

## S. MICHAEL OWENS, PH.D.

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**Home:** 7 Bradley Lane  
Little Rock, Arkansas 72227

### EDUCATION

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- B.S. Chemistry**      1973      Wofford College, Spartanburg, SC
- Ph.D. Experimental Pathology**      1980      University of North Carolina, Chapel Hill, NC
- Department of Pathology, School of Medicine
  - Dissertation advisor: Arthur J. McBay, Ph.D.
- Postdoctoral Training**      1981–1983      University of Arizona, Tucson, AZ
- Pharmacokinetics and Therapeutics, Department of Pharmaceutical Sciences, College of Pharmacy
  - Postdoctoral advisor: Michael Mayersohn, Ph.D.

### PROFESSIONAL EXPERIENCE

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- 1973–1976      **Supervisor, Clinical Enzymology Laboratory**, Medical University of South Carolina, Charleston, South Carolina (Employment before going to graduate school)
- 1983–1987      **Research Assistant Professor**, Department of Pharmaceutical Sciences, College of Pharmacy, University of Arizona, Tucson, Arizona
- 1985–1988      **Assistant Professor**, Department of Pharmacology and Interdisciplinary Toxicology, School of Medicine, University of Arkansas for Medical Sciences, Little Rock, Arkansas
- 1988–1994      **Associate Professor**, Department of Pharmacology and Toxicology, School of Medicine, University of Arkansas for Medical Sciences, Little Rock, Arkansas
- 1994–present      **Full Professor**, Department of Pharmacology and Toxicology, School of Medicine, University of Arkansas for Medical Sciences, Little Rock, Arkansas
- 1993–1999      **Director, Graduate Studies in Pharmacology**, Department of Pharmacology and Toxicology, University of Arkansas for Medical Sciences, Little Rock, Arkansas
- 2001-2002      **Founding Director, Arkansas Biosciences Institute**
- 2004      **Interim Chair**, Department of Pharmacology and Toxicology, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, AR.
- 2000–present      **Director, Center for Alcohol & Drug Abuse Studies**, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, Arkansas
- 2004-present      **CSO, InterVexionTherapeutics, LLC.** A University of Arkansas for Medical Sciences Bioventures company for research, development and commercialization of protein therapeutics. The initial medications are based on

the biotechnology of Dr. Owens' monoclonal antibody therapies for the treatment of medical problems associated with drug abuse.

#### **ACADEMIC AND NATIONAL AWARDS/HONORS**

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| 1986-1997        | Research Scientist Development Award from the National Institute on Drug Abuse   |
| 1986-1987        | Sophomore Basic Science Golden Apple Award for Outstanding Teaching, third runner-up   |
| 1987-1988        | Chairman, Special Review Committee for Alcohol, Drug Abuse and Mental Health Administration's Small Business Innovative Research Grants, Rockville, MD           |
| 1998, 2000, 2002 | Chairman, Special Emphasis Panel for Minority Institutions Drug Abuse Research Development, National Institute on Drug Abuse, Rockville, MD                      |
| 2001             | <i>Wilbur D. Mills Endowed Chair in Alcoholism and Drug Abuse Prevention</i> , College of Medicine, University of Arkansas for Medical Sciences, Little Rock, AR |
| 2005-2006        | Chancellor's Distinguished Faculty Teaching Award, University of Arkansas for Medical Sciences, Little Rock, AR  |
| 2005-2007        | Chairman, Medication Development Research Subcommittee, NIDA-L, National Institute on Drug Abuse Initial Review Group, NIH/NIDA, Bethesda, MD                    |

