BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
H. Shelton Earp	**Director, UNC Lineberger Comprehensive Cancer Center; Professor, Medicine and Pharmacology**
eRA COMMONS USER NAME **Shelton_Earp**	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
Johns Hopkins University, Baltimore, MD	A.B.	1966	Pre-med
University of North Carolina Chapel Hill, Chapel Hill, NC	M.D.	1970	Medicine

A. Positions and Honors

Professional and Research Experience

1970-1971 Internship, Straight Medical Internship, Vanderbilt
1971-1974 Major - U.S. Army, Research Investigator
1974-1975 Junior Assistant Resident, Medicine, University of North Carolina
1975-1977 Fellowship, Endocrinology, University of North Carolina
1977-1982 Assistant Professor, Medicine; Assistant Director, UNC Lineberger Comp. Cancer Center
1982-1988 Associate Professor, Medicine, Associate Director, UNC Lineberger Comp. Cancer Center
1988-1997 Professor, Medicine, Pharmacology; Deputy Director, UNC Lineberger Comp. Cancer Center
1997-present Director, UNC Lineberger Comprehensive Cancer Center, Lineberger Professor of Cancer Research, Professor of Medicine and Pharmacology

Activities and Awards

Association of American Cancer Institutes: President (2005-2007), President-Elect (2003-2005), Board of Directors (2001-); NCI: Board of Scientific Advisors (2002-2007); IRG-A: NCI Cancer Centers Core Support Review Committee (1995-1999); American Cancer Society: Cell and Developmental Biology Study Section (1989-1993), Chair (1990-93).

B. Selected peer-reviewed publications (in chronological order) *(from total of 116)*

Wong ST, Winchell LF, McCune BK, Earp HS, Teixido J, Massague J, Herman B and Lee DC. The TGF-α precursor expressed on the cell surface binds to the EGF receptor on adjacent cells, leading to signal transduction. Cell, 56(3):495-506, 1989.

Katagiri T, Ting JP-Y, Dy R, Prokop C, Cohen P and Earp HS. Tyrosine phosphorylation of a c-Src-like protein is increased in membranes of CD4-, CD8- T lymphocytes from lpr/lpr mice. **Mol Cell Biol**, 9(11):4914-4922, 1989.

Petch LA, Harris J, Raymond VW, Blasband A, Lee DC and Earp HS. A truncated, secreted form of the epidermal growth factor receptor is encoded by an alternatively spliced transcript in normal rat tissue. **Mol Cell Biol**, 10(6):2973-2982, 1990.

Huckle WR, Prokop CA, Dy RC, Herman B and Earp S. Angiotensin II Stimulates Protein-Tyrosine Phosphorylation In A Calcium-Dependent Manner. **Mol Cell Biol**, 10(12):6290-6298, 1990.

O'Bryan JP, Frye RA, Cogswell PC, Neubauer A, Kitch B, Prokop C, Espinosa III R, Le Beau MM, Earp HS and Liu ET. axl, a transforming gene isolated from primary human myeloid leukemia cells, encodes a novel receptor tyrosine kinase. **Mol Cell Biol**, 11(10):5016-5031, 1991.

Kornberg LJ, Earp HS, Turner CE, Prockop C and Juliano RL. Signal transduction by integrins: increased protein tyrosine phosphorylation caused by clustering of β1 integrins. **Proc Nat Acad Sci USA**, 88(19):8392-8396, 1991.

Kornberg L, Earp HS, Parsons JT, Schaller M and Juliano RL. Cell adhesion or integrin clustering increases phosphorylation of a focal adhesion-associated tyrosine kinase. J Biol Chem, 267(33):23439-23442, 1992.

Luetteke NC, Phillips HK, Qiu TH, Copeland NG, Earp HS, Jenkins NA and Lee DC. The mouse *waved*-2 phenotype results from a point mutation in the EGF receptor tyrosine kinase. **Gene Dev**, 8(4):399-413, 1994.

Graham DK, Dawson TL, Mullaney DL, Snodgrass HR and Earp HS. Cloning and mRNA expression analysis of a novel human protooncogene, c-*mer.* **Cell Growth Diff**, 5(6):647-657, 1994.

Earp HS, Dawson TL, Li X and Yu H. Heterodimerization and functional interaction between EGF receptor family members: a new signaling paradigm with implications for breast cancer research, **Breast Cancer Res Treat**, 35:115-132, 1995.

Graham DK, Bowman GW, Dawson TL, Stanford WL, Earp HS and Snodgrass HR. Cloning and developmental expression analysis of the murine c-mer tyrosine kinase. **Oncogene**, 10:2349-2359, 1995.

Zohn I, Yu H, Li X, Cox A and Earp HS. Angiotensin II stimulates calcium-dependent activation of c-Jun N-terminal kinase. **Mol Cell Biol**, 15:6160-6168, 1995.

Earp HS, Huckle WR, Dawson TL, Li X, Graves L and Dy R. Angiotensin II activates at least two tyrosine kinases in rat liver epithelial cells: Separation of the major calcium-regulated tyrosine kinase from p125FAK. **J Biol Chem**, 270:28440-28447, 1995.

