UNIVERSITY OF PENNSYLVANIA-PERELMAN SCHOOL OF MEDICINE
Curriculum Vitae

Trevor M. Penning, PhD

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Citizenship: United States

Education:

1969-72	B.Sc. (First Class Honors) Southampton University, U.K. (Physiology and Biochemistry)
1972-76	Ph.D. Southampton University, U.K. (Biochemistry)

Postgraduate Training and Fellowship Appointments:

1972-76	Science Research Council Postgraduate Fellowship, Southampton University, U.K.
1976-79	Postdoctoral Fellowship, Molecular Pharmacology, Johns Hopkins University School of Medicine, Baltimore, MD

Faculty Appointments:

1979-82	Research Associate, Department of Pharmacology and Experimental Therapeutics, Johns Hopkins University School of Medicine
1982-88	Assistant Professor, Department of Pharmacology, University of Pennsylvania School of Medicine
1985-88	Assistant Professor (secondary), Department of Obstetrics and Gynecology, University of Pennsylvania School of Medicine
1988-94	Associate Professor, Department of Pharmacology, University of Pennsylvania School of Medicine
1988-94	Associate Professor (secondary), Department of Obstetrics and Gynecology, University of Pennsylvania School of Medicine
1988-	Member, Center for Research in Reproduction and Women's Health
1994-2014	Professor, Departments of Pharmacology (primary) and OB/GYN (secondary), University of Pennsylvania School of Medicine
1997-	Professor (secondary), Department of Biochemistry and Biophysics, University of Pennsylvania School of Medicine
1997-	Member, Center for Cancer Pharmacology
2012-	The Thelma Brown and Henry Charles Molinoff Professor of Pharmacology
2014-	Professor, Departments of Systems Pharmacology and Translational Therapeutics (primary) and OB/GYN (secondary), University of Pennsylvania School of

Administrative Appointments:

1995-96	Interim Chair, Department of Pharmacology, University of Pennsylvania School of Medicine
1997-05	Associate Dean for Post-doctoral Research Training, University of Pennsylvania School of Medicine
2001-05	Associate Dean for Post-doctoral Research Training, University of Pennsylvania School of Medicine and Director Biomedical Postdoctoral Programs
2006-	Director, Center of Excellence in Environmental Toxicology
2007-	Co-Leader, Tobacco and Environmental Carcinogenesis Program, The Abramson Cancer Center
2014-	Deputy Director Penn Superfund Research Program

Awards, Honors and Membership in Honorary Societies:

1972	B.Sc. (First Class Honors)
1981	Alberta Heritage Foundation for Medical Research, Visiting Lecturer
1983	Pharmaceutical Manufacturers Association Foundation, Research Starter Grant
1986	The Albert Ethelbert Ebert Prize and Medal, awarded by the American Pharmaceutical Association
1988	Honorary Masters Degree, University of Pennsylvania
1988-93	Research Career Development Award, National Cancer Institute
1990	Commendation for Outstanding Teaching, Class of '92
1997	Dean's Award for Excellence in Graduate Education
1998	Elected to the Johns Hopkins Society of Scholars
2009	Top Reviewer, Steroids
2010	Distinguished Service Award, National Postdoctoral Association
2010	Fellow of the American Chemical Society
2011	Prostate Cancer Foundation Challenge Award
2012	**The Thelma Brown and Henry Charles Molinoff Professor of Pharmacology (Endowed Chair)**

Memberships in Professional and Scientific Societies:

National Societies:
American Association for the Advancement of Science
American Association for Cancer Research (Teller, 1992-1993 and 2005-2006; Member, Task Force on Endocrinology, 1995; Program Committee, 1997, 2008)
American Chemical Society (Chair, Program Committee, Division of Chemical Toxicology, 2005-2006; Chair Publications Committee, Division of Chemical Toxicology 2009-present; Chair-Elect Division of Chemical Toxicology)
American Society for Biochemistry and Molecular Biology
The Biochemical Society
The Endocrine Society
Inflammation Research Association
New York Academy of Sciences
Society of Toxicology

Local Societies:
John Morgan Society (Recorder, 1989-1990; President, 1991-1992)
Philadelphia Chapter, American Association for Cancer Research
Delaware Valley Enzymology Club
Delaware Valley Drug Metabolism Group

International Societies:
International Study Group for Steroid Hormones
International Society of Polycyclic Aromatic Compounds

International Lung Cancer Consortium Organization

National Scientific Committees:
National Institutes of Health:
Ad Hoc Reviewer: Biochemical Endocrinology SS (1991-92)
Chair, Special Emphasis Panel- Chemical Pathology Study Section (2002)
Ad-Hoc Member: Cancer Etiology Study Section (2002-2004)
Permanent Member: Cancer Etiology Study Section (2004-2008)
NIEHS, Ad-Hoc Reviewer: P30 Environmental Health Sciences Core Center Program (2006)
NIEHS, Special Emphasis Panel Review of Superfund Research Program Grants (2012)
NIEHS, Review of Rapid Response IRB protocol (2014)
National Science Foundation (Ad Hoc Reviewer for Biochemistry Program (1991-)
March of Dimes Research Foundation (Ad Hoc Reviewer, 1991-)
Union of Concerned Scientists-UCLA (Scientific Panel discussant on hydrodrualic fracturing (2013)