#### **STATE, FEDERAL GOVERNMENT AND NATIONAL PUBLIC ADVISORY COMMITTEES**

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| 1984–1989  | Member, Special Review Committee for Alcohol, Drug Abuse, and Mental Health Administration's (ADAMHA) Small Business Innovative Research Grant Program, Rockville, MD  |
| 1985       | American Society for Engineering Education review panel for the Office of Naval Technology, Postdoctoral Fellowship Program, Washington, DC  |
| 1987       | Contract and Concept reviewer for the National Institute on Drug Abuse on "Pharmacokinetics of Psychoactive Drugs", Rockville, MD  |
| 1987       | Advisor to Dr. Robert Schuster (Director of the National Institute on Drug Abuse) on the use of immunopharmacological reagents for the treatment and study of drug abuse. One of three invited advisors, Rockville, MD |
| 1987, 1988 | Written Review for Neuroscience Panel of the Small Grant Review Committee, Alcohol, Drug Abuse and Mental Health Administration, Rockville, MD   |
| 1987-1988  | Chairman Special Review Committee for Alcohol, Drug Abuse, and Mental Health Administration's (ADAMHA) Small Business Innovative Research Grant Program, Rockville, MD   |
| 1989       | Member, Analytical Methods Working Group, Consensus Conference on Technical, Scientific & Procedural Issues of Employee Drug Testing, National Institute on Drug Abuse, Division of Applied Research, Falls Church, VA |

- 1989 Written Review for Physiological Processes Committee of the National Science Foundation, Washington, DC
- 1990 Advisor on drug testing in the workplace for the U.S. House of Representatives, Committee on Energy and Commerce, The Honorable John D. Dingel (Michigan), Chairman, Washington, DC
- 1990 *Ad hoc* Member, Drug Abuse Biochemical Research Review Subcommittee, National Institute on Drug Abuse, Rockville, MD
- 1990–1994 Member, Drug Abuse Biochemical Research Review Subcommittee, National Institute on Drug Abuse, Rockville, MD
- 1994–1998 Member National Institute of Health’s Reviewers Reserve
- 1998, 2000, 2002 Chairman Special Emphasis Panel for Minority Institutions Drug Abuse Research Development, National Institute on Drug Abuse, Rockville, MD
- 1998–Present *Ad hoc* Member, National Institute of Health Research Reviews
- 2002-2004 National Academy of Science, Washington, DC - Committee on Immunotherapies and Sustained Release Formulations for Treating Drug Addiction
- 2001-Present Board of Directors and at Large Member, Arkansas Biotechnology Association
- 2003-2006 College on the Problems of Drug Dependence, Drug Evaluation Liaison Committee
- 2003-2007 Member, Medication Development Research Subcommittee, NIDA-L, National Institute on Drug Abuse Initial Review Group, NIH/NIDA, Bethesda, MD
- 2005-2007 Chair, Medication Development Research Subcommittee, NIDA-L, National Institute on Drug Abuse Initial Review Group, NIH/NIDA, Bethesda, MD
- 2004-2007 College on the Problems of Drug Dependence, Program Committee
- 2004-Present Mentoring Advisory Committee, IDeA Networks of Biomedical Research Excellence
- 2008 US Congressional “Hill” briefing for Friend’s of the National Institute on Drug Abuse – “*Vaccine Development for Treating Drug Abuse*”
- 2010 Member, review committee for 2010 NIH Director's New Innovator Awards

## SCIENTIFIC REVIEWS

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*Biochemical Pharmacology*

*Drug and Alcohol Dependence*

*Drug Safety*

*Fundamental and Applied Toxicology*

*International Journal of Immunopharmacology*

*Journal of Drug Targeting*

*Journal of Pharmaceutical Sciences*

*Journal of Pharmacology & Experimental Therapeutics*

*Journal of Pharmacy and Pharmacology*  
*Life Sciences*

*Molecular Pharmacology*

*Neurotoxicology and Teratology*

*Toxicological Sciences*

*Toxicology and Applied Pharmacology*

## **JOURNAL EDITORIAL POSITIONS**

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Guest Editor for a journal issue entitled: "Monoclonal Antibodies as Drugs," in *Drug Development Research*, Wiley-Liss Publications, New York, NY. Vol 61 (3), 2004.

Editorial Board. *Toxicological Sciences* (Jan 03-Present).

