

Curtis L. Ashendel, Ph.D.

Curriculum Vitae

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Personal

Current positions: Associate Professor of Medicinal Chemistry

Current address: Department of Medicinal Chemistry and Molecular Pharmacology, Hansen Life Sciences
Research Building, Purdue University, 201 S. University St., West Lafayette, IN 47907-2064

Telephone: 765-494-1479 (office), 765-463-6508 (residence)

E-Mail: ashendel@purdue.edu

WWW: <http://www.mcmp.purdue.edu/~ashendel>

Home address: 108 Creighton Rd., West Lafayette, IN 47906-2101

Major Research Interests

- Computational and experimental genomic analysis with emphasis on prediction and verification of cis-acting elements that regulate gene transcription in mammalian genomes
- Computational/mathematical modeling of signal transduction pathways and gene regulatory networks in the regulation of cellular proliferation and differentiation of mammalian cells
- The molecular biology and cellular biochemistry of signal transduction in the development of cancer with specific emphasis on signaling involving attachment, protein kinases, including PKC and raf, and small G proteins such as ras
- Use of new genomic technologies to improve the speed of discovery and development of anti-cancer drugs

Positions Held

8/01-2/02	Visiting Scholar, Dept. Computer Science and Engineering, Univ. of Washington
7/88-present	Associate Professor of Medicinal Chemistry, Purdue University
5/00-9/01	Web Application and Database Developer for the School of Pharmacy
8/88-9/89	Deputy Director, Cancer Center, Purdue University
12/82-6/88	Assistant Professor of Medicinal Chemistry, Purdue University
10/82-12/82	Research Associate, University of Wisconsin
8/80-2/81	Graduate Teaching Assistant, University of Wisconsin
7/77-10/82	Graduate Trainee, University of Wisconsin

Post-secondary Education

- 2001-2002 University of Washington, Seattle. Computational Biology and Data Mining courses while on sabbatical leave in the Dept. Computer Science and Engineering with Prof. W. Larry Ruzzo.
- 1977-1982 University of Wisconsin-Madison, McArdle Laboratory for Cancer Research. Ph.D. in oncology. Ph.D. thesis: *The Role of Prostaglandins in Mouse Skin Tumor Promotion and the Tumor Promoting Phorbol Ester Receptor Protein: From Its Discovery to Its Role in the Physiology of Cell Membranes*. Course-work minor in environmental toxicology.

- 1973-1977 Michigan State University. B.S. *magna cum laude* in biochemistry. Senior honors thesis: *The Substrate Injection Method of Analysis of Enzymatic Reactions*.
- 1971-1973 Schoolcraft Community College (courses taken while in high school).

Membership in Scholarly Societies

American Association for Cancer Research (AACR)
International Society for Computational Biology (ISCB)

Honors and Awards

American Cancer Society Junior Faculty Research Award 7/84-6/87
National Institutes of Health (NCI) Research Career Development Award 8/89-8/94
Lafayette Lions Club Award in Cancer Research 1993

