

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Cole, Philip Arthur	POSITION TITLE E.K. Marshall and Thomas H. Maren Professor
eRA COMMONS USER NAME Pcole1	

EDUCATION/TRAINING (<i>Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.</i>)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
Yale University, New Haven, CT	B.S.	1980-1984	Chemistry
Cambridge University (UK)	C.P.G.S.	1984-1985	Chemistry
Johns Hopkins Univ. Sch. Med., Baltimore, MD	M.D.	1985-1991	Medicine
Johns Hopkins Univ. Sch. Med., Baltimore, MD	Ph.D.	1985-1991	Bioorganic Chemistry

Positions and Employment

1984-1985 Churchill Scholar, Prof. Sir Alan Battersby, Dept. of Chemistry, University of Cambridge, Cambridge, England

1985-1991 Graduate Student, Prof. C.H. Robinson, Dept. of Pharmacology and Molecular Sciences, Johns Hopkins School of Medicine, Baltimore, MD

1993-1996 Postdoctoral Fellow, Prof. C.T. Walsh, Dept. of Biological Chemistry and Molecular Pharmacology, Harvard Medical School, Boston, MA

1996-1999 Assistant Professor, Head of Laboratory, Laboratory of Bioorganic Chemistry, Rockefeller University, New York, NY

1999-present E.K. Marshall and Thomas H. Maren Professor and Director, Dept. of Pharmacology and Molecular Sciences, Johns Hopkins School of Medicine, Baltimore, MD

Other Experience

1991-1993 Resident, Department of Medicine, Brigham and Women's Hospital, Boston, MA

1993-1996 Clinical Fellow, Dept. of Endocrinology, Brigham and Women's Hospital, Boston, MA

Honors and Professional Activities

Winston Churchill Scholarship (1984-1985, University of Cambridge, Churchill College); Medical Scientist Training Program Grant Award (1985-1991, NIH, Johns Hopkins); Michael A. Shanoff Research Award (1990, Johns Hopkins School of Medicine); Howard Hughes Physician-Researcher Postdoctoral Fellowship (1993-1996); Board Certification-American Board of Internal Medicine (1994-present); Damon Runyon Scholar Award (1997); Irma Hirschl Scholar Award (1998); Burroughs Wellcome New Investigator Award in Toxicology (1998); Ellison Medical Foundation New Scholar on Aging (1998); Enzyme Advisory Board, Millenium Pharmaceuticals (Cambridge, MA; 2000-2002); Editorial Board-Biomed Central-Chemical Biology (2001-present); Editorial Board-Bioorganic Chemistry (2002-present); Editorial Board-Biomed Central-Biology (2003-present); Editorial Board-Letters in Drug Design&Discovery; Board of Scientific Consultants-Memorial Sloan Kettering Cancer Center (2002-present); Scientific Advisory Board-Structural Genomix (2002-present); Nominating Committee, American Chemical Society Biological Division (2005-2008); American Society of Clinical Investigation (2006-present); Maryland Daily Record Top Innovator of the Year (2006); Co-chair Gordon Res. Conf. Enzymes, Coenzymes, Metabolic Pathways (2009)

Recent Selected Publications (out of >125)

Zheng, Y., Karanam, B., Cebrat, M., Buck, D., Guidez, F., Zelent, A., Alani, R. M., Cole, P. A. (2005) Synthesis and Evaluation of a Potent and Selective Cell-permeable p300 Histone Acetyltransferase Inhibitor J. Am. Chem. Soc. **127**, 17182-17183.

Qiao, Y., Molina, H., Pandey, A., Zhang, J., Cole, P. A. (2006) Chemical Rescue of a Mutant Enzyme in Living

Cells Science **311**, 1293-1297.

