Announcements

Forty graduate students, six postdoctoral fellows and six faculty from Texas A&M University attended the Society of Toxicology meeting in Anaheim, California on March 10-14. The abstracts presented are listed on pages 4-6. Weston Porter, a doctoral student in Steve Safe’s laboratory, received the Procter & Gamble Company Graduate Student Fellowship Award. Alan Parrish, a doctoral student in Ken Ramos’s laboratory, received First Place in the Mechanism Specialty Section. Weili Wang, from Steve Safe’s laboratory, was awarded Second Place in the Mechanism Specialty Section. Cody Wilson and Feng Zhao, from Steve Safe’s and Tim Phillips’s laboratories, respectively, received travel awards from the Society of Toxicology to attend the meeting.

Dr. Ken Ramos received the Achievement Award at the Society of Toxicology meeting. The award honors a young scientist who has made a significant contribution to toxicology.

Alan Parrish and Cody Wilson presented their research at the annual meeting of the American Association for Cancer Research in Washington, DC in April.

Dr. James Wild and his graduate students Shane Gold, Marjorie Hong and Barbara Kuhlmann, and Sandra Hong, doctoral student in Evelyn Tiffany-Castiglioni’s

continued on page 2
laboratory, attended the "NATO Advanced Research Workshop: Chemical and Biological Technologies for the Detection, Destruction, and Decontamination of Chemical Warfare Agents" in Moscow on May 12-16. Dr. Wild was an organizer for the meeting. Shane, Marjorie, Sandra and Barbara presented posters.

Clynn Wilker, doctoral candidate from Larry Johnson’s laboratory, presented a poster entitled “Perinatal Exposure to Indole-3-Carbinol Alters Reproductive Development Similar to TCDD in Sprague-Dawley Rats” (CE Wilker, SH Safe and L Johnson) at the 15th International Symposium on Chlorinated Dioxins and Related Compounds in Edmonton, Alberta Canada. Clynn received an award for the outstanding poster presentation.

Mike Moore, a PhD graduate from Steve Safe’s laboratory, accepted a staff position at Pit Environmental Services in Bellevue, Washington.

Yu Fang Lu, from Steve Safe’s laboratory, will receive her PhD in toxicology this month. Yu Fang began a postdoctoral position at the University of Chicago.

Clynn Wilker will receive his PhD in toxicology this month.

Eddy Reed, toxicology student from CS Giam’s laboratory in Galveston, will graduate with his PhD in May. Eddy completed his coursework in College Station, then moved to Galveston, where he conducted his research.

The following doctoral students completed their preliminary exams this semester:

- **student**      **advisor**
  - Maxene Dwyer    Tim Phillips
  - Scott McKenzie   Tim Phillips
  - Cody Wilson      Steve Safe

Jane Thomsen and Weston Porter, from Steve Safe’s laboratory, presented their research at the Keystone Symposia on the Steroid/Thyroid/Retinoic Acid Gene Family in Lake Tahoe, CA on March 17-22.

Several toxicology students were honored at the 1996 College of Veterinary Medicine Honors Convocation. Alan Parrish received the George T. Edds award for an outstanding toxicology student. Cody Wilson received the Michael Szabuniewicz award. Kristie Willett received the TAMU Veterinary Faculty Auxiliary Graduate Student award.

**Dr. Patricia Pietrantonio** joined the Faculty of Toxicology. Dr. Pietrantonio recently began her position as Assistant Professor of Insect Toxicology in the Entomology Department.
Superfund News

The NIEHS-funded Superfund Basic Research Program (SBRP) has been carrying on its research program despite the continuing political uncertainties. The status of the overall E.P.A. program and its Superfund authorization has been under scrutiny by several congressional committees and there is still hope that the SBRP will survive with only minimal changes. Nevertheless our research program has been progressing and we will have a site visit by our External Advisory Board and NIEHS staff on July 9. Some current research highlights include:

- A diverse spectrum of non-additive (antagonistic) interactions between TCDD and PCBs have been observed in the chick embryo model; this will have implications for risk assessment of these compounds.