## **TEACHING EXPERIENCE**

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1982	Course Director, Industrial Toxicology, Department of Pharmacology and Toxicology, College of Pharmacy, University of Arizona, Tucson, Arizona
1982	Toxicology, Summer Institute Faculty, Occupational and Environmental Health, Arizona Center for Occupational Safety and Health, University of Arizona, Tucson, Arizona
1982–1984	Analytical Toxicology, Department of Pharmacology and Toxicology, College of Pharmacy, University of Arizona, Tucson, Arizona
1983–1984	Pharmaceutical Analysis, Department of Pharmaceutical Sciences, College of Pharmacy, University of Arizona, Tucson, Arizona
1985, 1986, 1994	Course Director, Pharmacology and Toxicology Seminar (5051), Department of Pharmacology and Interdisciplinary Toxicology, University of Arkansas for Medical Sciences
1985– present	Pharmacology for Graduate Students (5033) (Pharmacokinetics, Therapeutics and Immunopharmacology), Department of Pharmacology, University of Arkansas for Medical Sciences
1985– present	Medical School Pharmacology Lectures (Drug Metabolism, Pharmacokinetics, Therapeutics, Immunopharmacology, Antimycobacterials, Antifungals, Antivirals, Stimulant abuse, Sulfonamides, General Principles Laboratory on Pharmacokinetics, Group Discussion Leader for Clinical Case Conferences), Department of Pharmacology and Toxicology, School of Medicine, University of Arkansas for Medical Sciences
1986, 1992	Immunology for Graduate Students (5022) (Immunosuppression, Immunopotential, Anti-idiotypes), Department of Microbiology and Immunology, University of Arkansas for Medical Sciences
1986, 1988	Advanced Immunology (6081) (Idiotypes and the Immune Network Theory, Immunochemistry), Department of Microbiology and Immunology, University of Arkansas for Medical Sciences
Spring, 1989	Course Director for Medical School Pharmacology, Department of Pharmacology, School of Medicine, University of Arkansas for Medical Sciences
1990, 1992, 2003	Course Director for Graduate School Pharmacology (5043), Department of Pharmacology and Toxicology, School of Medicine, University of Arkansas for Medical Sciences

- 1987, 1991, 1997 Course Director and Sole Instructor, Pharmacokinetics and Experimental Therapeutics for Graduate Students (502V), Department of Pharmacology and Toxicology, University of Arkansas for Medical Sciences
- 1992–1998 Advanced Toxicology (5093) (Physiologically Based Pharmacokinetic Modeling), Department of Pharmacology and Toxicology, University of Arkansas for Medical Sciences
- 1992–2004 Alcohol and Drug Dependency (5143) (Effects of Drugs of Abuse on the Immune System), Department of Pharmacology and Toxicology, University of Arkansas for Medical Sciences
- 1995–1996 Course Director (and Course Developer), Scientific Communication and Ethics, a Pharmacology and Toxicology Seminar training course for First and Second Year Graduate Students (5051), Department of Pharmacology and Toxicology, University of Arkansas for Medical Sciences
- 1995, 1997, 2001, 2004 Neuropharmacology (5133) (Biochemical and Molecular Techniques for Studying the Nervous System, Receptors Systems), Department of Pharmacology and Toxicology, University of Arkansas for Medical Sciences

## **GRADUATE STUDENT TRAINING**

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### ***Previous Doctoral Students***

- Mark Andrew Zorbas, Ph.D. 1990 Pharmacology
- Current position: Ophthalmic & Dermatology Therapeutic Area Leader for DSRD & Development & Regulatory Strategy Site Lead-La Jolla, Drug Safety Research & Development, Pfizer, Inc., Pfizer, Inc., San Diego, CA.
- John Leland Valentine, Ph.D. 1995 Toxicology
- Current position: Associate Director in Biochemical Toxicology, Merck & Co., West Point, PA
- Susan Shelnutt, Ph.D. 1995 Toxicology
- Current position: Senior Toxicologist, Center for Toxicology and Environmental Health, Little Rock, AR.
- Elizabeth Mary Laurenzana, Ph.D. 1995 Pharmacology
- Current position: Research Associate, Department of Veterinary and Biomedical Sciences, Pennsylvania State University, PA
- J. Shane Hardin, M.D., Ph.D. 1998 Pharmacology
- Physician in private practice. Hot Springs, AR.
- Joel W. Proksch, Ph.D. 1999 Pharmacology
- Current position: Director, Drug Metabolism & Pharmacokinetics, Global Preclinical Development, Bausch & Lomb, Rochester, NY
- Kelly A. Byrnes 2001 Pharmacology
- Current position: Scientist, Preclinical Development/Pharmacokinetics, ZymoGenetics, Inc., Seattle, WA
- Alessandra Milesi-Hallé, M.D., Ph.D. 2005 Pharmacology
- Current position: Medical residency program in Pediatrics at Arkansas Children's Hospital, Little Rock, AR
- Sarah J. White, Ph.D. 2008 Pharmacology
- Current position: Post-doctoral Student in Department of Pharmacology, UAMS

