

**BENJAMIN F. CRAVATT, III  
PROFESSOR**

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Skaggs Institute for Chemical Biology  
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**Biographical Data**

Born: April 13, 1970; Houston, TX

**Education**

- 1992                      B.S., Stanford University, Biological Sciences (with Honors)  
  
                                 B.A., Stanford University, History
- 1996                      Ph.D., The Scripps Research Institute, Macromolecular and Cellular  
                                 Structure and Chemistry, 1996

**Scientific Positions**

- 1996-2001              Assistant Professor, The Skaggs Institute for Chemical Biology and  
                                 Department of Cell Biology, The Scripps Research Institute (TSRI)
- 2000-2001              Assistant Professor, Department of Chemistry, TSRI
- 2001-2004              Associate Professor (with tenure), Departments of Cell Biology and  
                                 Chemistry, TSRI
- 2002-present           Director, Helen L. Dorris Child and Adolescent Neuro-Psychiatric Disorder  
                                 Institute
- 2004-present           Norton B. Gilula Chair in Chemical Biology, TSRI
- 2004 – 2007            Professor, Departments of Cell Biology and Chemistry, TSRI
- 2007-present           Professor and Chair, Department of Chemical Physiology, TSRI

**Awards**

- 1992 Phi Beta Kappa, Stanford University
- 1992 The Block "S" Honors Award, Stanford University Athletics
- 1992-1995 NSF Predoctoral Fellow
- 1997 Fumio Mekata Fellow, Woods Hole Marine Biological Laboratory, Summer Neurobiology Course
- 1997-1998 Baxter Foundation Fellow
- 1998-2001 Searle Scholar
- 2002 Technology Review's TR100 Top 100 Young Innovators Award
- 2002 Promega Award for Early Career Life Scientists, American Society for Cell Biology
- 2004 Eli Lilly Award in Biological Chemistry, American Chemical Society
- 2005 Cope Scholar Award, American Chemical Society
- 2005 Young Investigator Award, International Cannabinoid Research Society
- 2007 Young Investigator Award, Linda and Jack Gill Center for Biomolecular Science, Indiana University
- 2007 Irving Sigal Young Investigator Award, The Protein Society
- 2007 Fellow, American Association for the Advancement of Science
- 2008 Tetrahedron Young Investigator Award in Bioorganic and Medicinal Chemistry, Elsevier
- 2009 MERIT Award, National Cancer Institute
- 2009-10 Pfizer Fellowship for Creativity in Chemistry and Chemical Biology

**Special Lectureships**

- 2002 Eli Lilly Award Symposium in honor of Kevan Shokat, ACS Meeting, Boston, MA

- 2003 Alfred Bader Symposium in honor of Christopher Walsh, ACS Meeting, New Orleans, LA
- 2004 Eli Lilly Lecture, Department of Chemistry, Yale University; Organic Synthesis Inc. Lecture, Carleton College; Keynote Speaker, Volcano Conference in Bioorganic Chemistry, Pack Forest, University of Washington
- 2005 Novartis Lecture in Organic Chemistry, Department of Chemistry, MIT; Keynote Speaker, Industry University Cooperative Chemistry Program, Texas A&M University
- 2006 Plenary Lecturer, ABRF Annual Meeting, Long Beach, CA; Keynote Speaker, Canadian Proteomics Initiative International Conference; *Troisieme Cycle* Lecture Series, Universities of Western Switzerland; Wyeth/Columbia Lecture, Department of Chemistry, Columbia University; State-of-the-Art Lecture, HUPO 2006, Long Beach, CA; Lecturer, Eli Lilly Award Symposium in honor of Linda Hsieh-Wilson, ACS Meeting, San Francisco, CA
- 2007 Plenary Lecture, Bürgenstock Conference, Bürgenstock Switzerland; Keynote Speaker, 27<sup>th</sup> Annual Graduate Student Symposium in the Pharmacological Sciences, University of Michigan; Plenary Lecture, 2007 International Conference on Bioactive Lipids in Cancer, Inflammation and Related Diseases, Montreal, Canada; Barnett Lecture, The Barnett Institute and Chemistry Department, Northeastern University; "Cell Biology in Ten Years" Symposium, American Society of Cell Biology Annual Meeting, Washington, D.C.
- 2008 Lecturer, Nobel Conference on Systems Biology and Child Health, Stockholm, Sweden; Plenary Lecture, British Society for Proteomics Research Annual Meeting, Cambridge, UK; Lecturer, Eli Lilly Award Symposium in honor of Paul Hergenrother, ACS Meeting, Philadelphia, PA; Keynote Speaker, Moores Cancer Center Faculty Retreat, UC San Diego
- 2009 Keynote Address, Phosphorylation, Signaling & Disease Meeting, CSHL, NY; Lecturer, Johnson Symposium, Chemistry Department, Stanford University; Plenary Lecture, Chemical Biology for Drug Discovery Conference, Oxford, UK
- 2010 Frontiers in Chemistry Lecture Series, Texas A&M University; Dauben Lecture, Chemistry Department, University of Washington