- Recent results have shown that in vivo exposure to soil extract from a Superfund wood-preserving waste site induces oxidative DNA damage in target tissue via formation of free radicals. This effect will need to be considered in risk assessment of toxic waste sites, in addition to adduct formation via metabolic activation of carcinogens.

- Investigation of the interactions of benzo(a)pyrene (BAP) & trinitrotoluene (TNT) in mutagenicity assays indicated that TNT inhibited the mutagenicity of BAP. Fluorescence imaging of cells exposed to the two chemicals indicates that the UV fluorescence of BAP in the cell completely disappears when TNT is added to the media.

- Separation procedures have been utilized to isolate 5 fractions from a complex coal tar mixture. Mutagenicity analyses indicate that although both the 4-ring and 5-ring fractions were genotoxic, the fraction consisting of >5-ring compounds induced a mutagenic response at much lower dose levels. These data have implications for using BAP as the surrogate PAH in risk assessment.
ALKALINE TREATMENT OF AFLATOXIN B1: STABILITY OF PARENT AND DEGRADATION PRODUCTS. R H Bailey, A B Sarr, T D Phillips. Faculty of Toxicology, TAMU.

EFFECTS OF CHEMICAL INTERACTIONS ON BACTERIAL MUTAGENICITY. J L Capizzi and K C Donnelly, VAPH, TAMU.

INDOLE-3-CARBINOL AND DIINDOLYLMETHANE AS ARYL HYDROCARBON (Ah) RECEPTOR AGONISTS AND ANTAGONISTS IN T47D HUMAN BREAST CANCER CELLS. I Chen, S Safe and L Bjeldanes, VTPP, TAMU and Dept. of Nutritional Sciences, University of California, Berkely, CA.

HYDROXY-PCBs AS ANTI-ESTROGENS: STRUCTURE-ACTIVITY RELATIONSHIPS. K Conner, M Mustain, M Moore, K Ramamoothy, S Safe, B Gillesby, A Joyceux, I Zacharewski and P Balaguer, VTPP, TAMU; Dept. of Pharmacology and Toxicology, University of Western Ontario, London, Ontario, Canada; and INSERM U58, 60 rue de Navacelles, 34090 Montpellier, France.

INDUCTION OF HEPATIC CYP1A2 BY ACENAPHTYLENE IN MICE: AGE-DEPENDENT EFFECTS. J Miggins, M Steinberg, M Sethi, J Womack, and S Safe. Departments of Veterinary Pathobiology and Veterinary Physiology and Pharmacology, TAMU.

A THROMBIN-GENERATED FRAGMENT OF OSTEOPONTIN UPREGULATES MITOGENIC RESPONSIVENESS OF SMOOTH MUSCLE CELLS IN A CHEMICAL MODEL OF ATHEROGENESIS. A R Parrish and K S Ramos. Faculty of Toxicology and VTPP, TAMU.

2, 3, 7, 8-TETRACHLORODIBENZO-p-DIOXIN (TCDD) AS AN ANTIESTROGEN IN MCF-7 HUMAN BREAST CANCER CELLS: INHIBITION OF ESTROGEN-INDUCED HEAT SHOCK PROTEIN 27 GENE EXPRESSION. W Porter, R Duan and S Safe. VTPP, TAMU.


TRANSCRIPTIONAL DOWNREGULATION OF INSULIN-LIKE GROWTH FACTOR BINDING PROTEIN-4 BY 2, 3, 7, 8-TETRA-CHLORODIBENZO-p-DIOXIN IN MCF-7 AND T47D HUMAN BREAST CANCER CELL LINES. K Schrophe, W Porter, M Moore and S Safe. Departments of Biochemistry and Biophysics and VTPP, TAMU

ALKYL POLYCHLORINATED DibenzoFURANS AS ANTI-ESTROGENS IN HUMAN BREAST CANCER CELL LINES. G Sun, W Wang, and S Safe. VTPP, TAMU.

REGULATION OF ESTROGEN-INDUCED TRANSFORMING GROWTH FACTOR-α BY 2, 3, 7, 8-TETRACHLORODIBENZO-p-DIXION IN HUMAN BREAST CANCER CELLS. C Vyhildal and S Safe. VTPP and Biochemistry and Biophysics, TAMU.

