NULL VARIANT ERYTHROCYTES IN WOMEN RECEIVING CHEMOTHERAPY FOR BREAST CANCER
A.J. Wyrobek, A.V. Carrano, W.L. Bigbee, J.D. Tucker, R.G. Langlods, R.H. Jensen, R.B. Everson, Lawrence Livermore National Laboratory, Livermore, CA and National Institute of Environmental Health Sciences, Research Triangle Park, NC

2:15 -----------------------------------
INDUCTION, ACCUMULATION, AND PERSISTENCE OF CYTOGENETIC CHANGES IN LYMPHOCYTES OF PATIENTS RECEIVING CHEMOTHERAPY FOR BREAST CANCER
J.D. Tucker, R.B. Everson, A.J. Wyrobek, A.V. Carrano, M.L. Christensen, J.T. Carpenter, LLNL, Livermore, CA, NIEHS, RTP, NC, and University of Alabama, Birmingham, AL

2:30 -----------------------------------
CHEMOTHERAPY WITH MUTAGENIC AGENTS ELEVATES THE IN VIVO FREQUENCY OF GLYCOPHORIN A "NULL" VARIANT ERYTHROCYTES
W.L. Bigbee, R.G. Langlods, R.H. Jensen, A.W. Wyrobek, R.B. Everson, LLNL, Livermore, CA and NIEHS, RTP, NC

2:45 -----------------------------------
SPERM CHROMOSOMAL ANALYSIS IN A SURVIVOR OF SEMINOMA AND ASSOCIATED RADIOTHERAPY
B. Brandriff, L.A. Gordon, I. Sharlip, A.V. Carrano, Lawrence Livermore National Laboratory, Livermore, CA and Children’s Hospital, Oakland, CA

WEDNESDAY, 2:00 PM
Parlors 7-9

MAMMALIAN CELL MUTAGENESIS
M.L. Meltz and C.J. Rudd, Presiding

2:00 -----------------------------------
MUTAGENESIS BY DNA CROSSLINKING AGENTS IN FANCONI’S ANEMIA LYMPHOBlastOID CELLS
K. Tatsumi, M. Toyoda, A. Tachibana, R. Ishida, H. Takebe, Kyoto University, Kyoto, Japan and Alchl Cancer Center Research Institute, Nagoya, Japan

2:15 -----------------------------------
COMPARISON OF THE FREQUENCY OF TG RESISTANT HUMAN T-LYMPHOCYTES INDUCED BY ETHYLNITROSOUREA (ENU), BENZO[a]PYRENE-7,8-DIOL-9,10-EPOXIDE (BPDE), UV AND 60Co RADIATION

2:30 -----------------------------------
THE EFFECT OF 2.45 GHz RADIOFREQUENCY RADIATION (RF) ON PROFLAVIN INDUCED MUTAGENESIS IN L5178Y CELLS
M.L. Meltz, P. Eagan, D.N. Erwtn, University of Texas Health Science Center and USAF School of Aerospace Medicine, San Antonio, TX

2:45 -----------------------------------
EFFECTS OF HEAVY ION RADIATION ON SOMATIC MUTATION AND DNA TRANSFECTION
T.C. Yang, C.A. Toblas, Lawrence Berkeley Laboratory, Berkeley, CA

3:00 - 3:30 COFFEE BREAK
MOLECULAR BIOLOGY OF DNA REPAIR

Ballroom 5
Regine Goth-Goldstein, Presiding

Sponsor: Arthur D. Little, Inc.

To prevent death, mutations and cancer, cells have evolved complex pathways for repair of DNA damage. In bacteria, several independent regulatory networks that are induced in response to DNA damage and stress have been identified. In yeast, three main pathways of DNA repair have been described, and many of the genes involved have been cloned allowing detailed analysis of the processes. Recently, some human DNA repair genes which affect different pathways have been transfected into repair deficient rodent cells and are being characterized. Preferential repair of damage in transcriptionally active genes also has been demonstrated in mammalian cells, and it appears that damage processing in active genes rather than overall repair correlates best with biological endpoints.

3:30 DAMAGE-INDUCIBLE RESPONSES IN BACTERIA
Graham Walker
Massachusetts Institute of Technology

4:00 CHARACTERIZING YEAST DNA REPAIR BY USE OF CLONED GENES
David Schild
Lawrence Berkeley Laboratory

4:30 MAPPING, ISOLATION, AND CHARACTERIZATION OF HUMAN DNA REPAIR GENES
Larry Thompson
Lawrence Livermore National Laboratory

5:00 INTRAGENOMIC HETEROGENEITY IN MAMMALIAN DNA REPAIR
Philip Hanawalt
Stanford University
WEDNESDAY, 5:30 pm - 8:00 pm  PUBLIC SYMPOSIUM

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Bhopal - Genetic Consequences ???

Ballroom 5  Henry E. Holden, Presiding

Sponsors: The Laboratory of Radiobiology and Environmental Health of the University of California, San Francisco

Environmental Health Research and Testing Laboratory of Lexington, Kentucky

The past forty years has seen an increasing number of incidences where large populations have been exposed to mutagenic or potentially mutagenic substances. Disasters such as those that occurred at Bhopal, Chernobyl, Seveso and Hiroshima/Nagasaki have led to great concern over the impact of widespread exposure to substances which may or may not have genetic consequences in the survivors both in terms of increased cancer risk and in terms of the genetic disease burden over several generations. This symposium will address the state-of-the-art genetic research dealing with these issues.

This Symposium will be open to the public and questions from the audience will be welcome in the concluding panel discussion.

5:30  INTRODUCTORY REMARKS
Henry Holden
Pfizer Inc.

5:40  ASSESSING GENOTOXICITY IN HUMAN POPULATIONS: TOOLS, TACTICS AND TRUTH
Richard Albertini
University of Vermont

6:30  GENETIC TOXICITY OF METHYL ISOCYANATE
Michael Shelby
National Institute of Environmental Health Sciences

7:20  COMMENTARY AND SUMMARY
Herbert Rosenkranz
Case Western Reserve University

7:30  PANEL DISCUSSION

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THURSDAY, 8:30 AM
Ballroom 5

CYTOGENETIC METHODS
V.L. Sawin and J.W. Yager, Presiding

8:30
NONRANDOM KILLING OF T-LYMPHOCYTES IN CRYOPRESERVATION
G.H.S. Strauss, W.L. Stanford, U.S. Environmental Protection Agency and Environmental Health Research and Testing, Research Triangle Park, NC

8:45
A RAT LIVER MICRONECLES
ASSAY EMPLOYING 4AAF AS MITOGEN
J. Ashby, T. Braithwaite, Imperial Chemical Industries Pic, Alderley Park, Macclesfield, Cheshire, UK

9:00
EVALUATION OF THE CYTOKINESIS BLOCK MODIFICATION OF THE PERIPHERAL LYMPHOCYTE MICRONECLES METHOD
J.W. Yager, M. Sorsa, University of California, Berkeley, CA and Institute of Occupational Health, Helsinki, Finland

THURSDAY, 8:30 AM
Ballroom 6

CYTOGENETIC TESTING I
J. Nath and E.B. Whorton, Jr., Presiding

8:30
SISTER CHROMATID EXCHANGE STUDIES IN PRIMARY MOUSE BONE MARROW AND SPLEEN CELL CULTURES
L.M. Soler, G. Krishna, J. Nath, T. Ong, West Virginia University and National Institute for Occupational Safety and Health, Morgantown, WV

8:45
A COMPARATIVE CYCLOPHOSPHAMIDE-INDUCED SISTER CHROMATID EXCHANGE PERSISTENCE IN MOUSE BONE MARROW AND SPLEEN CELLS
G. Krishna, J. Nath, T. Ong, National Institute for Occupational Safety and Health and West Virginia University, Morgantown, WV

9:00
CLASTOGENIC EFFECT OF ACRYLAMIDE IN MOUSE BONE MARROW
THURSDAY, 8:30 AM
Parlors 1-3

COMPLEX MIXTURES I
P. Flessel and J. Lewtas,
Presiding

8:30 -------------------------------
COUPLING OF MICROSPRESSION MUTAGENICITY ASSAYS WITH HPLC TO PRODUCE BIOASSAY CHROMATOGRAMS (MUTAGRAMS) OF COMPLEX MIXTURES
J. Lewtas, J. Chappell, D. DeMarini, J. Innom, L. King, L. Claxton, K. Williams, U.S. Environmental Protection Agency, Research Triangle Park, NC

8:45 -------------------------------
MUTAGENICITY OF COMBUSTION PARTICLES FROM SEVERAL COMMON BIOMASS FUELS
D.A. Bell, K.R. Smith, R.M. Kamens, University of North Carolina, Chapel Hill, NC and East West Center, Honolulu, HI

9:00 -------------------------------
MUTAGENICITY OF COMPLEX MIXTURES OF POLYCYCLIC AROMATIC HYDROCARBONS (PAH) PRESENT IN THE STANDARD REFERENCE MATERIAL (SRM) 1649
A.S. Raj, M. Katz, York University, Toronto, Ontario, Canada

THURSDAY, 8:30 AM
Parlors 7-9

CELL TRANSFORMATION
J.R. Landolph and J.W. Spalding, Presiding

8:30 -------------------------------
EFFECT OF CELL DENSITY UPON FREQUENCIES OF C3H/10T1/2 CELL TRANSFORMATION INDUCED BY N-METHYL-N'-NITRO-N-NITROSOGUANIDINE
C.J. Boreiko, D.J. Abernethy, Chemical Industry Institute of Toxicology, Research Triangle Park, NC

8:45 -------------------------------
GENOTOXICITY OF ASPIRIN, PHENACETIN AND ACETAMINOPHEN IN C3H/10T1/2 MOUSE EMBRYO CELLS
S.R. Paterno, J.R. Landolph, University of Southern California, Los Angeles, CA

9:00 -------------------------------
ONCOGENIC TRANSFORMATION AND GENOTOXICITY FROM PARAQUAT-GENERATED SUPEROXIDE RADICAL ALONE AND COMBINED WITH GAMMA-IRRADIATION IN BALB/C 3T3 AND C3H/10T-1/2 CELLS
C.R. Geard, M. Georgsson, M. Travissano, Columbia University, New York, NY
THURSDAY, 9:15 AM
Ballroom 5

CYTOGENETIC METHODS
V.L. Sawin and J.W. Yager, Presiding

9:15

FLOW CYTOMETRY AS A SHORT TERM ASSAY FOR IN VIVO CLASTOGENICITY: EFFECTS IN VARIOUS TISSUES
V.L. Sawin, K. Mcbee, J.W. Bickleham, Shell Development Company, Houston, TX and Texas A&M University, College Station, TX

9:30

FLOW CYTOMETRY AS A SHORT TERM ASSAY FOR IN VIVO CLASTOGENICITY: RESPONSE WITH TIME
V.L. Sawin, K. Mcbee and J.W. Bickleham, Shell Development Company, Houston, TX and Texas A&M University, College Station, TX

9:45

A NOVEL ASSAY FOR DETECTING CLASTOGENIC EFFECTS USING A MONOCHROMOSOMAL HYBRID CELL LINE
S.S. Sandhu, R.S. Athwal, U.S. Environmental Protection Agency, Research Triangle Park and University of Medicine and Dentistry of New Jersey, Newark, NJ

THURSDAY, 9:15 AM
Ballroom 6

CYTOGENETIC TESTING I
J. Nath and E.B. Whorton, Jr., Presiding

9:15

BENZENE INDUCES CHROMOSOME ABERRATIONS IN SPERMATOGONIAL STEM CELLS OF SUBCHRONICALLY EXPOSED MICE
K. Rithldech, W.W. Au, V.M.S. Ramanujam, E.B. Whorton, Jr., M.S. Legator, The University of Texas Medical Branch, Galveston, TX

9:30

INDUCTION OF CHROMOSOME ABERRATIONS IN HUMAN FIBROBLASTS PERMISSIVELY INFECTED WITH HUMAN CYTOME- GALOVIRUS
S.A. Bakar, T. Albrecht, W.W. Au, M.S. Legator
The University of Texas Medical Branch, Galveston, TX

9:45

PROLIXIN INCREASES CHROMOSOME DAMAGE AND SISTER CHROMATID EXCHANGES IN CULTURED HUMAN LYMPHOCYTES
D.A. Shaffer, B. Camblor, P.M. Smith, V.G. Dunbar, A. Falke, Georgia Mental Health Institute and Emory University, Atlanta, GA

10:00 - 10:30 COFFEE BREAK
THURSDAY, 9:15 AM
Parlors 1-3

COMPLEX MIXTURES I
P. Flessel and J. Lewtas, Presiding

9:15

SEASONAL VARIATIONS AND TRENDS IN CONCENTRATIONS OF AIR PARTICLE MUTAGENS IN CONTRA COSTA COUNTY, CA
P. Flessel, Y.Y. Wang, K. Chang, California Department of Health Services, Berkeley, CA

9:30

THE INTEGRATED AIR CANCER PROJECT: MUTAGENICITY OF WOODSMOKE IMPACTED AIR SHEDS

9:45

CYTOGENETIC DAMAGE TO FISH CELLS AND EMBRYOS FOLLOWING EXPOSURE TO CONTAMINATED SEA-SURFACE MICRO-LAYER
R.M. Kocan, M.L. Landolt, University of Washington, Seattle, WA

THURSDAY, 9:15 AM
Parlors 7-9

CELL TRANSFORMATION
J.R. Landolph and J.W. Spalding, Presiding

9:15

THE EFFECT OF CELL PASSAGE ON THE DEMONSTRATION OF VOMITOXIN-INDUCED MORPHOLOGICAL TRANSFORMATION IN BALB/3T3 A31-1-1 CELLS
C.W. Shen, F.M. Moreland, V.C. Dunkel, Division of Toxicology, CFSAN/FDA, Washington, DC

9:30

A COMPARATIVE EVALUATION OF SEVENTEEN CARCINOGENS AND NON-CARCINOGENS IN FOUR MAMMALIAN CELL TRANSFORMATION ASSAYS
J.W. Spalding, S. Stasiewicz, R.W. Tennant, CGTB/National Institute of Environmental Health Sciences, Research Triangle Park, NC

9:45

POTENTIAL CARCINOGENICITY OF EXTRACTS OF COAL AND WOOD SMOKE EMISSIONS AS DETERMINED BY THEIR ABILITY TO INDUCE SURVIVAL IN CELLULAR AGGREGATES
W.A. Suk, M.A. Chapman, J.D. Van Arnold, J.L. Mumford, Northrop Services, Incorporated, and the U.S. Environmental Protection Agency, Research Triangle Park, NC

10:00 - 10:30 COFFEE BREAK
Genetic Toxicology Testing Service

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5221 River Road, Bethesda, MD 20816
THURSDAY, 9 APRIL 1987
Ballroom 4
10:30 AM - 12:00 PM

POSTER SESSION I

Posters are to be set up by 9:00 am of their scheduled day, and to remain up for viewing until 5:00 pm. It is required that an author be present during the scheduled poster session.