**Membership, Professional Experience, and Service**

1997-present	Member, American Chemical Society
2000	Co-Founder, Activx Biosciences ( <a href="http://www.activx.com">www.activx.com</a> )
2000-present	Member, Scientific Advisory Board, Activx Biosciences
2001	Adhoc Member, Bio-organic and Natural Products (BNP) Study Section, NIH
2001, 2002	Adhoc Member, Technologies for Comprehensive, Sensitive and Quantitative Protein Analysis in Human Tumors: Phased Innovation Study Section, NIH
2001-present	Member, International Cannabinoid Research Society
2001-present	Contributor, <i>Faculty of 1000</i> , Macromolecular Chemistry of the Cell section
2001-2005	Member, Editorial Board, <i>Molecular and Cellular Proteomics</i>
2002, 2003	Adhoc Member, Molecular, Cellular and Developmental Neurosciences Study Section, Special Emphasis Panel, NIH
2002, 2003	Co-Editor (with Ruedi Aebersold), <i>Trends in Proteomics</i>
2002-present	Member, Editorial Board, <i>Bioorganic Chemistry</i>
2002-present	Member, Scientific Advisory Board, 5AM Ventures
2003	Adhoc Member, Biophysical Chemistry Study Section, NIH
2003-present	Member, Society for Neuroscience
2003-present	Director, TSRI Graduate Course in Neuroscience
2003-present	Consultant, Pfizer Global Research and Development
2003-present	Council Member, American Human Proteome Organization (HUPO)
2004-present	Member, Editorial Board, <i>Bioorganic Medicinal Chemistry &amp; Bioorganic Medicinal Chemistry Letters</i>
2004-present	Member, Editorial Board, <i>Chemistry and Biology</i>

2004-present	Member, Editorial Board, <i>ChemBioChem</i>
2004-present	Member, Editorial Board, <i>Molecular Biosystems</i>
2005-present	Member, Editorial Advisory Board, <i>Biochemistry</i>
2005-present	Member, Editorial Board, <i>Curr. Opin. Chem. Biol.</i>
2005-present	Member, Editorial Board, <i>ChemMedChem</i>
2005-present	Member, Scientific Advisory Committee, Damon Runyon Cancer Research Foundation
2005-present	Member, Educational Advisory Board for Rimonabant, Sanofi-Aventis
2005	Adhoc Member, Synthetic and Biological Chemistry A, Study Section, NIH
2006-present	Member, Editorial Board, <i>ACS Chemical Biology</i>
2006	Adhoc Member, Innovative Technologies for the Molecular Analysis of Cancer, Study Section, NIH
2006	Co-Organizer (with Art Horwich) of the 20 <sup>th</sup> Annual Symposium of the Protein Society, San Diego, CA
2007	Co-Organizer (with Michael Rosen) of the ASBMB Annual Meeting, Washington D.C.
2007-present	Member, Scientific Advisory Board, Searle Scholars Program
2007-2009	Member, Scientific Advisory Board, Caring for Carcinoid Foundation
2007-present	Member, Scientific Advisory Board, aTyr Pharma
2007-present	Member, Synthetic and Biological Chemistry A, Study Section, NIH
2008-present	Member, TASAP Board, Pfizer Global Research and Development
2009-present	Council Member, ASBMB

## **Publications**

### **1994**

Cravatt, B.F., Ashley, J.A., Janda, K.D., Boger, D.L., Lerner, R.A. "Crossing Extreme Mechanistic Barriers By Antibody Catalysis: Syn Elimination to a Cis Olefin", *J. Am. Chem. Soc.* **1994**, 116, 6013-6014.