Scientific Consulting

- NCI Small Business Incentives contract review panel (*Ad hoc* member, 1986).
- National Science Foundation Program in Cell Biology Review Panel (Member, 1987-91).
- Chemical Pathology NIH Study Section (*Ad hoc* member for project site visit in 1984, *ad hoc* member, 1992.)
- Eli Lilly Corporation (Consultant, 1988).
- National Research Council Panel for Evaluation of Howard Hughes Graduate Fellowship (Cell Biology panel, 1989, 1990, 1991)
- National Cancer Institute, *ad hoc* Technical Review Group, Contracts Review Branch (for Master Agreement Authorizations for RFPs on Chemopreventive agents), May 31, 1990.
- National Science Foundation Research Training Group Site Visit Panel (July 1991)
- NIH, DRG, BIOL-2 study section (*ad hoc* 1993)
- ConvaTec, private consulting on pharmaceutical product development and toxicology (1993)
- Board of Directors, American Cancer Soc. Indiana Division, (member, 1995-)
- NIH, NCI, contract review panel (*ad hoc* 1994)
- NIH, NCI, RFA review panel (*ad hoc* 1995)
- Army Breast Cancer Research Program, Cell Biology grant review panel (1995, 1996)
- Neoprobe Corporation, private consulting on diagnostic product development (1998)
- NIH NCI MTDD RFA review panel (2000)
- NIH, NCI AP4 Planning Grant RFA review panel (2004)
- NIH NCI NCDDG review panel (2004)
- NIH CSR MABS IRG (*ad hoc* 2005)
- NIH, NCI AP4 Center Grant RFA review panel (2005)
- NIH CSR Member Conflicts: Computational Biology Special Emphasis Panel (2006)
- NIH, NCI Cancer Genome Characterization Centers RFP review panel (2006, 2007)
- DoD (CDMRP) Breast Cancer Research Clinical and Experimental Therapeutics Panel (CET-2) (2006)
- NIH, NIDDK Diabetes Research and Training Centers review panel (2006)
- DoD (CDMRP) Breast Cancer Research Clinical and Experimental Therapeutics Panel(CET-2) Concept Grant Proposals review panel (2007)
- Celdon Labs private consulting on computational genomics product development and R&D funding (2006)
- NIH, NIDDK Loan Repayment Program review panel (2007, 2008, 2009,2010,2011)

- NIH, NCI Special emphasis review panel on Tumor Cell Genome Atlas (TCGA) Data Analysis and Visualization Technology (2008)
- NIH, NCI Special emphasis panel for review of Topic 251 SBIR Drug Discovery and Development contract proposals (chair, 2008)
- DoD (CDMRP) Breast Cancer Research Clinical and Experimental Therapeutics Panel (CET-6) (2008, 2009)
- NIH, NCI The Cancer Genome Atlas (TCGA) Cancer Genome Characterization Centers review panel (2009)
- NIH, NCI ARRA – Grand Opportunities NCI Molecular Target Discovery and Development Centers Pilot Program Center Proposal Review Panel (2009)
- DoD Lung Cancer Research Cell/Molecular Biology Concept Proposal Review panel (CON-LC2 panel) (2009)
- NIH, NCI Integrated Cancer Biology Program – Centers for Cancer Systems Biology Review panel (2009)
- NIH, NCI SBIR Small Business Innovative Research (SBIR) solicitation for Topic 255, Development of Anticancer Agents; Contract Review Panel (2010, 2011)
- NIH, NCI Ohio State University Comprehensive Cancer Center Core Grant Site Visit Review (2010)
- NIH, NCI Clinical Proteomic Technologies for Cancer Initiative (CPTC): Proteome Characterization Centers (PCCs) Grant Review Panel (2010)
- NIH, NCI SBIR Small Business Innovative Research (SBIR) solicitation for Topic 297, “Methods and Tools for Quantitatively Measuring Non-Coding RNAs in Cancer Early Detection, Prediction and Diagnosis”; Contract Review Panel (chair 2011)

Research Experience

Research done in my present position:

2008-present Automation in scientific reasoning

2005-2007 Tablet PCs in the Teaching of Science in Large Enrollment Lecture Courses in the Purdue University School of Pharmacy

2000-present Computational Genomics in cancer

2000-2005 computational modeling of the role of signaling in the regulation of cellular proliferation and differentiation

1998-2002 The role of catenin localization in regulation of proliferation and differentiation of murine epithelial cells, initially focusing on mouse keratinocytes

1982-1999 The biochemistry and role in cellular signaling of Protein Kinase C (PKC), Raf-1 oncoprotein, and the Ras oncoprotein in mammalian cells.

1989-2002 Two separate collaborative projects investigating the use of Raf, PKC, and ras, as well of receptor and non-receptor tyrosine protein kinases and down stream signaling kinases, such as MAP kinases and MEKs as targets for discovery of novel anti-cancer agents

Research done in previous positions:

1979-82 McArdle Laboratory, University of Wisconsin in Dr. R. K. Boutwell's lab investigating the interaction of the most potent mouse skin tumor promoter 12- O-tetradecanoylphorbol-13-acetate (TPA a.k.a. PMA) with specific high affinity binding sites in mouse epidermis and other mouse tissues. Specific accomplishments include development of a novel and generally useful assay for binding of highly lipophilic phorbol esters and other xenobiotics, independent discovery of the receptor/binding protein for tumor promoting phorbol esters, biochemical characterization of the phorbol ester receptor/binding protein, and purification and determination of the biochemical function of the receptor/binding protein as the calcium-activated, phospholipid-dependent protein kinase C (PKC).