GROWTH INHIBITION OF MDA-MB-468 HUMAN BREAST CANCER CELLS BY 2, 3, 7, 8-TETRACHLORODIBENZO-p-DIXION (TCDD): ROLE OF TRANSFORMING GROWTH FACTOR-α. W Wang and S Safe. VTPP, TAMU.

RELATIVE INDUCTION POTENCY OF SELECTED POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS) IN ENVIRONMENTAL SAMPLES USING THE H4IIE CELL BIOASSAY. K Willett, P Gardinali, J Sericano, T Wade, and S Safe. VTPP, TAMU; AND Geochem. and Environ. Res. Group, TAMU.

FACTORS WHICH DETERMINE THE ARYL HYDROCARBON (Ah)-NONRESPONSIVENESS OF ADRIAMYCIN RESISTANT MCF-7 HUMAN BREAST CANCER CELLS. C Wilson, W Wang and S Safe. VTPP, TAMU.

POLYCYCLIC AROMATIC HYDROCARBON CONTRIBUTION TO COAL TAR-INDUCED HEPATOCARCINOGENICITY. M A Steinberg, N Harper, and S Safe. VTPP, TAMU; L Goldstein, Electric Power Research Institute, Palo Alto, CA; L V Rodriguez, MD Anderson Cancer Center, Univ. of Texas, Houston, TX; and H Dunsford, Univ. of Mississippi Medical Center, Jackson, MS.

DECREASED ARYL-HYDROCARBON (Ah)-RESPONSIVENESS BY ICI 164,384 IN MCF-7 CELLS. J Thomsen, W Wang, and S Safe. VTPP and Biochemistry and Biophysics, TAMU.

RELATIVE INDUCTION POTENCY OF SELECTED POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS) IN ENVIRONMENTAL SAMPLES USING THE H4IIE CELL BIOASSAY. K Willett, P Gardinali, J Sericano, T Wade, and S Safe. VTPP, TAMU; AND Geochem. and Environ. Res. Group, TAMU.
8-TETRACHLORODIBENZO-p-DIOXIN (TCDD) REDUCES DAILY SPERM PRODUCTION AND ALTERS EPIDIDYMAL FUNCTION. C E Wilker, S H Safe, and L Johnson. Faculty of Toxicology, TAMU.

CHARACTERIZATION OF THE Ah-RESPONSIVENESS OF ISHIKAWA ENDOMETRIAL CELLS. M Wormke and S Safe, VTPP, TAMU.

EFFECTS OF 2,2', 4, 4', 5, 5'-HEXACHLORO-INDOLE-3-CARBINOL ON 3, 3', 4, 4', 5, 5'-PENTACHLOROBIPHENYL (PCB) TERATOGENESIS IN CHICKEN EMBRYOS AND C57BL/6 MICE. F Zhao, K Mayura, N Kocurek, J F Edwards, L F Kubena, S Safe, and T D Phillips, Faculty of Toxicology, Vet. Anatomy, TAMU.

MODULATION OF GROWTH-RELATED GENE EXPRESSION IN PRIMARY CULTURES OF RAT HEPATOCYTES BY BENZO(A)-PYRENE AND 2, 3, 7, 8-TETRACHLORODIBENZO-P-DIOXIN. W Zhao and K S Ramos. Faculty of Toxicology and VTPP, TAMU.

MOLECULAR TARGETS OF BENZO(A)PYRENE IN VASCULAR SMOOTH MUSCLE CELLS (SMCs). Y Zhang and K S Ramos. Faculty of Toxicology and VTPP, TAMU.

INHIBITION OF c-FOS PROTO-ONCOGENE EXPRESSION BY TCDD USING ESTROGEN-RESPONSIVE 5'-PROMOTER CONSTRUCTS. R Duan, W Porter, and S Safe. VTPP, TAMU.

ISOThERMAL ANALYSIS OF AFLATOXIN B, BINDING TO PHYLLoSILICATE CLAYS. P G Grant, AB Sarr, T D Phillips. Faculty of Toxicology, TAMU.