Boger, D.L., Lerner, R.A., Cravatt, B.F. "Synthesis of a Functionalized Rigid Bicyclo[2.2.1]heptane: A Useful Hapten for Eliciting Catalytic Antibodies", *J. Org. Chem.* **1994**, 59, 5078-5079.

Lerner, R.A., Siuzdak, G., Prospero-Garcia, O., Henriksen, S.J., Boger, D.L., and Cravatt B.F. "Cerebrodiene: A Brain Lipid Isolated from Sleep-Deprived Cats" *Proc. Natl. Acad. Sci. U.S.A.* **1994**, 91, 9505-9508.

### **1995**

Cravatt, B.F., Prospero-Garcia, O., Siuzdak, G., Gilula, N.B., Henriksen, S.J., Boger, D.L., Lerner, R.A. "Chemical Characterization of a Family of Brain Lipids That Induce Sleep" *Science* **1995**, 268, 1506-1509.

### **1996**

Cravatt, B.F., Lerner, R.A., Boger, D.L. "Structure Determination of an Endogenous Sleep-Inducing Lipid, *cis*-9-Octadecenamide (Oleamide): A Synthetic Approach to the Chemical Analysis of Trace Quantities of a Natural Product" *J. Am. Chem. Soc.* **1996**, 118, 580-509.

Patterson, J.E., Ollman, I.R., Cravatt, B.F., Boger D.L. Wong, C.-H., Lerner, R.A. "Inhibition of Oleamide Hydrolase Catalyzed Hydrolysis of the Endogenous Sleep-Inducing Lipid *cis*-9-Octadecenamide" *J. Am. Chem. Soc.* **1996**, 118, 5938-5945.

Cravatt, B.F., Giang, D.K., Mayfield, S.P., Boger, D.L., Lerner, R.A., Gilula, N.B., "Molecular Characterization of an Enzyme that Degrades Neuromodulatory Fatty Acid Amides" *Nature* **1996**, 384, 83-87.

### **1997**

Giang, D.K. & Cravatt, B.F. "Molecular Characterization of Human and Mouse Fatty Acid Amide Hydrolases." *Proc. Natl. Acad. Sci. USA* **1997**, 94, 2238-2242.

Thomas, E.A., Cravatt, B.F., Danielson, P.E., Gilula, N.B., Sutcliffe, J.G. "Fatty Acid Amide Hydrolase (FAAH), the Degradative Enzyme for Anandamide and Oleamide, Has Selective

Distribution in Neurons within the Rat Central Nervous System.” *J. Neurosci. Res.* **1997**, 50, 1047-1052.

Arreaza, G., Devane, W.A., Omeir, R.L., Sajnani, G., Kunz, J., Cravatt, B.F., Deutsch, D.G. “The Cloned Rat Hydrolytic Enzyme Responsible for the Breakdown of Anandamide Also Catalyzes its Formation via the Condensation of Arachidonic Acid and Ethanolamine.” *Neurosci. Lett.* **1997**, 234, 59-62.

Guan, X., Cravatt, B.F., Ehring, G.R., Hall, J.E., Boger, D.L., Lerner, R.A., Gilula, N.B. “The Sleep-Inducing Lipid Oleamide Deconvolutes Gap Junction Communication and Calcium Wave Transmission in Glial Cells.” *J. Cell Biol.* **1997**, 139, 1785-1792.

### **1998**

Patricelli, M.P., Patterson, J.P., Boger, D.L., Cravatt, B.F. “An Endogenous Sleep Inducing Compound is a Novel Competitive Inhibitor of Fatty Acid Amide Hydrolase (FAAH).” *Bioorg. Med. Chem. Lett.* **1998**, 8, 613-618.

Giang, D.K. & Cravatt, B.F. “A Second Mammalian N-Myristoyltransferase.” *J. Biol. Chem.* **1998**, 273, 6595-6598.

Patricelli, M.P., Lashuel, H.A., Giang, D.K., Kelly, J.W., and Cravatt, B.F. “Comparative Characterization of a Wild Type and Transmembrane Domain-Deleted Fatty Acid Amide Hydrolase: Identification of the Transmembrane Domain as a Site for Oligomerization.” *Biochemistry* **1998**, 37, 15177-15187.