Jonathan Hubbard, /Ph.D. 2008 Pharmacology.  
▪ Current position: Completing requirements for last two years of Medical School at UAMS

#### ***Previous Post-doctoral Students***

▪ Gilles Rivière, Ph.D. Ph.D. in Pharmacology from Pasteur Institute, Paris, France.

Current Position: Director Bioanalytical Group, Drug Metabolism & Pharmacokinetics, Novartis Corporation, Paris, France.

▪ Howard Hendrickson, Ph.D. Ph.D. in Analytical Chemistry  
Current Position: Assistant Professor, Department of Pharmaceutical Sciences, College of Pharmacy, UAMS, Little Rock, AR.

▪ Marie Lacy, Ph.D. Ph.D. in Microbiology and Immunology, UAMS  
Current Position: Research Assistant Professor, Arkansas Children's Hospital Research Institute, Little Rock, AR.

▪ Eric Peterson, Ph.D. Ph.D. in Molecular Biology, University of Arkansas at Fayetteville, AR  
Current Position: Assistant Professor, Department of Pharmacology and Toxicology, College of Medicine, UAMS, Little Rock, AR.

#### ***Previous Research Assistant Professors***

Howard Hendrickson, Ph.D. Ph.D. in Analytical Chemistry

- Assistant Professor, Department of Pharmaceutical Sciences, College of Pharmacy, UAMS
- Received a NIH K25 award for which Drs. David Wessinger and Michael Owens were mentor.

Elizabeth Laurenzana, Ph.D. Ph.D. in Pharmacology, UAMS

- Research Associate, Department of Veterinary and Biomedical Sciences, Pennsylvania State University, PA

#### ***Current Doctoral Students***

- William Atchley (M.D./Ph.D. program), IBS.
- Michael Hambuchen (Ph.D. program) Pharmacology

#### ***Current Mentoring of Instructors or Assistant Professors***

- Eric Peterson, Ph.D. Ph.D. in Molecular Biology, University of Arkansas at Fayetteville, AR
- Daniela Rüedi-Bettschen, Ph.D. Ph.D. in Behavioral Neuroscience. at the Swiss Federal Institute of Technology, Zurich, Switzerland

#### ***Medical Student Research Advisor for Honors in Research***

- Douglas Blackall, Class of 1988
- Hoang Bui, Class of 1989
- Michael McClurkan, Class of 1992

## **MEMBERSHIP ON UNIVERSITY COMMITTEES**

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### ***Previous***

1986	LCME Self-Study Task Force Sub-Committee on Clinical Science Departments
1986–1988	Committee for Allocation of Graduate Student Funds
1987	Committee for Development of Alcohol and Drug Abuse Six Year Plan
1989	Principal Investigators Working Group for Grants Accounting System
1989, 1993	Graduate and Medical Student Research Day, Scientific Judge, University of Arkansas for Medical Sciences
1990	Medical School Promotions Committee for Class of 1990
1990–1991	Alcohol and Drug Abuse Committee
1990–1992	Search Committee for Chairperson of Department of Microbiology & Immunology
1991–1992	Human Research Advisory Committee
1991–1994	Dean’s Research Advisory Committee
1996–1997	Search Committee for Chairperson for Department of Dermatology
1995–1998	Executive Committee, Biotechnology Center
1992–2000	Center for Neuroscience Advisory Committee
1997–1998	Search Committee for Chairperson for Department of Molecular Genetics
1998–2002	Arkansas Bioventures Advisory Board
2001-2003	Arkansas Biosciences Building Committee (UAMS Campus)
2002-2003	Internal Advisory Committee, Arkansas Cancer Research Center
2003-2004	College of Medicine Search Committee for Chair of the Department of Internal Medicine
2005-2006	College of Medicine, Search Committee for Director of Bioventures
2004-2006	College of Medicine Space Allocation Committee
2006-2007	College of Medicine, Search Committee for Chair of Microbiology and Immunology
2002-2007	College of Medicine Promotion and Tenure Committee