MAMMALIAN CELLS IN VITRO

1 SENSITIVITY TO THE CYTOTOXIC AND MUTAGENIC EFFECTS OF NITROSOPYRENE ARE REVERSED IN L5178Y STRAINS LY-R AND LY-S
H.H. Evans, J. Mencel, P.C. Howard
Case Western Reserve University, Cleveland, OH

2 IDENTIFICATION AND ISOLATION OF MAMMALIAN CELL CLONES CONTAINING NON-SELECTABLE AMPLIFIED, TRANSFECTED OR EXPRESSED SEQUENCES
T.G. Rossman, L.M. Rubin
New York University Medical Center, New York, NY

3 APHIDICOLIN INDUCED METHOTREXATE-RESISTANT MUTANTS IN CHINESE HAMSTER V79 CELLS
T. Morl, C.C. Chang, J.E. Trosko
Michigan State University, East Lansing, MI

4 DELETION MUTATIONS ARE ASSOCIATED WITH THE DIFFERENTIAL MUTATIONAL RESPONSE OF THE AS52 AND CHO-K1-BH4 CELL LINES FOLLOWING TREATMENT WITH RADIO-MIMETIC DRUGS
National Institute of Environmental Health Sciences, Research Triangle Park, NC and Pharmakon Research International, Incorporated, Waverly, PA

5 EVALUATING COMPOUNDS FROM COOKED BEEF FOR GENOTOXICITY IN REPAIR-DEFICIENT CHO CELLS
L.H. Thompson, S.A. Stewart, J.D. Tucker, E.P. Salazar, J.L. Minkler, A.V. Carrano, J.S. Felton
Lawrence Livermore National Laboratory, Livermore, CA

6 EVALUATIONS OF ANTITUMOR DRUGS FOR MUTAGENIC POTENTIAL IN THE CHO CELL SYSTEM
Grace Cancer Drug Center & Department of Experimental Therapeutics, Roswell Park Memorial Institute, Buffalo, NY

7 A CHO CELL LINE RESISTANT TO DEOXYCHOLIC ACID
G. Caderni, E.W. Stuart, W.R. Bruce
Ludwig Institute for Cancer Research, Toronto, Ontario, Canada

25
8
RESTRICTION ENZYME-INDUCED MUTATIONS IN CHO CELLS
G.J. Horesovsky, R.J. Preston
Oak Ridge National Laboratory and University of Tennessee Graduate School of
Biomedical Sciences, Oak Ridge, TN

9
EVALUATION OF THE DIVISION ARREST METHOD OF THE CHO/HGPRT
MUTATION ASSAY
Y. Oshiro, P.S. Balwierz, C.E. Piper
G.D. Searle & Company, Skokie, IL

10
DEVELOPMENT AND INVESTIGATION OF AN EXPANDED CHO/hgprrt
LOCUS ASSAY
D. McGregor, C. Riach, P. Cattanach, W. Caspary
Inveresk Research International Limited, Musselburgh, Scotland and National In-
tstitute of Environmental Health Sciences, Research Triangle Park, NC

11
MODULATION OF CHEMICAL MUTAGENICITY BY RETINOIDS IN THE
CHINESE HAMSTER OVARY/HYPOXANTHINE-GUANINE PHOSPHORI-
BOSYL TRANSFERASE SPECIFIC LOCUS MUTATION ASSAY
J.D. Budrooe, H.M. Schol, J.G. Shaddock, D.A. Casclano
National Center for Toxicoologcal Research, Jefferson, AR and The University of
Arkansas, Little Rock, AR

12
DETECTION OF MAMMALIAN CELL MUTAGENESIS IN ASS2 CELLS
L.F. Stankowski, Jr., W.G. Tuman, E.G. Godek, R.J. Matthews, R.W. Naismith
Pharmakon Research International Incorporated, Waverly, PA

13
SPONTANEOUS VARIATION AND SOURCES OF ERROR IN THE
CHO/HPRRT ASSAY
L.F. Stankowski, Jr., E.G. Godek, W.G. Tuman, M.J. Bleszczad, E.E. Stec, T. Pol-
insky, R.J. Matthews, R.W. Naismith
Pharmakon Research International Incorporated, Waverly, PA

14
QUANTITATIVE AND MOLECULAR ANALYSES OF FORMALDEHYDE-
INDUCED MUTATION IN MAMMALIAN CELLS
L.F. Stankowski, Jr., J.R. SanSebastian, W.G. Tuman, P.E. Giglio, M.J. Berta,
R.J. Matthews, R.W. Naismith, K.R. Tindall
Pharmakon Research International Incorporated, Waverly, PA and National In-
titute of Environmental Health Science, Research Triangle Park, NC

15
EFFECT OF OXYGEN RADICAL SCAVENGERS ON SPONTANEOUS MUTA-
TION RATE IN MAMMALIAN CELLS
L.F. Stankowski, Jr., W.G. Tuman, R.C. Nardone, R.J. Matthews, R.W. Naismith
Pharmakon Research International, Incorporated, Waverly, PA
16
OPTIMIZATION OF AN S-9 ACTIVATION MIXTURE FOR THE L5178Y TK\textsuperscript{+/-} MOUSE LYMPHOMA MUTATION ASSAY
J.B. Majeska, D.W. Matheson
Stauffer Chemical Company, Farmington, CT

17
MUTAGENICITY OF TOPOISOMERASE-ACTIVE AGENTS DUE TO CLASTOGENIC MECHANISMS
M.M. Moore, K.H. Brock, C.L. Doerr, D.M. DeMarini
U.S. Environmental Protection Agency, and Environmental Health Research and Testing, Research Triangle Park, NC

18
HIGH RESOLUTION CYTOGENETIC ANALYSIS OF TK\textsuperscript{+/-} MUTANTS OF L5178Y TK\textsuperscript{+/-} 3.72C CELLS: VARIATION IN BREAKPOINTS AMONG \sigma TK\textsuperscript{+/-} MUTANTS
J. Sawyer, M. Moore, J. Hozler
Clinical and Diagnostic Foundation, Corpus Christi, TX, U.S. Environmental Protection Agency, Research Triangle Park, NC, and Florida Institute of Technology, Melbourne, FL

19
\textit{IN SITU} AND MOLECULAR ANALYSIS OF MUTATION AT THE TK LOCUS IN MOUSE L5178Y TK\textsuperscript{-} 3.72C CELLS
M. Applegate, C. Broder, A. Wadham, K. Kasweck, J. Hozler, M. Moore, D. Clive, A. Burrell
Florida Institute of Technology, Melbourne, FL, U.S. Environmental Protection Agency and Burroughs Wellcome, Research Triangle Park, NC, and IBM, San Jose, CA

20
THE MUTAGENIC EFFECT OF SEVEN COMPOUNDS AT THREE GENETIC LOCI IN L5178Y TK\textsuperscript{+/-} MOUSE LYMPHOMA CELLS
A.M. Back, C. Hay, W.J. Caspary
Microbiological Associates, Incorporated and National Institute of Environmental Health Sciences, Research Triangle Park, NC

21
COMPARISON OF F\textsubscript{10F} AND RPMI USING L5178Y/TK\textsuperscript{-} 3.72C MOUSE LYMPHOMA CELLS
R. Krehl, G. McGee, D. Clive
Burroughs Wellcome Company, Research Triangle Park, NC

22
STUDIES WITH METHOTREXATE AT TK AND HGPRT LOCI IN L5178Y MOUSE LYMPHOMA CELLS
P.A. Poorman, N.T. Turner, R. Krehl, D. Clive
Burroughs Wellcome Company, Research Triangle Park, NC

23
SODIUM PYRUVATE INHIBITION OF H\textsubscript{2}O\textsubscript{2}-INDUCED MUTATION IN MAMMALIAN CELLS
D. Spencer Daston, W.J. Caspary
National Institute of Environmental Health Sciences/National Institute of Health, Research Triangle Park, NC
24 MUTAGENIC ACTIVITY AT THE TK LOCUS: RODENT VS. HUMAN CELLS
W. Caspary, R. Langenbach, B. Penman, C. Crespi, A. Mitchell, B. Myhr
National Institute of Health, Research Triangle Park, NC, Gentest, Woburn, MA,
Genesys Research, Mountainview, CA, and Hazleton Biotechnologies, Kensington,
MD

25 CHROMOSOME STUDIES OF CELLS FROM SPONTANEOUS AND CHEMICAL MUTAGEN-INDUCED SMALL (c) AND LARGE (a) UNSELECTED AND TRIFLUOROTHYMIDINE-RESISTANT (TFT) L5178Y MOUSE LYMPHOMA CELL COLONIES
W.F. Blazak, C.J. Rudd, F. Los, K. Pardo, W.J. Caspary
SRI International, Menlo Park, CA and National Institute of Environmental Health Sciences, Research Triangle Park, NC

26 MUTAGENICITY, SISTER CHROMATID EXCHANGE, AND ENDOREDUPLICATION STUDIES ON HYDROXYLAMINE HCL
Letterman Army Institute of Research, San Francisco, CA, and North Carolina State University, Raleigh, NC

27 MUTAGENICITY OF SULFIDES AND POLYSULFIDES IN THE MOUSE LYMPHOMA ASSAY
J.F. Dooley, G.R. Blackburn, C.A. Schreiner, C.R. Mackerer
Mobil Environmental and Health Science Laboratory, Princeton, NJ

28 CORRELATION OF DNA-PROTEIN CROSSLINKS (DPC) WITH CYTOTOXICITY AND MUTAGENICITY IN FORMALDEHYDE (HCHO) TREATED HUMAN LYMPHOBLASTS
E. Bermudez, T.R. Craft
Chemical Industry Institute of Technology, Research Triangle Park, NC

29 CELL KINETICS AND SISTER CHROMATID EXCHANGE FREQUENCIES OF HUMAN LYMPHOCYTES GROWN IN A MIXTURE OF HANK’S BALANCED SALT SOLUTION AND AUTOLOGOUS PLASMA
M.E. Gonsebatt, O.M. Mutchnick
Departamento de Genetica Instituto Nacional de la Nutricion, Mexico City, Mexico

30 DETECTION OF GENOTOXICITY OF GRAIN FUMIGANTS IN HUMAN LYMPHOCYTES
V.F. Garry, R. Nelson, M. Harkins
University of Minnesota, Minneapolis, MN

31 MODULATION OF RADIATION-INDUCED CHROMOSOME ABERRATIONS BY DMSO-AN OH RADICAL SCAVENGER
L.G. Littlefield, E. Joiner, E.L. Frome, S.P. Colyer
Oak Ridge Associated Universities and Oak Ridge National Laboratory, Oak Ridge, TN
32  N-METHYL-N-NITROSOUREA-INDUCED CELL KILLING AND MUTAGENESIS IN HUMAN FETAL CELL CULTURES CONTAINING DIFFERENT LEVELS OF O4-METHYLGUANINE-DNA METHYLTRANSFERASE ACTIVITY
R. Mitzayans, M.V. Middlestadt, M.C. Paterson (Intro. by R.D. Mehta)
Cross Cancer Institute, Edmonton, Alberta, Canada

33  EVALUATION OF TWO IN VITRO ASSAYS TO SCREEN FOR POTENTIAL TERATOGENS
Northrop Services, Incorporated and National Institute of Environmental Health Sciences, Research Triangle Park, NC

34  COMPARATIVE EVALUATION OF UNSCHEDULED DNA SYNTHESIS (UDS) IN HEPATOCYTES ISOLATED FROM VARIOUS MOUSE STRAINS
G. Milano, J.G. Shaddock, R.D. Harbison, D.A. Casclano
National Center for Toxicological Research, Jefferson, AR and The University of Arkansas for Medical Sciences, Little Rock, AR

35  AN EVALUATION OF CYTOTOXICITY AND GENOTOXICITY OF BENZOYL PEROXIDE
S.H.H. Swierenga, S.H. Hasnain, F. Lee
Drug Toxicology Division, Health Protection Branch, Ottawa, Ontario, Canada

======================================== COMPLEX MIXTURES
========================================

36  A COMPARISON OF THE MUTAGEN CONTENT OF FRIED CHICKEN AND FRIED BEEF
N.H. Shen, M.G. Knize, F.T. Hatch, J.S. Felton
Lawrence Livermore National Laboratory, Livermore, CA

37  DEVELOPMENT AND EVALUATION OF A PROTOCOL TO PREPARE DRINKING WATER SAMPLES FOR MUTAGENICITY TESTING
Y.Y. Wang, C.P. Flesel, K. Chang, D.A. Hollander, P.J. Marsden, L.R. Williams
California State Department of Health Services, Berkeley, CA, S-Cubed, La Jolla, CA, and U.S. Environmental Protection Agency, EML, Las Vegas, NV

38  REACTION OF CHLORINE DIOXIDE WITH AMINO ACIDS AND PEPTIDES: KINETICS AND MUTAGENICITY STUDIES
C.I. Wei, H. Tan, W.B. Wheeler
University of Florida, Gainesville, FL
39 MUTAGENICITY OF INDOOR AIR IN A RESIDENTIAL FIELD STUDY
J. Lewtas, S. Goto, K. Williams, J. Chapell, N. Wilson
U.S. Environmental Protection Agency, Research Triangle Park, N.C. and The Institute of Public Health, Tokyo, Japan

40 VALIDATION STUDIES OF A MICROSPUSPENSION MODIFICATION OF THE AMES BACTERIAL MUTAGENESIS ASSAY AND ITS APPLICATION TO CIGARETTE SMOKE CONDENSATE
D.A. Lee, C.K. Lee, D.J. Doolittle
R.J. Reynolds Tobacco Company, Winston-Salem, NC

41 THE EFFECTS OF TREATMENT CONDITIONS ON SISTER CHROMATID EXCHANGE INDUCTION BY CIGARETTE SMOKE CONDENSATE
C.K. Lee, B.G. Brown, E.A. Reed, G.D. Lowe
R.J. Reynolds Tobacco Company, Winston-Salem, NC

59 FROM RATS TREATED WITH CIGARETTE SMOKE CONDENSATE: MUTAGENIC RESPONSE OF B(a)P, QUERCETIN AND AFB1 IN THE AMES ASSAY
M. Gomes, J. Rueff, A. Laires, T. Chaveca, J. Romao, M. Halpern
Faculty of Medical Sciences, Lisbon, Portugal

43 DIESEL EXHAUST MUTAGENICITY DURING MINING
G. Lofroth, G. Lazaridis, F. Nordstrom
Nordic School of Public Health, Gothenburg, University of Stockholm and University of Lulea, Lulea, Sweden

44 MUTAGENIC POTENCY OF BINARY MIXTURES OF POLYCYCLIC AROMATIC AND NITROAROMATIC HYDROCARBONS
T. Kellor, K.C. Donnelly, A. Akgerman, T.R. Irvin
Texas A&M University, College Station, TX

45 TESTING OF PETROLEUM MIDDLE DISTILLATES IN A MODIFIED AMES ASSAY
G.R. Blackburn, R.A. Deltch, C.A. Schreiner, C.R. Mackerer
Mobile Environmental & Health Science Laboratory, Princeton, NJ

46 EXTRACTION AND METABOLIC ACTIVATION PARAMETERS FOR PETROLEUM FRACTIONS IN A MODIFIED AMES ASSAY
R.A. Deltch, G.R. Blackburn, C.A. Schreiner, C.R. Mackerer
Mobil Environmental & Health Science Laboratory, Princeton, NJ

47 ACTIVATION CONDITIONS FOR DETECTING THE MUTAGENICITY OF AN EXTRACT OF A CRUDE PETROLEUM OIL IN MOUSE LYMPHOMA CELLS
T.R. Bartknecht, R.C. Nardone, R.W. Nalsmith
Pharmakon Research International, Incorporated, Waverly, PA
48
THE GENOTOXIC AND CARCINOGENIC POTENTIAL OF ENGINE OILS AND HIGHLY Refined LUBRICATING OILS
R.H. McKee, R.T. Przygoda (Intro. by S.C. Lewis)
Exxon Biomedical Sciences Incorporated, East Millstone, NJ

49
EVALUATION OF IN VIVO AND IN VITRO SHORT-TERM TESTS FOR SCREENING HAZARDOUS WASTES
U.S. Environmental Protection Agency and Environmental Health Research and Testing, Research Triangle Park, NC

50
USE OF THE MICROSCREEN PHAGE-INDUCTION ASSAY TO ASSESS THE GENOTOXICITY OF FOURTEEN UNFRACTIONATED HAZARDOUS WASTES
V.S. Houk, D.M. DeMarini
U.S. Environmental Protection Agency, Research Triangle Park, NC

TUMOR PROMOTION

51
A TPA-RESISTANT SUBPOPULATION OF HUMAN BRONCHIAL EPITHELIAL CELLS HAS ENHANCED GROWTH POTENTIAL
J.H. Sanchez, C.J. Boreiko, J.D. Iglehart, T.W. Hesterberg
Chemical Industry Institute of Toxicology, Research Triangle Park, NC and Duke University Medical Center, Durham, NC

52
EXAMINATION OF THE TUMOR-PROMOTING CAPABILITY OF STERCULIA FOETIDA OILS IN MALE F-344 RAT PANCREAS
SRI International, Menlo Park, CA and Oregon State University, Corvallis, OR

CELL TRANSFORMATION

53
INDUCTION OF MORPHOLOGICAL TRANSFORMATION IN C3H/10T1/2 C18 MOUSE EMBRYO FIBROBLASTS BY CARCINOGENIC NICKEL COMPOUNDS
T. Miura, J.R. Landolph
University of Southern California School of Medicine, Los Angeles, CA

54
ACRYLONITRILE AND ACRYLAMIDE FAIL TO TRANSFORM C3H/10T1/2 CELLS
D.J. Abernethy, C.J. Boreiko
Chemical Industry Institute of Toxicology, Research Triangle Park, NC