Egertova, M., Giang, D.K., Cravatt, B.F., and Elphick, M.R. “A New Perspective on Cannabinoid Signalling: Complimentary Localization of Fatty Acid Amide Hydrolase and the CB1 Receptor in Rat Brain.” *Proc. R. Soc. Lond. B.* **1998**, 265, 2081-2085.

Boger, D.L, Henriksen, S.J., Cravatt, B.F. “Oleamide: An Endogenous Sleep-Inducing Lipid and Prototypical Member of a New Class of Biological Signaling Molecules.” *Curr. Pharm. Des.* **1998**, 4, 303-314.

Wan, M., Cravatt B.F., Huijun, Z.R., Xianyu, Z., Francke, U. “Conserved Chromosomal Location and Genomic Structure of Human and Mouse Fatty Acid Amide Hydrolase (FAAH) Genes and Evaluation of Clasper as a Candidate Neurological Mutation.” *Genomics* **1998**, 54, 408-414.

Boger, D.L., Patterson, J.E., Guan, X., Cravatt, B.F., Lerner, R.A., Gilula, N.B. “Chemical Requirements for Inhibition of Gap Junction Communication by the Biologically Active Lipid Oleamide.” *Proc. Natl. Acad. Sci. U.S.A.* **1998**, 95, 4810-4815.

## **1999**

Patricelli, M.P., Lovato, M.A., Cravatt, B.F. "Chemical and Mutagenic Investigations of Fatty Acid Amide Hydrolase: Evidence for a Family of Serine Hydrolases with Distinct Catalytic Properties." *Biochemistry* **1999**, 38, 9804-9812.

Liu, Y., Patricelli, M.P., Cravatt, B.F. "Activity-Based Protein Profiling: The Serine Hydrolases." *Proc. Natl. Acad. Sci. U.S.A.* **1999**, 96, 14694-14699.

Patricelli, M.P., Cravatt, B.F. "Fatty Acid Amide Hydrolase Competitively Degrades Bioactive Amides and Esters through a Nonconventional Catalytic Mechanism." *Biochemistry (accelerated publication)* **1999**, 38, 14125-14130.

Boger, D.L., Sato, H., Lerner, A.E., Austin, B.J., Patterson, J.E., Patricelli, M.P., Cravatt, B.F. "Trifluoromethyl Ketone Inhibitors of Fatty Acid Amide Hydrolase: A Probe of Structural and Conformational Features Contributing to Inhibition." *Bioorg. Med. Chem. Lett.* **1999**, 9, 265-270.

Thomas, E.A., Cravatt, B.F., Sutcliffe, J.G. "The Endogenous Lipid Oleamide Activates Serotonin 5-HT<sub>7</sub> Neurons in Mouse Thalamus and Hypothalamus." *J. Neurochem.* **1999**, 72, 2370-2378.

## **2000**

Patricelli M.P., Cravatt B.F. "Clarifying the Catalytic Roles of Conserved Residues in the Amidase Signature Family." *J Biol Chem.* **2000**, 275, 19177-19184.

Kustedjo K., Bracey M.H., Cravatt B.F. "Torsin A and its Torsion Dystonia-Associated Mutant Form Are Luminal Glycoproteins that Exhibit Distinct Subcellular Localizations." *J Biol Chem.* **2000**, 275, 27933-27939.

Boger, D.L., Sato, H., Lerner, A.E., Hedrick, M.P., Fecik, R.A., Miyauchi, H., Wilkie, G.D., Austin, B.J., Patricelli, M.P., Cravatt, B.F. "Exceptionally Potent Inhibitors of Fatty Acid Amide Hydrolase: the Enzyme Responsible for Degradation of Endogenous Oleamide and Anandamide." *Proc Natl Acad Sci U S A.* **2000**, 97, 5044-5049.

Cravatt, B.F., Sorensen, E.J. "Chemical Strategies for the Global Analysis of Protein Function." *Curr. Opin. Chem. Biol.* **2000**, 4, 663-668.

Egertova, M., Cravatt B.F., Elphick, M.R. "Fatty Acid Amide Hydrolase Expression in Rat Choroid Plexus: Possible Role in Regulation of the Sleep-Inducing Action of Oleamide." *Neurosci. Lett.* **2000**, 282, 13-16.