Yu H, Li X, Marchetto G, Dy R, Hunter D, Calvo B, Dawson T, Wilm M, Anderegg R, Graves L and Earp HS. Activation of a novel calcium-dependent protein-tyrosine kinase: Correlation with c-Jun N-terminal kinase but not mitogen-activated protein kinase activation. **J Biol Chem**, 271:29993-29998, 1996.

Li X, Yu H, Graves LM and Earp HS. Protein kinase C and protein kinase A inhibit calcium-dependent but not stress dependent c-Jun N-terminal kinase activation in rat liver epithelial cells. **J Biol Chem**, 272:14996-15002, 1997.

Li X, Hunter D, Morris J, Haskill J S and Earp HS. A calcium-dependent tyrosine kinase splice variant in human monocytes: Activation by a two-stage process involving adherence and a subsequent intracellular signal. **J Biol Chem**, 273:9361-9364, 1998.

Li X, Lee JW, Graves LM and Earp HS. Angiotensin II stimulates ERK via two pathways in epithelial cells: protein kinase C suppresses a G-protein coupled receptor-EGF receptor transactivation pathway. **EMBO J**, 17:2574-2583, 1998.

Camenisch T, Koller B, Earp HS and Matsushima G. A novel receptor tyrosine kinase, Mer, inhibits TNF-alpha production and lipopolysaccharide-induced endotoxic shock. **J Immunology,** 162:3498-3503, 1999.

LiX, Dy R, Cance W, Graves L and Earp HS. Interactions between two cytoskeleton-associated tyrosine kinases: CADTK and FAK. **J Biol Chem**, 274, 13, 8917-8924, 1999.

Lu Q, Gore M, Zhang Q, Camenisch T, Boast S, Casagranda F, Lai C, Skinner M, Klein R, Matsushima G, Earp H, Goff S and Lemke G. Receptor tyrosine kinases of the tyro 3 family are essential regulators of mammalian spermatogenesis. **Nature**, 398, 723-728, 1999.

Graves LM, Guy HI, Kozlowski P, Huang M, Lazarowski E, Pope RM, Collins MA, Dahlstrand EN, Earp HS and Evans DR. Regulation of carbamoyl phosphate synthetse and de novo uridine nucleotide synthesis by MAP kinase. **Nature**, 403:328-332, 2000.

Watson JM, Harding TW, Golubovskaya V, Morris JS, Hunter D, Li X, Haskill JS and Earp HS. Inhibition of the calcium-dependent tyrosine kinase (CADTK) blocks monocyte spreading and motility. **J Biol Chem**, 276:3536-3542, 2001.

Scott RS, McMahon EL, Pop S, Reap EA, Caricchio R, Cohen PL, Earp HS and Matsushima GK. Phagocytosis and clearance of apoptotic cells is mediated by Mer. **Nature**, 411: 207-211, 2001

Sartor CI, Zhou H, Kozlowska E, Guttridge K, Kawata E, Calvo E, Caskey L, Harrelson J, Hynes N, Ethier S, Calvo B and Earp HS. HER4 mediates ligand-dependent antiproliferative and differentiation responses in human breast cancer cells. **Mol Cell Biol**, 21:4265-4275, 2001.

Guttridge KL, Luft JC, Dawson TL, Kozlowska E, Mahajan NP, Varnum B and Earp HS. Mer receptor tyrosine kinase signaling: prevention of apoptosis and alteration of cytoskeletal architechture without stimulation or proliferation. **J Biol Chem,** 277, 27: 24057-24066, 2002.

Cohen PL, Caricchio R, Abraham V, Camenisch TD, Jennette JC, Roubey RA, Earp HS, Matsushima G and Reap EA. Delayed apoptotic cell clearance and lupus-like autoimmunity in mice lacking the c-mer membrane tyrosine kinase. **J Exp Med**, 196(1): 135-140, 2002.

Reuther-Madrid JY, Kashatus D, Chen S, Li X, Westwick J, Davis RJ, Earp HS, Wang CY and Baldwin AS Jr. The p65/RelA subunit of NF-κB supresses the sustained, anti-apoptotic activity of Jun kinase induced by tumor necrosis factor. **Mol Cell Biol**, 22:8175-83, 2002.

Calvo BS, Levine AM, Marcos M, Collins OF, Iacocca MV, Caskey LS, Gregory CW, Lin Y, Whang YE, Earp HS and Mohler JL. Human epidermal receptor 2 expression in prostate cancer. **Clin Cancer Res**, 9:1087-97, 2003.

Mahajan NP and Earp HS. An SH2 domain-dependent, phosphotyrosine-independent interaction between Vav1 and the Mer receptor tyrosine kinase: a mechanism for localizing guanine nucleotide-exchange factor action. **J Biol Chem**, 278:42596-603, 2003.

Gardner OS, Dewar BJ, Earp HS, Samet JM and Graves LM. Dependence of preoxisome proliferators-activated receptor ligand-induced mitogen-activated protein kinase signaling on epidermal growth factor receptor trasnactivation. **J Biol Chem,** 278:46261-9, 2003.