REACTION AND DIFFUSION CHARACTERISTICS OF CRYO-IMMOLIZED RECOMBINANT E. coli BIOCATALYST IN REMEDIATION OF NEUROTOXIC ORGANOPHOSPHATES. M S Hong, E Rainina, J K Grimsley, B E Dale, and J R Wild. Department of Chemical Engineering, Department of Biochemistry and Biophysics, TAMU.

INHIBITION OF EXCITATORY POST-SYNAPTIC PROPERTIES IN RAT HIPPOCAMPAL SLICES BY 2, 3, 7, 8-TETRACHLORODIBENZO-p-DIOXIN (2, 3, 7, 8-TCDD) AND 2, 2', 5, 5'-TETRACHLOROBIPHENYL (2', 2', 5, 5'-TCB). S J Hong, C A Grover, G D Frye, S H Safe, E Tiffany-Castiglioni. TAMU.

IN VITRO ANALYSIS OF LIGAND-DEPENDENT CHANGES IN Ah-RECEPTOR-DRE INTERACTIONS. L A Johnson, C Wilson and S Safe. VTPP, TAMU.

THE PURIFICATION OF A TNT-REDUCING ENZYME. T Kalafut, M E Wales, J R Wild. Department of Biochemistry and Biophysics, TAMU.


SUBSTITUTED FLAVONES AS ARYL HYDROCARBON RECEPTOR AGONISTS AND ANTAGONISTS. Y-F Lu, M Santostefano, B D M Cunningham, M D Threadgill, and S Safe. VTPP, TAMU; and School of Pharmacy, University Bath, Claverton Down, Bath, England.

INHIBITION OF 7, 12-DIMETHYL-BENZANTHRACENE-INDUCED RAT MAMMARY TUMOR GROWTH BY 6-METHYL-1,3,8-TRICHLORODIBENZOFLUORAN. A McDougal, J Howell, and S Safe, VTPP, TAMU.

DEGRADATION AND TOXICOLOGICAL EVALUATION OF FUMONISIN B, AND OTHER MYCOTOXINS TREATED WITH HYDROLYTICALLY-PRODUCED OZONE GAS. K S McKenzie, A B Sarr, K Mayura, W P Norred, K A Voss, R D Plattner, T D Rogers, and T D Phillips. Faculty of Toxicology, TAMU; Toxicology and Mycotoxin Research Unit, ARS/USDA, Athens, GA; Bioactive Constituents Research, ARS/USDA, Peoria IL; Lyntech, Inc., College Station, TX.

DIETARY ESTROGENS AND ANTIESTROGENS: A QUESTION OF DOSE AND POTENCY. S Safe. VTPP, TAMU.

ALTERATION OF OXYTOCIN-INDUCED CALCIUM OSCILLATIONS IN CLONE 9 CELLS BY TOXIN-EXPOSURE. R C Burghardt, T D Phillips, S H Safe and R Barhoumi. Faculty of Toxicology, TAMU.

ANTIESTROGENIC ACTIVITY OF HYDROXYLATED PCBs IDENTIFIED IN HUMAN SERUM. M Moore, M Mustain, K Daniel, S Safe, T Zacharewski, B Gillesby, A Joyeux, and P Balagué. VTPP, TAMU; Dept. Of Pharmacology and Toxicology, Univ. Of Western Ontario, London, Ontario, Canada; and INSERM U58, Montpellier, France.

FAILURE OF CHLORO-S-TRIAZINE-DERIVED CHEMICALS TO INDUCE ESTROGEN RECEPTOR-MEDIATED
RESPONSES IN VIVO AND IN VITRO. T Zacharewski, K Connor, J Howell, I Chen, H Liu, K Berhane, C Sciaretta and S Safe. VTPP, TAMU; and Dept. Of Pharmacology and Toxicology, Univ. Of Western Ontario, London, Ontario, Canada.

MOLECULAR MECHANISM OF INHIBITION OF ESTROGEN-INDUCED BRAIN CREATINE KINASE EXPRESSION BY TCDD. F Wang and S Safe. VTPP, TAMU.

GLUTAMATE UPTAKE AND GLUTATHIONE CONTENT IN LEAD-TREATED ASTROGLIA. L A Schneider, R Stevenson and E Tiffany-Castiglioni. VAPH, TAMU.