Boger, D.L., Fecik, R.A., Patterson, J.E., Miyauchi, H., Patricelli, M.P., Cravatt, B.F. "Fatty Acid Amide Hydrolase Substrate Specificity." *Bioorg. Med. Chem. Lett.* **2000**, 2613-2616.



Wang, E.W., Kessler, B.M., Borodovsky, A., Cravatt, B.F., Bogoy, M., Ploegh, H.L., Glas, R. "Integration of the Ubiquitin-Proteasome Pathway with a Cytosolic Oligopeptidase Activity." *Proc Natl Acad Sci U S A.* **2000**, 97, 9990-9995.

## **2001**

Adam, G.C., Cravatt, B.F., Sorensen, E.J. "Profiling the Specific Reactivity of the Proteome with Non-Directed Activity-Based Probes." *Chem. Biol.* **2001**, 8, 81-95.

Kidd, D. Liu, Y., Cravatt B.F. "Profiling Serine Hydrolase Activities in Complex Proteomes." *Biochemistry* **2001**, 40, 4005-4015.

Patricelli, M.P., Cravatt, B.F. "Characterization and Manipulation of the Acyl Chain Selectivity of Fatty Acid Amide Hydrolase." *Biochemistry* **2001**, 40, 6107-6115.

Cravatt, B.F., Demarest, K., Patricelli, M.P., Bracey, M.H., Giang, D.K., Martin, B.R., Lichtman, A.H. "Supersensitivity to Anandamide and Enhanced Endogenous Cannabinoid Signaling in Mice Lacking Fatty Acid Amide Hydrolase." *Proc. Natl. Acad. Sci. U S A.* **2001** 98, 9371-9376.

Patricelli, M.P., Cravatt, B.F. "Proteins Regulating the Biosynthesis and Inactivation of Neuromodulatory Fatty Acid Amides." *Vitam Horm.* **2001**, 62, 95-131.

Huitron-Resendiz, S., Gombart, L., Cravatt, B.F., Henriksen, S.J. "Effect of Oleamide on Sleep and its Relationship to Blood Pressure, Body Temperature, and Locomotor Activity in Rats." *Exp. Neurol.* **2001**, 172, 235-243.

Larsen, N.A., Heine, A., Crane, L., Cravatt, B.F., Lerner, R.A., Wilson, I.A. "Structural Basis for a Disfavored Elimination Reaction in a Catalytic Antibody 1D4." *J. Mol. Biol.* **2001**, 314, 93-102.

## **2002**

Lichtman, A.H, Hawkins, E.G., Griffin, G., Cravatt, B.F. "The Pharmacological Activity of Fatty Acid Amides is Regulated, not Mediated by Fatty Acid Amide Hydrolase In Vivo." *J. Pharmacol. Exp. Ther.* **2002**, 302, 73-79.

Sipe, J.C., Chiang, K., Gerber, A., Beutler, E., Cravatt, B.F. "A Missense Mutation in Human Fatty Acid Amide Hydrolase Associated with Problem Drug Use." *Proc. Natl. Acad. Sci. U.S.A.* **2002**, 99, 8394-8399.

Adam, G.C., Sorensen, E.J., Cravatt, B.F. "Proteomic Profiling of Mechanistically Distinct Enzyme Classes Using a Common Chemotype." *Nat. Biotechnol.* **2002**, 20, 805-809.

Jessani, N., Liu, Y., Humphrey, M., Cravatt, B.F. "Enzyme Activity Profiles of the Secreted and Membrane Proteome that Depict Cancer Invasiveness." *Proc. Natl. Acad. Sci. U.S.A.* **2002**, 99, 10335-10340.

Aebersold, R., Cravatt, B.F. "Proteomics: Advances, Applications, and the Challenges that Remain." *Trends Proteomics* **2002**, 20, S1-S2.

Cravatt, B.F., Lichtman, A.H. "The Enzymatic Inactivation of Fatty Acid Amide Signaling In Vivo." *Chem. Phys. Lipids* **2002**, 121, 135-48.

Adam, G.C., Sorensen, E.J., Cravatt, B.F. "Chemical Strategies for Functional Proteomics." *Mol. Cell. Proteomics* **2002**, 1, 781-790.