55
DEVELOPMENT OF AN EXPERIMENTAL SYSTEM TO EVALUATE THE ACTIVATION OF ONCOGENES BY CHEMICALS
A.P. Li, C.A. Myers, A.M. Klrk, C.W. Johnson
Monsanto Company, St. Louis, MO
THURSDAY, 1:30 PM
Ballroom 5

DNA REPAIR
J.L. Eppler and K.K. Richardson, Presiding

1:30  -------------------------------
RADIATION EFFECT ON THE DROSOPHILA MELANOGASTER GENETIC MATERIAL
J. Guzman R., C. Cortinas de Nava, O. Olivera R., M.E. de la Rosa D., Departamento de Radiobiologia, I.N.I.N., Salazar Estado de Mexico, and Instituto de Investigaciones Biomedicas, Mexico City, Mexico

1:45  -------------------------------
DNA BASE CHANGES INDUCED FOLLOWING IN VIVO EXPOSURE OF UNADAPTED AND ADAPTED E. COLI TO N-METHYL-N'-NITRO-N-NITROSOGUANIDINE
K.K. Richardson, R.M. Crosby, T.R. Skopek, Chemical Industry Institute of Toxicology, Research Triangle Park, NC

2:00  -------------------------------
FORWARD AND REVERSE MUTATION AT THE HPRT LOCUS IS DECREASED IN CHINESE HAMSTER CELLS EXPRESSING E. COLI ALKYLTRANSFERASE
M. Fox, J. Brennand, G.P. Margison, Paterson Institute for Cancer Research, Christie Hospital, Manchester, and Imperial Chemical Industries, Cheshire, UK

THURSDAY, 1:30 PM
Ballroom 6

HUMAN POPULATION MONITORING II
W.L. Bigbee and J.A. Reidy, Presiding

1:30  -------------------------------
SMOKING AND CHROMOSOME ABERRATIONS: EFFECTS OF CULTURE TIME AND CULTURE MEDIUM FOLATE
J.A. Reidy, A.T.L. Chen, J.L. Annest, T. Welty, Centers for Disease Control, Atlanta, GA

1:45  -------------------------------
SMOKING AND CHROMOSOME ABERRATIONS: EFFECT OF INDIVIDUAL FOLATE LEVELS ON ABERRATIONS IN 96-HOUR, LOW FOLATE CULTURES
A.T.L. Chen, J.A. Reidy, J.L. Annest, T. Welty, Centers for Disease Control, Atlanta, GA

2:00  -------------------------------
THE EFFECT OF LOW LEVEL STYRENE EXPOSURE IN BOAT BUILDERS ON SISTER CHROMATID EXCHANGE FREQUENCY
K.T. Kelsey, R. Letz, D. Wright, J.B. Little, Harvard School of Public Health, Boston, MA and Mt. Sinai Medical School, New York, NY

2:15  -------------------------------
MOLECULAR ANALYSIS OF GENETIC ALTERATION AT THE APRT LOCUS IN DNA REPAIR-PERFICIENT OR -DEFICIENT CHO CELLS
J.B. Scheerer, G.M. Adair, C. MacKinnon, K.A. Brotherman, P.A. Kimmitt, The University of Texas System Cancer Center, Smithville, TX

2:15  -------------------------------
SULPHASALAZINE CAUSES CHROMOSOME CHANGES IN PATIENTS WITH INFLAMMATORY BOWEL DISEASE
J.M. Mackay, D.P. Fox, P.W. Brunt, G.M. Howksworth, J.E. Brown, York University, Toronto, Ontario, Canada and University of Aberdeen, Scotland
THURSDAY, 1:30 PM
Parlors 1-3

COMPLEX MIXTURES II
N.Y. Kado and S.J. Rinkus, Presiding

1:30  MUTAGENICITY AND DNA DAMAGE IN CHINESE HAMSTER OVARY CELLS TREATED WITH COFFEE
S.J. Rinkus, S.J. Tyler, R.T. Taylor, Lawrence Livermore National Laboratory, Livermore, CA

1:45  NITROSATABLE PRECURSORS IN GRILLED FOODS
M. Nagao, K. Wakabayashi, M. Yano, T. Sugimura, National Cancer Center Research Institute, Tokyo, Japan

2:00  IDENTIFICATION AND MUTAGENICITY OF THE AMINOIMIDAZO-QUINOXALINES IN FRIED BEEF
M.G. Knize, N.H. Shen, S.K. Healy, J.S. Felton, Lawrence Livermore National Laboratory, Livermore, CA

THURSDAY, 1:30 PM
Parlors 7-9

MAMMALIAN CELLS IN VIVO
W.W. Au and M.T. Goldberg, Presiding

1:30  CHROMOSOME DAMAGING EFFECTS OF ALKYLATED AND HALOGENATED BENZENES ON BONE MARROW OF MICE
E. Mohtashami, K. Norpoth, Institute of Hygiene and Occupational Medicine, University Medical Center, Essen, W. Germany

1:45  IDENTIFICATION OF BENZENE AS A POTENT ENVIRONMENTAL GENOTOXIC AGENT
W.W. Au, J.B. Ward, Jr., M.T. Moslen, B.L. Harper, V.M.S. Ramanujam, M.S. Legator, The University of Texas Medical Branch, Galveston, TX

2:00  PERSISTENCE OF SCE-INDUCING DNA DAMAGE IN LYMPHOCYTES OF MICE ADMINISTERED L-PAM
P.J. Guzze, M.K. Conner, J.H. Turner, University of Pittsburgh, Pittsburgh, PA

2:15  FORMATION OF THE FRIED GROUND BEEF MUTAGENS 2-AMINO-3-METHYLMIDAZO[4,5-f]QUINOLINE (IQ) AND 2-AMINO-1-METHYL-6-PHENYLIMIDAZO-[4,5-b]PYRIDINE (PhIP) FROM L-PHENYLALANINE (Phe) + CREATININE (Cre) (OR CREATININE)
R.T. Taylor, E. Fultz, M.G. Knize, J.S. Felton, Lawrence Livermore National Laboratory, Livermore, CA

2:15  EFFECT OF CYSTEAMINE ON SCE INDUCTION BY GAMMA RAYS IN MURINE BONE MARROW CELLS IN VIVO
P. Morales-Ramirez, M.T. Mendiola Cruz, Instituto Nacional de Investigaciones Nucleares, Mexico City, Mexico
THURSDAY, 2:30 PM
Ballroom 5

DNA REPAIR
J.L. Epler and K.K. Richardson
Presiding

2:30
COMPLEMENTATION OF DNA
REPAIR DEFICIENCY IN MAM-
MALIAN CELLS BY THE
TRANSFER OF A SINGLE HUMAN
CHROMOSOME
R.S. Athwal, J. Bollu, L.H. Thomp-
son, New Jersey Medical School,
Newark, NJ and Lawrence Livermore
National Laboratory, Livermore, CA

2:45
MOLECULAR CLONING OF A HU-
MAN REPAIR GENE RESPONSIB-
LE FOR REJOINING OF DNA
DOUBLE-STRAND BREAKS
D.J. Chen, P.A. Jeggo, M.A.
Mclnnis, R.J. Reynolds, G.F. Strniste,
J.S. Tesmer, Los Alamos National Lab-
oratory, Los Alamos, NM

3:00
A PHOTOBIOLOGICAL EVALUA-
TION OF TANNING BEDS
C.L. Hix, A.A. Francis, W.L. Carrler,
J.D. Regan, Tennessee Technological
University, Cookeville, TN and Oak
Ridge National Laboratory, Oak
Ridge, TN

3:15
REPAIR OF DNA DAMAGED BY
ACTIVATED METABOLITES OF
AZABENZO(a)PYRENE IN HUMAN
CELLS
J.L. Epler, J.D. Regan, Oak Ridge
National Laboratory, Oak Ridge, TN

THURSDAY, 2:30 PM
Ballroom 6

HUMAN POPULATION
MONITORING II
W.L. Bigbee and J.A. Reidy,
Presiding

2:30
6-THIOGUANINE RESISTANT T-
LYMPHOCYTE DETERMINATION
AS A POSSIBLE INDICATOR OF
RADIATION EXPOSURE
P. Ostrosky-Wegman, R. Montero, M.
Gomez, C. Cortinas de Nava, Instituto
de Investigaciones Biomédicas, Mexico
City, Mexico

2:45
HPRT- MUTANT FREQUENCY
AMONG RADIOTHERAPY TECH-
NICIANS IS RELATED TO LEVELS
OF RECENTLY RECEIVED DOSE
OF IONIZING RADIATION
A.M. Selfert, W.E.C. Bradley, J.
Swartz, K. Messing, Université du
Quebec a Montreal and Institut du
Cancer de Montreal, Montreal, Que-
bec, Canada

3:00
MUTANT T-LYMPHOCYTES IN
HUMAN CORD BLOOD
M.J. McGinniss, R.J. Albertini,
University of Vermont, Burlington,
VT

3:15
EVIDENCE FOR ELEVATED
SOMATIC CELL MUTATIONS AT
THE GLYCOPHORIN A LOCUS IN
A-BOMB SURVIVORS
R.G. Langlols, W.L. Bigbee, M. Aki-
yama, R.H. Jensen, LLENL, Livermore,
CA and Radiation Effects Research
Foundation, Hiroshima, Japan

3:30 - 4:00 COFFEE BREAK
THURSDAY, 2:30 PM
Parlors 1-3

COMPLEX MIXTURES II
N.Y. Kado and S.J. Rinkus, Presiding

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2:30 ---------------------------------------------
MUTAGENIC METABOLITES IN URINE AND FECES OF RATS FED WITH 2-AMINO-3,8-DIMETHYLIMIDAZO-[4,5-F]QUINOXALINE (MeIQx), A CARCINOGENIC MUTAGEN PRESENT IN COOKED MEAT
H. Hayatsu, H. Kasai, S. Yokoyama, T. Miyazawa, Z. Yamaizumi, S. Sato, S. Nishihara, S. Arimoto, T. Hayatsu, Y. Ohara, Okayama University, Okayama, National Cancer Center, and University of Tokyo, Tokyo, Japan

2:45 ---------------------------------------------
COMPARATIVE GENOTOXICITY OF SIDESTREAM AND MAINSTREAM CIGARETTE SMOKE
L.G. Monteith, D.M. Simmons, C.B. Myers, T.J. Hughes, L.D. Claxton, Research Triangle Institute, and U.S. Environmental Protection Agency, Research Triangle Park, NC

3:00 ---------------------------------------------
GENOTOXIC EMISSION FACTORS FOR SIDESTREAM CIGARETTE SMOKE COMPONENTS

3:15 ---------------------------------------------
MUTAGENICITY OF PARTICULATE MATTER COLLECTED ON PERSONAL LOW VOLUME SAMPLING FILTERS FROM INDIVIDUALS EXPOSED TO ENVIRONMENTAL TOBACCO SMOKE (PASSIVE CIGARETTE SMOKE)

THURSDAY, 2:30 PM
Parlors 7-9

MAMMALIAN CELLS IN VIVO I
W.W. Au and M.T. Goldberg, Presiding

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2:30 ---------------------------------------------
THE RELATIONSHIP BETWEEN CHEMICALLY INDUCED HYPERPLASIA AND THE INDUCTION OF NEOPLASIA IN THE RAT KIDNEY
D.J. Loury, T.L. Goldsworthy, T. Smith-Oliver, J.A. Popp, B.E. Butterworth, Chemical Industry Institute of Toxicology, Research Triangle Park, NC

2:45 ---------------------------------------------
COMPARATIVE TUMORIGENICITY AND DEOXYRIBONUCLEIC ACID CONTENT OF TWO PHENO-TYPICALLY Variant CELL TYPES DERIVED FROM MOUSE ADENOCARCINOMA
M.A. Bempeng, K.I. Taylor, Norfolk State University, Norfolk, VA

3:00 ---------------------------------------------
THE NUCLEAR ABERRATION ASSAY APPLIED TO HAIR FOLLICLE CELLS AND URINARY BLADDER EPITHELIUM
M.T. Goldberg, A.M. Vedelago, V.J. Mummery, University of Guelph, Guelph, Ontario, Canada

3:15 ---------------------------------------------
THE NUCLEAR ABERRATION ASSAY REVISITED
M.J. Wargovitch, M.T. Goldberg, University of Texas System Cancer Center, Houston, TX and University of Guelph, Ontario, Canada

3:30 - 4:00  COFFEE BREAK
35
NEW APPROACHES IN ENVIRONMENTAL MUTAGENESIS

Ballroom 5
Raymond R. Tice, Presiding

Sponsor: R.J.R.- Nabisco

This symposium will introduce and summarize exciting new methodologies for the detection and analysis of genotoxic damage in eukaryotic cells. The novel methods presented will utilize in vitro and in vivo systems and range from single cell approaches for detecting DNA damage to a sensitive and reliable technique for the identification of agents capable of inducing aneuploidy.

4:00 FLUORESCENCE HYBRIDIZATION TECHNIQUES FOR THE ANALYSIS OF GENETIC DAMAGE
Daniel Pinkel
Lawrence Livermore National Laboratory

4:30 ANALYSIS FOR GENOTOXIC EFFECTS USING RODENT-HUMAN MONOCHROMOSOMAL HYBRIDS
Ragibir Athwal
New Jersey Medical School

5:00 A SIMPLE TECHNIQUE FOR QUANTITATION OF LOW LEVELS OF DNA DAMAGE IN SINGLE CELLS
Narendra Singh
National Institute on Aging

5:30 SELECTIVE ACTIVATION OF ENDOGENOUS ECOTROPIC RETROVIRUSES IN THE MOUSE
Richard Irons
Chemical Industry Institute of Toxicology

6:30 pm - 9:30 pm

AWARDS AND RECEPTION

Ballroom 5

Sponsors: Microbiological Associates, Inc.
Hazelton Laboratories America, Inc.
A Multidisciplinary Approach to Toxicology

The Research Triangle Institute (RTI) offers unique capabilities for a multidisciplinary approach in evaluating the toxic potential of pure compounds and complex environmental mixtures. This includes both method development and validation as well as chemical sample collection and analysis. The research staff of over 1,200 employees can assist your organization with a research approach and a cost estimate. If RTI can be of service, call the number listed below.

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- Collection of Samples
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- Chemical Analysis
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  - In Vivo Mutagenesis
  - Teratology
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  - Acute Toxicology
  - Neurobehavioral Toxicology
  - Metabolism Studies
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  - Design of Endocrine Experiments
  - Receptor Binding Assays
- Statistical Analysis
- Risk Assessment

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Questions: For an immediate reply contact:

Dr. Frederick J. de Serres, Director
Center for Life Sciences and Toxicology
Research Triangle Institute
Post Office Box 12194
Research Triangle Park, North Carolina 27709
(919) 541-6516
The goal of the Alexander Hollaender Symposium is to summarize some of the exciting progress in understanding the mutational basis of human disease. The insights gained have implications in relieving the burden of genetic diseases in human beings, in monitoring populations for any increase attributable to environmental hazards, and, maybe, in changing future directions of mutation research in general.

Three lectures address complicated biological and societal issues in somatic cell mutagenesis: Do fragile sites on chromosomes indicate potentially treatable damage from environmental exposures that contribute to cancer? How do the diverse mutants of collagen synthesis explain hereditary diseases of connective tissue? How realistic are prospects for treating human genetic disease by replacing mutant genes?

Three speakers review approaches to understanding germ cell mutagenesis in human beings. How well do rodent assays serve as a basis for setting standards for protecting the human genome from environmental mutagens? How have new assays and new dose calculations improved the understanding of genetic damage from ionizing radiation in Japan? Are other interdisciplinary studies of other human populations feasible and likely to yield new insights?

