

# Gabriel Fenteany, Ph.D.

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Citizenship: Dual USA and Hungary/EU

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## EDUCATION

- Ph.D.**, Biochemistry, 1997, Harvard University, Cambridge, Massachusetts (thesis title: Lactacystin, Proteasome Function and Cell Morphology; advisors: Prof. Stuart L. Schreiber and Prof. Elias J. Corey)
- M.A.**, Biochemistry and Molecular Biology, 1992, University of California, Santa Barbara (thesis title: Antibiotic Inhibitors of Protein Synthesis: Relative Efficacy in Larvae of *Haliotis rufescens* (Gastropod Mollusc) and Effects on Larval Settling Behavior; advisor: Prof. Daniel E. Morse)
- B.A.**, Biochemistry, Aquatic Biology, 1990, University of California, Santa Barbara
- Licence (B.S. equivalent)**, Biology, 1989, Université de Franche-Comté, France (as foreign exchange student from Reed College, Portland, Oregon, 1985 – 1989)

## RELEVANT PROFESSIONAL EXPERIENCE

### RESEARCH

- Senior Research Scientist and Group Leader**, Institute of Genetics, Biological Research Centre of the Hungarian Academy of Sciences, Szeged, Hungary, 2017 – present
- Senior Research Scientist/Research and Grants Advisor**, Research Administration and Data Sciences Research Center, New York City Health and Hospitals, New York and New York University Medical Center, 2015 – 2017
- Senior Research Scientist**, Division of Endocrinology, New York City Health and Hospitals/Woodhull and New York University Medical Center, New York, 2015 – 2017
- Faculty of the Cell Biology Graduate Program**, University of Connecticut, Storrs, 2008 – 2015
- Faculty Co-Director, High-Throughput Screening Facility**, University of Connecticut, Storrs, 2008 – 2015
- Faculty of the Structural Biology Partnership**, University of Connecticut, Storrs, 2008 – 2015
- Associate Professor of Chemistry**, University of Connecticut, Storrs, 2006 – 2015
- Assistant Professor of Chemistry**, University of Illinois, Chicago, 2000 – 2006
- Life Sciences Research Foundation Postdoctoral Fellow**, Harvard Medical School, Boston, Massachusetts, 1997 – 2000

### TEACHING

- Associate Professor of Chemistry**, University of Connecticut, Storrs, 2006 – 2015
- Taught seven semesters of Organic Chemistry I and II (undergraduate classes)
  - Taught six semesters of Biological Chemistry (graduate class)
  - Ran or taught various other seminar and lab research courses
- Assistant Professor of Chemistry**, University of Illinois, Chicago, 2000 – 2006
- Taught four semesters of Biochemistry I (undergraduate class)
  - Taught six semesters of Chemical Biology and Bioorganic Chemistry (graduate class)
  - Ran or taught various other seminar and lab research courses
- Graduate Teaching Fellow**, Harvard University, Cambridge, Massachusetts, 1994 – 1996
- Graduate Teaching Assistant**, University of California, Santa Barbara, 1991

### WEB DEVELOPMENT AND CONTENT CREATION

- Creator and Maintainer**, The Virtual Library of Biochemistry, Molecular Biology and Cell Biology: <http://biochemweb.net>, 1999 – present
- Creator and Maintainer**, Websites for the Divisions of Experimental Medicine and Hematology, Brigham and Women's Hospital, Harvard Medical School, 1998 – 2000

## NARRATIVE

I have years of experience as an independent professional scientist, with a strong record of influential publications, presentations, and grant funding. I am presently a senior research scientist and group leader at the Biological Research Centre of the Hungarian Academy of Sciences where my research is focused on chemical biology and probing and controlling DNA repair and damage tolerance pathways. I was formerly a university professor in chemistry and then a hospital-based biomedical researcher, both in the United States. My main focus of research has been chemical biology, organic chemistry, biochemistry, and cell biology, particularly the discovery of novel modulators of basic biological processes of medical significance, the unbiased isolation of their molecular targets, the characterization of protein-small molecule interactions, and the dissection of the pathways controlling cell motility, with an interest in collective cell migration (the understudied but widespread phenomenon whereby cells move together as groups). My group made major contributions to the discovery of novel anti-migratory and pro-migratory agents and to the understanding of the functions and roles of their protein targets in cancer progression, metastasis, wound healing, and related processes. I have mentored 8 post-doctoral fellows, 13 Ph.D. students, 6 M.S. students, 18 undergraduate researchers, two technicians, and two high school scholars. I have been the principal investigator on major grants from the National Institutes of Health, the American Cancer Society, and other funding agencies and foundations.

