

Curriculum Vitae



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Ph. D. (Columbia University 1988, New York)

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Current Position

2008 - Professor and Head, Biochemistry, NUS

Previous Positions

2004 - Professor, Dept of Microbiology and Immunology, Indiana University School of Medicine, Indianapolis, USA

1994 - 2003, Assistant Professor, Associate Professor, Yale University School of Medicine, New Haven CT, USA

1992 - 1994 Assistant Professor, Department of Biochemistry, Mount Sinai School of Medicine New York USA

1988 - 1991 Postdoctoral Fellow, Rockefeller University, New York, USA

Research Highlights

1985 - 1987 Discovered existence of ASF (alternative splicing factor).

1988 - 1991 Purified and molecular cloned STAT1 and STAT2, revealing the STAT gene family (PNAS, 89: 7840).

1992 Discovered the STAT Signaling Pathway (Cell, 70: 323).

1996 Revelation a pathway through which growth factors directly regulate cell growth and survival through STAT (Science, 272:719).

2001-2003 Revelation of mechanisms by which STAT3 can regulate innate immunity & inflammation (PNAS 100, 1879); inflammation induced chronic heart failure (PNAS 100, 12929); body homeostasis and obesity (PNAS 101, 4661) and dendritic cell development and immune tolerance (Immunity 19, 849).

2005 Revelation of a mechanism for development of sporadic Wilms' tumor (Cancer Research, 66: 8049).

2007 - now Demonstration of essential roles of endothelial STAT3 in tumor angiogenesis and metastasis and in epigenetic control of gene expression.

Current Research

- 1) Roles of STAT3 in epigenetic regulation of gene expression
- 2) Mechanisms of tumor angiogenesis & metastasis and cancer stem cells
- 3) Development of anti-tumor therapies by targeting the STAT3 and its regulated factors
- 4) Development and applications of stem cells therapies in major human diseases
- 5) Bioinformatics and proteomics on epigenetic regulation of gene expression

Selected publications (total 92):

- Fu, X.-Y, Schindler, C., Improta, T., Aebersold, R., and Darnell, J. E. (1992) The proteins of ISGF3, the IFN-alpha induced transcriptional activator, define a gene family involved in signal transduction. *Proc. Natl. Acad. Sci. USA*, 89:7840-7843.
- Fu XY. A transcription factor with SH2 and SH3 domains is directly activated by an interferon-alpha-induced cytoplasmic protein tyrosine kinase(s). (1992) *Cell*. 70(2):323-335.
- Chin EY, Kitagawa M, Su WS, You ZH, Iwamoto Y and Fu XY. Cell Growth Arrest and Induction of Cyclin Dependent Kinase Inhibitor p21WAF1/CIP1 Mediated by STAT1. *Science*. 1996 May 3; 272(5262):719-22.
- Su WCS, Kitagawa M, Xue N, Xie B, Garofalo S, Cho J, Deng C, Horton WA and Fu XY. Activation of Stat1 by mutant fibroblast growth-factor receptor in thanatophoric dysplasia type II dwarfism. (1997) *Nature*. Mar 20; 386(6622):288-92.
- Welte T, Leitenberg D, Dittel BN, al-Ramadi BK, Xie B, Chin YE, Janeway CA, Bothwell AL, Bottomly K, Fu XY. STAT5 interaction with the T cell receptor complex and stimulation of T cell proliferation. *Science*. 1999 Jan 8; 283(5399):222-5.
- Welte T, Zhang SS, Wang T, Zhang Z, Hesslein DG, Yin Z, Kano A, Iwamoto Y, Li E, Craft JE, Bothwell AL, Fikrig E, Koni PA, Flavell RA, Fu XY. STAT3 deletion during hematopoiesis causes Crohn's disease-like pathogenesis and lethality: a critical role of STAT3 in innate immunity. *Proc Natl Acad Sci U S A*. 2003 Feb 18; 100(4):1879-84.
- Laouar*, Y., Welte*, Fu, X-Y.** and Flavell, R. A. (2003) Flt3 ligand specifically requires STAT3 in the induction of dendritic cell development from hematopoietic stem cells *Immunity*, 19, 849–861. *These authors contribute equally to this work. ** The Corresponding Author.
- Gao Q, Wolfgang MJ, Neschen S, Katsutaro Morino, Tamas L. Horvath, Shulman G, & Fu XY. (2004). Disruption of Neural STAT3 Causes Obesity, Diabetes, Infertility and Thermal Dysregulation *Proc. Natl. Aca. Sci. USA* 101, 4661–4666.
- Rong Y, Cheng L, Chang Z, and Fu XY. WT1 and STAT3 synergistically promote cell proliferation: A possible mechanism in sporadic Wilms' tumor. (2006) *Cancer Research*. Aug 15; 66(16):8049-57.
- Kim BG, Li C, Qiao W, Mamura W, Kasperczak B, Anver M, Wolfraim L, Hong S, Mushinski E, Kim SG, Fu XY, Deng C and Letterio JJ. SMAD4 signaling in T cells is required for suppression of gastrointestinal cancer (2006). *Nature*. Jun 22; 441(7096):1015-9.
- Moh, A., Zhang, W., Wang, Z., Wang, J. and Fu X-Y (2008) STAT3 sensitizes insulin signaling by negatively regulating GSK-3 β . *Diabetes*. 57(5):1227-35. Epub 2008 Feb 11.
- Wegrzyn, J., Potla, R., Chwae, Y-J, Fu, X-Y., Larner, A. C etc (2008) A Novel Function of Stat3 in Cellular Respiration. *Science*, In Press