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Special Feature

Four outstanding young Chinese scientists received the 2013 Scholar Award from the US Chinese Anti-Cancer Association and the National Foundation for Cancer Research

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To facilitate and strengthen collaborations among cancer researchers and physicians in the United States and China, the US Chinese Anti-Cancer Association (USCACA) and the National Foundation for Cancer Research (NFCR) have established the Scholar Excellence Award for the USCACA-NFCR Scholar Exchange and Fellowship Program in Basic, Translational, and Clinical Studies. Since 2010, 10 young Chinese researchers and physicians have received the award for their outstanding achievements in cancer research accomplished while in the United States, as well as their continuing efforts in eradicating cancer after their return to China. This year, USCACA and NFCR selected 4 young scientists for their excellence in basic or clinical cancer research. Here, we are proud to introduce these 4 winners of the 2013 USCACA-NFCR Scholar Excellence Award:

The ceremony of the fourth USCACA-NFCR Scholar Excellent Award in Guangzhou, China, November 9, 2013. Awards were presented by Vice Presidents of the Sun Yat-sen University Cancer Center, NFCR Chief Science Officer, Associate Editor of JAMA, USCACA President, and USCACA Chairman of the Board. From left, Mu-Sheng Zeng, Boris Pasche, Michael Wang, Rui-Hua Xu, Weiwei Yang, Haizhong Feng, Yan Sun, Chenfeng Dong, Shi-Yuan Cheng, and Wei Zhang.

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- Dr. Yan Sun at the Department of Pathology, Tianjin Medical University Cancer Institute and Hospital, Tianjin;
- Dr. Weiwei Yang at the Laboratory of Cancer Metabolism, Institute of Biochemistry and Cell Biology, Shanghai Institutes for Sciences (SIBS), Chinese Academy of Sciences (CAS), Shanghai;
- Dr. Chenfang Dong at the Department of Pathology, Zhejiang University School of Medicine, Hangzhou; and
- Dr. Haizhong Feng at the Stem Cell Research Center, Renji Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai.

The awards were presented to these 4 awardees at the 3rd International Symposium on Oncology held at Baiyun Conference Center in Guangzhou during November 7–9, 2013.

We have invited each of these four awardees to contribute

a short essay summarizing their achievements in cancer research. As illustrated in their essays, these outstanding young scholars have received excellent training under their US mentors who are USCACA members. These talented young scientists have not only made impressive discoveries in the mechanisms underlying the causes or progression of human cancers, but also discovered new approaches for improving treatments for cancer patients. Our ultimate goal is to expedite novel cancer drug development by stimulating the translation of laboratory findings into novel cancer therapies, fostering collaborations in clinical cancer drug development, and sharing expert knowledge and medical practices between China and the United States.

Dr. Yan Sun, Department of Pathology, Tianjin Medical University Cancer Institute and Hospital, Tianjin

Dr. Yan Sun is currently an associate professor at the Department of Pathology, Tianjin Medical University Cancer Institute and Hospital, Tianjin. She received her BS degree in Clinical Medicine in 2001, her MS degree in Pathology in 2004, and her PhD degree in Oncology in 2007 from Tianjin Medical University.

In 2010, Dr. Yan Sun joined Dr. Wei Zhang's laboratory in the Department of Pathology at the MD Anderson Cancer Center, University of Texas, Houston, Texas, USA, as a New Century Talent of Tianjin Medical University. In Dr. Zhang's laboratory, Dr. Sun investigated a master microRNA-mRNA network that regulates epithelial-to-mesenchymal transition (EMT) in malignant ovarian cancer. Dr. Sun and her colleagues demonstrated that *miR-506* acts as a key node in this novel miRNA-mRNA network promoting EMT in ovarian cancer. This outstanding study was published in *Cancer Cell* and featured on the cover of the same issue of the journal. In a personalized medicine project on ovarian cancer in collaboration with The Cancer Genome Atlas project, Dr. Sun performed integrated analyses on the multidimensional genomic, epigenetic, and clinical data of 316 high-grade serous ovarian cancer cases. These analyses led to the discovery that *BRCA2* mutations are associated with improved survival and improved chemotherapy response compared with *BRCA* wild-type or *BRCA1* mutations. The study was published in *JAMA* and highlighted in an editorial comment of *Nature Reviews Cancer* and other high-impact journals. In another study on colorectal cancer, Dr. Sun showed that NGAL expression was elevated during the normal mucosa-adenoma-adenocarcinoma sequence, and high NGAL expression promoted tumor growth and liver metastasis in mouse models and was associated with poor survival for patients. These results were published in *Clinical Cancer Research*. During the two years with Dr. Wei Zhang, Dr. Sun participated in several projects and authored or co-authored in a total of 9 publications in *JAMA*, *Cancer Cell*, *Journal of Clinical Investigation*, *Clinical Cancer Research*, *Cancer*, and *PLoS One*. Dr. Sun's outstanding research was recognized by *The A. Lavoy Moore Endowment Fund* and *The Linda K. Manning Fellowship* at MD Anderson Cancer Center.