Adam, G.C., Sorensen, E.J., Cravatt, B.F. "Trifunctional Chemical Probes for the Consolidated Detection and Identification of Enzyme Activities in Complex Proteomes." *Mol. Cell. Proteomics* **2002**, 1, 828-835.

Bracey, M.H., Hansen, M., Masuda, K., Stevens, R.C., Cravatt, B.F. "Structural Adaptations in a Membrane Enzyme that Terminates Endocannabinoid Signaling." *Science* **2002**, 298, 1793-1796.

### **2003**

Speers, A.E., Adam, G.C., Cravatt, B.F. "Activity-Based Protein Profiling *In Vivo* Using a Copper(I)-Catalyzed Azide-Alkyne Cycloaddition." *J. Amer. Chem. Soc.* **2003**, 125, 4686-4687.

Clement, A.B., Hawkins, E.G., Lichtman, A.H., Cravatt, B.F. "Increased Seizure Susceptibility and Pro-Convulsant Activity of Anandamide in Mice Lacking Fatty Acid Amide Hydrolase." *J. Neurosci.* **2003**, 23, 3916-3923.

Egertova, M., Cravatt, B.F., Elphick, M.R. "Comparative Analysis of Fatty Acid Amide Hydrolase and CB(1) Cannabinoid Receptor Expression in the Mouse Brain: Evidence of a Widespread Role for Fatty Acid Amide Hydrolase in Regulation of Endocannabinoid Signaling." *Neuroscience* **2003**, 119, 481-496.

Leung, D., Hardouin, C., Boger, D.L., Cravatt, B.F. "Discovering Potent and Selective Reversible Inhibitors of Enzymes in Complex Proteomes." *Nat. Biotechnol.* **2003**, 21, 687-691.

McKinney, M.K., Cravatt, B.F. "Evidence for Distinct Roles in Catalysis for Residues of the Serine-Serine-Lysine Catalytic Triad of Fatty Acid Amide Hydrolase." *J. Biol. Chem.* **2003**, 278, 37393-37399.

Liu, J., Batkai, S., Pacher, P., Harvey-White, J., Wagner, J.A., Cravatt, B.F., Gao, B., and Kunos, G. "LPS Induces Anandamide Synthesis in Macrophages via CD14/MAPK/PI3K/NF-kappaB Independently of Platelet Activating Factor." *J. Biol. Chem.* **2003**, 278, 45034-45039.

Adam, G.C., Vanderwal, C.D., Sorensen, E.J., Cravatt, B.F. "The Natural Product FR182877 is a Potent and Selective Inhibitor of Carboxylesterase-1." *Angew. Chem. Int. Ed.* **2003**, 42, 5480-5484.

Cravatt, B.F., Lichtman, A.H. "Fatty Acid Amide Hydrolase: An Emerging Therapeutic Target in the Endocannabinoid System." *Curr Opin. Chem. Biol.* **2003**, 7, 469-475.

Kustedjo, K., Deechongkit, S., Kelly, J. W., Cravatt, B.F. "Recombinant Expression, Purification, and Comparative Characterization of TorsinA and its Torsion Dystonia-Associated Variant DE-TorsinA" *Biochemistry* **2003**, 42, 15333-15341.

## **2004**

Adam, G. C., Burbaum, J., Kozarich, J.W., Patricelli, M.P., Cravatt, B.F. "Mapping Enzyme Active Sites in Complex Proteomes." *J. Amer. Chem. Soc.* **2004**, 126, 1363-1368.

Speers, A.E., Cravatt, B.F. "Chemical Strategies for Activity-Based Proteomics." *ChemBioChem* **2004**, 5, 41-47.

Jessani, N., Cravatt, B.F. "The Development and Application of Chemical Strategies for Activity-Based Protein Profiling." *Curr. Opin. Chem. Biol.* **2004**, 8, 54-59.

Weber, A., Ni, J., Ling, K. H., Acheampong, A., Tang-Liue, D. D., Burk, R., Cravatt, B. F., Woodward, D. "Formation of Prostaglandins from Anandamide in FAAH Knockout Mice Analyzed by HPLC with Tandem Mass Spectrometry." *J. Lipid Res.* **2004**, 45, 757-763.

Massa, F., Marsicano, G., Hermann, H., Cannich, A., Monory, K., Cravatt B.F., Ferri, G.-L., Sibaev, A., Storr, M., Lutz, B. "The Endogenous Cannabinoid System Protects Against Colonic Inflammation." *J. Clin. Inv.* **2004**, 113, 1202-1209.