Dees EC, McKinnon KP, Kuhns JJ, Chwastiak KA, Sparks S, Myers M, Collins EJ, Frelinger JA, Deventer H, Collichio F, Carey LA, Brecher ME, Graham M, Earp HS and Serody JS. Dendritic cells can be radpidly expanded ex vivo and safely administered in patients with metastatic breast cancer. **Cancer Immunol Immunother,** 53:777-85, 2004.

Zhou H, Kim YS, Peletier A, McCall W, Earp HS and Sartor CI. Effects of the EGFR/HER2 kinase inhibitor GW572016 on EGFR- and HER2-overexpressing breast cancer cell line proliferation, radiosensitization, and resistance. **Int J Radiat Oncol Biol Phys**, 58(2):344-52, 2004.

Li Y, Mahajan NP, Webster-Cyriaque J, Bhende P, Hong GK, Earp HS and Kenney S. C-mer induced by the Epstein-Barr virus immediate-early protein BRLF1. **J Virology**, 78(21):11778-11785, 2004.

Angelillo-Scherrer A, Bernier L, Flores N, Savi P, DeMol M, Schaeffer P, Herbert JM, Lemke G, Goff SP, Matsushima GK, Earp HS, Hoylaerts MF, Plaisance S, Conway EM, Collen D, Wehrle-Haller B and Carmeliet P. Role of Gas6 receptors in platelet signaling during thrombus stabilization and implications for antithrombotic therapy. **J Clin Invest**, 115(2):237-246, 2005.

Gregory CW, Whang YE, McCall W, Fei S, Liu Y, Pontuga L, French F, Wilson EM and Earp HS. Heregulin-induced activation of HER2 and HER3 increases androgen receptor transactivation and CWR-R1 human recurrent prostate cancer cell growth. **Clin Cancer Res**, 11(5):1704-1712, 2005.

Liu Y, Majumder S, McCall W, Sartor CI, Mohler JL, Gregory CW, Earp HS and Whang Y. Inhibition of HER-2/neu kinase impairs androgen receptor recruitment to the androgen responsive enhancer. **Cancer Res**, 65(8):1-6, 2005.

Mahajan, N., Whang, Y., Mohler, J., and Earp, H.S. Activated tyrosine kinase Ack1 promotes prostate tumorigenesis: Role of Ack1 in polyubiquitination of tumor suppressor Wwox. **Cancer Res**, 65:10514-10523, 2005.

C. Research Support

Direct Support for PI Laboratory

1-R01-CA112553-01 (Earp, PI) 04/06 – 03/11
An Anti-Proliferative Role for HER4 in Breast Cancer
National Institutes of Health
This grant's objectives are to define the unique signaling capabilities that distinguish HER4 from EGFR, HER2, and HER3 and to elucidate the intracellular, "tumor suppressor" pathways by which HER4 promulgates its anti-proliferative and/or differentiation effects.
Role: Principal Investigator.

(Earp, PI) 7/1/98 – 10/1/05
Clinical and Genetic Studies of Breast Cancer
Breast Cancer Research Foundation

Grants to Dr. Earp as Director of the Lineberger Center

5-P30-CA16086-29 (Earp, PI) 12/04 – 11/09
UNC Lineberger Comprehensive Cancer Center, Center Core Support Grant
National Cancer Institute
Program funds to support the UNC Lineberger Cancer Center administration, core facilities and program endeavors.
Role: Principal Investigator

1-P50-CAS8223 (Earp, PI) 10/01 – 7/06
National Cancer Institute
UNC Breast Cancer SPORE
The UNC Breast Cancer SPORE promotes novel translational breast cancer research in population science, clinical/translational science, gene/molecular discovery, and other relevant areas.
Role: Principal Investigator

1-U56-CA92075 (Earp, PI) 5/01 - 4/06
National Cancer Institute
NCCU/UNC Lineberger Partnership in Cancer Research
The Partnership will establish a mutually beneficial collaboration between these two institutions to promote cancer research that focuses on minority health disparities in cancer and that will develop cancer research at NCCU and its BBRI.
Role: Principal Investigator

Completed

1-RO1-CA81503 (Earp, PI) 4/99 – 1/05
National Cancer Institute
CADTK Function in Normal and Neoplastic Cells
Define functional differences and interaction between two cytoskeletal-associated kinases, particularly in epithelial cells in which both are expressed.
Role: Principal Investigator

2-R01-CA49240-10 (Earp, PI) 7/96 – 6/01
National Cancer Institute
Axl Receptor Biology: Transformation and Signaling
Define the interactions and the processing of the Axl receptor and dissect the role of Axl/Gas6 in breast carcinogenesis.
Role: Principal Investigator

DAMD17-96-1-6015 (Earp, PI) 7/96 – 6/00
US Army Medical Research
Actions and Substrates for the HER4 Tyrosine Kinase in Breast Cancer
Identify specific HER4 phosphotyrosine substrates, adapter molecules and intracellular signaling pathways.
Role: Principal Investigator