## GRANTS

R01GM077622, Fenteany, G. (PI), 06/01/2006 – 05/31/2013 National Institutes of Health (NIGMS) Mechanism of Action of New Inhibitors of Cell Migration	Role: PI	Amount: \$1,295,000
R01GM077622 Supplement, Fenteany, G. (PI), 09/11/2009 – 08/31/2012 National Institutes of Health (NIGMS) Mechanism of Action of New Inhibitors of Cell Migration	Role: PI	Amount: \$200,451
R01GM077622 Supplement, Fenteany, G. (PI), 01/01/2008 – 05/31/2011 National Institutes of Health (NIGMS) Research Supplements to Promote Diversity in Health-Related Research	Role: PI	Amount: \$175,252
Summer Undergraduate Research Fellowship, Lincoln, S.T. (Awardee), 06/2011 – 08/2011 University of Connecticut	Role: PI	Amount: \$3,990
Summer Undergraduate Research Fellowship, Minutolo, N. (Awardee), 06/2011 – 08/2011 University of Connecticut	Role: Co-PI with David Knecht	Amount: \$4,000
University of Connecticut Major Research Equipment Award, Hadden, K. (PI), 10/22/2010 UConn High-Throughput Screening Center	Role: Key Personnel	Amount: \$221,530
Summer Undergraduate Research Fellowship, Heyse, S.A. (Awardee), 06/2010 – 08/2010 University of Connecticut	Role: PI	Amount: \$2,500
University of Connecticut Intermediate Research Equipment Award, Yao, X. (PI), 12/11/2009 Nano Liquid Chromatography System	Role: Key Personnel	Amount: \$99,000
UCHC/Storrs and Regional Campus Incentive Grant, Wright, D. (PI), 09/01/2008 – 08/31/2009 A High Throughput Screen to Identify Novel Anti-Cancer Agents	Role: Co-PI	Amount: \$50,000
Summer Undergraduate Research Fellowship, Morse, P.D. (Awardee), 06/2009 – 08/2009 University of Connecticut	Role: PI	Amount: \$3,000
Partnership for Excellence in Structural Biology Research Fellowship, 01/01/2008 – 05/31/2008 University of Connecticut Partnership for Excellence in Structural Biology Fenteany, G. (PI), Alexandrescu, A.T. (Co-PI)	Role: PI	Amount: \$12,735
Partnership for Excellence in Structural Biology Research Fellowship, 08/01/2008 – 12/31/2007 University of Connecticut Partnership for Excellence in Structural Biology Gascón, J.A. (PI), Fenteany, G. (Co-PI)	Role: Co-PI	Amount: \$12,735
Summer Undergraduate Research Fellowship, Drozdowicz, L.B. (Awardee), 06/2007 – 08/2007 University of Connecticut	Role: PI	Amount: \$3,000
0722948 (Major Research Instrumentation), Knecht, D.A. (PI), 09/01/2007 National Science Foundation		

Acquisition of a Confocal Live Cell Imaging System RSG-02-250-01-DDC, Fenteany, G. (PI), 07/01/2002 – 06/30/2006 American Cancer Society	Role: Sr. Personnel	Amount: \$367,305
Probes to Study and Control Cell Motility and Morphogenesis R21CA95177, Fenteany, G. (PI), 04/01/2002 – 03/31/2003 National Institutes of Health (NCI)	Role: PI	Amount: \$650,000
Discovery of Drug Targets Controlling Cell Motility Campus Research Board Grant, Fenteany, G. (PI), 07/01/2001 – 06/30/2002 University of Illinois	Role: PI	Amount: \$148,573
Small Organic Molecules to Study and Control Cell Motility 0091994 (Major Research Instrumentation), Keiderling, T.A (PI), 02/15/2001 National Science Foundation	Role: PI	Amount: \$15,000
Purchase of a Departmental Stopped-Flow Equipped Circular Dichroism Spectrometer Role: Co-PI		Amount: \$112,572