Huitron-Resendiz, S., Sanchez-Alavez, M., Wills, D.N., Cravatt, B.F., Henriksen, S.J. "Characterization of the Sleep-Wake Patterns in Mice Lacking Fatty Acid Amide Hydrolase." *Sleep* **2004**, 27, 857-865.

Speers, A.E., Cravatt, B.F. "Profiling Enzyme Activities In Vivo Using Click Chemistry Methods." *Chem. Biol.* **2004**, 11, 535-546.

Lichtman, A.H., Shelton, C., Advani, T., Cravatt, B.F. "Mice Lacking Fatty Acid Amide Hydrolase Exhibit Cannabinoid Receptor-Mediated Phenotypic Hypoalgesia." *Pain* **2004**, 109, 319-327.

Ortega-Gutierrez, S., Hawkins, E.G., Viso, A., Lopez-Rodriguez, M. L., Cravatt, B.F. "Comparison of Anandamide Transport in FAAH Wild Type and Knockout Neurons: Evidence for Contributions by Both FAAH and the CB1 Receptor to Anandamide Uptake." *Biochemistry* **2004**, 43, 8184-8190.

Bracey, M.H., Cravatt, B.F., Stevens, R.C. "Structural Commonalities among Integral Membrane Enzymes;" *FEBS Lett.* **2004**, 567, 159-165.

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Chiang, K.P., Gerger, A.L., Sipe, J.C., Cravatt, B.F. “The P129T Mutant of Human Fatty Acid Amide Hydrolase Exhibits Reduced Cellular Expression and Activity. Evidence for a Functional Link between Defects in the Endocannabinoid System and Problem Drug Use.” *Hum. Mol. Genetics* **2004**, 13, 2113-2119.

Cravatt, B.F., Lichtman, A.H. “The Endogenous Cannabinoid System and its Role in Nociceptive Behavior.” *J. Neurobiol.* **2004**, 61, 149-160.

Jessani, N., Humphrey, M., McDonald, W.H., Niessen, S., Gangadharan, B., Yates, J.R., Mueller, B.M., Cravatt, B.F. “Carcinoma and Stromal Enzyme Activity Profiles Associated with Breast Tumor Growth In Vivo.” *Proc. Natl. Acad. Sci. U.S.A.* **2004**, 101, 13756-13761.

Azad, S.C., Monory, K., Marsicano, G., Cravatt, B.F., Lutz, B., Zieglansberger, W., Rammes, G. “Circuitry for Associative Plasticity in the Amygdala Involves Endocannabinoid Signaling.” *J. Neurosci.* **2004**, 24, 9953-9961.

Saghatelian, A., Trauger, S.A., Want, E.J., Hawkins, E.G., Siuzdak, G., Cravatt, B.F. “Assignment of Endogenous Substrates to Enzymes by Global Metabolite Profiling.” *Biochemistry (accelerated publication)* **2004**, 45, 14332-14339.

Lichtman, A.H., Leung, D., Shelton, C.C., Saghatelian, A., Hardouin, C., Boger, D.L., Cravatt, B.F. “Reversible Inhibitors of Fatty Acid Amide Hydrolase that Promote Endocannabinoid-Mediated Analgesia: Evidence for an Unprecedented Combination of Potency and Selectivity.” *J. Pharmacol. Exp. Ther.* **2004**, 311, 441-448.

Barglow, K.T., Cravatt, B.F. “Discovering Disease-Associated Enzymes by Proteome Reactivity Profiling.” *Chem. Biol.* **2004**, 11, 1523-1531.

Sieber, S. A., Mondala, T., Head, S. R., Cravatt, B. F. “Microarray Platform for Profiling Enzyme Activities in Complex Proteomes.” *J. Amer. Chem. Soc.* **2004**, 126, 15640-15641.

## **2005**

Saghatelian, A., Cravatt, B.F. “Global Strategies to Integrate the Proteome and Metabolome.” *Curr. Opin. Chem. Biol.* **2005**, 9, 62-68.

Cravatt, B.F., Kodadek, T. “A Chemo-centric View of Proteomics and Genomics.” *Curr. Opin. Chem. Biol.* **2005**, 9, 1-3.

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