8:30 FRAGILE SITES AND HUMAN CANCER
Jorge Yunis
University of Minnesota Medical School

9:00 MUTANTS OF COLLAGEN AND OSTEOGENESIS IMPERFECTA
Peter Byers
University of Washington

9:30 PROSPECTS FOR HUMAN GENE THERAPY: FACT AND FICTION
Theodore Friedman
University of California San Diego

10:00 COFFEE BREAK
10:30 GERM CELL MUTATION IN MICE: STANDARDS FOR PROTECTING THE HUMAN GENOME
   Udo Ehling
   Gesellschaft fur Strahlen- und Umweltforschung, FRG

11:00 GERM CELL MUTATION IN HUMAN BEINGS: CURRENT RESULTS FROM JAPAN
   James Neel
   University of Michigan

11:30 OTHER APPROACHES: SENTINEL PHENOTYPES AND OFFSPRING OF CANCER PATIENTS
   John Mulvihill
   National Cancer Institute

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12:00 pm  ANNUAL BUSINESS MEETING
   Ballroom 5

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1:30 pm - 2:30 pm  SPECIAL LECTURE
   INTERACTION OF CANCER RESEARCH AND ENVIRONMENTAL MUTAGEN STUDIES - PAST, PRESENT AND FUTURE
   TAKASHI SUGIMURA
   PRESIDENT
   NATIONAL CANCER CENTER, JAPAN
   Ballroom 5
   Sponsor: Pharmakon Research International, Inc.
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********** NOTES **********
FRIDAY, 10 APRIL 1987
Ballroom 4
2:30 - 4:00 PM

POSTER SESSION II

Posters are to be set up by 9:00 am of their scheduled day, and to remain up for viewing until 5:00 pm. It is required that an author be present during the scheduled poster session.

Coffee will be available at the beginning of the Poster Session.

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RISK ASSESSMENT
==================================

1. GENETIC TOXICOLOGY: A CRITICAL APPRAISAL
   D. Clive
   Burroughs Wellcome Company, Research Triangle Park, NC

2. SIGNIFICANCE OF NON-GENOTOXICITY IN THE PREDICTION OF CARCINOGENIC RISK TO HUMANS
   Case Western Reserve University School of Medicine, Cleveland, OH

3. GENOTOXICITY ASSESSMENT OF TRIMETREXATE: A NEW ANTICANCER DRUG
   M.L. Kropko, J.C. Theiss, G.D. Stoner, F.A. de la Iglesia
   Warner-Lambert/Parke-Davis Pharmaceutical Research, Ann Arbor, MI and
   Medical College of Ohio, Toledo, OH

4. QUANTITATIVE COMPARATIVE MUTAGENICITY TESTING OF A DRUG CANDIDATE: COUPLING OF KNOWLEDGE OF MECHANISMS OF TOXIFICATION PROVIDES A POWERFUL RISK ASSESSMENT
   The Upjohn Company, Kalamazoo, MI, Pharmakon Research International, Waverly, PA, and University of Wisconsin, Madison, WI

5. INFLUENCE OF THE VARYING EXPRESSION OF THE A<sup>7</sup> MUTATION ON THE PROPORTION OF (YS x VY) F-1 HYBRID MICE SUSCEPTIBLE TO LINDANE-ASSOCIATED TUMOR FORMATION
   G.L. Wolff, R.L. Morrissey
   National Center for Toxicological Research, Food and Drug Administration, Department of Health and Human Services, Jefferson, AR, and Pathology Associates Incorporated, Ijamsville, MD

6. MUTAGENICITY ACTIVITY OF FISH MUSCLE EXTRACTS
   R.D. Bible, C.D. Mohr, O.C. Pancorbo
   East Tennessee State University, Johnson City, TN, and University of Georgia, Athens, GA
DNA REPAIR

7 CLONING OF A HUMAN GENE THAT RESTORES NORMAL SCE AND STRAND-BREAK REPAIR TO CHO MUTANT LINE EM9
K.W. Brookman, L.H. Thompson, C.C. Collins, S.A. Stewart, J.L. Minkler, A.V. Carrano
Lawrence Livermore National Laboratory, Livermore, CA

8 CLONING AND CHARACTERIZATION OF A HUMAN GENE WHICH COMPLEMENTS THE NUCLEOTIDE EXCISION REPAIR DEFICIENT CHO CELL LINE UV5
Lawrence Livermore National Laboratory, Livermore CA

9 ISOLATION OF HUMAN DNA SEQUENCES ASSOCIATED WITH A DNA EXCISION REPAIR GENE
M.A. MacInnes, R. Okinaka, D.J. Chen, R.J. Reynolds, J.G. Tesmer, G.F. Strniste
Los Alamos National Laboratory, Los Alamos, NM

10 RESISTANCE TO THE TOXIC EFFECTS OF 5-BROMO-2'-DEOXYURIDINE AND WHITE-LIGHT IRRADIATION IN A SYRIAN HAMSTER CELL LINE
E.R. Kaufman
University of Illinois College of Medicine, Chicago, IL

11 TEMPERATURE AND SPECTRAL STUDIES ON A UV-INDUCED PHOTOSENSITIVE LESION IN THE DNA OF HUMAN CELLS
A.A. Francis, J. D. Regan
Oak Ridge National Laboratory, Oak Ridge, TN

12 ANALYSIS OF THREE REPAIR PATHWAYS ASSOCIATED WITH MNNG SUSCEPTIBILITY IN LEUKOCYTES FROM ALZHEIMER'S DISEASE PATIENTS
J.D. Bartlett, W.G. Bradley, S.H. Robison
University of Vermont, Burlington, VT

13 EVALUATION OF ACRYLAMIDE IN RODENT HEPATOCYTE DNA/REPAIR ASSAYS
T.R. Barfknecht, D.J. Mecca, R.W. Nalsmith
Pharmakon Research International, Incorporated, Waverly, PA

14 EVALUATION OF FOUR SCORING METHODS AND COMPARISON OF RAT STRAIN DIFFERENCES IN THE IN VITRO UNSCHEDULED DNA SYNTHESIS (UDS) ASSAY
The Upjohn Company, Kalamazoo, MI
15
THE ROLE OF DNA EXCISION REPAIR IN THE MODULATION OF MUTATION INDUCED IN CHINESE HAMSTER CELLS BY 2 AMINOFLUORENE DERIVATIVES
R.T. Okinaka, T.W. Whaley, G.F. Strniste
Los Alamos National Laboratory, Los Alamos, NM

PROKARYOTIC STUDIES

16
FORMALDEHYDE INDUCES DNA BASE CHANGES IN E. COLI AND RESTRICTION FRAGMENT PATTERN ALTERATIONS IN HUMAN LYMPHOBLASTS
Chemical Industry Institute of Toxicology, Research Triangle Park, NC, and Harvard School of Public Health, Boston, MA

17
COLONY PROBING OF SALMONELLA TYPHIMURIUM HISD3052 REVERTANTS
Food and Drug Administration, Washington, DC

18
THE MECHANISM OF AFLATOXIN B1 DIRECT-ACTING MUTAGENICITY
H.E. Olsen, N.Y. Kado, D.P.H. Hsieh
University of California, Davis, CA

19
INDUCTION OF GENETIC DUPLICATIONS IN BACTERIA BY β-PROPIOLACTONE AND STRYCHNINE
G.R. Hoffmann, K.M. Sprague, C.C. Van Haight, J.A. Wrobel, D.H. Wroblewski
College of the Holy Cross, Worcester, MA

20
MUTATIONAL FINGERPRINT ANALYSIS OF CHEMICAL INTERMEDIATES GENERATED BY DMN, DEN, AND RELATED COMPOUNDS
NCl-Frederick Cancer Research Facility, Frederick, MD

21
A GENOTOXIC ANALYSIS OF COBALTOUS ACETATE UTILIZING THE SALMONELLA MUTAGENICITY ASSAY AND THE MOUSE MICRONUCLEUS TEST
L.J. Turoczi, M. Bauzon, L. Kocur
Wilkes College, Wilkes-Barre, PA

22
MUTAGENICITY STUDY OF SULFUR MUSTARD IN THE SALMONELLA HISTIDINE REVERSION TEST
D.L. Stewart (Introd. by R.F. Jostes)
Pacific Northwest Laboratories, Richland, WA
23 MUTAGENICITY STUDIES OF BENZOYL PEROXIDE IN BACTERIA
T.I. Matula, R.H. Downie, N. Barrett
Health and Welfare Canada, Ottawa, Ontario, Canada

24 MUTAGENICITY OF FINE SAND COLLECTED FROM RIYADH
M.A. Hannan, H.Y. Aboul-Eneln, A.A.R. Al-Dakan
King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia

25 MUTAGENIC ACTION OF CROWN ETHERS
P. Arenaz, K. Pannell, S. Garcia, University of Texas, El Paso, TX

26 MUTAGENICITY OF VOLATILE ORGANIC COMPOUNDS COMMONLY
FOUND AS CONTAMINANTS IN POTABLE WATER SUPPLIES
T.D. Calandra, J.E. Caruso, S. Shahied
New Jersey State Department of Health, Trenton, NJ

27 MUTAGENICITY OF NITROFURANS IN SALMONELLA TYPHIMURIUM TA98,
TA98NR, AND TA98/1,8-DNP
Y.-C. Ni, R.H. Heflich, F.F. Kadlubar, P.P. Fu
National Center for Toxicological Research, Jefferson, AR

28 MUTAGENICITY OF 31 ORGANIC COMPOUNDS IN A MODIFIED PREINCUBATION AMES ASSAY WITH SALMONELLA TYPHIMURIUM STRAINS TA100 AND TA102
T.J. Hughes, D.S. Simmons, L.G. Montelth, L.E. Myers, L.D. Claxton
Research Triangle Institute and U.S. Environmental Protection Agency, Research Triangle Park, NC

29 INHIBITORY EFFECT OF CHLOROPHYLLIN ON AFLATOXIN B1-
INDUCED MUTATION IN SALMONELLA TYPHIMURIUM
W-Z. Whong, J. Stewart, H.E. Brockman, T. Ong
National Institute for Occupational Safety and Health, Morgantown, WV and Illinois State University, Normal, IL

30 MUTAGENICITY OF CrIII AND CrVI COMPOUNDS IN THE PRESENCE OF
MANNITOL, DITHIOHREITOL AND ANAEROBIOSES
S.J. Rogers, D.A. Pagano, E. Zeiger
Montana State University, Bozeman, MT and National Institute of Environmental Health Sciences, Research Triangle Park, NC

31 THE RELATIONSHIP BETWEEN COVALENT DNA BINDING AND REVERTANT YIELD IN THE SALMONELLA MUTAGENICITY (AMES) ASSAY - IMPLICATIONS FOR ASSAY SPECIFICITY
R.H. Dashwood, Oregon State University, Corvallis, OR
32 PRELIMINARY EVALUATION OF TREATMENT AND SELECTION CONDITIONS WHICH EFFECT EXPRESSION OF ANTHRACYCLINE MUTAGENICITY IN SALMONELLA TYPHIMURIUM
H.F. Thomas, University of Kentucky, Lexington, KY

33 INCORPORATION OF TA97a INTO A STANDARD AMES TEST PROTOCOL
C.E. Piper, C.D. Kuzdas, G.D. Searle & Company, Skokie, IL

34 DYE TECHNIQUE DIFFERENTIATES TEST MATERIAL PRECIPITATE FROM SALMONELLA TYPHIMURIUM COLONIES
Chevron Environmental Health Center, Incorporated, Richmond, CA and Microbiological Associates, Incorporated, Bethesda, MD

35 PROTOCOLS FOR THE SOS/UMU CHROMOTEST
C. Barber, C. Smith, W.S. Barnes, Clarion University of Pennsylvania, Clarion, PA

==================================
CYTOGENETICS
==================================

36 DEVELOPMENT OF A MICRONUCLEUS ASSAY TO SCREEN FOR CLASTOGENICITY IN LS178Y MOUSE LYMPHOMA CELLS
C.L. Doerr, K.H. Brock, M.M. Moore, Environmental Health Research and Testing and U.S. Environmental Protection Agency, Research Triangle Park, NC

37 EVALUATION OF A SIMPLIFIED PROTOCOL FOR THE MOUSE BONE MARROW MICRONUCLEUS ASSAY
M. Garriott, C. Piper, A. Kokkino, G.D. Searle & Company, Skokie, IL

38 GENDER AND AGE DIFFERENCES IN THE MICRONUCLEUS TEST WITH BENZENE AND CYCLOPHOSPHAMIDE
B.L. Harper, M.S. Legator
The University of Texas Medical Branch, Galveston, TX

39 AN ANALYSIS OF THE FREQUENCY AND DISTRIBUTION OF MICRONUCLEI IN PERIPHERAL BLOOD ERYTHROCYTES OF CONTROL AND BENZENE EXPOSED MICE
C.A. Luke, R.R. Tice, Brookhaven National Laboratory, Upton, NY

40 COMPARATIVE SENSITIVITY OF PEROMYSCUS LEUCOPUS AND MUS MUSCULUS TO BENZENE-INDUCED BONE MARROW DAMAGE

47
41 AN ANALYSIS OF THE TIME-DEPENDENT INDUCTION OF CHROMOSOMAL ABERRATIONS (CA) AND SISTER CHROMATID EXCHANGES (SCE) IN MOUSE BONE MARROW CELLS IN VIVO

42 PRELIMINARY COMPARISON OF THREE CYTOGENETIC ASSAYS FOR GENOTOXICITY IN MOUSE BONE MARROW CELLS
Oak Ridge Associated Universities, Oak Ridge, TN

43 A COMPARISON OF THE FREQUENCIES OF CHROMOSOME BREAKAGE IN MOUSE AND HUMAN PERIPHERAL BLOOD LYMPHOCYTES (PBLs) FOLLOWING GAMMA IRRADIATION
Environmental Health Research and Testing, and U.S. Environmental Protection Agency, Research Triangle Park, NC, and Duke University Medical Center, Durham, NC

44 A COMPARISON OF THE FREQUENCIES OF CHROMOSOMAL ABERRATIONS AND MICRONUCLEI IN MOUSE PERIPHERAL BLOOD LYMPHOCYTES EXPOSED TO GAMMA IRRADIATION IN VITRO
Environmental Health Research and Testing, and U.S. Environmental Protection Agency, Research Triangle Park, Duke University Medical Center, Durham, NC

45 THE EFFECT OF HYDROXYL RADICAL SCAVENGERS ON X-RAY INDUCED DNA DAMAGE IN NORMAL AND DOWN SYNDROME (DS) LYMPHOCYTES
R.A. MacLaren, W.W. Au, V.M.S. Ramanuljam, M.S. Legator
The University of Texas Medical Branch, Galveston, TX

46 TOXICITY ASSESSMENT AND IN VITRO CHROMOSOME ABERRATION TESTS
M.J. Armstrong, S.M. Galloway
Merck Institute for Therapeutic Research, West Point, PA

47 A COMPARISON OF CYTOTOXICITY INDICATORS FOR IN VITRO CYTOGENETICS
McNeil Pharmaceutical, Spring House, PA

48 MUTAGENIC ACTION OF SODIUM AZIDE IN MAMMALIAN CELLS
P. Arenaz, University of Texas, El Paso, TX
49
GENOTOXICITY STUDIES OF 1,1,1- AND 1,1,3-TRICHLOROACETONES (TCA)
W.F. Blazak, J.R. Meier, B.E. Stewart, D.C. Blachman, J.T. Deahl
SRI International, Menlo Park, CA and U.S. Environmental Protection Agency, Cincinnati, OH

50
EFFECTS OF CHRONIC EXPOSURE TO 2,3,7,8-TETRACHLORODIBENZOP-DIOXIN ON CYTOGENETIC ENDPOINTS IN PERIPHERAL BLOOD LYMPHOCYTES OF THE RHESUS MONKEY
M. Lim, D. Jacobson-Kram, J.R. Williams
Johns Hopkins University Oncology Center, Baltimore, MD

51
EFFECT OF STEROID HORMONES ON CHROMOSOME CHANGES IN CULTURED CHO CELLS
T.S. Kochhar, M. Rusch, M. Cox, H. Doung, Kentucky State University, Frankfort, KY

52
IMMUNE RESPONSE AND CYTOGENETIC EFFECTS OF PRAZIQUANTEL ON CYSTICERCOTIC SWINE
Instituto de Investigaciones Biomedicas, Mexico City, Mexico

53
INTERLABORATORY REPRODUCIBILITY OF CHEMICALS TESTED IN THE IN VITRO CHROMOSOME ABERRATION AND SISTER CHROMATID EXCHANGE ASSAYS
B.A. Tainer, E. Zelger, M.A. Resnick
National Institute of Environmental Health Sciences, Research Triangle Park, NC