1977-79 McArdle Laboratory, University of Wisconsin in Dr. Boutwell's lab investigating the role prostaglandins play in promotion of mouse skin tumor by TPA. Specific accomplishments: quantification of prostaglandins E and F in mouse epidermis by radioimmuno-assay and independent (simultaneous) discovery of their increased levels in response to TPA and other agents.

1976-77 Dept. of Biochemistry, Michigan State University in Dr. Wallace A. Wood's lab doing independent honor's research. This project consisted of enzyme kinetics experiments, computer programming, and mathematical modeling. Specific accomplishments include development and validation of a novel method for kinetic analysis of enzyme catalyzed reactions involving continuous injection of the reaction substrate and spectrophotometric monitoring of the reaction.

1974-76 Dept. of Biochemistry, Michigan State University in the Mass Spectrometry Facility with Drs. Charles C. Sweeley and John F. Holland as a student computer programmer developing a custom low and high resolution data system for a Varian CH5 mass spectrometer on a PDP-11/45 mini-computer. In addition to systems and applications programming, this job included some digital circuit design and construction and some mass spectrometer operation.

Molecular Research Methodology Expertise

Molecular biology including DNA cloning, subcloning, two-hybrid cloning, PCR, production of recombinant viruses and proteins in bacteria, yeast, insect and mammalian cells; protein kinases; G-proteins; cellular proliferation assays; radioligand-receptor assays; ELISA; protein purification; enzymology; immunochemistry; simple organic chemical synthesis; radio-immunoassay; polyclonal and monoclonal antibody production; mass spectrometry; spectroscopy; *in vivo* chronic and acute pharmacology/toxicology with mice; animal cell culture; neoplastic cell transformation *in vitro* by chemicals, DNA transfection, and virus-mediated gene transfer; histopathology of tumors; gel electrophoresis of proteins and nucleic acids and blotting; many forms of liquid chromatography; enzyme kinetics; immunocytology; development of medium-throughput drug screening protocols

Computational Biology Research Expertise

Statistical models of sequences, including Markov models, and algorithms using those models; numerous clustering (unsupervised learning) algorithms, including agglomerative and model-based applied to sequence motifs; SQL manipulation of genomic relational databases.

General Computer/Information Technology Experience

- 42 years of experience, beginning with Fortran programming in 1969
- Extensive programming experience: estimated to include more than 100,000 lines of Fortran, 300,000 lines of C/C++ (and PHP), 250,000 lines of HTML, and 50,000 lines of various assembly code; representing hundreds of different projects
- Extensive experience with all phases of project management and application/system development, from project analysis through system specification, design, preparation of project proposals, coding, testing, documentation, deployment, user training, and impact assessment
- Diverse coding language experience: C/C++, Visual Basic/Basic, Fortran, Assembler, HTML, SAS, Java/JavaScript, Perl, Unix shell, DOS Batch, COBOL
- Experience on a wide variety of operating systems: All varieties of Windows, Linux, IBM S390 (JCL/Roscoe), RSX-11D, CPM
- Extensive client-server systems programming and administration experience
- Experience with systems programming and applications, including databases, scientific data analysis, and instrument data acquisition (slow and high speed) and control
- Hardware integration/development/maintenance experience with variety of mini-computer and micro-computer platforms: Intel x86, Z80/Northstar, Intel 8080, PDP-11, PDP-8
- Experience with analog (signal processing) and digital circuit design used in sensor interfaces
- Installed hardware and software for a number of LAN systems using start-topology. Some experience with network administration.
- Extensive experience with computer security including firewalls, access control lists, log analysis, and maintaining account privileges on Windows NT and Linux systems.
- Extensive system integration and troubleshooting experience: Assembled and maintained several dozen computer systems, including workstations and servers, and several LANs
- Extensive experience with relational database development, including mysql, Oracle, and SAS
- Extensive experience with web page development, including DHTML using PHP and shell/Perl cgi scripts. Also extensive experience in administration of Apache web servers running under Linux and Windows NT.