## PEER-REVIEWED PUBLICATIONS

- Fenteany, G., Inoue, T., Bahtiyar, G., Sacerdote, A. Association of vitamin D depletion with normalization of elevated serum 17-OH progesterone. *J. Med. Case Rep.*, 2017, 3:22.
- Powell, D., Inoue, T., Bahtiyar, G., Fenteany, G., Sacerdote, A. Treatment of nonclassic 11-hydroxylase deficiency with Ashwagandha root. *Case Rep. Endocrinol.* 2017, 2017:Article ID 1869560.
- Eddy, N.A. Fenteany, G. Model studies directed to the synthesis of cucurbitacin I C/D rings. *Tetrahedron Lett.* 2015, 56:5079-5081.
- Magpusao, A.N., Omolloh, G., Johnson, J., Gascón, J., Pecuh, M.W., Fenteany, G. Cardiac glycoside activities link Na<sup>+</sup>/K<sup>+</sup> ATPase ion-transport to breast cancer cell migration via correlative SAR. *ACS Chem. Biol.* 2015, 10:561–569.
- Eddy, N.A., Richardson, J.J., Fenteany, G. The effect of Lewis acids on the cycloaddition of 3,3,6-trimethylcyclohex-5-ene-1,2,4-trione: Hydrogen transfer versus cycloaddition with cyclopentadiene. *Eur. J. Org. Chem.* 2013, 23:5041–5044.
- Clark, A.G., Sider, J.R., Verbrugge, K., Fenteany, G., von Dassow, G., Bement, W.M. Identification of small molecule inhibitors of cytokinesis and single cell wound repair. *Cytoskeleton* 2012, 69:1010–1020.
- Eddy, N.A., Kelly, C.B., Mercadante, M.A., Leadbeater, N.E., Fenteany, G. Access to dienophilic ene-triketone synthons by oxidation of diketones with an oxoammonium salt. *Org. Lett.* 2012, 14:498–501.
- Ren, G., Baritaki, S., Marathe, H., Feng, J., Park, S., Beach, S., Bazeley, P.S., Beshir, A.B., Fenteany, G., Mehra, R., Daignault, S., Al Mulla, F., Keller, E., Bonavida, B., de la Serna, I., Yeung, K.C. Polycomb protein EZH2 regulates tumor invasion via the transcriptional repression of the metastasis suppressor RKIP in breast and prostate cancer. *Cancer Res.* 2012, 72:3091–3104.
- Rudnitskaya, A.N., Eddy, N.A., Fenteany, G., Gascón, J.A. Recognition and reactivity in the binding between Raf kinase inhibitor protein and its small-molecule inhibitor locostatin. *J. Phys. Chem. B.* 2012, 116:10176–10181.
- Beshir, A.B., Argueta, C.E., Menikarachchi, L.C., Gascón, J.A., Fenteany, G. Locostatin disrupts association of Raf kinase inhibitor protein with binding proteins by modifying a conserved histidine residue in the ligand-binding pocket. *Forum Immunopath. Dis. Ther.* 2011, 2:47–5
- Eddy, N.A., Morse, P.D., Morton, M.D., Fenteany, G. Synthesis of oxazolidinone and tosyl enamines by tertiary amine catalysis. *Synlett* 2011, 5:699–701.
- Wang, Z., Castellano, S., Kinderman, S.S., Argueta, C.E., Beshir, A.B., Fenteany, G., Kwon, O. Diversity through a branched reaction pathway: Generation of a library of sixteen multicyclic scaffolds and identification of antimigratory agents. *Chem. Eur. J.* 2011, 17:649–654.
- Beshir, A.B., Ren, G., Magpusao, A.N., Barone, L.M., Yeung, K.C., Fenteany, G. Raf kinase inhibitor protein suppresses nuclear factor-κB-dependent cancer cell invasion through negative regulation of matrix metalloproteinase expression. *Cancer Lett.* 2010, 299:137–149.
- Kahsai, A.W., Zhu, S., Fenteany, G. G protein-coupled receptor kinase 2 activates radixin, regulating membrane protrusion and motility in epithelial cells. *Biochim. Biophys. Acta* 2010, 1803:300–310.
- Knecht, D.A., LaFleur, R., Kahsai, A.W., Argueta, C.E., Beshir, A.B., Fenteany, G. Cucurbitacin I inhibits cell motility by indirectly interfering with actin dynamics. *PLoS One* 2010, 5:e14039.

