

BIOGRAPHICAL SKETCH

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NAME Suzanne A.W. Fuqua	POSITION TITLE Professor		
eRA COMMONS USER NAME SFUQUA			
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
University of Houston	B.Sc	1976	Biology
University of Houston	M.Sc	1978	Microbiology
University of Texas Graduate School of Biomedical Sciences	Ph.D.	1982	Cancer Biology

A. Personal Statement

The main goal of my research is to determine the role of a specific somatic mutation in the estrogen receptor, called A908G or K303R ER α , in the clinical problem of hormone resistance. We were the first to discover the mutation in breast tumors, and have determined that the mutation alters many aspects of hormone action, including binding to coregulatory proteins, enhanced stability, estrogen hypersensitivity, and resistance to both the antiestrogen tamoxifen and the aromatase inhibitor anastrozole. A major goal of my laboratory is to develop novel therapeutics to target this mutation to restore hormone sensitivity, as well as identify other novel mechanisms of resistance.

B. Positions and Honors

1982-1983	Project Investigator, Department of Tumor Virology, The University of Texas System Cancer Center, M.D. Anderson Hospital and Tumor Institute, Houston, Texas
1983-1985	Senior Research Associate, Virology and Immunology Department, Southwest Foundation for Biomedical Research, San Antonio, Texas
1985-1986	Postdoctoral Fellow, Department of Medicine/Medical Oncology, University of Texas Health Science Center at San Antonio, San Antonio, Texas
1987-1990	Research Instructor, Department of Medicine/Medical Oncology, University of Texas Health Science Center at San Antonio, San Antonio, Texas
1990-1994	Assistant Professor, Department of Medicine/Medical Oncology, University of Texas Health Science Center at San Antonio, San Antonio, Texas
1994-1999	Associate Professor (tenured), Department of Medicine/Medical Oncology, University of Texas Health Science Center at San Antonio, Texas
1999-present	Professor (tenured), Breast Center, Depts. Medicine, and Molecular and Cellular Biology, Baylor College of Medicine, Houston, Texas
2007-2008	Distinguished Alumna and Professor, University of Texas Graduate School of Biomedical Sciences, Houston, Texas
2010	Dr. Susan Love Research Foundation's Army of Women Scientific Advisory Committee

C. Selected Publications (from a list of over 180 publications)

- Cui, Y., Niu, A., Pestell, R., Kumar, R., Curran, E.M., Liu, Y., and Fuqua, S.A.: Metastasis-associated protein 2 is a repressor of estrogen receptor alpha whose overexpression leads to estrogen-independent growth of human breast cancer cells. *Mol Endocrinol*, 20:2020-2035, 2006. PMID: 16645043.
- Cui, Y., Parra, I., Zhang, M., Hilsenbeck, S.G., Tsimelzon, A., Furukawa, T., Horii, A., Zhang, Z.Y., Nicholson, R.I., Fuqua, S.A.: Elevated expression of mitogen-activated protein kinase phosphatase 3 in breast tumors: a mechanism of tamoxifen resistance. *Cancer Res*, 66:5950-5959, 2006. PMID: 16740736.