54
ANALYSIS OF CHROMOSOMAL ALTERATIONS DURING TUMOR DEVELOPMENT
C.B. Bast, R.J. Preston, R.J.M. Fry, Oak Ridge National Laboratory and University of Tennessee Graduate School of Biomedical Sciences, Oak Ridge, TN

55
RESTRICTION ENDONUCLEASE-INDUCED CHROMOSOME ABERRATIONS IN HUMAN LYMPHOBLASTOID CELLS
R.J. Preston, G.J. Hook, R.A. Winegar, University of Tennessee Biomedical Graduate School and Oak Ridge National Laboratory, Oak Ridge, TN

56
THE EFFECTS OF HYDROXYUREA (HU) AND CYTOSINE ARABINOSIDE (araC) ON THE EXPRESSION OF THE COMMON FRAGILE SITE AT 3p14 (FRA3B)
X.Z. Li, Z.A. Yan, X.T. Zhou, Institute of Genetics, Academia Sinica, Beijing, China

57 (Late poster; no abstract)
THE USE OF FERTILISED ONE-CELL EMBRYOS TO DETECT NUMERICAL CHROMOSOME ABERRATIONS
R. Albanese, (Imperial Chemical Industries PLC, Macclesfield Cheshire, England)
FRIDAY, 4:00 PM
Ballroom 5

PROKARYOTIC MUTAGENESIS
T. Ong and R.A. Pelroy,
Presiding

FRIDAY, 4:00 PM
Ballroom 6

MOLECULAR MECHANISMS
IN MAMMILLIAN CELLS
G.M. Adair and M. Mazar,
Presiding

4:00 ---------------------------------------------------------------------
ANTIMUTAGENIC ACTIVITY OF CHLOROPHYLLIN AGAINST
COMPLEX ENVIRONMENTAL MIXTURES AND CHEMICAL MUTO-
GENS USING A SALMONELLA FORWARD MUTATION ASSAY
SYSTEM
J.H. Russell, J. Nath, T. Ong, West
Virginia University and National Insti-
tute for Occupational Safety and
Health, Morgantown, WV

4:00 ---------------------------------------------------------------------
BENZO[a]PYRENE DIOL-EPOXIDE
MUTAGENESIS AT THE APRT
LOCUS IN CHO CELLS
M. Mazar, B.W. Glickman, York
University, Toronto, Canada

4:15 ---------------------------------------------------------------------
THE INVOLVEMENT OF OXYGEN
IN BISULFITE MUTAGENESIS
D.A. Pagano, E. Zelger, National Insti-
tute of Environmental Health Sci-
tences, Research Triangle Park, NC

4:15 ---------------------------------------------------------------------
The SPECIFICITY OF UV-
INDUCED MUTATIONS AT AN EN-
DOGENOUS LOCUS IN MAM-
MALIAN CELLS
E.A. Drobetsky, A.J. Grosovsky, B.W.
Glickman, York University, Toronto,
Canada

4:30 ---------------------------------------------------------------------
MUTATIONAL SYNERGISM BET-
WEEN CHEMICAL MUTAGENS
AND HIGHLY AROMATIC CHEM-
ICAL MIXTURES
R.A. Pelroy, D.L. Stewart, E.J. Sass,
Pacific Northwest Laboratory, Rich-
land, WA

4:30 ---------------------------------------------------------------------
KINDS OF MUTATIONS FORMED
WHEN A SHUTTLE VECTOR CON-
TAING ADDUCTS OF THE
"ANTI" 7,8-DIOL-9,10-EPOXIDE OF
BENZO[a]PYRENE (BPDE) REPI-
CATES IN HUMAN CELLS
J.-L. Yang, V.M. Maher, J.J. McCor-
mick, Michigan State University, East
Lansing, MI

4:45 ---------------------------------------------------------------------
MUTANTS OF E. COLI SENSITIVE
TO PEROXIDE AND NEAR-
ULTRAVIOLET RADIATION (NUV)
A. Elsenstark, University of Missouri,
Columbia, MO

4:45 ---------------------------------------------------------------------
MUTATION, INACTIVATION, OR
LOSS OF THE APRT GENE IN
APRT+ CHO CELL TRANSFEC-
TANTS
G.M. Adair, R.S. Naurn, K.A. Broth-
erman, University of Texas System
Cancer Center, Smithville, TX

50
FRIDAY, 4:00 PM
Parlors 1-3

METABOLISM
W.F. Blazak and B.S. Shane, Presiding

4:00 -----------------------------------------
ACTIVATION OF NITRO-SUBSTITUTED PAH BY CHEMICAL REDUCTION IN THE AMES PLATE INCORPORATION ASSAY
J.M. Goldring, L.M. Ball, A. Gold, R. Sangalah, University of North Carolina, Chapel Hill, NC

4:15 -----------------------------------------
MUTAGENICITY OF D- AND L-ISOMERS OF AZIDOALANINE (AZIDE METABOLITE)
W.M. Owais, R.C. Ronald, A. Kleinhofs, R.A. Nilan, Yarmouk University, Irbid, Jordan and Washington State University, Pullman, WA

4:30 -----------------------------------------
MUTAGENIC AND CLASTOGENIC EFFECTS OF 3-CHLORO-4-(DICHLOROMETHYL)-5-HYDROXY-2(5H)-FURANONE (MX) AND ITS DETOXICATION BY LIVER S-9 COMPONENTS

4:45 -----------------------------------------
ACTIVITIES OF XENOBIOTIC METABOLISM ENZYMES IN CELLS COMMONLY USED IN GENOTOXICITY ASSAYS
D. McGregor, I. Edwards, W. Caspary (Intro by R. Tennant), Inveresk Research International Limited, Musselburgh, Scotland and National Institute of Environmental Health Sciences, Research Triangle Park, NC

FRIDAY, 4:00 PM
Parlors 7-9

GERM CELL AND HERITABLE MUTATIONS
R.L. Dobson and K.S. Lavappa, Presiding

4:00 -----------------------------------------
CORRELATION BETWEEN ENU-INDUCED MUTATION FREQUENCY AND DNA-REPLICATION PROCESS IN MOUSE STEM-CELL SPERMATOGONIA
W.L. Russell, P.R. Hunsleker, J.W. Bangham, Oak Ridge National Laboratory, Oak Ridge, TN

4:15 -----------------------------------------
DNA BREAKAGE AND REPAIR IN MOUSE SPERMATOCYTES AND SPERMATIDS AFTER EXPOSURE TO X RAYS OR ETHYLENE OXIDE
G.A. Segato, E.E. Generoso, Oak Ridge National Laboratory, Oak Ridge, TN

4:30 -----------------------------------------
GENETIC DAMAGE AND THE EXPRESSION OF BEHAVIORAL ABNORMALITIES IN THE PROGENY OF MALE RATS EXPOSED TO IONIZING RADIATION
M.C. Lowery, K. Rithldech, W.W. Au, P.M. Adams, M.S. Legator, The University of Texas Medical Branch, Galveston, TX

4:45 -----------------------------------------
RADIATION INDUCTION OF GENETIC DAMAGE IN MOUSE IMMATURE OOCYTES CONFIRMED AND MEASURED
R.L. Dobson, T. Straume, T.C. Kwan, Lawrence Livermore National Laboratory, Livermore, CA
FRIDAY, 5:00 PM
Ballroom 5

PROKARYOTIC MUTAGENESIS
T. Ong and R.A. Pelroy, Presiding

5:00
MECHANISMS OF GLUTATHIONE MUTAGENICITY IN SALMONELLA
E. Zelger, A.-A. Stark, D.A. Pagano, National Institute of Environmental Health Sciences, Research Triangle Park, NC and Tel-Aviv University, Tel-Aviv, Israel

5:15
COMPARATIVE ANTIMUTAGENICITY OF FIVE COMPOUNDS AGAINST MUTAGENIC COMPLEX MITURXURES
T. Ong, W.Z. Whong, J. Stewart, H.E. Brockman, National Institute for Occupational Safety and Health, Morgantown, WV and Illinois State University, Normal, IL

5:30
MACROPHAGE- DERIVED OXYGEN FREE RADICALS INDUCE MUTATIONS IN SALMONELLA TA102
X. Partos, K. Mortelmans, SRI International, Menlo Park, CA

5:45
HISTIDINE BIOASSAY USING SALMONELLA - POSSIBLE APPLICATIONS TO Ames TEST
D.B. Busch, G.T. Bryan, Armed Forces Institute of Pathology, Washington, D.C. and University of Wisconsin, Madison, WI

5:00
Molecular Mechanisms in Mammalian Cells
G.M. Adair and M. Mazur, Presiding

5:15
A COMPARISON OF MUTATIONS INDUCED BY X-RAYS AND ETHYLMETHANESULFONATE (EMS) AT THE HGPR AND TK LOCI IN TK6 HUMAN LYMPHOBLASTIC CELLS
H.L. Liber, D.W. Yandell, J.B. Little, Harvard School of Public Health, Boston, MA

5:30
IN VITRO MUTATION INDUCTION BY GAMMA IRRADIATION IN HUMAN T-LYMPHOCYTES
J.P. O'Neill, L.M. Sullivan, J.A. Nicklas, T.C. Hunter, R.J. Albertini, University of Vermont, Burlington, VT

5:45
THE RELATIONSHIP BETWEEN BENZO(A) PYRENE DIOL-EPOXIDE-DNA ADDUCTS AND MUTAGENICITY IN THE CHO/HGPT ASSAY
L. Recio, L.R. Shugart, A.W. Hsie (Intro. by J.S. Wassom), University of Kentucky, Lexington, KY, Oak Ridge National Laboratory, Oak Ridge, TN, and The University of Texas Medical Branch, Galveston, TX

6:00
MAGNIFYING MEASUREMENT OF INDUCED MUTAGENIC RESPONSES IN THE Ames TEST
M.S. Masri, V.G. Randall, USDA Western Regional Research Center, Berkeley, CA
FRIDAY, 5:00 PM
Parlors 1-3

METABOLISM
W.F. Blazak and B.S. Shane, Presiding

5:00
A COMPARATIVE STUDY OF THE ACTIVATION OF BENZO(A)-PYRENE (BP) AND 2-AMINOFLUORENE(AF) TO MUTAGENS BY HEPATIC S9 FRAC-
TIONS FROM CRAYFISH, FISH AND RATS, AS MEASURED IN THE AMES ASSAY
B.S. Shane, A.M. Troxclair, C.S. Jewell, G.W. Winston, Louisiana State University, Baton Rouge, LA

5:15
HYPOCHLORITE ACTIVATION OF B[a]P-7,8-DIHYDRODIOLS TO MUTAGENS. A MECHANISM FOR MUTAGENIC ACTIVATION BY STIMULATED POLYMORPHONUCLEAR LEUKOCYTES?
H.H. Sellier, W.H. Koch, G.H. Posner, The Johns Hopkins University, Baltimore, MD

5:30
FACTORS RESPONSIBLE FOR SPECIES DIFFERENCES IN BLADDER CANCER INDUCTION
Y. Sharief, S. Knowles, V. Schligur, T.K. Rao, R. Langenbach, Integrated Laboratory Systems, and National Institute of Environmental Health Sciences, Research Triangle Park, NC

5:45
EFFECT OF DIETARY TRANS FATTY ACIDS ON MUTAGENICITY
N.R. Green, M. Schaub, Florida State University, Tallahassee, FL

FRIDAY, 5:00 PM
Parlors 7-9

GERM CELL AND HERITABLE MUTATIONS
R.L. Dobson and K.S. Lavappa, Presiding

5:00
VINCristINE-INDUCED ANEUPLOIDY IN GERMINAL AND SOMATIC CELLS OF THE CHINESE HAMSTER
K.S. Lavappa, M.W. O'Donnell, C.W. Sheu, U.S. Food and Drug Administration, Washington, DC

5:15
INVESTIGATION OF ABNORMAL FOETUSES IN THE LITTERS OF MALE RATS CHRONICALLY TREATED WITH CYCLOPHOSPHAMIDE

5:30
TWO-DIMENSIONAL GEL ELECTROPHORESIS FOR THE DETECTION OF HERITABLE MUTATIONS AS QUANTITATIVE ALTERATIONS IN PROTEIN EXPRESSION
C.S. Giometti, J. Taylor, D. Grahn, Argonne National Laboratory, Argonne, IL

5:45
MOLECULAR ANALYSIS OF DIEPOXYBUTANE INDUCED MUTATIONS IN DROSOPHILA MELANOGASTER
J.T. Reardon (Intro. by P.D. Smith), Southern Methodist University, Dallas, TX
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ROLE OF BIOTECHNOLOGY IN GENETIC ANALYSIS

Ballroom 5
James S. Felton, Presiding

Sponsor: University of California Biotechnology Research and Education Program

The continued growth of the disciplines utilizing recombinant DNA technology has brought about many new techniques that have application to the field of Environmental Mutagenesis. The analysis of the mechanisms of DNA damage has begun to use DNA sequencing as a direct measurement of chemical and radiation induced base changes. A new method for automating DNA sequencing will be presented which will increase the yield of this currently labor intense technique. Once sequences of various genes have been determined they are recorded in the Genbank Database, but errors in this database can occur and the kinds and frequencies of these errors will be discussed. Knowing the sequence of a particular gene can lead to specific base changes to engineer a better protein, and this has become a much more feasible approach with the use of a technique called "Cassette Mutagenesis". A new technique which can duplicate a gene or a small portion of a gene many times over using specific DNA primer sequences can make in vitro gene amplification a usable method for analysis of just a few copies of DNA. The mapping and ordering of the human genome will require separation of large pieces of DNA following specific restriction enzyme cleavage and a method called "Pulsed Field Electrophoresis" can separate these very large oligonucleotides where conventional methods fail. It is hoped that these new techniques which were mainly developed to solve specific problems, will find applications in Environmental Mutagenesis studies as well.

8:30 AUTOMATED DNA SEQUENCING
Elaine Heron
Applied Biosystems, Inc.

9:00 ERRORS IN ANALYSIS OF GENETIC SEQUENCES FROM THE GENBANK DATA BASE
Christian Burks
Los Alamos National Laboratory

9:30 CASETTE MUTAGENESIS
Mike Kriegler and Carl Perez
Cetus, Inc.

10:00 COFFEE BREAK

10:30 IN VITRO GENE AMPLIFICATION
Kary Mullis
Xytronyx, Inc.