- Magpusao, A.N., Desmond, R., Billings, K.J., Fenteany, G., Peczuh, M.W. Synthesis and evaluation of antimigratory and antiproliferative activities of lipid-linked [13]-macro-dilactones. *Bioorg. Med. Chem. Lett.* 2010, 20:5472–5476.
- Ménoret, A., McAleer, J.P., Ngoi, S.-M., Ray, S., Eddy, N.A., Fenteany, G., Lee, S.-J., Rossi, R.J., Mukherji, B., Allen, D.L., Chakraborty, N.G., Vella, A.T. The oxazolidinone derivative locostatin induces cytokine appeasement. *J. Immunol.* 2009, 183:7489–7496.
- Beshir, A.B., Guchhait, S.K., Gascon, J.A., Fenteany, G. Synthesis and structure–activity relationships of metal–ligand complexes that potently inhibit cell migration. *Bioorg. Med. Chem. Lett.* 2008, 18:498–504.
- Kahsai, A.W., Cui, J., Kaniskan, H.Ü., Garner, P.P., Fenteany, G. Analogs of tetrahydroisoquinoline natural products that inhibit cell migration and target galectin-3 outside of its carbohydrate-binding site. *J. Biol. Chem.* 2008, 283:24534–24545.
- Mc Henry, K.T., Montesano, R., Zhu, S., Beshir, A.B., Tang, H.H., Yeung, K.C., Fenteany, G. Raf kinase inhibitor protein positively regulates cell–substratum adhesion while negatively regulating cell–cell adhesion. *J. Cell. Biochem.* 2008, 103:972–985.
- Farooqui, R., Zhu, S., Fenteany, G. Glycogen synthase kinase-3 acts upstream of ADP-ribosylation factor 6 and Rac1 to regulate epithelial cell migration. *Exp. Cell Res.* 2006, 312:1514–1525.
- Kahsai, A.W., Zhu, S., Wardrop, D.J., Lane, W.S., Fenteany, G. Quinocarmycin analog DX-52-1 inhibits cell migration and targets radixin, disrupting interactions of radixin with actin and CD44. *Chem. Biol.* 2006, 13:973–983.
- Stossel, T.P., Fenteany, G., Hartwig, J.H. Cell surface actin remodeling. *J. Cell Sci.* 2006, 119:3261–3264.
- Farooqui, R., Fenteany, G. Multiple rows of cells behind an epithelial wound edge extend cryptic lamellipodia to collectively drive cell-sheet movement. *J. Cell Sci.* 2005, 118:51–63.
- Zhu, S., Mc Henry, K.T., Lane, W.S., Fenteany, G. A chemical inhibitor reveals the role of Raf kinase inhibitor protein in cell migration. *Chem. Biol.* 2005, 12:981–991.
- Altan, Z.M., Fenteany, G. c-Jun N-terminal kinase regulates lamellipodial protrusion and cell sheet migration during epithelial wound closure by a gene expression-independent mechanism. *Biochem. Biophys. Res. Commun.* 2004, 322:56–67.
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- Ankala, S.V., Fenteany, G. Selective deprotection of either aryl or alkyl silyl ethers from aryl, alkyl bis-silyl ethers. *Tetrahedron Lett.* 2002, 43:4729–4732.
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- Corey, E.J., Li, W.Z., Nagamitsu, T., Fenteany, G. The structural requirements for inhibition of proteasome function by the lactacystin-derived  $\beta$ -lactone and synthetic analogs. *Tetrahedron* 1999, 55:3305–3316.
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- Fenteany, G., Standaert, R.F., Reichard, G.A., Corey, E.J., Schreiber, S.L. Fenteany, G., Inoue, T., Bahtiyar, G., Sacerdote, A. Association of vitamin D depletion with normalization of elevated serum 17-OH progesterone. *J. Med. Case Rep.*, 2017, 3:22.
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- Wang, Z., Castellano, S., Kinderman, S.S., Argueta, C.E., Beshir, A.B., Fenteany, G., Kwon, O. Diversity through a branched reaction pathway: Generation of a library of sixteen multicyclic scaffolds and identification of antimigratory agents. *Chem. Eur. J.* 2011, 17:649–654.