Research Funding Received as Principal Investigator or Project Leader

- 1/2006-8/2007 Provost's Program for Technology in Teaching Innovation, Program Director, \$80,000 (DC and TC).
- 8/90-8/2000 NIH U01 CA 52995, "Cancer Drugs Active Against Signal Transduction Targets." National Cooperative Natural Products Drug Discovery Groups application, Garth Powis (Univ. Arizona, Tucson, AZ), Program Director, \$7,200,000 (TC). Project #3, C. L. Ashendel, Project Leader, \$1,100,000 (TC).
- 8/89-8/94 NIH K04 CA 01424, Research Career Development Award, "Molecular Mechanisms of Multistage Carcinogenesis" \$250,400 (DC and TC).
- 7/89-12/94 NIH U01 CA 50743 National Cooperative Drug Discovery Group, "Mechanism Based Discovery of Antitumor Agents." C.-j. Chang, Program Director. Project #2: Modulation of Protein Kinase C", C.L. Ashendel, Project Leader, \$196,528 (DC)
- 7/88-6/90 American Cancer Society BC-636, "Protein Kinase C and *ras* Oncogene Function", E.J. Taparowsky, Co-P.I., \$168,000 (TC).
- 9/85-11/88 NIH P01 CA 36761, "Membrane Regulation and Expression of Cell Transformation", D.J. Morre and C.L. Ashendel co-program directors, "Tumor Promoter Action on Plasma Membrane Function," (Project #2), C.L. Ashendel, PI, \$131,664 (DC).

- 9/85-8/88 Marshall County Cancer Society, "Maintaining a Skin Tumor-Susceptible Strain of Mice," \$1,750 (DC)
- 7/84-6/87 American Cancer Society Junior Faculty Research Award #106 "The Molecular Basis of Multistage Carcinogenesis". \$63,000 (DC).
- 1/84-12/90 NIH R01 CA 36262 "Interactions of Tumor Promoters with Receptors" \$531,044 (DC).
- 7/82-6/85 Showalter Trust "Use of Cell Culture Systems to Study the Mechanisms of Action of Chemical Carcinogens and Tumor Promoters" \$55,000 (DC).
- 4/82-3/85 NIH CA 23168 "Cancer Center Support (Core)" (Dr. D.J. Morr , Program Director), Dr. Ashendel's allocation \$59,280 (DC).
- 3/83-2/84 American Cancer Society Institutional Research Grant and Indiana Elks Gift, "Effects of the Tumor Promoter 12-0-tetradecanoylphorbol-13-acetate on its Cellular Receptor Protein and Receptor-Associated Protein Kinase Activity." \$7,500 (DC).
- 8/80-7/81 American Cancer Society Institutional Research Grant "Development of a Novel Assay for Directly Measuring Specific Binding of 12-0-Tetradecanoylphorbol-13- acetate to Mouse Proteins and Biochemical Characterization of the Binding Activity." \$2,000 (DC).

Research Funding Received as Co-principal Investigator

1/87-12/87 NIH S10 RR03445, "Cell Sorter and a Flow Cytometer", D.J. Morr , PI, \$283,000 (DC).