11:00 PULSED FIELD ELECTROPHORESIS IN HUMAN GENE MAPPING
Cassandra Smith
Columbia University
SATURDAY, 1:30 PM
Ballroom 5

CYTOGENETIC TESTING II
R.J. Preston, Presiding

1:30 ---------------------------------
SCE FREQUENCIES IN CHO CELLS EXPOSED SIMULTANEOUSLY TO ADRIAMYCIN AND RADIOFREQUENCY RADIATION
V. Claravino, M.L. Meltz, D.N. Erwin, University of Texas Health Science Center and USAF School of Aerospace Medicine, San Antonio, TX

1:45 ---------------------------------
INTERACTION OF RESTRICTION ENDONUCLEASE-INDUCED DNA DAMAGE WITH DNA REPAIR INHIBITORS IN THE PRODUCTION OF CHROMOSOME ABERRATIONS.
R.A. Winegar and R.J. Preston, University of Tennessee, Oak Ridge National Laboratory, Oak Ridge, TN

2:00 ---------------------------------
MUTAGEN HYPERSONSITIVITY AND MUTAGEN-INDUCED CHROMOSOME BREAKAGE IN HUMAN FIBROBLASTS

2:15 ---------------------------------
KINETICS OF CELL-CYCLE PROGRESSION IN DOWN SYNDROM (DS) AND NORMAL LYMPHOCYTES
H.M. Shafik, M.A. Nokta, W.W. Au, M.S. Legator, The University of Texas Medical Branch, Galveston, TX

2:30 ---------------------------------
IN-VITRO CYTOGENETIC TESTING USING SISTER CHROMATID EXCHANGE AND CHROMOSOME ABERRATION ENDPOINTS IN CHO CELLS
K.S. Loveday, M.J. Morris, E. Zelger, American Biogenics Corporation, Woburn, MA and NIEHS, RTP, NC

SATURDAY, 1:30 PM
Ballroom 6

TEST STRATEGIES AND ASSESSMENT
W.R. Lower, Presiding

1:30 ---------------------------------
TESTING THE PREDICTIVITY OF BATTERIES OF SHORT-TERM GENOTOXICITY TESTS FOR CARCINOGENIC POTENCY
F.K. Ennever, H.S. Rosenkranz, Case Western Reserve University School of Medicine, Cleveland, OH

2:00 ---------------------------------
THE RELATIONSHIP BETWEEN CHEMICAL STRUCTURE OF NITROFLUORENONE AND NITROFLUORENE AND THEIR GENOTOXIC ACTIVITY
R.M. Kitchin, W.E. Bechtold, A.L. Brooks (Intro. by N.D. Stephens), University of Wyoming, Laramie, WY and Inhalation Toxicology Research Institute, Albuquerque, NM

2:15 ---------------------------------
A TEST OF THE UNIFORMITY OF RADIATION-INDUCED MUTATION RATES
G.V. Johnson, M.J. Plewa, University of Illinois, Urbana, IL

2:30 ---------------------------------
STATUS OF IN SITU ENVIRONMENTAL GENOTOXIC SENTINELS
W.R. Lower, S.S. Sandhu, University of Missouri, Columbia, MO and U.S. Environmental Protection Agency, Research Triangle Park, NC
MECHANISMS IN NON-MAMMALIAN EUKARYOTES
R.C. von Borstel, Presiding

1:30 -----------------------------------------------
CHARACTERIZATION OF YEAST MUTATION isel THAT ENHANCES PERMEABILITY OF SACCHAROMYCES CEREVISIA
B. Winsor, A.A. Potter, F. Karst, E.R. Nestmann, F. Lacroix, Centre National Recherche Scientifique, Strasbourg, France, Université de Pau, France, Veterinary Infectious Disease Organization, Saskatoon, and Department of Health and Welfare, Ottawa, Ontario, Canada

1:45 -------------
STUDY OF THE MODIFICATION OF THE HETEROZYGOUS EFFECTS OF MULTILOCUS DELETION MUTATIONS IN THE AD-3 REGION OF NEUROSPORA CRESSA BY MEANS OF GENETICALLY MARKED THREE-COMPONENT HETEROKARYONS
F.J. de Serres, J.R. Miller, Research Triangle Institute, RTP, NC and Oak Ridge National Laboratory, Oak Ridge, TN

2:00 ----------------- 
DEVELOPMENT OF pMP4, A SHUTTLE VECTOR FOR USE IN DEFINING FRAMESHIFT MUTATIONS AT THE his4-38 REGION OF YEAST
M.J. Plewa, D. Kalinowski, F.L. Lamer, University of Illinois, Urbana, IL and Oak Ridge National Laboratory, Oak Ridge, TN

2:15 ----------------------
ANALYSIS OF REVERSIONS INDUCED BY SODIUM CHLORIDE AND POTASSIUM CHLORIDE IN YEAST
K.R. Parker, R.C. von Borstel, University of Alberta, Edmonton, Alberta, Canada

2:15 ----------------------
The Efficacy of the Root Tip Cell Micronucleus Assay for Water Pollutants
T.H. Ma, Z. Xu, G.L. Cabrera, R.M.E. Valtierra, G.G. Arreola, Western Illinois University, Macomb, IL and Universidad Autonoma de Queretaro, Mexico

2:30 ----------------------
MOLECULAR DOSIMETRY STUDIES OF FORWARD MUTATION INDUCED AT THE yg2 LOCUS IN MAIZE BY ETHYL METHANESULFONATE
W.E. Schy, M.J. Plewa, University of Illinois, Urbana, IL
SATURDAY, 11 APRIL 1987
Ballroom 4
2:30 - 4:00 PM

POSTER SESSION III

Posters are to be set up by 9:00 am of their scheduled day, and to remain up for viewing until 5:00 pm. It is required that an author be present during the scheduled poster session.

Coffee will be available at the beginning of the Poster Session.

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TEST BATTERIES
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1. RELATIONSHIPS BETWEEN IN VITRO GENETIC TOXICITY AND RODENT CARCINOGENICITY
   E. Zelger
   National Institute of Environmental Health Sciences, Research Triangle Park, NC

2. CONCORDANCE OF RESULTS BETWEEN IN VITRO MAMMALIAN CELL MUTAGENESIS AND CLASTOGENESIS ASSAYS
   A.D. Mitchell, W.J. Caspary
   Genesys Research, Incorporated, Mountain View, CA and National Institute of Environmental Health Sciences, Research Triangle Park, NC

3. ASSESSING A SAR BATTERY APPROACH FOR PREDICTING GENOTOXICITY
   L.D. Claxton, M. Miller, D. Walsh
   U.S. Environmental Protection Agency and Environmental Health Research and Testing, Research Triangle Park, NC

4. THE ESTABLISHMENT OF A MICROCOMPUTER SYSTEM FOR GENETIC TOXICOLOGY DEVELOPED FROM THE "COMPUTERIZED LABORATORY NOTEBOOK" CONCEPT
   G.H.S. Strauss, W.L. Stanford, S.J. Berkowitz
   U.S. Environmental Protection Agency and Environmental Health Research and Testing, Research Triangle Park, NC

5. A FLUORESCENCE PHOTOMICROSCOPE METHOD FOR DETECTING THE PRESENCE OF ACTIVE ENZYMES IN THE MIXED FUNCTION OXIDASE (MFO) SYSTEM IN S-9 MIXES AND OTHER PREPARATIONS
   M.J. Ferguson
   University of Texas Health Science Center, Dallas, TX

6. ETOPOSIDE (VP 16) AND TENOPOSIDE (VM26): NOVEL ANTICANCER DRUGS, STRONGLY MUTAGENIC IN MAMMALIAN BUT NOT PROKARYOTIC TEST SYSTEMS
   R.S. Gupta, A. Bromke, D.W. Bryant, R. Gupta, B. Singh, D.R. McCalla
   McMaster University, Hamilton, Ontario, Canada
7
AN IN VITRO AND IN VIVO EVALUATION OF THE GENOTOXIC POTENTIAL OF 2,4-PENTANEDIONE
P.J. Guzzle, R.S. Slesinski, D. Ballantyne
Union Carbide Corporation, Export, PA

8
COMPARISON OF FECA PentAENES IN THE SALMONELLA TYPHIMURIUM
AND L5178Y MOUSE LYMPHOMA CELL MUTAGENESIS ASSAYS
SRI International, Menlo Park, CA

9
THE GENOTOXIC POTENTIAL OF ISOPHORONE
Exxon Biomedical Sciences Incorporated, East Millstone, NJ, Bushy Run Research Center/Mellon Institute-Union Carbide Corporation, Export, PA, and Microbiological Associates Incorporated, Bethesda, MD

10
A STUDY OF HIGH LUNG CANCER MORTALITY IN XUAN WEI COUNTY;
MUTAGENICITY AND CARCINOGENICITY OF INDOOR AIR PARTICLES
FROM COAL AND WOOD COMBUSTION
U.S. Environmental Protection Agency, Research Triangle Park, SRI International, Menlo Park, CA, and Institute of Environmental Health and Engineering, Beijing, China

PLANTS, FUNGI, DROSOPHILA

11
UTILITY OF ARABIDOPSIS EMBRYO ASSAY FOR TESTING COMPLEX MIXTURES
G.N. Acedo, S.S. Sandhu, D.M. DeMarini, J.L. Mumford
Environmental Health Research and Testing, and U.S. Environmental Protection Agency, Research Triangle Park, NC

12
MUTAGENICITY OF PESTICIDES IN BARLEY PROGENY TEST SYSTEM
C.B.S.R. Sharma, N. Panneerselvam
Bharathiar University, Coimbatore, India

13
ACTIVATION OF PROMUTAGENS BY ALGAE
M. Lippert, J.M. Gentile, M.J. Plewa
Hope College, Holland, MI and University of Illinois, Urbana, IL

14
THE ACTIVATION OF A NITRATED PYRENE MIXTURE TO MORE POTENT MUTAGENS BY PLANT S9 AND SUPEROXIDE DISMUTASE (SOD)
A.L. Looney, B.S. Shane
Louisiana State University, Baton Rouge, LA
15 CURRENT DEVELOPMENT OF A LONG TERM TEST WITH YEAST STRAIN MP1
R. Fährig
Fraunhofer-Institut fur Toxikologie und Aerosolforschung, Hannover, Federal Republic of Germany

16 DNA SEQUENCE ANALYSIS OF UV-INDUCED MUTATIONS IN YEAST
B.A. Kunz, M.K. Pierce, C.N. Giroux
University of Manitoba, Winnipeg, Manitoba, Canada, York University, Toronto, Ontario, Canada, and National Institute of Environmental Health Sciences, Research Triangle Park, NC

17 A METHOD FOR SELECTING DOSES FOR THE DROSOPHILA SEX-LINKED RECESSIVE LETAL ASSAY
E.D. Thompson, B.A. Reeder
Procter and Gamble Company, Cincinnati, OH

18 MUTAGENICITY OF VOLATIVE ANESTHETIC AND NITROUS OXIDE COMBINATIONS
J.M. Baden, Y.R. Kundomal
Stanford University School of Medicine and Veterans Administration Medical Center, Palo Alto, CA

FISH, AMPHIBIANS, BIRDS

19 EVALUATION OF GENOTOXICITY USING AN ESTUARINE FISH, FUN-DULUS HETEROCLITUS
C.B. Daniels, J.C. Means
Chesapeake Biological Laboratory, Solomons, MD

20 THE BULLFROG (RANA CATESBEIANA) TADPOLE - A POTENTIAL ORGAN-ISM FOR CYTOGENETIC BIOASSAY FOR FRESHWATER POLLUTION
T.-H. Ma, G.L. Cabrera, K.-S. Kim
Western Illinois University, Macomb, IL

21 EFFECT OF CHROMIUM-INDUCED DNA DAMAGE ON GENE EXPRES-SION IN THE CHICK EMBRYO IN VIVO
J.W. Hamilton, K.E. Wetterhahn
Dartmouth College, Hanover, NH
1. DETECTION, ISOLATION AND PARTIAL CHARACTERIZATION OF NITROARENE ADDUCTS OF DNA USING A POST-LABELLING TECHNIQUE AND A COMBINATION OF TLC AND ION-PAIRING HPLC
   I.B. Lambert, D.W. Bryant, L. Davison, D.R. McCalla
   McMaster University, Hamilton, Ontario, Canada

2. BACTERIAL MUTAGENICITY AND REDUCTIVE METABOLISM OF 1-, 3- AND 6-NITROSOKENZO(A)PYRENE
   P.P. Fu, J.R. Thornton-Manning, L.E. Unruh, L.S. Von Tungeln, R.H. Heffich
   (Introd. by W.B. Melchior)
   National Center for Toxicological Research, Jefferson, AR

3. MICROSOMAL METABOLISM OF 12-HYDROXYMETHYL-BENZ(A)ANTHRACENE: IDENTIFICATION, ABSOLUTE CONFIGURATIONS, AND MUTAGENICITY OF METABOLITES
   L.S. Von Tungeln, L.E. Unruh, R.H. Heffich, P.P. Fu, N.P. Wang (Introd. by D.T. Beranek)
   National Cancer for Toxicological Research, Jefferson, AR and Horng Kuan College, Sha-lu, Taichung, Taiwan, Republic of China

4. METABOLISM OF 1- AND 3-NITROBENZO(a)PYRENE TO MUTAGENS IN THE CHO/HGPRT ASSAY
   National Center for Toxicological Research, Jefferson, AR

5. METABOLIC ACTIVATION OF α-NAPHTHOFLAVONE BY THE CYTOCHROME P-450 SYSTEM PRODUCES CLASTOGENICITY
   M. Andries, G.W. Lucler, J.A. Goldstein, M. Graham, C. Thompson (Introd. by W. Sheridan)
   National Institute of Environmental Health Sciences, Research Triangle Park, NC

6. RELATIONSHIP BETWEEN CLASTOGENICITY OF α-NAPHTHOFLAVONE IN CHO CELLS AND DNA ADDUCT FORMATION
   C. Thompson, M. Andries, G. Lucler (Introd. by M. Shelby)
   National Institute of Environmental Health Sciences, Research Triangle Park, NC

7. PROMUTAGEN ACTIVATION BY MAMMALIAN HEPATIC S9 FROM METABOLICALLY ALTERED ORGANISMS
   D. Heydenburg, L.S. Hertel, C.C. Barney, J.M. Gentile
   Hope College, Holland, MI

8. METABOLISM OF NITROARENES IN SALMONELLA TYPHIMURIUM: EVIDENCE FOR AN ENZYME COMPLEX WHICH BOTH REDUCES AND ACETYLATES 1,8-DINITROPYRENE
   J. Orr, D.W. Bryant, D.R. McCalla
   McMaster University, Hamilton, Ontario, Canada
30
AN ULTRASENSITIVE ENZYME IMMUNOASSAY DETECTOR FOR HPLC: APPLICATION TO METABOLIC MONITORING
A.M. Cheh, T.A. Onigbinde, V.C. Ross
American University, Washington, DC

31
INCREASED RESPONSE IN PREMUTAGENS BIOACTIVATION BY REPEATED ADMINISTRATIONS OF CYTOCHROME P-450 AND P-448 INDUCERS
M. Paolini, P. Hrelia, E. Sapigni, L. Murelli, G. Cantelli-Forti
Istituto di Farmacologia dell'Università, Bologna, Italy

32
THE ANTIMUTAGENESIS OF OXIDIZED GLUTATHIONE AGAINST AFLATOXINS AND METABOLITES IN THE SALMONELLA-MUTAGENICITY TEST
C.L. Kirk-Yourtee, D.M. Yourtee, R.C. Lanman
University of Missouri, Kansas City, MO

33
DETECTION OF DIPHTHERIA TOXIN- AND 8-AZAGUANINE-RESISTANT HAMSTER RESPIRATORY TRACT CELLS FOLLOWING IN VIVO ADMINISTRATION OF MUTAGENS
D.B. Couch, K. Jain, A.G. Bouch, J.A. Heddle
York University, Downsview, Ontario, Canada

34
MUTAGENESIS IN VIVO: PRELIMINARY EXPERIMENTS WHICH CONFIRM THE FEASIBILITY OF THE DETECTION OF ETHYLNITROSOUREA (ENU) MUTAGENESIS IN MOUSE T-LYMPHOCYTES
D.M. Zimmer, C.S. Aaron
The UpJohn Company, Kalamazoo, MI

35
THE MOUSE, IN VIVO MODEL FOR SOMATIC MUTATION AT THE HPRT LOCUS: CURRENT STUDIES
I.M. Jones, K.Burkhardt-Schultz, C.L. Strout, T.L. Crippen
Lawrence Livermore National Laboratory, Livermore, CA

36
ACTIVITY OF TRITIATED THYMIDINE IN THE MOUSE BONE MARROW MICRONUCLEUS ASSAY
F. Ratpan, J. Ashby
Polyser Limited, Sarnia, Ontario, Canada, and Imperial Chemical Industries Plc, Alderley Park, UK

37
FACTORS AFFECTING THE TISSUE-SPECIFIC INDUCTION OF SISTER CHROMATID EXCHANGES IN MICE
D.H. Blakey, R.D.L. Bell
Health and Welfare Canada, Ottawa, Ontario, Canada
38 THE INDUCTION OF SCE IN THE BONE MARROW OF B6C3F1 MICE FOLLOWING SINGLE OR REPEATED INHALATION OF BENZENE
A.L. Brooks, P.J. Sabourlin, R.F. Henderson
Lovelace Inhalation Toxicology Research Institute, Albuquerque, NM

39 COMPARISON OF IN VIVO CYTOGENETIC MEASUREMENTS OF CHROMOSOMAL REPLICONS IN MOUSE BONE MARROW AND SPERMATOGONIAL CELLS
M.H. Lugo, H.F. Rauchfuss, J.W. Allen, J.C. Hozier
Florida Institute of Technology, Melbourne, FL and U.S. Environmental Protection Agency, Research Triangle Park, NC

40 PREDICTION OF ENVIRONMENTAL STOMACH CARCINOGENS AND PROMOTERS BY IN VIVO SHORT-TERM ASSAY
C. Furlhata, T. Matsushima
University of Tokyo, Tokyo, Japan

41 APPLICATION OF THE PERIPHERAL BLOOD ERYTHROCYTE MICRONUCLEUS ASSAY TO DETECTION OF CHROMOSOMAL DAMAGE FROM REPEATED EXPOSURES TO GENOTOXINS
C.M. Wehr, P.R. Hentka, J.T. MacGregor
U.S. Department of Agriculture, ARS, Berkeley, CA