### ***Current***

2002-Present	Dean’s Distinguished Speaker Selection Committee, College of Medicine
2005-Present	Executive Committee for Institutional Clinical and Translational Research
2008-Present	Chair, Dean’s Distinguished Speaker, Faculty Scholar and Distinguished Alumni Selection Committee, College of Medicine
2008-Present	Chair, Subcommittee for rewriting of College of Medicine promotion and tenure document for basic scientist
2009-Present	Cabinet member, Center for Clinical and Translation Research (CCTR), UAMS

2009-Present College of Medicine, Search Committee for Chair of Biochemistry and  
Molecular Biology

## **PROFESSIONAL SOCIETIES**

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- American Association for the Advancement of Science
- American Association of Pharmaceutical Scientists
- American Society for Clinical Pharmacology and Therapeutics
- American Society for Pharmacology and Experimental Therapeutics
- Arkansas Chapter of the Society for Neuroscience
- College on the Problems of Drug Dependence
- Society for Neuroscience
- Society of Toxicology

## **MAJOR RESEARCH INTERESTS**

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Experimental therapeutics, pharmacokinetics, substance abuse, immunopharmacology,  
neuroscience, biotechnology.

## **ROYALTIES FOR PRODUCTS DEVELOPED FROM IMMUNOLOGICAL RESEARCH**

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A non-exclusive license for use of a monoclonal antibody against phencyclidine in a diagnostic  
test for drug abuse. Microgenics Corporation, Concord CA (1993).

## **PATENTS**

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- US Patent No. 6,669,937, entitled "Monoclonal antibody antagonists for treating medical  
problems associated with d-amphetamine-like drugs" issued 12/30/03.
- US Patent No. 7,202,348, with the same title, issued 4/10/07.
- US Patent No. 7,632,929, entitled "Methamphetamine-like hapten compounds, linkers,  
carriers and compositions and uses thereof" issued 12/15/09.
- US Patent Application serial no.s 12/611,708, 12/596,765, 11/763,948, and 11/738,789  
are currently pending in the US.
- European Regional Patent Application no.s 07798645.3 and 0874624.4 are also currently  
pending.
- PCT/US08/60815 is currently pending as a National Stage Application in India.

## **CURRENT FUNDING**

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### ***Grants as Principal Investigator***

R01 DA07610

7/01/05–6/30/10

NIH/NIDA

### ***Immunotherapy for Drug Abuse***

- \$1,512,842 total direct cost
- The goal of this grant is to explore and understand fundamental pharmacological  
mechanisms of maternal-fetal effects after exposure to stimulant drugs of abuse and to anti-  
drug monoclonal antibodies. The overall hypothesis is that maternally administered anti-  
drug monoclonal antibodies can protect both mother and fetus for the harmful effects of (+)-  
methamphetamine, ecstasy, and phencyclidine.

R01 DA11560 1/01/04–12/31/11 NIH/NIDA  
*Antibody-based Therapy for Methamphetamine Abuse*

- \$1,563,447 total direct cost.
- The purpose of this grant is to develop antibody-based medications for the treatment of the toxicity and addiction due to stimulants like methamphetamine.
- Currently in a no cost extension. The renewal has been submitted.

U01 DA023900 9/30/07-8/31/12 NIH/NIDA  
*Active immunization for treating methamphetamine abuse*

- \$3,848,043 total direct cost
- The purpose of these preclinical studies is to facilitate the medical discovery and development of new (+)-methamphetamine conjugate vaccines (MCVs) to help patients stop using (+)METH-like drugs by blocking or reducing their effects even under challenges of binge and relapse.

### **Grants as Mentor or Co-Investigator**

F30 DA024522, Period: 9/1/04–6/30/06 9/30/07-9/29/11 NIH/NIDA  
*Antagonists as Protective Medications for Drug Abuse During Pregnancy*

Principal Investigator: Jonathan Hubbard, Ph.D.