National Educational Committees:
Member, Advisory Committee on Science, Engineering and Public Policy National Academy (1999-2000)
National Science Foundation (Advisory Committee, Graduate Student and Postdoctoral Data for NSF-NIH Survey, 2001)
National Postdoctoral Association Advisory Committee (2002-2005)
GREAT (Graduate Research Education and Training Group) of the AAMC (Steering Committee, 2003-2007)
Co-Chair, Postdoctoral Committee, GREAT Group of the AAMC (2003-2005)
Chair-Elect, GREAT Group of the AAMC (2004-2005)
Chair, GREAT Group of the AAMC (2005-2006)
Past-Chair, GREAT Group of the AAMC (2006-2007)
USMLE, Ad-Hoc Committee on Changes in Licensure (2008)

International Scientific Committees:
Ad Hoc Reviewer, United States-Israel Binational Science Foundation (1991-)
Ad Hoc Reviewer, the Wellcome Trust (1992-)
START, Program Fonds zur Forderung Der wissenchaftlichen Furschung Austria (Member, 2000-)
Canadian Institutes of Health Research, External Reviewer, Fall 2007

Local Scientific Committees:
None

Editorial Positions:

1983-85	Correspondent, Trends in Pharmacological Sciences (Current Awareness Series)
1987-90	Editorial Consultant, International Cancer Research Data Bank: Cancergram (Chemical Carcinogenesis: Aromatic Hydrocarbons and Heterocyclic Analogs)
1991-	Editorial Advisory Board, Biochemical Journal
1993-	Editorial Board, Steroids-**Nominated Outstanding Reviewer in 2010 -Nominated Outstanding Reviewer in 2014**
2003-2005	Editorial Board, Chemical Research in Toxicology
2003-2008	Editorial Board, Journal of Biological Chemistry
2008-	Editorial Board, Journal of Steroid Biochemistry & Molecular Biology
2010-2015	Editorial Board, Journal of Biological Chemistry
2010	Editor, Special Issue on Targeted Enzyme Inhibitors: Journal of Steroid Biochemistry & Molecular Biology

Ad Hoc Reviewer:
Analytical Biochemistry
Archives Biochemistry and Biophysics
Biochemical Pharmacology
Biochemistry (A.C.S. Journal)
Biochimica ET Biophysica Acta
Bioconjugate Chemistry (A.C.S. Journal)
Cancer Research
Chemical Research in Toxicology (A.C.S. Journal)
Chemical Reviews (A.C.S. Journal)
Clinical Cancer Research
Dermatology
Endocrinology
Endocrine Reviews
FEBS Letters
International Journal of Cancer
Journal of Medicinal Chemistry (A.C.S. Journal)
Journal of Molecular Biology
Journal of Natural Products (A.C.S. Journal)
Journal of Lipid Research
Journal of Pharmaceutical Sciences
Molecular Endocrinology
Nature Oncology
Proceedings of the National Academy of Sciences USA
Prostate
Trends in Pharmacological Sciences
Science

Consultant:
Avid Therapeutics, Toxicology Consultant
Columbia University, Environmental Health Sciences Core Center, External Advisory Board
Glaxo-Smith Kline
GTx-Therapeutics
Kythera
Organon
Metabolex
National Center for Toxicological Research, Scientific Advisory Group
Philadelphia Biomedical Research Institute, Scientific Advisory Board
Research Institute for Fragrance Materials-Guest
Sage Pharmaceutics
Schering-Plough
SMART, Therapeutics
Syrrix
Tokai, Pharmacuticals
UMDNJ-Rutgers University, CounterAct Research Center of Excellence
University of Nebraska, Lincoln, Nebraska, Postdoctoral Training Programs
University of North Carolina, Superfund Basic Research Training Program
University of Kentucky, External Advisory Board Redox and Repair Group
Markey Cancer Center External Advisory Board, University of Kentucky
UMDNJ-Rutgers University-Environmental Health Sciences Core Center, External Advisory Board
University of Cincinnati, Environmental Health Sciences Core Center, External Advisory Board
WHO, International Agency for Research on Cancer Monographs volume 92: Polycyclic Aromatic Hydrocarbons and some Heterocylces: and vol 105: Gasoline and Diesel Exhaust

Academic Committees at the University of Pennsylvania:

1983-88	Member, University Council Committee on Research
1984-85	Chair, Sub-Committee for Policy on Computer Software
1984-85	Member, Sub-Committees for Graduate Core Courses in Cell Biology,
1985-88	Chair, University Council Committee on Research
1985-88	Member, Corporate Sponsored Research Board
1985-88	Interviewing Panel, Medical School Admissions
1986-88	Ex-officio member, Faculty Grants and Awards Committee
1986-87	Chair, Sub-Committee for Course on Scientific Writing
1986-87	Member, Academic Review Committee for Otorhinolaryngology and Human Communication
1986-87	Member, Sub-Committee for Review of Bridge Curriculum in Endocrinology
1986-88	Member, Search Committee for Chairperson for Otorhinolaryngology and Human Communication
1987-89	Member, Sub-Committee on Policy for Misconduct in Science
1987-89	Member, Sub-Committee on Indirect Costs
1989	Chair, Sub-Committee to Evaluate Pathology 100
1984-94	Biomedical Graduate Curriculum Committee
1987-94	Chair, Emergency Financial Aid Committee
1988-94	Member, Teaching Evaluation Sub-Committee for Appointments and Promotions
1990-93	MSTP, Advisory Committee
1990-93	University Judiciary Committee
1990-92	Search Committee for Trustee Professorship in Pharmacology
1990-91	Member, Committee to Reorganize the Graduate Group in Biochemistry
1990-94	Institutional Biohazard Safety Committee
1990-94	Environmental Health and Safety Committee
1990-94	Medical School Animal Care and Use Committee
1991	Member, Committee to Review the Graduate Group in Physiology
1992-94	Chair, Analytical Search Committee in Pharmacology
1993-94	Member, Steering Committee of Medical Faculty Senate
1994	Chair-Elect, Medical Faculty Senate**
1995	Member, Search Committee for Vice-Dean for Medical School Education
1995-96	Member, Institute for Environmental Medicine Policy and Research Advisory Board
1996	Member, Biotechnology Task Force
1996-97	Member, Committee to Review Department of Radiation Oncology
1997-01	Chair, Office of Postdoctoral Programs Advisory Committee
1997-	Member, Steering Committee for Center for Cancer Pharmacology
1998-00	Member, Academic Review Committee University of Pennsylvania School of Medicine
1998-99	Member, Committee to Review the Department of Molecular & Cellular Engineering and the Institute for Human Gene Therapy
2001	Chair, Biomedical Postdoctoral Programs Advisory Committee
2002	Member, Committee to Review CAMB Graduate Group
2005	Member, Search Committee for Director of Center for Research on Reproduction and Women's Health
2008	Member, Review of Graduate Group in Genomics & Computational Biology
2011	Member, University Committee to Review Center for Public Health Initiatives
2012	Member, Review of Graduate Group in Biostatistics and Epidemiology

2012	Member, Vice-Provost for Research Review Committee for Center for Public Health Initiatives
2012-13	Member, Committee to Review the Biostatistics & Epidemiology Graduate Group

**Declined due to appointment as Interim Chair of Pharmacology

Major Teaching and Training Responsibilities at the University of Pennsylvania:

Medical Students: Pharmacology-100 (16 years)
1. Give 3 lectures and 2 conferences
2. Give structured review of last half of the course

Medical Students: Curriculum-2000 Modules 1 & 2 (3 years)
1. Give 1 lecture on Prostaglandins
2. Give 3 lectures in Reproduction/Endocrine Section
3. Co-founder Frontiers in Environmental Health Sciences Course (4th Year Medical Students)

Graduate Student Education:
1. Course Director, Fundamentals of Pharmacology, PHRM 623 (three times)
2. Lecturer (1984-2010), Fundamentals of Pharmacology, six lectures.
3. Course Director, Practical Modern Enzymology (1998-2005), BMB523/PHRM 523
4. Lecturer (1998-2005), Practical Modern Enzymology. Six lectures.
5. Lecturer (1998-2005), Principles of Cancer Pharmacology, Three Lectures
6. Group Leader (1998-), Topics in Cancer Pharmacology
7. Lecturer (2000-), Medical Pharmacology, Four Lectures
8. Lecturer (2001), Frontiers in Cancer Pharmacology
9. Course Director (2006-) Molecular Toxicology, PHRM 590
10. Lecturer (2006-), Molecular Toxicology, PHRM 590 Seven Lectures
11. Lecturer (2001), Frontiers in Cancer Pharmacology
12. Lecturer (2006), Frontiers in Bioorganic and Medicinal Chemistry, PHRM 630, Two Lectures
13. Teach one-module of Bioethics Training to all BGS students
14. Lecturer (2009-2010) Global Environmental Health, PUBH 519
15. Director (2010-) Certificate Program in Environmental Health Sciences
16. Lecturer (2010-) Frontiers in Envrionmental Health Sciences
17. Lecturer (2011-), Fundamentals of Pharmacology, one lecture.
18. Lecturer (2012-), Fundamentals of Pharmacology, seven lectures
19. Director (2014-), Introduction to Superfund Sites and Health Effects of Hazardous Waste PHRM 657

Postdoctoral Training:
1. Supervise four postdoctoral fellows, full-time

Curriculum Design:
1. Redesign mandatory bioethics training for all graduate-students and postdoctoral trainees within School of Medicine with distance based learning modules
2. Implement, On-line writing course for Biomedical Professionals as a component of Postdoctoral Training
3. Design and implement Environmental Health Sciences Track in Graduate Group in Pharmacological Sciences
4. Developed curriculum for Certificate Program in Environmental Health Sciences
5. Developed Interdisciplinary Supefund Research Training Program

Participation in Continuing Education Courses Offered By Department of Pharmacology, University of Pennsylvania:

1. Lecturer, General Pharmacology Course, Wyeth-Ayerst, 1991
2. Lecturer, General Pharmacology Course, DuPont Merck, 1992
3. Lecturer, Receptor-Biology Course, DuPont Merck, 1994

Past and Current Pre- and Post-doctoral Trainees:

Eighteen (18) Predoctoral Fellows: Three were recipients of an Advanced Predoctoral Fellowship in Pharmacology from the Pharmaceutical Manufacturers Association. Two were recipients of the Saul Winegrad Thesis Award (for the most outstanding thesis in Pharmacological Sciences that year). Two were recipients of the Saul Winegrad Thesis Award (for the most outstanding thesis in Biochemistry and Molecular Biophysics that year). **One received a Presidential Early Career Development Award by U.S. President George W. Bush, Jr.**

Twenty three (23) Postdoctoral Fellows: Six of ten U.S. Nationals or permanent residents successfully applied for individual NRSA postdoctoral fellowships.