42 DEVELOPMENT OF A SUBACUTE PERIPHERAL BLOOD MICRONUCLEUS ASSAY IN MALE AND FEMALE ICR MICE
H.D. Lebowitz, J.L. Ivett
Hazleton Laboratories America, Incorporated, Kensington, MD

43 GENOTOXIC INTERACTIONS OF HEAVY METALS IN HEPATOCYTES
M. Marlon, D. Jutras, F. Denizeau
Universite du Quebec a Montreal, Montreal, Quebec, Canada

44 GENOTOXIC EFFECTS IN RAT AFTER IN VIVO TREATMENT WITH A BENZIDINE-DERIVED AZO DYE
B.K.M. Belje
Stockholm University, Stockholm, Sweden

45 URINE MUTAGENICITY IN RATS AS AN IN VIVO INDEX OF GENOTOXIC EXPOSURE
C.A. Rahn, D.A. Lee, C.K. Lee, D.J. Doolittle
R.J. Reynolds Tobacco Company, Winston-Salem, NC
MAMMALIAN GERM CELLS

46 CYCLOPHOSPHAMIDE-INDUCED DAMAGE TO SYNAPTONEMAL COMPLEXES AND METAPHASE CHROMOSOMES IN MOUSE MEIOTIC CELLS
U.S. Environmental Protection Agency, Research Triangle Park and Duke University, Durham, NC

47 UTILIZATION OF SEMINIFEROUS TUBULE SEGMENTS TO STUDY UNSCHEDULED DNA SYNTHESIS (UDS) IN MALE RATS EXPOSED TO METHYL METHANESULFONATE (MMS)
K.S. Bentley, P.K. Working (Introdr. by D. Simpson)
Chemical Industry Institute of Technology, Research Triangle Park, NC

48 DIFFERENTIAL SENSITIVITY OF PREOVULATORY MOUSE OOCYTES TO COLCHICINE INDUCED ANEUPLOIDY
J.B. Malibes, Z.P. Yuan
Louisiana State University Medical Center, Shreveport, LA

49 EFFECTS OF ACRYLAMIDE AND ACRYLONITRILE ON UNSCHEDULED DNA SYNTHESIS (UDS) IN RAT SPERMATOCYTES
M.E. Hurtt, K.S. Bentley, P.K. Working
Chemical Industry Institute of Toxicology, Research Triangle Park, NC

50 DOMINANT LETHAL ASSAY OF ACRYLONITRILE AND ACRYLAMIDE IN THE MALE RAT
P.K. Working, K.S. Bentley, M.E. Hurtt, K.L. Mohr
Chemical Industry Institute of Technology, Research Triangle Park, NC

51 IN VITRO DOMINANT LETHAL ASSESSMENT OF ETHYL METHANESULFONATE (EMS)-INDUCED OOCYTE DAMAGE IN THE MOUSE
K.L. Mohr, P.K. Working (Introdr. by T. Craft)
Chemical Industry Institute of Technology, Research Triangle Park, NC

52 ASSESSMENT OF FETAL DEATH RATE AMONG IN UTERO PROGENY OF B6C3F1 AND CD-1 MICE AFTER SUBCUTANEOUS INJECTIONS OF MALES WITH BUTYL BENZYL PHthalate (BBP)
J.B. Bishop, C.M. Teaf, B. Bhooshan
National Institute of Environmental Health Sciences, Research Triangle Park, N.C. and Florida State University, Tallahassee, FL, Consumer Products Safety Commission, Washington, DC.
HUMAN POPULATION MONITORING

53 ASSOCIATIONS BETWEEN MATERNAL SMOKING AND DNA ADDUCTS IN HUMAN PLACENTA DETECTED BY 32P-POSTLABELING: QUANTITATIVE ASPECTS
R.B. Everson, E. Randerath, T.A. Avitts, K. Randerath
National Institute of Environmental Health Sciences, Research Triangle Park, NC and Baylor College of Medicine, Houston, TX

54 CHARACTERISATION OF DNA ADDUCTS IN PLACENTAS OF INDIVIDUALS EXPOSED TO HIGH LEVELS OF 'SMOKY' COAL COMBUSTION EMISSIONS
I.G.C. Robertson, J. Lewtas, X.M. Li, J.L. Mumford
U.S. Environmental Protection Agency, Research Triangle Park, NC, and Institute of Environmental Health and Engineering, Beijing, China

55 SOUTHERN BLOT ANALYSIS OF IN VIVO DERIVED hprt MUTANT T-CELL CLONES
J.A. Nicklas, T.C. Hunter, J.P. O’Nell, R.J. Albertini
University of Vermont, Burlington, VT

56 DEMONSTRATION THAT BrdU LABELLING COULD BE USED IN THE ALBERTINI ASSAY
M. Gomez-Chavarin, R. Montero, P. Ostrosky-Wegman, C. Cortinas de Nava, R. Tice, R. Albertini (Intro. by M. Collin)
Instituto de Investigaciones Biomedicas, Mexico City, Mexico, Brookhaven National Laboratories, Upton, NY, and University of Vermont, Burlington, VT

57 MARKERS OF BIOLOGICALLY EFFECTIVE DOSE OF CISPLATINUM-BASED CHEMOTHERAPY IN CANCER PATIENTS
F.P. Perera, H.K. Fischman, M. Stoopler, M.C. Polier, E. Reed
Columbia University, New York, NY and National Cancer Institute, Bethesda, MD

58 FREQUENCY OF DOUBLE FLUORESCENT BODIES IN SPERM OF MALES SEEN FOR IMPAIRED FERTILITY
P.E. Bibbins Jr., J.B. Ward, Jr., M.S. Legator
The University of Texas Medical Branch, Galveston, TX
SHORT-TERM TESTS AND THE RODENT BIOASSAY -
A CRITICAL EVALUATION

Ballroom 5

David J. Brusick, Presiding
Sponsor: SRI International

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One of the more controversial aspects of genetic toxicology testing is the mechanistic and correlative associations between short-term test results and in vivo responses. This symposium will address both associations as they exist for heritable genetic damage and cancer in rodent bioassays. The format will consist of brief prepared presentations describing the information as it exists followed by a scientific forum among panelists familiar with the complexities of this issue. The objective is to provide both a perspective on the development of the data as well as a direction for future efforts in reconciling apparent inconsistencies.

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4:00  PERFORMANCE OF SHORT-TERM TESTS - MUTAGENESIS
Barry Margolin  
National Institute of Environmental Health Sciences

4:25  PERFORMANCE OF SHORT-TERM TESTS - CARCINOGENESIS
Joseph Haseeman  
National Institute of Environmental Health Sciences

4:45  PERFORMANCE OF THE RODENT BIOASSAYS - CARCINOGENESIS
Stephen Nesnow  
U.S. Environmental Protection Agency

5:05  PERFORMANCE OF THE RODENT BIOASSAYS - MUTAGENESIS
Michael Shelby  
National Institute of Environmental Health Sciences

5:25  PANEL DISCUSSION

John Ashby  
Imperial Chemical Industries, U.K.

Donald Clive  
Burroughs Wellcome Co.

Marvin Legator  
University of Texas, Galveston

Mortimer Mendelsohn  
Lawrence Livermore National Laboratory

Ian Monroe  
CanTox, Inc.

Verne Ray  
Pfizer, Inc.

Herbert Rosenkranz  
Case Western Reserve University

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INDEX

All authors are cited according to the page(s) on which their presentations appear.

Aaron, C.S., 43, 44, 65
Abernethy, D.J., 21, 31
Aboul-Enein, H.Y., 46
Acedo, G.N., 31, 62
Adair, G.M., 32, 50
Adams, N., 12
Adams, P.M., 51
Adler, I.-D., 20
Afzal, V., 14, 14
Akgerman, A., 30
Akiyama, M., 34
Albanese, R., 49
Albertini, R.J., 15, 19, 34, 52, 68, 68
Albrecht, T., 22
Allen, J.W., 48, 48, 66, 67
Allen, K.L., 15
Al-Dakan, A.A.R., 46
Ammenheuser, M.M., 15
Amitower, A.L., 15
Anders, M.E., 16
Anderson, D., 53
Andon, B., 23
Andries, M., 64, 64
Annest, J.L., 32, 32
Applagate, M., 27
Arenaz, P., 46, 48
Arimoto, S., 35
Armstrong, M.J., 48
Arreola, G.G., 57
Ashby, J., 20, 65, 69
Athwal, R.S., 22, 34, 36
Au, W.W., 22, 22, 33, 48, 51, 56
Avits, T.A., 68

Back, A.M., 27
Backer, L.C., 67

Baden, J.M., 63
Bakar, S.A., 22
Baker, R.M., 25
Ball, L.M., 51
Ballantyne, B., 62
Balwierz, P.S., 26
Bangham, J.W., 51
Barber, C., 47
Barfknecht, T.R. 30, 44
Barnes, W.S., 47
Barney, C.C., 64
Barrett, N., 46
Bartlett, J.D., 44
Bast, C.B., 49
Rauzon, M., 45
Bechtold, W.E., 56
Becker, C., 15
Beije, B.K.M., 66
Bell, D.A., 21
Bell, R.D.L., 65
Bempoong, M.A., 35
Benforado, K.B., 45
Bentley, K.S., 67, 67
Berkowitz, S.J., 61
Berman, J.K., 15
Bermudez, E., 28
Berta, M.J., 26
Bhooshan, B., 67
Bibbias Jr., P.E., 68
Bickham, J.W., 22
Bieszczad, M.J., 26
Bigbee, W.L., 17, 17, 34
Bishop, J.B., 67
Blachman, D.C., 49
Blackburn, G.R., 28, 30, 30
Blakey, D.H., 15, 65
Blazak, W.F., 15, 28, 49, 51
Bleicher Jr., W.T., 16
Blevins, R.D., 43
Bodell, W.J., 16
Bollu, J., 34
Boreiko, C.J., 21, 31, 31
Bouch, A.G., 65
Boucher, R., 47
Boyes, B.G., 15
Bradley, W.E.C., 34
Bradley, W.G., 44
Brady, A.L., 56
Braithwaite, I., 20
Brandriiff, B., 17
Brennand, J., 32
Brock, K.H., 15, 27, 31, 47
Brockman, H.E., 46, 52
Broder, C., 27
Bromke, A., 61
Brookman, K.W., 44
Brooks, A.L., 56, 66
Brotherman, K.A., 32, 50
Brown, B.G., 30
Brown, J.E., 32
Bruce, W.R., 25
Brunt, P.W., 32
Brusick, D.J., 69
Bryan, G.T., 52
Bryant, D.W., 61, 64, 64
Budrooe, J.D., 26
Burkhart-Schultz, K., 65
Burks, C., 55
Burns, P.A., 14
Burrell, A., 27
Burton, R., 35
Busch, D.B., 52
Butterworth, B.E., 35
Byers, P., 38
Cabrera, G.L., 57, 63
Caderni, G., 25
Calandra, T.D., 46
Camblor, B., 22
Campbell, J., 15
Cantelli-Forti, G., 65
Carpenter, J.T., 17
Carrano, A.V., 17, 17, 17, 25, 44
Carrier, W.L., 34
Caruso, J.E., 46
Carver, J.H., 47
Casciano, D.A., 26, 29
Caspary, W., 15, 26, 27, 27, 28, 28, 51, 61
Cattanach, P., 26
Cebula, T.A., 45
Chang, C.C., 25
Chang, K., 23, 29
Chapell, J., 30
Chapman, M.A., 23
Chappell, J., 21
Chaveca, T., 30
Cheh, A.M., 65
Chen, A.T.L., 32, 32
Chen, D.J., 34, 44
Chou, M.W., 64
Christensen, M.L., 17
Ciavavino, V., 56
Claxton, L.D., 12, 21, 23, 35, 46, 61
Clive, D., 27, 27, 27, 43, 69
Clough, T., 43
Collins, C.C., 44
Colyer, S.P., 28
Conner, M.K., 33
Correa, D., 49
Cortinas de Nava, C., 32, 34, 68
Couch, D.B., 65
Cox, M., 49
Craft, T.R., 28, 45
Crespi, C., 28
Crippen, T.L., 65
Crosby, R.M., 32, 45
Cupitt, L., 23
Curren, R.D., 62
Dahl, T.A., 14
Daniels, C.B., 63
Dashwood, R.H., 46
Daston, D.S., 27
Davison, L., 64
Day, J., 57
De la Iglesia, F.A., 43
De la Rosa, D., M.E., 32
De Serres, F.J., 57
<table>
<thead>
<tr>
<th>Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deahl, J.T.</td>
<td>49</td>
</tr>
<tr>
<td>Dearfield, K.L.</td>
<td>15</td>
</tr>
<tr>
<td>Deitch, R.A.</td>
<td>30, 30</td>
</tr>
<tr>
<td>DeMarini, D.M.</td>
<td>21, 27, 31, 31, 62</td>
</tr>
<tr>
<td>Denizeau, F.</td>
<td>66</td>
</tr>
<tr>
<td>Dimnik, L.S.</td>
<td>56</td>
</tr>
<tr>
<td>Dobson, R.L.</td>
<td>51</td>
</tr>
<tr>
<td>Doerr, C.L.</td>
<td>27, 47</td>
</tr>
<tr>
<td>Donnelly, K.C.</td>
<td>30</td>
</tr>
<tr>
<td>Dooley, J.F.</td>
<td>28</td>
</tr>
<tr>
<td>Doolittle, D.J.</td>
<td>30, 66</td>
</tr>
<tr>
<td>Douglas, G.R.</td>
<td>15</td>
</tr>
<tr>
<td>Doung, H.</td>
<td>49</td>
</tr>
<tr>
<td>Downie, R.H.</td>
<td>46</td>
</tr>
<tr>
<td>Drobetsky, E.A.</td>
<td>50</td>
</tr>
<tr>
<td>DuFrain, R.J.</td>
<td>16</td>
</tr>
<tr>
<td>Dunbar, V.G.</td>
<td>22</td>
</tr>
<tr>
<td>Dunkel, V.C.</td>
<td>23</td>
</tr>
<tr>
<td>Eagan, P.</td>
<td>17</td>
</tr>
<tr>
<td>Edwards, J.</td>
<td>51</td>
</tr>
<tr>
<td>Ehling, U.</td>
<td>39</td>
</tr>
<tr>
<td>Eisenstark, A.</td>
<td>50</td>
</tr>
<tr>
<td>Elerspur, R.K.</td>
<td>45</td>
</tr>
<tr>
<td>Elmore, E.L.</td>
<td>29</td>
</tr>
<tr>
<td>Ennever, F.K.</td>
<td>43, 56</td>
</tr>
<tr>
<td>Epler, J.L.</td>
<td>34</td>
</tr>
<tr>
<td>Erexson, G.L.</td>
<td>48, 48</td>
</tr>
<tr>
<td>Erwin, D.N.</td>
<td>17, 56</td>
</tr>
<tr>
<td>Evans, H.H.</td>
<td>25</td>
</tr>
<tr>
<td>Everson, R.B.</td>
<td>15, 17, 17, 17, 68</td>
</tr>
<tr>
<td>Fahrig, R.</td>
<td>13, 63</td>
</tr>
<tr>
<td>Falek, A.</td>
<td>22</td>
</tr>
<tr>
<td>Farrell, J.G.</td>
<td>45</td>
</tr>
<tr>
<td>Felton, J.S.</td>
<td>14, 25, 29, 33, 33</td>
</tr>
<tr>
<td>Ferguson, M.J.</td>
<td>61</td>
</tr>
<tr>
<td>Fischman, H.K.</td>
<td>68</td>
</tr>
<tr>
<td>Flessel, C.P.</td>
<td>23, 29</td>
</tr>
<tr>
<td>Flisser, A.</td>
<td>49</td>
</tr>
<tr>
<td>Forehand, L.</td>
<td>35</td>
</tr>
<tr>
<td>Fowler, R.G.</td>
<td>16</td>
</tr>
<tr>
<td>Fox, D.P.</td>
<td>32</td>
</tr>
<tr>
<td>Fox, M.</td>
<td>32</td>
</tr>
<tr>
<td>Francis, A.A.</td>
<td>34, 44</td>
</tr>
<tr>
<td>Friedman, T.</td>
<td>38</td>
</tr>
<tr>
<td>Frome, E.L.</td>
<td>28</td>
</tr>
<tr>
<td>Fry, R.J.M.</td>
<td>49</td>
</tr>
<tr>
<td>Fu, P.P.</td>
<td>46, 64, 64, 64</td>
</tr>
<tr>
<td>Fultz, E.</td>
<td>33</td>
</tr>
<tr>
<td>Furuhata, C.</td>
<td>66</td>
</tr>
<tr>
<td>Fuscoe, J.C.</td>
<td>14</td>
</tr>
<tr>
<td>Galloway, S.M.</td>
<td>48</td>
</tr>
<tr>
<td>Gangolli, S.D.</td>
<td>53</td>
</tr>
<tr>
<td>Garcia, S.</td>
<td>46</td>
</tr>
<tr>
<td>Garner, R.C.</td>
<td>15</td>
</tr>
<tr>
<td>Garriott, M.</td>
<td>47</td>
</tr>
<tr>
<td>Garry, V.F.</td>
<td>28</td>
</tr>
<tr>
<td>Gaulden, M.E.</td>
<td>16</td>
</tr>
<tr>
<td>Geard, C.R.</td>
<td>21</td>
</tr>
<tr>
<td>Generoso, E.E.</td>
<td>51</td>
</tr>
<tr>
<td>Gentile, G.J.</td>
<td>57</td>
</tr>
<tr>
<td>Gentile, J.M.</td>
<td>57, 57, 62, 64</td>
</tr>
<tr>
<td>Georgsson, M.</td>
<td>21</td>
</tr>
<tr>
<td>Gibson, J.B.</td>
<td>67</td>
</tr>
<tr>
<td>Giglio, P.E.</td>
<td>26</td>
</tr>
<tr>
<td>Giometti, C.S.</td>
<td>53</td>
</tr>
<tr>
<td>Giroux, C.N.</td>
<td>63</td>
</tr>
<tr>
<td>Glickman, B.W.</td>
<td>14, 50, 50</td>
</tr>
<tr>
<td>Godek, E.G.</td>
<td>26, 26</td>
</tr>
<tr>
<td>Gold, A.</td>
<td>51</td>
</tr>
<tr>
<td>Goldberg, M.T.</td>
<td>35, 35</td>
</tr>
<tr>
<td>Goldman, L.</td>
<td>15</td>
</tr>
<tr>
<td>Goldring, J.M.</td>
<td>51</td>
</tr>
<tr>
<td>Goldstein, G.</td>
<td>35</td>
</tr>
<tr>
<td>Goldstein, J.A.</td>
<td>64</td>
</tr>
<tr>
<td>Goldsworthy, T.L.</td>
<td>35</td>
</tr>
<tr>
<td>Gomes, M.</td>
<td>30</td>
</tr>
<tr>
<td>Gomez, M.</td>
<td>34</td>
</tr>
<tr>
<td>Gomez-Chavarin, M.</td>
<td>49, 68</td>
</tr>
<tr>
<td>Gonsebatt, M.E.</td>
<td>28</td>
</tr>
<tr>
<td>Gonzalez, D.</td>
<td>49</td>
</tr>
<tr>
<td>Gordon, A.J.E.</td>
<td>14</td>
</tr>
<tr>
<td>Gordon, J.A.</td>
<td>45</td>
</tr>
<tr>
<td>Gordon, L.A.</td>
<td>17</td>
</tr>
<tr>
<td>Goto, S.</td>
<td>30</td>
</tr>
<tr>
<td>Graham, M.</td>
<td>64</td>
</tr>
<tr>
<td>Grahn, D.</td>
<td>53</td>
</tr>
<tr>
<td>Green, N.R.</td>
<td>53</td>
</tr>
<tr>
<td>Greene, C.J.</td>
<td>15</td>
</tr>
<tr>
<td>Grosovsky, A.J.</td>
<td>50</td>
</tr>
</tbody>
</table>
Kasweck, K., 27
Katz, M., 21
Kaufman, E.R., 44
Kellar, T., 30
Kelsey, K.T., 32
Kennelly, J.C., 15
Kier, L.D., 12, 12
Kim, K.-S., 63
Kimball, L.S., 17
Kimmitt, P.A., 32
King, L., 21
Kirk, A.M., 31
Kirkland, D.J., 15
Kirk-Yourtee, C.L., 65
Kitchin, R.M., 56
Kleinhofs, A., 51
Kliesch, U., 20
Kligerman, A.D., 48, 48
Knize, M.G., 29, 33, 33
Knoll, R.B., 51
Knowles, S., 53
Kocan, R.M., 23
Koch, W.H., 53
Kochhar, T.S., 49
Kocur, L., 45
Kokkino, A., 47
Korte Jr., D.W., 28
Krehl, R., 27, 27
Kriegler, M., 55
Krishna, G., 20, 20
Kropko, M.L., 43
Kundomal, Y.R., 63
Kunz, B.A., 63
Kuzdas, C.D., 47
Kwan, T.C., 51