Mentor: S. Michael Owens, Ph.D.

- \$144,091 Total direct cost
- This is an individual pre-doctoral MD/PhD fellowship. The research is designed to train a student in research aimed at developing treatments for drug abuse in pregnant users. Dr. Owens is the scientific mentor for this application

R42 DA017596, Period: 9/1/04–6/30/06 9/1/04-6/30/10 NIH/NIDA  
*Development of Plant Derived Antibodies for Drug Abuse*

Principal Investigator: Barry Holtz, Ph.D.

Co-Investigator: S. Michael Owens, Ph.D.

- \$758,369 Current year total cost
- This is Phase I of an STTR small business grant in which InterveXion Therapeutics LLC will produce a chimeric anti-PCP monoclonal antibody in plants. This antibody medication was developed in the laboratory of Dr. Michael Owens. The antibodies will then be tested in human clinical trails on Phase II for safety and efficacy

U54 RR025209-01 (Lowery) 07/01/09-06/30/14 NIH  
*Arkansas Center for Clinical and Translational Research*

Principal Investigator: Curtis Lowery, M.D.

Co-Investigator: S. Michael Owens, Ph.D.

- \$2,778,276 Current year total cost
- The Arkansas Center for Clinical and Translational Research (CCTR) unites all UAMS Colleges and its Graduate School behind a campus-wide translational research endeavor. The overarching goal is to establish an integrative CCTR that transforms the pace, effectiveness, and quality of translational research at UAMS, resulting in better health for all Arkansans. Dr. Owens is a Co-Investigator.

1 RC2 DA028915 (B. Holtz and WB Gentry, PI) 09/30/2009–08/31/2011 NIH/NIDA

- \$1,194,659 Total cost year 1 awarded to InterveXion Therapeutics, LLC
- \$193,687 Total cost year 1 subaward to UAMS component
- *“Chimeric anti-Methamphetamine Monoclonal Antibody for Treating Stimulant Toxicity”*

- The major goals of this project are to develop an anti-methamphetamine antibody into a human medication by developing and completing the manufacturing and purification processes, testing for toxicity in rodents, and preparing the IND application to the FDA.

Role: Co-Investigator

## RECENT PREVIOUS FUNDING

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PO1 DA14361 9/01/01–7/31/09 NIH/NIDA

*Preclinical testing of Antibody therapy for METH abuse*

- \$4,187,684 total direct cost, 2<sup>nd</sup> year no cost extension
- The purpose of this grant is to test new antibody-based medicines for the treatment of the methamphetamine abuse. This program project includes for individual grants, which constitute an NIH program project grant. Dr. Owens is the program director and the principle investigator on Project 1, which has a direct cost budget of \$1,099,808.

Post-doctoral NRSA DA018039 (Eric Peterson, PI) 9/01/04-8/31/07 NIH/NIDA

*Single Chain Antibody Medications for (+)METH*

Mentor: S. Michael Owens, Ph.D.

- \$133,824 Total direct cost
- This is an individual post-doctoral fellowship. The research will be designed to use molecular engineering to construct a new anti-(+)-methamphetamine single chain antibody. Dr. Owens is the scientific mentor for this application.