Scientific Lectures by Invitation (since 2002):

2002 "Structure-Function of Steroid Hormone Transforming Aldo-Keto Reductases and their Genes" Metabolex, San Francisco, CA

2002 "Examination of the Differences in Structure-Function of Rat and Human 3α-Hydroxysteroid Dehydrogenases" Invited Speaker: XIth International Workshop On the Enzymology and Molecular Biology of Carbonyl Metabolism, Ystad, Sweden

2002 "Aldo-Keto Reductases and Overview" Invited Speaker: Division of Chemical Toxicology, American Chemical Society Annual Meeting, Boston MA

2002 "Aldo-Keto Reductases and Polycyclic Aromatic Hydrocarbon Activation" Invited Speaker: Division of Chemical Toxicology, American Chemical Society Annual Meeting, Boston MA

2002 "3α-Hydroxysteroid Dehydrogenases-Structure-Function Relationships" Invited Speaker: International Congress on Hormonal Steroids and Hormones and Cancer, Fukuoka, Japan

2002 "Dissecting HSD Mechanisms: Functional Similarity but Structural Diversity in SDRs and AKRs." Invited Speaker: 1st International Symposium on Short-Chain Dehydrogenases/ Reductases in Cancer and Other Diseases, Buffalo, NY

2003 "The Emerging Role of Aldo Keto Reductases in the Metabolism of Natural and Toxic Substances" Visiting Professor, National Taiwan University, Taipei, Taiwan

2003 "Aldo-Keto Reductases and the Metabolic Activation of Polycyclic Aromatic Hydrocarbons" Visiting Professor, Veterans General Hospital, Taipei, Taiwan

2003 "Beyond Receptors: Structure-Function of Hydroxysteroid Dehydrogenases" Visiting Professor, China Medical College Hospital, Taichung, Taiwan

2003 "Aldo-Keto Reductases: Carcinogen Activation and Chemoprevention" Dohme Symposium Speaker, In Honor of the 80th Birthday of Paul Talalay, M.D., Johns Hopkins University School of Medicine

2003 "Structure-Function of 3α-Hydroxysteroid Dehydrogenases" Genes and Proteins" Invited Speaker Serono Foundation Conference on Molecular Steroidogenesis, Bath, United Kingdom

2003 "Beyond Receptors Hydroxysteroid Dehydrogenases as Targets for Selective Intracrine Modulators" Invited Speaker: Gordon Conference on Hormonal Carcinogenesis, Kimball Union Academy, NH

2003 "Polycyclic Aromatic Hydrocarbons Mutate p53 in Human Lung Adenocarcinoma Cells." Invited Speaker: International Society of Polycyclic Aromatic Compounds, Amsterdam, the Netherlands

2003 "Beyond Steroid Receptors: Hydroxysteroid Dehydrogenases as Targets for Selective Intracrine Modulators", Syrrx, Inc., San Diego, CA

2004 "Dissecting Steroid Hormone Transforming Aldo-Keto Reductases: Form and Function" Cecil Ida Green Center for Reproductive Biology, University of Texas, Southwestern, Dallas, TX

2004 "Human Aldo-Keto Reductases and Steroid Hormone Action" Endocrine Grand Rounds, University of Texas, Southwestern, Dallas, TX

2004 "Aldo-Keto Reductases and the Metabolic Activation of Polycyclic Aromatic Hydrocarbons" University of Colorado Health Sciences Center, Denver, CO

2004 "The Emerging Role of Aldo-keto Reductases in the Metabolism of Natural and Toxic Substances" Visiting Professorship Lecture, University of Colorado Health Sciences Center, Denver, CO

2004 "Comparison of the Rate-Limiting Steps in 3α-Hydroxysteroid Dehydrogenase (AKR1C9) Catalyzed Reactions" XIIth International Workshop on the Enzymology and Molecular Biology of Carbonyl Metabolism, Burlington, VT

2004 "Aldo-Keto Reductases and Polycyclic Aromatic Hydrocarbon Activation" Environmental Protection Agency, Research Triangle Park, NC

2005 "Aldo-Keto Reductase (AKR) 1C3 Pluripotency: Potential Target for the Anti-neoplastic Action of Nonsteroidal Anti-inflammatory Drugs" Invited Speaker, Workshop on 11β- and 17β-Hydroxysteroid Dehydrogenases: Role in Human Disease, Elmau Castle, Germany

2005 "Aldo-Keto Reductases and Steroid Hormone Action" Institute of Biochemistry, University of Ljubljana, Slovenia

2005 "Mechanisms of Carcinogenesis –Polycyclic Aromatic Hydrocarbons" Invited Speaker, 230th National Meeting of the American Chemical Society, Washington, DC

2005 "Aldo-Keto Reductases and Polycyclic Aromatic Hydrocarbon Activation" Dept. of Chemistry, Virginia Commonwealth Univ., Richmond, VA

2005 "Aldo-Keto Reductases and Polycyclic Aromatic Hydrocarbon Activation" University of Strathclyde, Scotland, U.K.

2005 "Aldo-Keto Reductases and Steroid Hormone Action" University of Dundee, Scotland, U.K.