Funding Received by Students and Fellows

- 12/99 American Society for Cell Biology, awarded to Rui-Ru Ji, \$350 for travel to the annual ASBC meeting in Wasington DC.
- 6/97-5/99 PRF Graduate Fellowship, awarded to Rui-Ru Ji, \$11,666/yr.
- 1/96-12/96 Elks Graduate Fellowship in Cancer Research, awarded to Rui-Ru Ji, \$10,000.
- 3/92 to 2/94 David Ross Fellowship, \$19,800 for Elma Fernandes.
- 1/91-12/91 Elks Graduate Fellowship in Cancer Research, awarded to Elma Fernandes, \$10,000.
- 5/90 NCI Minority Travel Award for C. Molina to travel to the AACR annual meeting in Washington, D.C. \$350.
- 9/90 to 8/91 NIH T32 CA09634 \$9000 (DC) "Training in Drug and Carcinogen-DNA interactions" (W. M. Baird, Program director) for Carlos Molina.
- 1/90-12/91 David Ross Fellowship, \$17320 for Crystal Weyman.
- 9/86-8/90 NIH F31 GM 11691 (NRSA,MARC Fellowship), \$62,213 for Carlos Molina.
- 12/86-11/88 David Ross Fellowship, \$13200 for Y.-M. Tang.
- 8/86-3/87 NIH T32 GM 07211, "Molecular Mechanism of Cell Function," (P. T. Gilham, Program director) \$6200 for Crystal Weyman.
- 7/85-6/86 Carroll County Cancer Society, \$500 for Martha Sutula.

Invited Lectures

1. Purdue University, Dept. Medicinal Chemistry and Pharmacognosy, 10/28/82
2. The University of Wisconsin, McArde Laboratory, 3/8/83
3. Mayo Clinic, Cell Biology Seminar Series, 3/19/86
4. NIEHS 9/10/86
5. Purdue University, Biochemistry Program, 12/2/86

6. Purdue University, Dept. Pharmacology and Toxicology, 11/10/86
7. Eli Lilly Corporation, 11/4/87
8. NIH Chemical Pathology Workshop on Signal Transduction, 2/25/89
9. Schering Corporation, 3/9/89
10. Symposium on Mechanisms of Cancer Induction and Prevention, San Francisco, 5/23/89
11. Indiana University School of Medicine, Dept. of Medicine, 12/11/89
12. Northwestern Univ., Dept. Pharmacology and Cancer Center, 1/24/90
13. University of Colorado, Boulder, School of Pharmacy, 10/18/90
14. North Carolina State University, Toxicology Training Program, 11/27/90
15. NCI Workshop on Chemoprevention, Charleston, S.C. 3/17/91
16. Indiana University, Dept. Chemistry, Biochemistry Division, 12/13/91
17. Cancer Chemotherapy Gordon Research Conference, 7/15/92
18. Symposium on the Role of Soy in Preventing and Treating Chronic Disease, Mesa, Arizona, 2/22/94
19. Indiana Univ. School of Med., Dept. of Pharmacology, 5/4/94
20. Hong Kong Univ. of Science and Technology, 3/20/98

Meetings Organized

- Co-organized (with Wm. Baird) a symposium on Mechanisms of Cancer Induction and Prevention (in honor of the lifelong accomplishments of Dr. R. K. Boutwell), held in San Francisco, on May 23, 1989.
- Assisted Jeff Bennetezen (Dept. Biological Sciences, Purdue Univ.) with Conference on Genomics Research, held at Purdue University, November 11, 1995.