## PUBLICATIONS

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1. Owens, S.M., McBay, A.J., Reisner, H.M. and Perez-Reyes, M.: 125I Radioimmunoassay of delta-9-tetrahydrocannabinol in blood and plasma with a solid-phase second-antibody separation method. *Clin Chem* 27: 619-624, 1981.
2. Perez-Reyes, M., Owens, S.M. and DiGuiseppi, S.: The clinical pharmacology and dynamics of marijuana cigarette smoking. *J Clin. Pharmacol* 21: 201S-207S, 1981.
3. Cocchetto, D.M., Owens, S.M., Perez-Reyes, M., DiGuiseppi, S. and Miller, L.L.: Relationship between delta-9-tetrahydrocannabinol concentration and pharmacologic effects in man. *Psychopharmacol* 75: 158-164, 1981.
4. McBay, A.J. and Owens, S.M.: Marijuana and Driving. In *Problems of Drug Dependence 1980*, L.S. Harris, Ed., National Institute on Drug Abuse Research Monograph Series 34, Supt. of Documents, U.S. Govt. Printing Office, Washington, DC, 1981, 257-263.
5. Owens, S.M., Woodworth, J. and Mayersohn, M.: Radioimmunoassay for phencyclidine (PCP) in serum. *Clin Chem* 28: 1509-1513 (1982).
6. Owens, S.M., McBay, A.J. and Reisner, H.M.: Radioimmunoanalysis of delta-9-THC in blood by means of an 125I-tracer. In *The Analysis of Cannabinoids in Biological Fluids*, R.L. Hawks, Ed., National Institute on Drug Abuse. Research Monograph Series 42, Supt. of Documents, U.S. Govt. Printing Office, Washington, D.C., 1982, 33-43.
7. Barnett, G., Chiang, C-W.N., Perez-Reyes, M. and Owens, S.M.: Kinetic study of smoking marijuana. *J Pharmacokinet Biopharm* 10: 495-506, 1982.
8. Owens, S.M., McBay, A.J. and Cook, C.E.: Marijuana, ethanol and other drug use among drivers killed in single-vehicle crashes. *J Forensic Sci* 28: 372-379, 1983.

9. Woodworth, J., Owens, S.M. and Mayersohn, M.: Phencyclidine (PCP) disposition kinetics in dogs: Preliminary observations. *Res Comm Subst Abuse* 4: 49-57, 1983.
10. Owens, S.M., Mayersohn, M. and Woodworth, J.R.: Phencyclidine blood protein binding: Influence of protein, pH and species. *J Pharmacol Exp Ther* 226: 656-660, 1983.
11. Woodworth, J.R., Owens, S.M. and Mayersohn, M.: Phencyclidine disposition kinetics in dogs: Preliminary findings. In *PCP and Related Arylcyclohexylamines - Present and Future Applications*, J.-M. Kamenka, E.F. Domino and P. Geneste, Eds., NPP Books, Ann Arbor, MI 1983, 411-429.
12. Woodworth, J.R., Mayersohn, M. and Owens, S.M.: Quantitative analysis of phencyclidine and metabolites by capillary column gas chromatography with use of a nitrogen-specific detector. *J Anal Toxicol* 8: 2-6, 1984.
13. Owens, S.M.: Immunoassays for pharmacokinetic studies of psychoactive drugs. In *Pharmacokinetics and Pharmacodynamics of Psychoactive Drugs*. G. Barnett and C.-W.N. Chiang, Eds., Biomedical Publications, Forest City, CA, 1985, 487-502.
14. Mayersohn, M., Woodworth, J.R. and Owens, S.M.: Phencyclidine disposition in animals. In *Pharmacokinetics and Pharmacodynamics of Psychoactive Drugs*, G. Barnett and C.-W.N. Chiang, Eds., Biomedical Publications, Forest City, CA, 1985, 28-47.
15. Mayersohn, M., Owens, S.M., Anaya, A.L., Bliss, M. and Achari, I.: 4-Methylpyrazole disposition in the dog: Evidence for saturable elimination. *J Pharm Sci* 74: 895-896, 1985.
16. Woodworth, J.R., Owens, S.M. and Mayersohn, M.: Phencyclidine (PCP) disposition kinetics in dogs as a function of dose and route of administration. *J Pharmacol Exp Ther* 234: 654-661, 1985.
17. Owens, S.M. and Mayersohn, M.: Phencyclidine-specific Fab fragments alter phencyclidine disposition in dogs. *Drug Metab Dispos* 14: 52-58, 1986.  