2006 "Role of Aldo-Keto Reductases in Steroid and Xenobiotic Metabolism" Liver Center, Albert Einstein College of Medicine, NY

2006 "Hydroxysteroid Dehydrogenases and the Pre-receptor Regulation of Steroid Hormone Action" Featured Speaker: Delaware Valley Enzymology Club, Granite-Run Mall, PA

2006 "Identification of the Molecular Switch that Regulates Access of 5α-Dihydrotestosterone to the Androgen Receptor" Invited Speaker, Molecular Steroidogenesis, Satellite Mtg Endocrine Society, Boston, MA

2006 "Identification of the Molecular Switch that Regulates Access of 5α-Dihydrotestosterone to the Androgen Receptor" XIIIth International Workshop on the Enzymology and Molecular Biology of Carbonyl Metabolism, Nashville, IN

2006 "Role of Aldo-Keto Reductases in Steroid and Xenobiotic Metabolism" Institute for Experimental Genetics, GSF National Research Center for Health and Environment, Neuherberg, Germany

2006 "Aldo-Keto Reductase and Steroid Hormone Action" Structural Genomics Consortium, Oxford University, U.K.

2007 "Human Aldo-Keto Reductases and the Metabolic Activation of Polycyclic Aromatic Hydrocarbons" Environmental and Occupational Health Sciences Institute, Rutgers, NJ

2007 "Aldo-Keto Reductases and Nuclear Receptor Action" Karolinska Institute, Stockholm, Sweden

2007 "Aldo-Keto Reductases and Polycyclic Aromatic Carcinogenesis" Cancer Center, University of Southern Illinois, IL

2007 "Dissecting Structure-Function in Aldo-Keto Reductases" Dept. of Biochemistry

Pennsylvania State University, Medical College at Hershey

2008 "Structure-Function of Human Steroid 5β-Reductase". Invited Speaker: Pre-receptor Steroid Metabolism as a Target for Pharmacological Treatment. Eisbee, Germany

2008 "Steroid Hormone Transforming Aldo-keto Reductases and Cancer" Invited Speaker: 136th Advanced Course on: Steroid Enzymes and Cancer: Erice, Sicily.

2008 "Pre-Receptor Regulation of Androgen Action in Human Prostate" Plenary Session, Endocrine Society, San Francisco

2008 "Type 5 17β-Hydroxysteroid Dehydrogenase/Prostaglandin F Synthase (AK1C3): Role in Breast cancer and Inhibition by NSAIDs. 14th International Workshop on the Enzymology and Molecular Biology of Carbonyl Metabolizing Enzymes, Kranjska gora, Slovenia.

2009 "Crystal Structures of Bile-Acid Biosynthetic Enzymes" Deuel Conference on Lipids, La Casa Del Zorra, Borreggo Springs, CA

2009 "Aldo-Keto Reductases, Lung Cancer and Reactive Oxygen Species", Center for Molecular Toxicology, Vanderbilt University, Nashville TN

2009 "Aldo-Keto Reductases as Targets for the Pre-Receptor Regulation of Nuclear Hormone Action" GTx-Therapuetics, Memphis, TN

2009 "Liquid Chromatography and Mass Spectrometry of Steroid Hormone Metabolites: Applications" Workshop on Steroid Analytics, German Center for Environmental Health" Munich, Germany

2009 "Mechanisms of Polycyclic Aromatic (PAH) Hydrocarbon Activation" Invited Speaker Founders Symposium in Honor of Stephen S. Hecht, Division of Chemical Toxicology, 238th National Meeting of the American Chemical Society

2009 "Aldo-Keto Reductases (AKRs) and Human Lung Cancer" Invited Speaker 8th Meeting of the Slovenian Biochemical Society, Otocec, Slovenia

2010 "Steroid Hormone and Xenobiotic Metabolomics" Erice Cancer Meeting, Cancer Omics, Erice Sicily

2010 "Quinone Reductase Activity of Human Aldo-Keto Reductases: Mechanism and Health Implications", 15th International Workshop on the Enzymology and Molecular Biology of Carbonyl Metabolizing Enzymes, Lexington, KY

2010 "Aldo-Keto Reductases (AKRs) and Polycyclic Aromatic Hydrocarbons" XIIth International Congress of Toxicology, Barcelona, Spain

2010 "Polycyclic Aromatic Hydrocarbons-Health and Food Chain Concerns" ACS Special Symposium on the Gulf-Oil Spill, ACS National Meeting Boston, MA

2010 "Polycyclic Aromatic Hydrocarbons-Health and Food Chain Concerns" Hudson/Delaware Chapter Society of Environmental Toxicology and Chemistry

2010 "Aldo-Keto Reductases and Androgen Metabolism in Human Prostate" Department of Pharmacology, Cornell University, NY. NY.

2010 "Development of Stable Isotope Dilution LC/MS Methods For The Determination of the Androgen Metabolome in Human Serum". NCI, Workshop on Androgen Receptor Signaling in Prostate cancer: Translating Biology into Clinical Practice. Crystal City, Arlington, VA

2011 "Pre-receptor Regulation of the Androgen Receptor in Prostate Cancer", First International Congress on Steroid Research", Chicago IL

2011 'New Frontiers In Androgen Biosynthesis and Metabolism" Invited speaker at Gordon Conference on Hormonal Carcinogenesis, Bryant U., Providence RI

2011 "Aldo-Keto Reductases and Lung Cancer: A Paradigm for Environmental Health Science Research" Blumberg School of Public Health, Johns Hopkins University, Baltimore, MD

2011 "Aldo-Keto Reductases and Polycyclic Aromatic Hydrocarbon Carcinogenesis" Drexel University School of Medicine, Philadelphia, PA

2011 "Aldo-Keto Reductases and Lung Cancer: A Paradigm for Environmental Health

Science Research" EHOSI-Rutgers University.