Patents

#5,578,636 (US) Polythiophene anti-tumor agents. Issued 11/26/96

#5,741,811 (US) Polythiophene anti-tumor agents. Issued 4/21/98

#6,894,039 (US) Selenophene anti-tumor agents. Issued 5/17/05

Abstracts and Presentations

1. Ashendel, C.L., LeBlond, D.J., and Burgess, T.A.: A computer-assisted method for determining K_M using a single reaction mixture. *Federation Proc.* **17**:1423 (1977) Abstract 849.
2. Verma, A.K., Rice, H.M., Ashendel, C.L., and Boutwell, R.K.: Induction of ornithine decarboxylase activity in mouse epidermis by 12-0-tetradecanoyl-phorbol- 13-acetate: Possible involvement of prostaglandins. *Proc. of Am. Assoc. Cancer Res.* **19**:232 (1978) Abstract 926.
3. Ashendel, C.L. Increased prostaglandin levels in mouse epidermis induced by phorbol esters. *Proc. Am. Assoc. Cancer Res.* **20**:268 (1979) Abstract 1087.
4. Ashendel, C.L., and Boutwell R.K.: Biochemical and biological characterization of specific binding of [³H]12-0-tetradecanoylphorbol-13-acetate to mouse tissues. *Proc. Am. Assoc. Cancer Res.* **22**:129 (1981) Abstract 513.
5. Ashendel, C.L., and Boutwell, R.K.: Solubilization and purification of the phorbol ester tumor promoter receptor from mouse brain. *Federation Proc.* **41**:492 (1982) Abstract 1295.
6. Ashendel, C.L.: Characterization of the protein kinase activity associated with the isolated phorbol ester receptor. *Proc. Am. Assoc. Cancer Res.* **24**:106 (1983) Abstract 420.
7. Ashendel, C.L.: The role of the phorbol ester receptor protein in cellular membrane function. Presented at a symposium on the Role of Cocarcinogens and Promoters in Human and Experimental Carcinogenesis held May 16-18, 1983 in Budapest, Hungary.

8. Ashendel, C.L.: Subcellular redistribution of protein kinase C and phorbol ester receptor in mouse cells treated with phorbol esters. *Federation Proc.* **43** (1984) Abstract 2714.
9. Ashendel, C.L., Minor, P., and Hermsen, L., Identification of two forms of phorbol ester binding activity differing in affinity, specificity, and calcium, and phospholipid requirements. *Proc. Am. Assoc. Cancer Res.*, **26**:144 (1985) Abstract 571.
10. Ashendel, C.L., Distinct Mechanisms for acute and chronic effects of phorbol esters on cells. Presented at a FASEB Summer Research Conference on Protein Kinases held August 4-9, 1985.
11. Baudoin, P.A. and Ashendel, C.L., Down-regulation of the phorbol ester receptor in mouse lymphocytes and during promotion of C3H 10T1/2 fibroblasts. *Proc. Am. Assoc. Cancer Res.* **27**:145 (1986) Abstract 575.
12. Ashendel, C.L., Hermsen, L., and Minor, P.L. Phosphorylation of the phorbol ester receptor/protein kinase C. *J. Cell. Biochem. Supplement 10C*: 191 (1986) Abstract #L274.
13. Baudoin, P.A. and Ashendel, C.L., Regulation of protein kinase C (PK-C) and its relation to multistage *in vitro* promotion. Presented at PUB Research Conference held March 14-16, 1986, at Turkey Run State Park.