GLOMERULAR MESANGIAL CELLS ARE PREFERENTIAL TARGETS OF BENZO(A)PYRENE IN THE KIDNEY. K S Ramos, C M Bral and A R Parrish. Faculty of Toxicology and VTPP, TAMU.

MOLECULAR AND CELLULAR TARGETS OF BENZO(A)PYRENE IN PRECISION-CUT RAT LIVER AND KIDNEY SLICES. K Brendel, R L Fisher, A R Parrish and K S Ramos. Department Of Pharmacology., Univ. Of Arizona, Tuscon, AZ; and Faculty of Toxicology and VTPP, TAMU.

BENZO(A)PYRENE INDUCES TRANSCRIPTION OF THE NORMALLY CONSTITUTIVE C-HA-RAS PROTOONCOGENE IN VASCULAR SMOOTH MUSCLE CELLS. C M Bral, D N Sadhu and K S Ramos. Faculty of Toxicology and VTPP, TAMU.

STUDIES ON THE MECHANISM OF HEPATOTOXICITY OF p-CRESOL: EFFECTS OF DEUTERIUM LABELLING AND RING SUBSTITUTION. D C Thompson, K Perera and R London. TAMU Health Sciences Center, College Station, TX and NIEHS, Research Triangle Park, NC.

ENZYME BASED BIOSENSOR FOR DIRECT DETECTION OF ORGANOPHOSPHOROUS NEUROTOXINS. A L Simonian, E I Rainina, J K Grimsley and J R Wild. Department of Biochemistry and Biophysics, TAMU.

Conferences

May 1996

May 30-31, 1996
The 10th Annual Genetic and Molecular Toxicology Workshop
Bethesda, MD
Contact: Patricia M. Mulligan; Microbiological Associates, Inc.; 900 Blackwell Road; Rockville, MD 20850; Tel: (301) 251-0437

June 1996

June 3-7, 1996
Critical Issues in Tumor Microcirculation, Angiogenesis and Metastasis
Cambridge, MA
Sponsored by the Harvard Medical School and Massachusetts General Hospital
Contact: Harvard MED-CME; P.O. Box 825; Boston, MA 02117-0825

June 5-8, 1996
Control and Manipulation of Malignant Tumor Spread
Paris, France
Contact: S. Scholl or S. Pellegrino; Tel: 33 1 44 32 46 71

June 8-12, 1996
Inducible Genomic Responses
Stevenson/Columbia River Gorge, WA
Contact: AACR; Public Ledger Bldg., Suite 816; 150 South Independence Mall West; Philadelphia, PA 19106-3483;Tel: (215) 440-9300

June 12-13, 1996
The Future Uses of Chlorine: Issues in Education, Research, and Policy
Cambridge, MA
Contact: Jennifer Nash; Chlorine Project; MIT Rm E40-251; 77 Massachusetts Ave.; Cambridge, MA 02139-4307; Tel: (617) 253-3586; E-mail: jnash@mit.edu
June 8-August 23, 1996 (various dates)
FASEB Summer Research Conferences
Saxtons River, VT
Snowmass Village, CO
Copper Mountain, CO
Contact: FASEB Career Resources; 9650 Rockville Pike; Bethesda, MD 20814-3998;
Tel: 1-800-43-FASEB, ext. 7020

June 9-12, 1996
Modulation of Chemical Toxicity and Risk Assessment
Tucson, AZ
Contact: Susan Hurt, Conference Coordinator; The University of Arizona; College of Pharmacy Center for Toxicology; 1703 East Mabel; Tucson, AZ 85721-0207;
E-mail: hurt@toxic.pharm.arizona.edu

June 9-14, 1996
DNA Adducts and Mutations in Human Biomonitoring
Stockholm, Sweden
Contact: Meeting Secretariat Mairon Sandin; Karolinska Institutet, CNT, Novum; S-141 57 Huddinge, Sweden; Tel: +46-8-608 92 20

June 12-14, 1996
4th Biennial International Symposium on Alternatives in the Assessment of Toxicity: Issues, Progress and Opportunities
Aberdeen Proving Ground, MD
Sponsored by U.S.Armv Edgewood Research, Development and Engineering Center; Contact: Heather Cowan or Janice Rhodes; Tel: (410) 569-0200

June 17-21, 1996
DNA Binding Proteins and Transcriptional Regulators
Washington, D.C.
Contact: CATCMB/103 McCort-Ward Bldg.; The Catholic University of America; Washington, D.C. 20064; Tel: 202-319-6161

June 22-27, 1996
1996 World Congress on In Vitro Biology
San Francisco, CA
Contact: Society for In Vitro Biology; 8815 Centre Park Dr., Suite 210; Columbia, MD 21045; Tel: 410-992-0946.