Lacroute, F., 57
Laires, A., 30
Lamb IV, J.C., 29
Lambert, I.B., 64
Landolph, J.R., 21, 31
Landolt, M.L., 23
Lang, R., 13
Langenbach, R., 28, 53
Langlois, R.G., 17, 17, 34
Lanman, R.C., 65

Larimer, F.L., 57
Lavappa, K.S., 53
Lawlor, T.E., 47
Lazaridis, G., 30
Lebowitz, H.D., 66
Lee, C.K., 30, 30, 66
Lee, D.A., 30, 66
Lee, F., 29
Lee, P.S., 62, 62
Legator, M.S., 22, 22, 33, 47, 48, 51, 56, 68, 69
Lerman, S.A., 62
Letz, R., 32
Lewtas, J., 21, 23, 30, 35, 68
Li, A.P., 12, 31
Li, X.M., 62, 68
Li, X.Z., 49
Liber, H.L., 45, 52
Lim, M., 49
Linkous, S.L., 48
Lippert, M., 62
Little, J.B., 32, 52
Littlefield, L.G., 28
Lofroth, G., 30, 35
Lohman, P.H.M., 56
Look, S.A., 45
Looney, A.L., 62
Los, F., 28
Loury, D.J., 35
Loveday, K.S., 56
Lowe, G.D., 30
Lowe, K.W., 48
Lower, W.R., 56
Lowery, M.C., 51
Lucier, G.W., 64, 64
Lugo, M.H., 66
Luke, C.A., 47, 47, 48
Luz, A., 13

Ma, T.-H., 57, 57, 63
MacGregor, J.T., 15, 66
Machado, M.L., 47
MacInnes, M.A., 34, 44
Mackay, J.M., 32
Mackerer, C.R., 28, 30, 30
MacKinnon, C., 32
MacLaren, R.A., 48  
Macphee, D.G., 16  
Maher, V.M., 17, 50  
Mailhes, J.B., 67  
Majeska, J.B., 27  
Margison, G.P., 32  
Margolin, B., 69  
Marion, M., 66  
Marsden, P.J., 29  
Masri, M.S., 52  
Matheson, D.W., 27  
Matsushima, T., 66  
Matthews, R.J., 26, 26, 26, 26  
Matula, T.I., 15, 46  
Mayo, J., 43  
Mazur, M., 50  
Mazurek, J., 43  
McBee, K., 22  
McCalla, D.R., 61, 64, 64  
McCartney, M.A., 16  
McCormick, J.J., 17, 50  
McCoy, E.C., 16  
McCurdy, S.M., 35  
McGee, G., 27  
McGinniss, M.J., 34  
McGregor, D., 26, 51  
McKee, R.H., 31, 62  
McKenzie, W.H., 28  
Means, J.C., 63  
Mecca, D.J., 44  
Meegan, R., 25  
Meier, J.R., 49, 51  
Meltz, M.L., 17, 56  
Mencel, J., 25  
Mendelsohn, M., 69  
Mendiola Cruz, M.T., 33  
Messing, K., 34  
Michaud, S., 17  
Midden, W.R., 14  
Middlestadt, M.V., 29  
Miller, I.R., 57  
Miller, M., 61  
Millner, G., 29  
Minkler, J.L., 25, 44  
Mirsalis, J.C., 31  
Mirzayans, R., 29  
Mitchell, A.D., 28, 61  
Miura, T., 31  
Miyazawa, T., 35  
Mohr, C.D., 43  
Mohr, K.L., 67, 67  
Mohtashamipour, E., 33  
Monroe, I., 69  
Monteith, L.G., 35, 46  
Montero, R., 34, 49, 68  
Moore, M.M., 15, 27, 27, 27, 31, 47  
Morales-Ramirez, P., 33  
Moreland, F.M., 23  
Mori, T., 25  
Morris, M.J., 56  
Morrissey, R.E., 29  
Morrissey, R.L., 43  
Mortelmans, K., 52  
Moses, M.J., 67  
Moslen, M.T., 33  
Mullin, P.D., 45  
Mullis, K., 55  
Mulvihill, J.J., 39  
Mumford, J.L., 23, 35, 62, 68  
Mommerly, V.J., 35  
Murelli, L., 65  
Murphy, D.D., 29  
Mutchinick, O.M., 28  
Myers, C.A., 31  
Myers, C.B., 35  
Myers, L.E., 46  
Myhr, B., 28  
Nagao, M., 33  
Nagata, C., 56  
Nairn, R.S., 50  
Naismith, R.W., 26, 26, 26, 26, 30, 44  
Nardone, R.C., 26, 30  
Narod, S.A., 15  
Nath, J., 20, 20, 50  
Neel, J., 39  
Nelson, R., 28  
Nesnow, S., 62, 69  
Nestmann, E.R., 15, 57  
Neuhauser-Klaus, A., 13  
Newman, D., 48  
Ni, Y.-C., 46
Nicklas, J.A., 52, 68
Nilan, R.A., 51
Nishimura, S., 35
Nokta, M.A., 56
Nordstrom, F., 30
Norimura, T., 17
Norpoth, K., 33

O’Donnell, M.W., 53
Ohara, Y., 35
Okinaka, R.T., 44, 45
Oldham, J.W., 48
Oleson, F.B., 12
Olivieri, G., 14
Olsen, H.E., 45
Olvera R., O., 32
O’Neill, J.P., 15, 52, 68
Ong, T., 20, 20, 46, 50, 52
Onigbinde, T.A., 65
Ormiston, B.G., 47
Orr, J., 64
Oshiro, Y., 26
Ostrosky-Wegman, P., 34, 49, 68
Owais, W.M., 51

Pagano, D.A., 46, 50, 52
Palowski, N., 31
Pancorbo, O.C., 43
Panneerselvam, N., 62
Pannell, K., 46
Paolini, M., 65
Paquette, D.E., 47, 48
Pardo, K., 15, 28
Parker, K.R., 57
Partos, X., 52
Pasley, T., 31
Paterson, M.C., 29
Patrierno, S.R., 21
Payne, W.L., 45
Pelroy, R.A., 50
Penman, B., 28
Perera, F.P., 68
Perez, C., 55
Peters, B., 15
Peters, J.H., 62
Phillips, R.D., 62

Pierce, M.K., 63
Pinkel, D., 36
Piper, C.E., 26, 47, 47
Plancarte, A., 49
Plewa, M.J., 56, 57, 57, 57, 57, 62
Poirier, M.C., 68
Polinsky, T., 26
Poorman, P.A., 27
Popp, J.A., 35
Posner, G.H., 53
Potter, A.A., 57
Povirk, L.F., 14
Preston, R.E., 48
Preston, R.J., 12, 14, 26, 49, 49, 56
Przygoda, R.T., 31
Purvis, S.F., 43
Putman, D.L., 62

Rahn, C.A., 66
Raj, A.S., 21
Ramanujam, V.M.S., 22, 33, 48
Randall, V.G., 52
Randerath, E., 68
Randerath, K., 68
Rao, T.K., 12, 53
Ratpan, F., 65
Rauchfuss, H.F., 66
Rauscher III, F.J., 25
Ray, V., 69
Reardon, J.T., 53
Recio, L., 52
Reed, E., 68
Reed, E.A., 30
Reeder, B.A., 63
Regan, J.D., 34, 34, 44
Reidy, J.A., 32, 32
Recist, E.J., 62
Resnick, M.A., 49
Reynolds, R.J., 34, 44
Riach, C., 26
Ricchio, E.S., 62
Richardson, K.K., 32, 45
Rinkus, S.J., 33
Riutidech, K., 22, 51
Roberts, M.R., 48
Robertson, I.G.C., 68
Stewart, D.L., 45, 50
Stewart, J., 46, 52
Stewart, K.R., 62
Stewart, M.L., 45
Stewart, S.A., 25, 44, 44
Stoner, G.D., 43
Stoopler, M., 68
Straume, T., 51
Strauss, G.H.S., 20, 61
Strmiste, G.F., 34, 44, 45
Strout, C.L., 65
Stuart, E.W., 25
Sugg, D., 25
Sugimura, T., 33, 39
Suk, W.A., 23
Sullivan, L.M., 15, 52
Swartz, J., 34
Swenson, D., 43
Swierenga, S.H.H., 29
Szeklik-Safee, J., 25

Tachibana, A., 17
Tainer, B.A., 49
Takabe, H., 17
Tan, H., 29
Tatsumi, K., 17
Taylor, J., 53
Taylor, K.I., 35
Taylor, R.T., 33, 33
Teaf, C.M., 67
Tennant, R.W., 23
Tesluk, S.J., 35
Tesmer, J., 34, 44
Theiss, J.C., 43
Thielmann, H.W., 52
Thomas, H.F., 47
Thomas, S.M., 16
Thompson, C., 64, 64
Thompson, E.D., 63
Thompson, L.H., 18, 25, 34, 44, 44
Thornton-Manning, J., 64, 64
Tice, R.R., 47, 47, 48, 68
Tindall, K.R., 25, 26
Tobias, C.A., 17
Toyoda, M., 17
Travisano, M., 21

Trosko, J.E., 25
Troxclair, A.M., 53
Truckess, M.W., 45
Trzoes, R., 43
Tucker, J.D., 17, 17, 25
Tuman, W.G., 26, 26, 26, 26
Turner, J.H., 33
Turner, N.T., 27
Turcoci, L.J., 45
Tyler, S.I., 33

Unruh, L.E., 64, 64, 64

Vainio, H., 56
Valencia, R., 43
Valtierra, R.M.E., 57
Van Arnold, J.D., 23
Van der Sluis, D., 43
Van Haight, C.C., 45
Vedelago, A.M., 35
Von Borstel, R.C., 57
Von Tungeln, L.S., 64, 64

Wadhamms, A., 27
Wagner, E.D., 57
Wakabayashi, K., 33
Walker, G., 18
Walsh, D., 61
Wang, N.-P., 64
Wang, Y.Y., 23, 29
Ward Jr., J.B., 15, 33, 68
Wargovich, M.J., 35
Warren, S., 23, 31
Waters, M.D., 56
Weber, C.A., 44
Wehr, C.M., 15, 66
Wei, C.I., 29
Welty, T., 32, 32
Westbrook-Collins, B., 48
Wetterhahn, K.E., 63
Whaley, T.W., 45
Wheeler, W.B., 29
Whong, W-Z., 46, 52
Whorton Jr., E.B., 15, 22
Wiencke, J.K., 14, 14, 14
Wilkinson, B.P., 29

78
Williams, J.R., 49
William, K., 21, 30
Williams, L.R., 29
Williams, R., 31
Wilson, N., 30
Winegar, R.A., 49, 56
Winsor, B., 57
Winston, G.W., 53
Wiser, S.K., 43, 44
Witcher, L.W., 28
Wolff, G.L., 43
Wolff, S., 14, 14
Working, P.K., 67, 67, 67
Woskie, S., 35
Wright, D., 32
Wrobel, J.A., 45
Wroblewski, D.H., 45
Wu, R., 14
Wyrobek, A.J., 17, 17, 17

Xu, Z., 57

Yager, J.W., 20
Yamaizumi, Z., 35
Yan, Z.A., 49
Yandell, D.W., 52
Yang, J.-L., 50
Yang, T.C., 17
Yano, M., 33
Yokoyama, S., 35
Yourtee, D.M., 65
Yuan, Z.P., 67
Yunis, J., 38

Zeiger, E., 46, 49, 50, 52, 56, 61
Zhou, X.T., 49
Zielenska, M., 16
Zimmer, D.M., 43, 65
Zweidinger, R., 23
<table>
<thead>
<tr>
<th>Ballroom 5</th>
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