3. Herynk, M.H., Parra, I., Cui, Y., Beyer, A., Wu, M-F, Hilsenbeck, S.G., and Fuqua, S.A.W.: Association between the estrogen receptor α A908G mutation and outcomes in invasive breast cancer. *Clin Cancer Res*, 13:3235-3243, 2007. PMID: 17545528.
4. Fuqua, S.A.W. (editor): *Hormone Receptors in Breast Cancer*, Cancer Treatment and Research, Springer, 2008.
5. De Amicis, F., Zupo, S., Panno, M.L., Malivindi, R., Giordano, F., Barone, I., Mauro, L., Fuqua, S.A., and Ando, S: Progesterone receptor β recruits a repressor complex to a half-PRE site of the estrogen receptor α gene promoter, *Mol Endocrinol*, 2009 [Jan 15 Epub ahead of print]. PMID: 19147702, PMCID: PMC2725766.
6. Giordano, C., Cui, Y., Barone, I., Ando, S., Mancini, M.A., Berno, V., and Fuqua, S.A. Growth factor-induced resistance to tamoxifen is associated with a mutation of estrogen receptor α and its phosphorylation at serine 305. *Breast Cancer Res and Treat*, 119:71-85, 2010 [Feb 11, 2009, Epub ahead of print]. PMID: 19205871
7. Barone, I., Cui, Y., Herynk, M.H., Corona-Rodriguez, A., Giordano, C., Selever, J., Beyer, A., Ando, S., and Fuqua, S.A.: Expression of the K303R estrogen receptor α breast cancer mutation induces resistance to an aromatase inhibitor via addiction to the PI3K/Akt kinase pathway, *Cancer Res*, 69:4724-32, 2009. PMID: 19487288. NIHMSID: NIHMS113413. PMCID: pending.
8. De Amicis, F., Thirugnanasampanthan, J., Cui, Y., Selever, J., Beyer, A., Parra, I., Weigel, N.L., Herynk, M.H., Tsimelzon, A., Lewis, M.T., Chamness, G.C., Hilsenbeck, S.G., Ando, S., and Fuqua, S.A.: Androgen receptor overexpression induces tamoxifen resistance in human breast cancer cells, *Breast Cancer Res and Treat*, 121:1-11, 2009 [Jun 17 Epub ahead of print.] PMID: 19533338.
9. Herynk, M.H., Lewis, M.T., Hopp, T.A., Medina, D., Corona-Rodriguez, A., Cui, Y., Beyer, A.R., and Fuqua, S.A.: Accelerated mammary maturation and differentiation, and delayed MMTV-Neu-induced tumorigenesis of K303R mutant ER α transgenic mice. *Oncogene*, 28:3177-3187, 2009. PMID: 19561644.
10. Vivacqua, A., Lappano, R., De Marco, P., Sisci, D., Aquila, S., De Amicis F., Fuqua, S.A., Ando, S., and Maggiolini, M.: G protein-coupled receptor 30 expression is up-regulated by EGF and TGF α in estrogen receptor α -positive cancer cells. *Mol Endocrinol*, 23:1815-1826, 2009. PMID: 19749156.
11. Herynk, M.H., Hopp, T., Cui, Y., Niu, A., Corona-Rodriguez, A., and Fuqua, S.A.: A hypersensitive estrogen receptor alpha mutation that alters dynamic protein interactions. *Breast Cancer Res Treat*, 122:381-393, 2010. [Oct 20, Epub ahead of print.] PMID: 19842032
12. Ma, Y., Fan, S., Hu, C., Meng, Q., Fuqua, S.A., Pestell, R.G., and Rosen, E.M. BRCA1 regulates acetylation and ubiquitination of estrogen receptor alpha. *Mol Endocrinol*, 24:76-90, 2010. PMID: 19887647. PMCID: PMC2802901.
13. Barone, I., Iacopetta, D., Covington, K.R., Cui, Y., Tsimelzon, A., Beyer, A., Ando, S., and Fuqua, S.A.: Phosphorylation of the mutant K303R estrogen receptor α at serine 305 affects aromatase inhibitor sensitivity, *Oncogene*, 29:2403-2414, 2010, [Jan 25 Epub ahead of print]. PMID: 20101208.
14. Ohshiro, L., Mudvari, P., Meng, Q-C., Rayala, S., Sahin, A.A., Fuqua, S.A., and Kumar, R.: Identification of a novel estrogen receptor- α variant and its upstream splicing regulator, *Mol Endocrinol*, 24:914-922, 2010 [Mar 19 Epub ahead of print] PMID:20304996
15. Barone, I., Brusco, L., and Fuqua, S.A.: Estrogen receptor mutations and changes in downstream gene expression and signaling, *Clin Cancer Res*, 16:2701-2708, 2010. PMID:20427689

D. Research Support

Ongoing Research Support

RO1 CA72038

09/01/1996-05/31/2013

NIH/NCI

A Hypersensitive ER α Mutant in Breast Cancer Hormone Resistance

The major goal of this project is to begin to evaluate the potential clinical significance of the K30R ER mutation as an indicator of poor prognosis in primary breast cancer treated with tamoxifen or aromatase inhibitors.

Role: PI

P50 CA58183

12/01/2007-11/30/2012

NIH/NCI

Role of Androgen Receptor in Breast Cancer Progression

The goal of this project is to determine whether AR overexpression in ER-positive breast cancer confers resistance to tamoxifen and aromatase inhibitors

Role: Project Director

T32 CA90221

07/01/2008-06/30/2013

NIH/NCI

Translational Breast Cancer Research Training Program

The major goal of this grant is to provide training opportunities in translational breast cancer research. The training includes laboratory training, interactions with physician scientists, and exposure to clinical breast cancer issues.

Role: PI

BC060007

04/16/2007-04/15/2011

Department of Defense

Molecular Classification of Genes Involved in African American Breast Cancer Progression

The major goal of this project is to obtain expression microarray profiles from breast tumors from African American women, and to compare these to profiles from Caucasian women to identify markers associated with aggressive disease.

Role: Co-PI

KG081694 (Brown)

12/09/2008–12/08/2013

Komen for the Cure - Promise

Using genomics and proteomics to develop effective therapies for ER-negative breast cancer

The main goals of this multi project grant are to identify the critical growth regulatory pathways in ER-negative breast cancers and to develop effective targeted therapy to treat these aggressive breast cancers.

Role: Project Director

KG100889 (Fuqua)

8/05/2010-8/04/2013

Komen for the Cure

Role of Dicer and BCRP in Hormone Resistance

The main goals are to determine how Dicer overexpression affects ER function and resistance, and to determine how Dicer affects BCRP and metastatic behavior.

Role: PI

RP100188 (Fuqua)

4/01/2010-3/31/2013

Cancer Prevention & Research Institute of Texas

Loss of Rho GDI α enhances metastasis and resistance to tamoxifen

The main goals are to determine how Rho GDI α knockdown affects ER function, and if knockdown affects MTA2 expression and metastasis.

Role: PI

RP101251 (Mangelsdorf)

8/01/10-7/31/2012

Cancer Prevention & Research Institute of Texas

Development of nuclear receptor and coregulatory profiles for diagnostic and therapeutic targeting of breast and lung cancers.

The main goals of this project are to discover and develop therapies based on nuclear receptors and coregulatory proteins.

Role: Co-Principal Investigator