June 29-August 2, 1996
Environmental Applications of Gas Chromatographic Mass Spectrometry
Bloomington, IN
Sponsored by the School of Public And Environmental Affairs Indiana University; Contact: Executive Education Program; Indiana University; SPEA 410H; Bloomington, IN 47405; Tel: (812) 855-0193

August 17-23, 1996
Methods in Clinical Cancer Research
Park City, UT
Co-sponsored by the AACR and the ASCO; Contact: AACR; Public Ledger Bldg, Suite 816; 150 S. Independence Mall West; Philadelphia, PA 19106-3483; Tel: (215) 440-9300

August 29-30, 1996
Dietary Fat and Cancer: Genetic and Molecular Interactions
Washington, D.C.
Contact: AICR Conference Secretariat; The Pearson Group, Suite 210; 1150 South Washington Street; Alexandria, VA 22314; Tel:
(703) 683-6334

September 1996

September 11-13, 1996
Biological Monitoring in Occupational and Environmental Health
Espoo, Finland
Contact: Ms. Kristiina Kulha; Topeliuksenkatu 41 a A; FIN-00250 Helsinki, Finland; Tel: int+358-0-47 47 551, Fax: int+358-0-47 47 548; e-mail: kkul@occuphealth.fi

September 22-25, 1996
Eurotox ’96
Alicante, Spain
Contact: J. Leuschner; Redderweg 8; D-21147 Hamburg, Germany; Tel: ++49 40 70 20 20

October 1996

October 6-9, 1996
Carcinogenesis from Environmental Pollution: Assessment of Human Risk and Strategies for Prevention
Budapest, Hungary
Joint Conference of the AACR and the IARC, with the collaboration of the Hungarian Cancer Society; Contact AACR; Public Ledger Bldg., Suite 816; 150 S. Independence Mall West; Philadelphia, PA 19106-3483; Tel: (215) 440-9300

October 19-23, 1996
Programmed Cell Death
Bolton Landing, New York
Sponsored by the American Association for Cancer Research. Contact: Special Conference Registration, Public Ledger Building, Suite 816, 150 South Independence Mall West, Philadelphia, PA 19106-3483; Tel: (215) 440-9300, Fax: (215) 440-9313

October 20-24, 1996
7th North American International Society for the Study of Xenobiotics Meeting
San Diego, CA
Contact: ISSX; PO Box 3; Cabin John, MD 20818; Fax: 301-983-5357

October 26-28, 1996
3rd International Symposium: Impact of Cancer Biotechnology Diagnostic & Prognostic Indicators
Nice, France
Sponsored by the International Society for Preventive Oncology; Contact: Box 20, University of Massachusetts Medical Center; 55 Lake Ave. N; Worcester, MA 01655

December 1996

December 4-7, 1996
New Approaches for Assessing the Carcinogenic Potential of Chemicals
Austin, TX
Contact: Mary Lou Fendley; UT Science Park; PO Box 389; Smithville, TX 78957; Tel: (512) 237-2522

July 1997

July 1-5, 1997
Stress of Life—Stress and Adaptation from Molecules to Man
Budapest, Hungary
Contact: Dr. Peter Csermely; Institute of Biochemistry I.; Semmelweis University; P.O. Box 260; H-1444 Budapest, Hungary; Tel: +361-266-6550

July 6-10, 1997
7th EAVPT International Congress
Madrid, Spain
Contact: Congress Secretariat, Mrs. Marta Cazorla; Viajes Iberia Congresos; 7th EAVPT International Congress; San Bernard 20; 28015 Madrid, Spain; Tel: 34 1 5328137

The toxicology program would like to thank the Spring 1996 Seminar Series hosts for their assistance.