The above manuscript was featured for review in the *Journal of the American Medical Association* (257:3188, 1987) and as one of the featured articles in the National Institute on Drug Abuse (NIDA) publication, *NIDA Notes* (Vol. 2, Number 3, pp. 12-13, 1987).
18. Levitt, M.A., Sullivan, J.B., Owens, S.M., Burnham, L. and Finley, P.R.: Amitriptyline plasma protein binding: Effect of plasma pH and relevance to clinical overdose. *Am. J. Emer. Med.* 4: 121-124, 1986.
19. Owens, S.M. and Mayersohn, M.: Modulation of phencyclidine (PCP) pharmacokinetics with PCP-specific Fab fragments. In *Phencyclidine: An Update*. D. Clouet, Ed., National Institute on Drug Abuse Research Monograph Series 64, Supt. of Documents, U.S. Govt. Print. Office, Washington, DC, 1986, 112-126.
20. Woodworth, J.R., Mayersohn, M. and Owens, S.M.: Disposition kinetics of the monohydroxy metabolites of phencyclidine (PCP) in the dog. *J Pharmacol Exp Ther.* 238: 900-904, 1986.
21. Owens, S.M., Hardwick, W. and Blackall, D.: Phencyclidine pharmacokinetic scaling among species. *J. Pharmacol. Exp. Ther.* 242: 96-101, 1987.
22. Owens, S.M., Zorbas, M., Gunnell, M., Polk, M. and Lattin, D.L.: Molecular criteria for an immunological model of the PCP receptor. In *Sigma and Phencyclidine-Like Compounds as Molecular Probes in Biology*. E.F. Domino and J.-M. Kamenka, Eds. NPP Books, Ann Arbor, MI., 663-672, 1988.

23. Owens, S.M., Zorbas, M., Lattin, D.L., Gunnell, M., and Polk, M.: Antibodies against arylcyclohexylamines and their similarities in binding specificity with the phencyclidine receptor. *J Pharmacol Exp Ther* 246: 472-478, 1988.
24. Egen, N.B., Bliss, M., Mayersohn, M., Owens, S.M., Arnold, L. and Bier, M.: Isolation of monoclonal antibodies to phencyclidine from ascites fluid by preparative isoelectric focusing in the rotaphor. *Anal Biochem* 172: 488-494, 1988.
25. McMillan, D.E., Evans, E., Wessinger, W.D. and Owens, S.M.: Structure-activity relationships of arylcyclohexylamines as discriminative stimuli in pigeons. *J. Pharmacol. Exp. Ther.* 247: 1086-1092, 1989.
26. Zorbas, M., Owens, S.M., Plunkett, L.M. and Bui, H.: The pharmacokinetics of [3H]1-[1-(2-thienyl)cyclohexyl]piperidine (TCP) in Sprague Dawley rats. *Drug Metab Dispos* 17: 641-645, 1989.
27. Evans, R.E., Owens, S.M., Ruch, S., Kennedy, R.H. and Seifen, E.: The effect of age on digoxin pharmacokinetics in Fisher-344 rats. *Toxicol. Appl. Pharmacol.* 102: 61-67, 1990.
28. Owens, S.M., McMillan, D.E., Hardwick, W.C. and Wessinger, W.D.: Phencyclidine pharmacokinetics and concentration-response relationships in the pigeon. *Pharmacol Biochem Behav* 35: 797-801, 1990.
29. Zorbas, M.A. and Owens, S.M.: Importance of reactive metabolites to the in vivo hepatic clearance of phencyclidine (PCP). In *Problems of Drug Dependence*, L.S. Harris, ed. *Natl. Inst. on Drug Res. Monogr. Ser. 105*, Supt. Documents, U.S. Govt. Print. Office, Washington, DC, pp. 429-430, 1990.
30. Wessinger, W.D. and Owens, S.M.: Influence of phencyclidine (PCP) pharmacokinetics on PCP dependence after i.v. and s.c. routes of administration. In *Problems of Drug Dependence*, L.S. Harris, ed. *National Institute on Drug Abuse Res. Monogr. Ser., Supt. Documents, U.S. Govt. Print. Office, Washington, DC*, pp. 431-432, 1990.
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## **ABSTRACTS AND NOTEWORTHY PRESENTATIONS**

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*This research was included in a national news conference on medication development for drug abuse at the annual meeting of the Society for Neuroscience in New Orleans, October 26, 1997.*

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*This research was included in a national press release and news conference on medication development for drug addiction at the annual meeting of the American Chemical Society in New Orleans, August 23, 1999. As a result, it received international news coverage in the lay and scientific press.*

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*This abstract (along with 14 other abstracts) was selected from over 600 submitted abstracts by the American Society of Pharmacology and Experimental Therapeutics (ASPET) for inclusion in their annual press briefings.*

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*Abstracts for 2005-2009 have not been included.*