BIOGRAPHICAL SKETCH

NAME Adrienne D. Cox	POSITION TITLE Associate Professor
eRA COMMONS USER NAME adricox	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
Pomona College, Claremont, CA	BA	1974	Zoology
Eastern Virginia Medical School, Norfolk, VA	PhD	1987	Biomedical Science

A. Positions and Honors

1979 - 1987	Graduate Student, Dept. of Microbiology & Immunology, Eastern Virginia Medical School, Norfolk, VA.
1988 - 1992	Postdoctoral Fellow, La Jolla Cancer Research Foundation, La Jolla, CA.
1992 - 1994	Research Assistant Professor, Department of Pharmacology, University of North Carolina at Chapel Hill, Chapel Hill, NC.
1994 - 2001	Assistant Professor, Departments of Radiation Oncology and Pharmacology, University of North Carolina at Chapel Hill, Chapel Hill, NC.
1993 - present	Member, Lineberger Comprehensive Cancer Center, University of North Carolina at Chapel Hill, Chapel Hill, NC.
2001 - present	Associate Professor, Departments of Radiation Oncology and Pharmacology, University of North Carolina at Chapel Hill, Chapel Hill, NC.
2003 - present	Head, Division of Molecular Radiobiology, Department of Radiation Oncology, University of North Carolina at Chapel Hill, Chapel Hill, NC.
Reviewer, grants:	Member, NCI study section BMCT; NCI SEPs (many various); Komen, DOD Breast Cancer, DOD Prostate Cancer, CBCRP.
Reviewer, editorial:	Nat. Med., MCB, Cancer Research, JBC, Oncogene, PNAS, and others.
Honors/awards:	National Merit Scholar, NSF graduate fellowship, NRSA postdoctoral fellowship, NIH/NCI training grant, NIH/NCI FIRST award, UNC-CH teaching excellence awards

Selected Publications:

Cox AD, Hisaka MM, Buss JE and Der CJ. (1992) Specific isoprenoid modification is required for the function of normal, but not oncogenic, Ras protein. Mol. Cell. Biol. 12: 2606-2615.

Kato K, Cox A.D, Hisaka MM, Graham SM, Buss JE and Der CJ. (1992) Isoprenoid addition to Ras protein is the critical modification for its membrane association and transforming activity. PNAS 89: 6403-6407.

Cox AD and Der CJ. (1992) Protein prenylation: more than just glue? Curr. Op. Cell Biol. 4: 1008-16.

Cox AD, Garcia AM, Westwick JK, Kowalczyk JJ, Lewis MD, Brenner DA and Der CJ. (1994) The CAAX peptidomimetic compound B581 specifically blocks farnesylated, but not geranylgeranylated or myristylated, oncogenic Ras signaling and transformation, J. Biol. Chem. 269: 19203-19206.

Cox AD and Der CJ. (1997) Farnesyltransferase inhibitors and cancer treatment: targeting simply Ras? BBA Rev. Cancer 1333: F51-F71.

Cox AD. (2001) Farnesyltransferase inhibitors: potential role in cancer treatment. Drugs 61: 1-10.

Fiordalisi JJ, Holly SP, Johnson RL II, Parise LV, Cox AD. (2002) A distinct class of dominant negative Ras mutants: cytosolic, GTP-bound Ras effector domain mutants that inhibit Ras signaling and transformation, and enhance cell adhesion. J. Biol. Chem. 277: 10813-10823.

Chiu VK, Bivona T, Hach A, Sajous JB, Silletti J, Weiner H, Johnson RJ II, Cox AD, Philips MR. (2002) Ras signaling on endoplasmic reticulum and Golgi. Nature Cell Biol. 4: 343-350.

Grana TM, Rusyn EV, Zhou H, Sartor CI, Cox AD. (2002) Ras mediates radioresistance through both PI3-K-dependent and Raf-dependent but MEK-independent signaling pathways. Cancer Res. 62: 4142-4150.

Cox AD and Der CJ. (2002) Farnesyltransferase inhibitors: promises and realities. Curr. Opin. Pharmacol. 2: 388-393.

Bivona TG, Perez De Castro I, Ahearn IM, Grana TM, Chiu VK, Lockyer PJ, Cullen PJ, Pellicer A, Cox AD and Philips MR. (2003) Phospholipase Cgamma activates Ras on the Golgi apparatus by means of RasGRP1. Nature. 424:694-8.

Fiordalisi JJ, Johnson RL 2nd, Weinbaum CA, Sakabe K, Chen Z, Casey PJ and Cox AD. (2003) High affinity for farnesyl transferase and alternative prenylation contribute individually to K-Ras4B resistance to farnesyl transferase inhibitors. J Biol Chem. 278: 41718-41727.

Grana TM, Sartor CI and Cox AD (2003) EGFR autocrine signaling in RIE-1 cells transformed by the Ras oncogene enhances radiation resistance. Cancer Res. 63:7807-7814.

Joyce PL and Cox AD (2003) Rac1 and Rac3 are targets for GGTase I inhibitor-mediated inhibition of signaling, transformation, and membrane ruffling. Cancer Res. 63:7959-7967.

Cox AD, Der CJ. (2003) The dark side of Ras: regulation of apoptosis. Oncogene 22:8999-9006.

Solski PA, Wilder RS, Rossman KL, Sondek J, Cox AD, Campbell SL, Der CJ. (2004 Requirement for carboxyl-terminal sequences in regulation of Ect2 guanine nucleotide exchange specificity and transformation. J Biol Chem. 279: 25226-33.