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- Ménoret, A., McAleer, J.P., Ngoi, S.-M., Ray, S., Eddy, N.A., Fenteany, G., Lee, S.-J., Rossi, R.J., Mukherji, B., Allen, D.L., Chakraborty, N.G., Vella, A.T. The oxazolidinone derivative locostatin induces cytokine appeasement. *J. Immunol.* 2009, 183:7489–7496.
- Beshir, A.B., Guchhait, S.K., Gascon, J.A., Fenteany, G. Synthesis and structure–activity relationships of metal–ligand complexes that potently inhibit cell migration. *Bioorg. Med. Chem. Lett.* 2008, 18:498–504.
- Kahsai, A.W., Cui, J., Kaniskan, H.Ü., Garner, P.P., Fenteany, G. Analogs of tetrahydroisoquinoline natural products that inhibit cell migration and target galectin-3 outside of its carbohydrate-binding site. *J. Biol. Chem.* 2008, 283:24534–24545.
- Mc Henry, K.T., Montesano, R., Zhu, S., Beshir, A.B., Tang, H.H., Yeung, K.C., Fenteany, G. Raf kinase inhibitor protein positively regulates cell–substratum adhesion while negatively regulating cell–cell adhesion. *J. Cell. Biochem.* 2008, 103:972–985.
- Farooqui, R., Zhu, S., Fenteany, G. Glycogen synthase kinase-3 acts upstream of ADP-ribosylation factor 6 and Rac1 to regulate epithelial cell migration. *Exp. Cell Res.* 2006, 312:1514–1525.
- Kahsai, A.W., Zhu, S., Wardrop, D.J., Lane, W.S., Fenteany, G. Quinocarmycin analog DX-52-1 inhibits cell migration and targets radixin, disrupting interactions of radixin with actin and CD44. *Chem. Biol.* 2006, 13:973–983.
- Stossel, T.P., Fenteany, G., Hartwig, J.H. Cell surface actin remodeling. *J. Cell Sci.* 2006, 119:3261–3264.
- Farooqui, R., Fenteany, G. Multiple rows of cells behind an epithelial wound edge extend cryptic lamellipodia to collectively drive cell-sheet movement. *J. Cell Sci.* 2005, 118:51–63.
- Zhu, S., Mc Henry, K.T., Lane, W.S., Fenteany, G. A chemical inhibitor reveals the role of Raf kinase inhibitor protein in cell migration. *Chem. Biol.* 2005, 12:981–991.
- Altan, Z.M., Fenteany, G. c-Jun N-terminal kinase regulates lamellipodial protrusion and cell sheet migration during epithelial wound closure by a gene expression-independent mechanism. *Biochem. Biophys. Res. Commun.* 2004, 322:56–67.
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- Fenteany, G., Zhu, S. Small-molecule inhibitors of actin dynamics and cell motility. *Curr. Topics Med. Chem.* 2003, 3:593–616.
- Ankala, S.V., Fenteany, G. Selective deprotection of either aryl or alkyl silyl ethers from aryl, alkyl bis-silyl ethers. *Tetrahedron Lett.* 2002, 43:4729–4732.
- Mc Henry, K.T., Ankala, S.V., Ghosh, A.K., Fenteany, G. A non-antibacterial oxazolidinone derivative that inhibits epithelial cell sheet migration. *ChemBioChem* 2002, 3:1105–1111.
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- Corey, E.J., Li, W.Z., Nagamitsu, T., Fenteany, G. The structural requirements for inhibition of proteasome function by the lactacystin-derived  $\beta$ -lactone and synthetic analogs. *Tetrahedron* 1999, 55:3305–3316.
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- Fenteany, G., Standaert, R.F., Reichard, G.A., Corey, E.J., Schreiber, S.L. A  $\beta$ -lactone related to lactacystin induces neurite outgrowth in a neuroblastoma cell line and inhibits cell cycle progression in an osteosarcoma cell line. *Proc. Natl. Acad. Sci. USA* 1994, 91:3358–3362.
- Fenteany, G., Morse, D.E. Specific inhibitors of protein synthesis do not block RNA synthesis or settlement of planktonic larvae in a marine gastropod mollusc (*Haliotis rufescens*). *Biol. Bull.* 1993, 184:6–14.
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## PATENTS