2012 "Aldo-Keto Reductases and Polycyclic Aromatic Hydrocarbon Carcinogenesis" Lincoln University, Nebraska

2013 "Aldo-Keto Reductases and Tobacco Carcinogenesis" University of Texas Medical Branch Galveston, TX.

2013 "Aldo-Keto Reductase 1C3 as a Target for Castrate Resistant Prostate Cancer" Second International Congress on Steroid Research, Chicago IL.

2013 "Constituents of Diesel Exhaust and Mechanisms of Carcinogenicity" American Throracic Society, Philadelphia, PA

2013 "Androgen Biosynthetic Enzymes in Castrate Resistant Prostate Cancer", Gordon Conference on Hormones and Cancer, Bryant University, Providence RI

2014 "Androgen Biosynthesis in Castration Resistant Prostate Cancer: Tragteing 17b-HSD Type 5 (AKR1C3)" Turku University, Turku Finland.

2014 'Steroid Synthesis Inhibitors Targeting HSD17B5 (AKR1C3)" The 9th TCDM Symposium of the Series on Disease Modeling: Novel mechanisms and approaches in the treatment of prostate cancer. Turku University, Turku Finland.

2014 "What every man shold know: Targeting AKR1C3 in Advanced Prostate Cancer", University of Pittsburgh

2015 AKR1C3 and Androgen Metabolism: Invited Speaker, Endocrine Society, San Diego, CA

2015 Aldo-Keto Reductases and the Metabolic Activation of Nitoarenes: Goldshmidts Conference, Prague, Czech Republic

2015 Targeting AKR1C3 (Type 5 17β-Hydroxysteroid Dehydrogenase) in Castration Resistant Prostate Cancer, Congress Steroid Research

Public-Service Seminars.

2012 "Hydrofracking: Public Health Issues and Impacts", NIEHS Center Directors Mtg. Boston, MA

2012 "Hydrofracking: Public Health Issues and Impacts", Department of Environmental Health Sciences, University of North Carolina

2012 "Hydrofracking: Public Health Issues and Impacts", Environmental Health Sciences Core Center, Mailman School of Public Health

2012 "The Environment and the Assault on Your Health: What Happened to the Precautionary Pronciple? Association of Senior and Emeritus Faculty, UPenn.

2012 Medical Panelist "Prostate Cancer Foundation Fund Raiser" Philadelphia, PA

2013 "Hydrofracking: Public Health Issues and Impacts"-The Pennsylvania Experience. Midwest Environmental Health Sumit, National Conference of State Legislators, DesMoines Iowa"

2013 Keynote Speaker: Hydrofracturing: Public Health Issues and Impacts, the PA Experience Columbia University, Earth Institute

2014 "Hydrofracturing: Public Health Issues and Impacts the PA Experience". Department of Environmental Health Sciences, Washington University, Seattle, WA

2014 Keynote Speaker: "Hydrofracturing: Public Health Issues and Impacts the PA Experience". North Carolina Chapter, Society of Toxicology, NIEHS, Research Triangle Park.

Postdoctoral Training Lectures by Invitation:

2002 COSEPUP Convocation (breakout session leader), National Academies,Washington, DC
2001 Postdoctoral Network National Meeting, Sponsored by the Alfred P. Sloan Foundation, Carnegie Institution, Washington DC
2003 ACS, Mid-Atlantic Division, Princeton, NJ
2003 NIH Advisory Committee to the Director on Postdoctoral Issues, National Institutes of Health, Bethesda, MD
2004 GREAT Group Conference, American Association of Medical Colleges, Austin, TX
2005 Annual Meeting of National Postdoctoral Association, San Diego, CA
2006 Postdoctoral Leaders Meeting, Satellite Meeting, GREAT Group, La Paloma, Tucson, AZ
2007 The Postdoctorate COMPACT, Thomas Jefferson Medical School
2007 Plenary Speaker, SCIENCE 2007, University of Pittsburgh School of Medicine
2007 Postdoctoral Leaders Meeting, GREAT Group Providence Rhode Island
2008 The Postdoctoral COMPACT and You: University of Nebraska, Lincoln, NB
2008 The Scientific Workforce: Career Trajectories Reconsidered: University of Nebraska, Lincoln, NB
2010 "How Did We End-Up with Different Classes of Postdoctoral Appointees? Possible Solutions. Invited speaker, American Independent Research Institutes, Annual Meeting, Washington, DC
2010 The Graduate and Postdoctoral Great Compacts and Conducting an Annual Evaluation: NSF EPSCoR Annual Conference, Little Rock, AK

Continuing Medical Education Sessions Sponsored by National Meetings:

2001 4th International Symposium on "Women's Health and Menopause", sponsored by the Giovanni Lorenzini Medical Foundation, Washington DC (CMES)
2001 Symposium "Novel Strategies for the Prevention of Osteoporosis: Moving Beyond ERT", 83rd, Annual Meeting of the Endocrine Society, Denver, CO (CMES)
2003- AACR, Associate Membership Grant Writing Workshop-Mentor: AACR Annual Meetings 2003, 2004, 2005, 2006, 2007

Organizing Roles in Scientific Meetings:

1999 Organizer, Faculty Retreat in Pharmacology, University of Pennsylvania School of Medicine
2000 Organizer, Career Workshops for Postdoctoral Appointees, University of Pennsylvania School of Medicine
2000 Organizer, ACS Symposium on "The Emerging Role of Aldo-Keto Reductases in the Metabolism of Toxic Substances," 224th National Meeting of the American Chemical Society, Boston, MA
2001 Organizer, Faculty Retreat in Molecular Toxicology: Impact of the Environment on our Health, University of Pennsylvania School of Medicine
2005 Program Chair, Division of Chemical Toxicology, American Chemical Society
2005 Organizer, ACS Symposium on Tobacco Carcinogenesis, Division of Chemical Toxicology Session, 230th National Meeting of the American Chemical Society, Washington, DC
2005 Organizer, ACS Symposium on "Where Toxicology Meets the Law – Focus on Dioxin", 230th National Meeting of the American Chemical Society, Washington, DC
2006 Program Chair, Division of Chemical Toxicology, American Chemical Society
2006 Organizer, ACS Symposium on "Frontiers in Chemical Toxicology", 232nd National Meeting of the American Chemical Society, San Francisco, CA
2006 Program Chair, Annual Meeting of the GREAT Group AAMC "Redefining Research Training", La Paloma, Tucson, AZ
2006 Organizer, 1st Center of Excellence in Environmental Toxicology Symposium: The Environment, Health and Disease, University of Pennsylvania School of Medicine
2007 Organizer, 2nd Center of Excellence in Environmental Toxicology Symposium:

Genes and Environmental Health, University of Pennsylvania School of Medicine
2008 Program Co-Chair, International Workshop, "Pre-receptor Steroid Metabolism as A Target for Pharmacological Treatment", Eisbee, Germany
2008 Organizer, Annual Environmental Health Sciences Core Centers Mtg, University of Pennsylvania School of Medicine and 3rd Center of Excellence in Environmental Toxicology Symposium: "Omics" Approaches in Environmental Health (these were concurrent programs)
2010 Co-Organizer Workshop on Nantoxicology, University of Pennsylvania
2010 Organizer, 4th Center of Excellence in Environmental Toxicology Symposium: Oxidative and Nitrative Stress and Environmental Health.
2011 Chair, Program Organizing Committee 1st International Congress on Steroid Research
2011 Organizer, 5th Center of Excellence in Environmental Toxicology Symposium: Environmental Health and Reproduction, Endocrinology and Development.
2012 Co-Organizer, 6th Center of Excellence in Environmental Toxicology Symposium: Gene-Environment Interactions and Childhood Metabolic Disorders (Co-Sponsored by the Children's Hospital of Philadelphia).
2013 Program Committee, 2nd International Congress on Steroid Research
2014 Co-Organizer: Impact of Uncoventional Natural Gas Drilling Operations on The Environment and Public Health (CEET and CPHI)
2014 Program Organizer, 17th International Workshop on The Enzymology and Molecular Biology of Carbonyl Metabolism
2015 Program Committee, 3rd International Congress on Steroid Research

Bibliography:

Research Publications, peer-reviewed:

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The aldo-keto reductase superfamily homepage at: www.med.upenn.edu/akr
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1. "Irreversible Ligands For Nonsteroidal Antiinflammatory Drug and Prostaglandin Binding Sites"
Inventors: Leslie J. Askonas and Trevor M. Penning
U.S. Patent No. 5,068,250. Date of Patent: Nov. 26, 1991

2. "Nonsteroidal Suicide Substrates of Hydroxysteroid Dehydrogenase"
Inventors: Trevor M. Penning and Joseph W. Ricigliano
U.S. Patent No. 5,118,621. Date of Patent: June 2, 1992

3. "Irreversible Ligands for Nonsteroidal Antiinflammatory Drug and Prostaglandin Binding Sites"
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4. "Non-Steroid and Non-Prostanoid Inhibitors of Steroid and Prostaglandin Transforming Enzymes I"
   Inventors: Trevor M. Penning and Joseph W. Ricigliano
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5. "Non-Steroid and Non-Prostanoid Inhibitors of Steroid and Prostaglandin Transforming Enzymes II"
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7. "Bifunctional AKR1C3 Inhibitors/Androgen Receptor Modulators and Methods of Use Thereof"
   Inventors: Trevor M. Penning, Adegoke Adenji, Michael C. Byrns, Barry Twenter and Jeffery D. Winkler.
   US Provisional Patent Application No 61/475,091
   Converted to an Patent Pending No PCT/US12/33199 April 13, 2012

8. "Indomethacin Analogs for the Treatment of Castrate Resistant Prostate Cancer"
   Provisional US Patent Application (with Vanderbilt) No. 61/548.004, File Date 10/21/11
   Co-Inventors: Larry J. Marnett, Andy J. Liedtke, Trevor M. Penning, Adegoke O. Adeniji, and Michael C. Byrns
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http://nextwave.sciencemag.org/cgi/content/full/2002/08/27/9
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5. Contributor, COMPACT Between Postdoctoral Appointees and Their Mentors
AAMC, December 2006, (profiled in Nature)