Hart Bailey
Larry Johnson
Rick Finnell
Tim Phillips
Weston Porter
Cody Wilson

special thanks to host and seminar coordinator
Evelyn Tiffany-Castiglioni
International Program for Animal Alternatives

Call for Research Proposals for Development and Validation of Alternatives in Animal Testing for Efficacy and Safety

Sponsored by Procter & Gamble

Submissions due August 15

The purpose of this program is to provide funds for research in biological sciences. Specifically, this program funds the development and the scientific validation of replacements for, or improvements in, current animal methods for efficacy and safety testing used in the development of new drugs and other consumer products. Funding will be provided for up to three proposals each year. The maximum funding for each awarded proposal will be $50,000 per year for a period of up to three years. Contact: Program Administrator; International Program for Animal Alternatives; The Procter & Gamble Company; Miami Valley Laboratories; PO Box 538707; Cincinnati OH 45253-8707; fax (513) 627-0084

Employment Opportunities

Postdoctoral Position
University of Virginia

Position available to study the expression, identification and regulation of estrogen receptors in the heart and peripheral vasculature. U.S. citizenship or permanent residency required. Send resume and names of four references to: C. Desjardins, Medical Center Box 391, University of Virginia, Charlottesville, VA 22908. e-mail: reprod@virginia.edu.

Positions
Roche Bioscience


Positions
Amgen

Opportunities in the fields of Toxicology, Pharmaceuticals, Medicinal Chemistry and Neuroscience. Email resume to: jobs@amgen.com and indicate resume as subject or send resume to Amgen, Job Code: TPSC, P.O. Box 2569, Thousand Oaks, CA 91319-2569. On-line job bulletin board at: http://amgen.bio.com.
**Health Risk Analyst**  
The New Hampshire Division of Public Health Services  
Candidate will prepare complex multi-media assessments of the harmful effects of environmental contaminants on populations at risk in addition to reviewing human health risk assessments. Requires a graduate degree in Toxicology, Environmental Health, or in a related field plus four years experience in public health or in a related field.  
Contact Dennis Pinski, Supervisor, Risk Assessment Section; Tel: (603) 271-4664.

**Assistant Professor**  
Johns Hopkins University  
School of Hygiene and Public Health  
Division of Toxicological Sciences. Applicants should be trained in the area of toxicology and completed at least two to three years of postdoctoral research. Send CV, research plans, and 3 references to James D. Yager, PhD; Professor and Director, Division of Toxicological Sciences; Dept of Environmental Health Sciences; Johns Hopkins Univ School of Hygiene and Public Health; 615 N Wolfe St; Baltimore, MD 21205-2179.

**Environmental Toxicologist**  
Maryland Department of the Environment  
Provides technical support to the Department’s Air, Water, and Waste Administrations on environmental toxicology/public health issues. Four year or advanced degree in environmental health or toxicology with risk assessment coursework and/or experience required. Regulatory and/or toxicological experience preferred. Send resume and writing sample to Dr. Diedre Murphy; Environmental Risk Assessment Program; Technical and Regulatory Services Administration; Maryland Department of the Environment; 2500 Broening Highway; Baltimore, MD 21224; Tel: (410) 631-3906.

**Faculty Position**  
University of Rhode Island  
Tenure-track, Assistant Professor level position in the Department of Biomedical Sciences. A PhD in toxicology or a closely related discipline, such as pharmacology, biochemistry, or cell or molecular biology is required. The candidate must have postdoctoral experience and publications in peer reviewed journals. Send CV, 3 references, copies of selected publications, and research plan to Dr. Z. A. Shaikh, Search Committee Chair (Log #161065); P.O. Box G; University of Rhode Island; Kingston, RI 02881; Tel: (401) 874-2362.

**Assistant Professor**  
Saint Joseph’s College  
Teaching responsibilities include environmental science; general and analytical chemistry (limnology helpful); and assistance with general laboratories. Ph.D. and teaching experience required. Send resume, CV, statement of teaching philosophy, research interest, transcripts, and three letters of recommendation to Sister Mary Ellen Murphy, Ph.D., Dean; Saint Joseph’s College; 278 Whites Bridge Road; Standish, ME 04084-5263.