Kloog Y and Cox AD. (2004) Prenyl-binding domains: Potential targets for Ras inhibitors and anti-cancer drugs. Seminars Cancer Biol. 14: 253-61.

Shutes, AS, Berzat AC, Cox AD and Der CJ. (2004) Atypical mechanism of regulation of the Wrch-1 Rho family GTPase. Current Biol. 14: 2052-6.

Lim K-H, Baines AT, Fiordalisi JJ, Shipitsin M, Feig LA, Cox AD, Der CJ and Counter CM. (2005) Activation of RalA is critical for Ras-induced tumorigenesis of human cells. Cancer Cell 7: 533-45.

Berzat AC, Buss JE, Chenette EJ, Weinbaum CA, Shutes A, Der CJ, Minden A, Cox AD. (2005) Transforming activity of the Rho family GTPase, Wrch-1, a Wnt-regulated Cdc42 homolog, is dependent on a novel carboxyl-terminal palmitoylation motif. J Biol Chem. 280: 33055-65.

Keller PJ, Gable CM, Wing MR and Cox AD. (2005) Rac3-mediated transformation requires multiple effector pathways. Cancer Res. 65: 9883-90.

Capell BC, Erdos MR, Madigan JP, Fiordalisi JJ, Varga R, Conneely K, Gordon LB, Der CJ, Cox AD and Collins FS. (2005) Inhibiting farnesylation of progerin prevents the characteristic nuclear blebbing of Hutchinson-Gilford progeria syndrome. PNAS 36: 12879-84.

Keller PJ, Fiordalisi JJ, Berzat AC and Cox AD. (2005) Visual monitoring of post-translational lipid modifications using EGFP-GTPase probes in live cells. Methods 37: 131-37.

Baines AT, Lim K-H, Shields JM, Lambert JM, Counter CM, Der CJ and Cox AD. (2005) Use of retrovirus expression of interfering RNA to determine the contribution of activation K-Ras and Ras effector expression to tumor growth. Methods Enzymol., in press.

Berzat AC, Brady DC, Fiordalisi JJ and Cox AD. (2005) Using inhibitors of prenylation to block localization and transforming activity. Methods Enzymol., in press.

Fiordalisi JJ, Keller PJ and Cox AD. (2006) PRL tyrosine phosphatases regulate Rho family GTPases to promote invasion and motility. Cancer Res., in press.

Bivona TG, Quatela SE, Bodemann BO, Ahearn IM, Soskis MJ, Miura J, Wiener HH, Wright L, Saba SG, Yim D, Fein A, Pérez de Castro I, Thompson CB, Cox AD and Philips MR. (2006) Phosphorylation of K-Ras by PKC regulates a farnesyl-electrostatic switch that promotes association with Bcl-XL on mitochondria and induces apoptosis. Molecular Cell, in press (Feb. 17 issue).

C. Research support ongoing or completed in the last three years:

05/05 – 04/10 Inhibitors of Rho Function as Novel Cancer Therapeutics, NIH U19-CA67771-11 (Sebti), Co-Program Leader

The goal of these studies is to characterize which Rho GTPases are targets of small molecule therapeutics, and to develop novel inhibitors of RhoGEFs and Rho effectors for anticancer treatment.

08/05 – 07/07 Development of carbon nanotube field emission electron microbeam array for single cell irradiation, NC Biotechnology Center (Chang), Co-Principal Investigator

The goal of these studies is to provide proof of principle for live cell, real time irradiations for evaluation of cellular responses to ionizing radiation.

12/04 - 11/09 Biological activity of Ras oncogenes, NIH R01-CA042978 (Der), Co-Investigator

The goal of these studies is to determine the role of carboxymethylation and non-Raf effectors in Ras signaling and transformation.

07/04 - 06/09 Protein prenylation, oncogenesis and novel therapeutics, NIH R01-CA109550 (Cox), Principal Investigator

The goal of these studies is to characterize the consequences of protein prenylation and palmitoylation in the attachment of proteins to membranes, and their roles in promoting oncogenic growth.

07/03 - 06/08 Rho family proteins and malignant transformation, NIH, R01-CA63071 (Der), Co-PI

The goal of these studies is to evaluate the involvement of novel members of the Rho family of GTPases in oncogenesis by Ras and Wnt, and the possibility that they are targets of farnesyltransferase inhibitors.

09/02 -09/03 Characterization of candidate geranylgeranyltransferase inhibitors in cell-based assays, PPD Discovery (Cox), Principal Investigator

The goal of these studies was to determine the potency, selectivity, cell-permeability and toxicity of potential lead compounds for geranylgeranyltransferase inhibitors by using cell-based assays on physiologically relevant GGTI targets.

01/02 - 12/03 Functional consequences of oncogenically mutated K-Ras in pancreatic cancer, Lustgarten Foundation for Pancreatic Cancer Research, LF01-56 (Cox), Principal Investigator

The goal of these studies was to determine the biological relevance of the presence of activating mutations in the K-Ras oncogene that are found in up to 90% of pancreatic cancers, by examining the consequences to downstream signaling and tumorigenicity.

09/00 - 08/05 Geranylgeranyltransferase inhibitors and cancer therapy, NIH, NCDDG U19-CA667771-06 (Sebti), Project Leader

The goal of these studies was to determine the physiological importance of R-Ras, TC21, Rac1, RhoA and CDC42 as targets of GGTIs, and to identify genes whose expression is altered by GGTI-mediated inhibition of protein geranylgeranylation and cellular proliferation.