14. Baudoin, P.A. and Ashendel, C.L. Translocation and down-regulation of protein kinase C and correlation with transformation *in vitro*. Presented at Tissue Culture Association Midwestern Branch spring meeting, held April 9, 1986, in Chicago.
15. Hooper, W. C., Abraham, R. T., Ashendel, C. L., and Woloschak, G. Differential expression of protein kinase C activity in the KG-1 and KG-1a myeloblastic leukemia cell lines. *J. Cell. Biochem.* **11A**:216 (1987) Abstract D319.
16. Minor, P. L., Baudoin, P. A., and Ashendel, C. L. Separation and functional characterization of three distinct forms of protein kinase C from rat brain and other tissues. *Proc. Am. Assoc. Cancer Res.* **28**:174 (1987) Abstract 691.
17. Reeves, J. A., Baudoin, P. A., Ashendel, P. A., and Kraft, A. Bryostatin is less potent than phorbol esters in inducing non-adherent growth of mouse epidermal cells. *Proc. Am. Assoc. Cancer Res.* **28**:175 (1987) Abstract 695.
18. Weyman, C.M., Wolfson, M., Taparowsky, E.J., and Ashendel, C.L. The Role of Protein Kinase C in *ras* Oncogene-altered Signal Transduction and Cellular Transformation. Presented at a PUB research conference held March 13 to 15, 1987 at Turkey Run State Park.
19. Ashendel, C. L., Minor, P. L., Baudoin, P. A., and Molina, C. Chromatographic resolution of altered forms of protein kinase C. *Fed. Proc.* **46**:2067 (1987) Abstract 825.
20. Baudoin, P. A. and Ashendel, C. L. Down-regulation of protein kinase C in mouse cells and tissues. *Fed. Proc.* **46**:2067 (1987) Abstract 826.
21. Ashendel, C.L., Weyman, C.M., Wolfson, M., and Taparowsky, E.J. The role of protein kinase C in *ras* oncogene-altered signal transduction and cellular transformation. Presented at a FASEB Summer Research Conference on "Mechanisms of Carcinogenesis" held July 20 to 24, 1987, at Saxtons River, VT.
22. Weyman, C.M., Wolfson, M., Minor, P.L. and Ashendel, C.L. Selective down-regulation of a chromatographically distinct protein kinase C in C3H 10T1/2 fibroblasts transfected with a *ras* oncogene. *Proc. Am. Assoc. Cancer Res.* **29**:81 (1988) Abstract 555.
23. Molina, C.A., Minor, P.L., and Ashendel, C.L. Phosphorylation of protein kinase C in cells: Occurrence, mechanism, and implication for signal transduction. *Proc. Am. Assoc. Cancer Res.* **29**:104 (1988) Abstract 554.
24. Burg, D.L. and Ashendel, C.L. The role of protein kinase C in the primary mouse keratinocyte response to TPA or calcium. *Proc. Am. Assoc. Cancer Res.* **30**: 43 (1989) Abstract 168.
25. Molina, C.A. and Ashendel, C.L. Different effects of phorbol ester and diacylglycerol on the phosphorylation of protein kinase C in cells. *Proc. Am. Assoc. Cancer Res.* **30**: 212 (1989) Abstract 840.
26. Hirabayashi, N., Peterson-Mahrt, S., Ashendel, C., and DiGiovanni, J. Translocation and down regulation of epidermal PKC in different mouse stocks and strains. *Proc. Am. Assoc. Cancer Res.* **30**: 208 (1989)