**Cell Biologist Position #OPSCI-1714**  
**Signal Transduction Position #OPSCI-1891**  
Wyeth Ayerst  
Candidates must have a Ph.D. in Life Sciences with a minimum of 3 years relevant postdoctoral experience or the equivalent. Send resume with salary requirements and Position # to Wyeth-Ayerst Research; Human Resources Dept; P.O. Box 7886; Philadelphia, PA 19101-7886; or fax to (610) 989-4854; e-mail: jobs@RAMAIL1wyeth.com (ASCII format, no attachments, subject: resume).

**Postdoctoral Positions**  
NCI and NIH  
Two positions are available (1) in the Retrovirus Pathogenesis Group with Dr. David Derse, candidates should have a strong background in molecular biology and virology and (2) in the Developmental Signal Transduction Group, candidates should have a strong background in molecular, cellular, or developmental biology. Applicants must have less than 5 years of postdoctoral experience. Send CV and three references to the appropriate mentor at The Laboratory of Leukocyte Biology; Division of Basic Sciences; NCI-FCRDC; Bldg 567; Frederick, MD 21702.

**Positions**  
NIH-funded positions are available to study signal transduction processes mediated by the Raf-1 protein kinase. Experience in molecular biology and protein biochemistry are required. Send CV, short
Postdoctoral Fellow
Wake Forest University
An NCI-funded Postdoctoral Fellowship is available in the Signaling Program of the Comprehensive Cancer Center of Wake Forest University. Research opportunities are available in the Departments of Biochemistry, Microbiology/Immunology, and Physiology/Pharmacology. Contact: Dr. Moseley Waite, Chairman; Dept of Biochemistry; Bowman Gray School of Medicine; Medical Center Boulevard; Winston-Salem, NC 27157-1016.

Postdoctoral Position
University of Vermont
A recent Ph.D. is needed to study the proliferation of airway smooth muscle. Molecular biology experience is required. Send CV to James Posada, Ph.D.; Dept of Molecular Physiology; University of Vermont; Burlington, VT 05405. Tel: (802) 656-5776; e-mail: posada@salus.med.uvm.edu.

Postdoctoral Positions
Yale University
Positions available to study signal transduction and gene regulation in inflammation (asthma). Experience in molecular biology and whole animal studies is desired. Send CV with references to Drs. Prabir Ray and Anuradha Ray; Dept of Internal Medicine/Pulmonary Section; Yale University School of Medicine; LCI 105, 333 Cedar Street; New Haven, CT 06520.

Postdoctoral Positions
University of Miami
Positions available to study the adaptive regulation of transporters and receptors in human brain. Candidates will have PhD and expertise in HPLC, GC/MS, ligand binding, receptor autoradiography, in situ hybridization, solution hybridization or PCR methodologies. Send CV and three references to Deborah C. Mash, Ph.D.; Dept of Neurology; University of Miami; 1501 NW 9th Avenue; Miami, FL 33136; e-mail: dmash@mednet.med.miami.edu.

Senior Scientist/Toxicologist
International Life Sciences Institute (ILSI) Risk Science Institute
Applicants should have working knowledge of human health risk assessment and expertise in reproductive/developmental toxicology is required. Position requires a PhD in toxicology or related biological science and 3+ years of professional experience. Will coordinate and staff technical groups, analyze technical data, draft and edit manuscripts, create project concepts and solicit funding support for projects. Send a detailed resume and list of publications to Human Resources, ILSI, 1126 16th. St., NW; Washington, D. C., 20036. Fax: (202)659-3859.

Job Search Web Addresses:
Federation of American Societies for Experimental Biology: gopher.faseb.org (Telnet: appserv.faseb.org - login: gopher; web programs need Telnet)
Best Bets: http://www.lib.umich.edu/chdocs/employment
American Cancer Society: http://pubs.acs.org
Federal Govt Openings: http://www.fedworld.gov/
Career Mosaic: http://www.careermosaic.com/cm
Monster Board: http://www.monster.com/
NIEHS: http://niehs.nih.gov
FASEB Careers On Line: http://www.faseb.org/careers