- Levinson, N. M., Kuchmnet, O., Shen, K., Young, M. A., Koldobskiy, M., Karplus, M., Cole, P. A., Kuriyan, J. (2006) A Src-like Inactive Conformation in the Abl Tyrosine Kinase Domain, PLoS Biology **4**, 144.
- Culhane, J. C., Szewczuk, L. M., Liu, X., Da, G., Marmorstein, R., Cole, P. A. (2006) A Mechanism-based Inactivator for Histone Demethylase LSD1 J. Am. Chem. Soc. **128**, 4356-4357.
- Schwarzer, D., Zhang, Z., Zheng, W., Cole, P. A. (2006) Negative Regulation of a Tyrosine Phosphatase by Tyrosine Phosphorylation J. Am. Chem. Soc. **128**, 4192-4193.
- Bose, R., Molina, H., Patterson, A. S., Bitok, J. K., Periaswamy, B., Bader, J. S., Pandey, A., Cole, P. A. (2006) Phosphoproteomic Analysis of Her2/neu Signaling and Inhibition Proc. Natl. Acad. Sci. USA **26**, 9773-9778.
- Zhang, X., Gureasko, J., Shen, K., Cole, P. A., Kuriyan, J. (2006) An Allosteric Mechanism for the Activation of the Kinase Domain of the Epidermal Growth Factor Receptor Cell **125**, 1137-1149.
- Karanam, B., Jiang, L., Wang, L., Kelleher, N. L., Cole, P. A. (2006) Kinetic and Mass Spectrometric Analysis of p300 HAT Domain Autoacetylation, J. Biol. Chem. **281**, 40292-40301.
- Karanam, B., Wang, L., Wang, D., Liu, X., Marmorstein, R., Cotter, R., Cole, P. A. (2007) Multiple Roles for Acetylation in the Interaction of p300 HAT with ATF-2, Biochemistry **46**, 8207-8216.
- Szewczuk, L. M., Culhane, J. C., Yang, M., Majumdar, A., Yu, H., Cole, P. A. (2007) Mechanistic Analysis of a Suicide Inactivator of Histone Demethylase LSD1, Biochemistry **46**, 6892-6902.
- Yang, M., Culhane, J. C., Szewczuk, L. M., Gocke, C. B., Brautigam, C. A., Tomchick, D. R., Machius, M., Cole, P. A.*, Yu, H.* (2007) Structural Basis of Histone Demethylation by LSD1 Revealed by Suicide Inactivation Nature Struct. Mol. Biol. **14**, 535-539. (*co-corresponding)
- Yang, M., Culhane, J. C., Szewczuk, L. M., Jalli, P., Ball, H. L., Machius, M., Cole, P. A., Yu, H. (2007) Structural Basis for Inhibition of the LSD1 Histone Demethylase by the Antidepressant trans-2 Phenylcyclopropylamine Biochemistry **46**, 8058-8065.
- Kenneth, N. S., Ramsbottom, B. A., Gomez-Roman, N., Marshall, L., Zhang, J., Cole, P. A., White, R. J. (2007) Activation of Pol III Transcription by c-Myc Involves Selective Acetylation of Histone H3 and Recruitment of TRAPP, GCN5, and TFIIIB Proc. Natl Acad. Sci. USA **104**, 14917-14922.
- Hwang, Y., Thompson, P. R., Wang, L., Jiang, L., Kelleher, N. L., Cole, P. A. (2007) A Selective Chemical Probe for Coenzyme-A Requiring Enzymes Angewandte Chemie Int. Ed. **46**, 7621-7624.
- Szewczuk, L. M., Saldanha, S. A., Ganguly, S., Bowers, E. M., Javoroncov, M., Karanam, B., Culhane, J. C., Holbert, M. A., Klein, D. C., Abagyan, R., Cole, P. A. (2007) De novo Discovery of Serotonin N-acetyltransferase Inhibitors, J. Med. Chem. **50**, 5330-5338.
- Zhang, X., Pickin, K. A., Bose, R., Jura, N., Cole, P. A., Kuriyan, J. (2007) Inhibition of the EGF Receptor by Blockage of an Activating Kinase Domain Interface, Nature **450**, 741-744.
- Liu, X., Wang, L., Zhao, K., Thompson, P. R., Hwang, Y., Marmorstein, R., Cole, P. A. (2008) The Structural Basis of Protein Acetylation by the p300/CBP Transcriptional Coactivator, Nature **451**, 846-850.
- Qiu, Q., Tarrant, M.K., Lee, S.H., Satyamurthy, A., Bose, R., Banjade, S., Pal, A., Bornmann, W. G., Lemmon, M. A., Philip A. Cole, P. A., Leahy, D. J. (2008) Mechanism of Activation and Inhibition of the HER4/ErbB4 Kinase Structure **16**, 460-467.
- Levinson, N. M., Seeliger, M. A., Cole, P. A., Kuriyan, J. (2008) Structural Basis for the Recognition of c-Src by its Inactivator Csk Cell **134**, 124-134.
- Pickin, K. A., Chaudhury, S., Dancy, B. C. R., Gray, J. J., Cole, P. A. (2008) Analysis of Autophosphorylation of a Protein Kinase by Expressed Protein Ligation J. Am. Chem. Soc. **130**, 5667-5669.
- Liu, Y., Dentin, R., Chen, D., Hedrick, S., Ravnskaer, K., Schenk, S., Milne, J., Meyers, D. J., Cole, P., Yates, J., Olefsky, J., Guarente, L., Montminy, M. (2008) A fasting inducible acetylase/deacetylase switch modulates gluconeogenesis through activator-coactivator exchange Nature in press.
- Cole, P. A. (2008) Chemical Probes for Histone-Modifying Enzymes Nature Chem. Biol. in press.
- Szewczuk, L. M., Tarrant, M. K., Sample, V., Drury, W. J. III, Zhang, J., Cole, P. A. (2008) Analysis of Serotonin N-Acetyltransferase Regulation In Vitro and in Live Cells Using Protein Semisynthesis Biochemistry in press.
- Tang, Y., Holbert, M. A., Wurtele, H., Meeth, K., Rocha, W., Gharib, M., Jiang, E., Thibault, P., Verrault, A., Cole, P. A., Marmorstein, R. (2008) Fungal Rtt109/KAT11 Histone Acetyltransferase: an Unexpected Structural Homolog of Metazoan p300/CBP Nature Struct. Mol. Biol. **15**, 738-745.

RESEARCH SUPPORT – Philip A. Cole**ACTIVE**

RO1 CA74305 (Cole, PI)	04/01/97 – 03/31/12	3.84 calendar
NIH	\$177,293	
Chemical Approaches to Protein Phosphorylation		

This grant focuses on protein semisynthesis, bisubstrate analogs, and chemical rescue in the analysis of cell signaling.

RO1 GM62437 (Cole, PI)	02/01/01 – 01/31/09	2.88 calendar
NIH	\$166,880	
Mechanisms and Inhibition of Histone Acetyltransferases		

The major goal of this project is the design and synthesis of inhibitors for a variety of histone acetyltransferases and to determine the basis of HAT selectivity and regulation.

R01AG19186 (Cole, PI)	04/01/01 - 03/31/09	.96 calendar
NIH	\$114,294	
Serotonin N-Acetyltransferase Regulation and Inhibition		

The major goals are to design prodrug inhibitors of the title enzyme and elucidate the basis for regulation of this enzyme by light-mediated signaling pathways.

PENDING

RO1 GM62437 (Cole, PI)	02/01/09 – 01/31/13
NIH	
Histone Modification Mechanisms and Inhibition (competing renewal)	
Focuses mostly on histone demethylases and p300 mechanism	