Abstract 827.

27. Molina, C.A. and Ashendel, C. L. Effects of phorbol ester and diacylglycerol on the phosphorylation of protein kinase C: Implications for signal transduction. Presented at a PUB research conference held March 18, 1989.
28. Burg, D. L. and Ashendel, C. L. The role of protein kinase C in the primary mouse keratinocyte response to TPA or calcium. Presented at a PUB research conference held March 18, 1989.
29. Tang, Y.-M. and Ashendel, C. L. Cloning and sequencing the mouse brain protein kinase C- β cDNA. Presented at a PUB research conference held March 18, 1989.
30. Molina, C.A., Weyman, C. M., and Ashendel, C.L. Regulation of Protein Kinase C via phosphorylation. Proc. Am. Assoc. Cancer Res. **31**: 149 (1990) Abstract 887.
31. Weyman, C. M., Davenport, E. A., Taparowsky, E. J., and Ashendel, C. L. Reduction of Protein Kinase C Levels in C3H 10T $\frac{1}{2}$ Cells Under Conditions of Growth Factor Depletion Is Antagonized by Transfection and expression of *c-myc*. Proc. Am. Assoc. Cancer Res. **31**: 157 (1990) Abstract 937.
32. Weyman, C. M., Vaidya, T. B., Taparowsky, E. J., and Ashendel, C. L. Elevated levels of Protein Kinase C in C3H 10T $\frac{1}{2}$ derived myoblasts expressing a transfected Ha-*ras* oncogene. Presented at the Ninth Summer Symposium in Molecular Biology: "Molecular Pathways of Cell Growth Control", held July 25-27, 1990 in University Park, PA. Abstract (poster) #13.
33. Ashendel, C. L., Burg, D., Hatch, S., and Mills, J. Protein Kinase C Isotypes in mouse skin and keratinocytes. Presented at the Sixth International Symposium on Cellular Endocrinology: "Receptor-mediated Stimulation of Phosphoinositide Metabolism and Protein Kinase C", held August 12 to 15, 1990 in Lake Placid, NY. Abstract #75.
34. Ashendel, C. L., Chan, T. C., and Chang, C.-j. Inhibition of protein kinase C by diamine-dichloro-platinum(II). Proc. Am. Assoc. Cancer Res. **32**: 77 (1991) Abstract #459.
35. Molina, C. M., Weyman, C. M., and Ashendel, C. L. The role of activator-dependent autophosphorylation of in down regulation of Protein kinase C. Proc. Am. Assoc. Cancer Res. **32**: 153 (1991) Abstract #919.
36. Tang, Y.-M. and Ashendel, C. L. Comparison of the effects of overexpression of cDNAs encoding protein kinase C (PKC) isotypes in murine cell lines. Proc. Am. Assoc. Cancer Res. **32**: 280 (1991) Abstract #1662.
37. Fernandes, E. R. and Ashendel, C. L. Transfection of Krev-1 restores Protein kinase C levels lowered by expression of activated c-Ha-*ras* in mouse embryo fibroblasts. Proc. Am. Assoc. Cancer Res. **32**: 308 (1991) Abstract #1834.
38. Weyman, C. M., Henley, S. A., Vaidya, T. B., and Ashendel, C. L. Inhibition or down-regulation of PKC decreases the efficiency of growth in soft agarose of C3H 10T $\frac{1}{2}$ fibroblasts transformed by stable expression of a transfected T24 c-Ha-*ras* oncogene. Presented at the Seventh Annual Meeting on Oncogenes, held June 24 to 29, 1991 at Hood College, Frederick, Maryland.
39. Ashendel, C. L. Exposure of cells to phorbol esters increases association of ras GTPase activating protein with the cell membrane and cytoskeleton. Proc. Am. Assoc. Cancer Res. **33**: 89 (1992) Abstract #531.
40. Fernandes, E. R. and Ashendel, C. L. Regulation of rasGTPase activating protein and protein kinase C by ras expression. Proc. Am. Assoc. Cancer Res. **33**: 88 (1992) Abstract #530.
41. Ashendel, C.L., Li, X.-h., and Chang, C.-j. Potent inhibition of protein kinase C by naphthoquinones. Proc. Am. Assoc. Cancer Res. **33**: 519 (1992) Abstract #3103.
42. Caamano, J, DiRado, M., Iizasa, T. Fernandes, E., Ashendel, C., Noda, M., and Klein-Szanto, A. J. P. Partial suppression of tumor growth after transfection of human lung cancer cell lines with the Krev-1 gene. Proc. Am. Assoc. Cancer Res. **33**: 388 (1992) Abstract #2319.
43. Abou-shoer, M., Ma, G.-e., Li, X.-h., Koonchanokm, N.M., Geahlen, R.L., Ashendel, C.L., McLaughlin, J.L., and Chang, C.-j. Protein-Tyrosine Kinase Inhibitors from *Koelreutaria henryi* Presented and the 33rd Annual meeting of the American Society of Pharmacognosy, July 26-31, 1992.
44. Jayasuriya, H., Koonchanokm, N.M., Geahlen, R.L., Ashendel, C.L., McLaughlin, J.L., and Chang, C.-j. Protein-Tyrosine Kinase Inhibitors from *Polygonum cuspidatum* Presented and the 33rd Annual meeting of

- the American Society of Pharmacognosy, July 26-31, 1992.
45. Ashendel, C. L. and Chan, T. C. K. TGF β_1 and autocrine growth regulation of BALB/MK cells. Proc. Am. Assoc. Cancer Res. **34**: 522 (1993) Abstract #3113.
 46. Fernandes, E. R. and Ashendel, C. L. *Ras*-dependent decrease in PKC α mRNA levels in C3H 10T $\frac{1}{2}$ mouse fibroblasts. Proc. Am. Assoc. Cancer Res. **34**: 528 (1993) Abstract #3149.
 47. Fernandes, E. R. and Ashendel, C. L. Krev-1 as a biochemical probe in analyzing *ras*-regulated signaling. Presented at the Ninth Annual Meeting on Oncogenes, held June 22 to 26, 1993 at Hood College, Frederick, Maryland.
 48. Ashendel, C. L. The role of association of the *c-raf* protein with cell membrane components during activation by protein kinases. Presented at the Ninth Annual Meeting on Oncogenes, held June 22 to 26, 1993 at Hood College, Frederick, Maryland.
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