PAST GRANT SUPPORT

NAME Trevor M. Penning, Ph.D. DEPARTMENT Pharmacology DATE September 2013

Name of Grant	Period of Award	Grant Category*	Role in Grant**	% Effort	Funding Source	Current Annual Direct Cost	Additional Comments***
1. Molecular mechanisms of multi-stage carcinogenesis	8/30/02-6/30/07	PP	P.I.	25%	NIH	$1,385,893	Work was continued on 3 separate R01's
2. Center of Excellence In Environmental Toxicology	09/01/09-03/31/10	PP	P.I.	0%	NIEHS	$367,964	ARRA-Stimulus Package-Admin Supplement to Parent Grant
3. Center for Gene Environment Inter-Actions in Lung Cancer	06/01/07-05/30/11	O	Co-P.I.	10%	Pennsylvania DOH Non-formula grant	$800,000	Non-renewable
4. Pathways of PAH Activation in Human Lung cells	08/03/07-04/31/12	R01	P.I.	10%	NIEHS/NIH	$349,637	
5. Human Aldo-Keto And Nuclear Receptor Action	07/01/07-06/30/13	R01	P.I.	10%	NCI/NIH	$172,910	A1 Submission scored Impact Score 30
6. Structure-Function of Steroid Transform-ing AKRs	09/01/07-08/30/13	R01	P.I.	10%	NIDDK/NIH	$177,000	Competing continutaion Impact Score 62
7. Aldo-keto reductases And PAH Activation	04/01/09-12/31/14	R01	P.I.	15%	NCI/NIH	$183,600	Competing continuation Impact Score 35-A1

*For **Grant Category,** use code in bold from the following menu:

R01 NIH R01
PP NIH Program Project, Center or Core Grants
FG Federal Grants - Other (including other individual NIH grants and grants from VA, NSF, Dept. of Energy, etc.)
CT Clinical Trials
TG Training Grants
IG Industrial Grants (including pharmaceutical)
PG Private Foundation Grants (including internal Penn grants)
O Other

** For program projects, specify whether PI, co-leader or project leader. For center, core and training grants, similarly specify your role.

CURRENT GRANT SUPPORT

NAME Trevor M. Penning, Ph.D. DEPARTMENT Pharmacology DATE March 2012

	Name of Grant	Period of Award	Grant Category*	Role in Grant**	% Effort	Funding Source	Current Annual Direct Cost	Additional Comments***
1.	NIEHS Center of Excellence in Environmental Toxicology	4/1/15-3/1/20	PP	P.I.	20%	NIEHS/ NIH	$1,200,000	Competing Continutaion Impact Score 23
2.	Translational Research Training Program in Environmental Health Sciences	07/1/12-06/30/17	TG	P.I.	10%	NIEHS/NIH	$186,000	
3.	Gulf-Coast Health Allaince: health risks Related to the Macondo Oil Spill	06/01/11-05/31/16	O	Co-I	10%	NIEHS/NIH	$122,436	
4.	University of Penn Cancer Center Support Grant	01/01/11 – 12/31/15	PP	Co-I	10%	NCI/NIH	$10,000	
5.	Androgen receptor action in castrate resistant prostate cancer. Steroid analytical core	05/01/13-04/30/18	PP	Co-I	10%	NCI/NIH	$160,000	

*For **Grant Category,** use code in bold from the following menu:

R01 NIH R01
PP NIH Program Project, Center or Core Grants
FG Federal Grants - Other (including other individual NIH grants and grants from VA, NSF, Dept. of Energy, etc.)
CT Clinical Trials
TG Training Grants
IG Industrial Grants (including pharmaceutical)
PG Private Foundation Grants (including internal Penn grants)

CURRENT GRANT SUPPORT CONTINUED

NAME Trevor M. Penning, Ph.D. DEPARTMENT Pharmacology DATE March 2012

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Name of Grant	Period of Award	Grant Category*	Role in Grant**	% Effort	Funding Source	Current Annual Direct Cost	Additional Comments***
6. Asbestos fate, exposure, remediation, and adverse health effects	04/01/2014-03/31/2018	PP	Deputy Director	15%	NIEHS/NIH	$109,327	
			Director Training Core	10%	NIEHS/NIH	$83,295	

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For **Grant Category,** use code in bold from the following menu:

R01	NIH R01	**CT**	Clinical Trials
PP	NIH Program Project, Center or Core Grants	**TG**	Training Grants
FG	Federal Grants - Other (including other individual NIH grants and grants from VA, NSF, Dept. of Energy, etc.)	**IG**	Industrial Grants (including pharmaceutical)
		PG	Private Foundation Grants (including internal Penn grants)
		O	Other

** For program projects, specify whether PI, co-leader or project leader. For center, core and training grants, similarly specify your role.

*** Include any additional, brief information. For clinical trials, for example, specify if multicenter or single center and indicate role of Penn site. Explain any grants in **Other** category.

If space is needed for more entries, use an additional sheet.

PENDING GRANT SUPPORT

NAME Trevor M. Penning, Ph.D. DEPARTMENT Pharmacology DATE March 2012

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Name of Grant	Period of Award	Grant Category*	Role in Grant**	% Effort	Funding Source	Current Annual Direct Cost	Additional Comments***
Philadelphia Prostate Cancer SPORE	5/01/16-4/30/21	PP	Project Leader	10%	NCI/NIH	$167,746	Revised

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For **Grant Category,** use code in bold from the following menu:

R01	NIH R01	**CT**	Clinical Trials
PP	NIH Program Project, Center or Core Grants	**TG**	Training Grants
FG	Federal Grants - Other (including other individual NIH grants and grants from VA, NSF, Dept. of Energy, etc.)	**IG**	Industrial Grants (including pharmaceutical)
		PG	Private Foundation Grants (including internal Penn grants)
		O	Other

** For program projects, specify whether PI, co-leader or project leader. For center, core and training grants, similarly specify your role.
*** Include any additional, brief information. For clinical trials, for example, specify if multicenter or single center and indicate role of Penn site. Explain any grants in **Other** category.

If space is needed for more entries, use an additional sheet.