Compound libraries made through phosphine-catalyzed annulation/Tebbe/Diels-Alder reactions

US 862403: publication date: Jan. 7, 2014; filing date: Nov. 9, 2012; priority date: Nov. 9, 2011; also published as: US20130143916; Inventors: Ohyun Kwon, Gabriel Fenteany

Inhibitors of animal cell motility and growth

US 7390826: publication date: Jun. 24, 2008; filing date: Oct. 26, 2005; priority date: Jun. 12, 2002; also published as US20030236290, US20060063935, WO2003106437A1; Inventors: Gabriel Fenteany, Arun K. Ghosh, Kevin McHenry, Sudha Ankala, Sarosh Anjum, Shoutian Zhu

Lactacystin analogs

US 6645999: PCT number: PCT/US1996/005072; publication date: Nov. 11, 2003; filing date: Apr. 12, 1996; also published as: CA2217817A1, CN1151787C, CN1187769A, DE69636902D1, DE69636902T2, EP0820283A1, EP0820283A4, EP0820283B1, US5756764, US6147223, US6214862, US6335358, US6458825, WO1996032105A1; Inventors: Gabriel Fenteany, Robert F. Standaert, Timothy F. Jamison, Stuart L. Schreiber

## AWARDS AND HONORS

- |             |   |
|-------------|---|
| 2007        | University of Connecticut Undergraduate Student Government Educator of the Year Nominee |
| 2002 – 2006 | American Cancer Society Research Scholar  |
| 1999 – 2000 | Life Sciences Research Foundation Postdoctoral Fellowship                               |
| 1999        | National Institutes of Health Postdoctoral Fellowship (Declined)                        |
| 1999        | American Lung Association Postdoctoral Fellowship (Declined)                            |

1991 – 1994 National Defense Science and Engineering Graduate Fellowship  
1990 Elections to Phi Beta Kappa and Golden Key National Honor Societies  
1985 Alice Tweed Tuohy Honors Scholarship, Scholarship Foundation of Santa Barbara

## **FORMAL GRANT REVIEWING**

2011 National Science Foundation – Division of Chemistry  
2009 National Institutes of Health – Synthetic and Biological Chemistry B Study Section, *Ad Hoc* Member  
2009 National Science Foundation – Integrative Organismal Systems – Animal Developmental Mechanisms  
2009 National Institutes of Health, Stage 1 Reviewer for RC1 Challenge Grants  
2008 American Heart Association Bioengineering 2 Peer Review Study Group  
2007 – 2008 National Science Foundation – Molecular and Cellular Biosciences  
2006 National Institutes of Health – Synthetic and Biological Chemistry B Study Section, *Ad Hoc* Member  
2003 – 2006 American Cancer Society  
2003 Vahlteich Endowment Research Fund