Dr. Yan Sun continued her translational cancer research after she returned to Tianjin Medical University Cancer Institute and Hospital in October, 2012. She successfully obtained a research grant from the National Science Foundation of China. She continues a number of collaborations in China and other countries. Recently, one of her collaborative projects with Dr. Wei Zhang on a novel chromosome instability inhibitor received joint support from the Sister Institution Network Fund at the MD Anderson Cancer Center and Tianjin Cancer Institute and Hospital. Dr. Sun is also a key investigator of the Total Cancer Care project by the Moffitt Cancer Center, Tampa, Florida, USA and Tianjin Medical University Cancer Institute and Hospital. Additionally, she has served as a member of the Standing Committee of the pathology group of Hepatocyte Cancer Committee in the Chinese Anti-Cancer Association. Dr. Sun was selected as a recipient of Outstanding Young College Teachers of Tianjin in 2012 and "131" Outstanding Talents of Tianjin in 2013.

Selected Publications:

1. Yang D, Sun Y*, Hu L, et al. Integrated analyses identify a master microRNA regulatory network for the mesenchymal subtype in serous ovarian cancer. Cancer Cell, 2013, 23:186–199. (*co-first author)
2. Sun Y, Yokoi K, Li H, et al. NGAL overexpression is correlated with colorectal adenoma-carcinoma sequence and tumor progression. Clin Cancer Res, 2011,17:4331–4340.
3. Yang D, Khan S, Sun Y, et al. Association of BRCA1 and BRCA2 mutations with survival, chemotherapy sensitivity, and gene mutator phenotype in patients with ovarian cancer. JAMA, 2011,306:1557–1565.
4. Sun Y, Sun B, Wang J, et al. Prognostic implication of SYT-SSX fusion type and clinicopathologic parameters for tumor-related death, recurrence and metastasis in synovial sarcoma. Cancer Sci, 2009,100:1018–1025.
5. Sun B, Sun Y*, Wang J, et al. The diagnostic value of SYT-SSX detected by RT-PCR and FISH for synovial sarcoma: a review and prospective study of 255 cases. Cancer Sci, 2008,99:1355–1361. (* corresponding author)

Dr. Weiwei Yang, Laboratory of Cancer Metabolism, Institute of Biochemistry and Cell Biology, Shanghai Institutes for Sciences (SIBS), Chinese Academy of Sciences (CAS), Shanghai

Dr. Weiwei Yang, currently a professor at Institute of Biochemistry and Cell Biology, SIBS, CAS, received his BS degree in Pharmacology from Wuhan University in 2001 and PhD degree in Physiology from Institute of Health Science, SIBS, CAS, in 2007.

Dr. Yang joined Dr. Zhimin Lu's laboratory at the Department of Neuro-Oncology, MD Anderson Cancer Center, University of Texas, Houston, Texas, USA in 2008. He studied the role of pyruvate kinase isoenzyme type M2 (PKM2) in EGFR-associated tumorigenesis. He demonstrated that EGFR activation induces PKM2 nuclear translocation. Nuclear PKM2 interacts with β-catenin via K433 through Src-dependent phosphorylation of β-catenin. Both proteins are then recruited to the cyclin D1 promoter, leading to HDAC3 removal from the promoter, histone H3 acetylation, and cyclin D1 expression. PKM2-dependent β-catenin transactivation plays a pivotal role in EGF-promoted tumor cell proliferation and brain tumor development. This finding, for the first time, highlights the essential non-metabolic functions of PKM2 by a dual role that is essential in EGFR-promoted β-catenin transactivation, tumor cell proliferation, and tumorigenesis. This important discovery has been published in *Nature* (2011) and highlighted in an MD Anderson News Release and several journals including *Cell*, *Nature SciBX*, *Science Signaling*, *Cancer Cell*, *Cancer Research*, and *Cell Research*. In addition, this milestone finding has also been highlighted in the NCI website.

Dr. Yang then determined the mechanisms underlying PKM2-regulated gene transcription by histone H3 phosphorylation during EGFR-promoted tumorigenesis. He showed that PKM2-dependent histone H3 modifications are instrumental in EGF-induced expression of cyclin D1 and c-Myc, tumor cell proliferation, cell cycle progression, and brain tumorigenesis. In addition, levels of histone H3 T11 phosphorylation correlate with nuclear PKM2 expression levels, grades of glioma malignancy, and prognosis. These findings highlight another novel role of PKM2 as a protein kinase in its non-metabolic functions of histone modification. This work has been published in *Cell* (2012). The significance of this study was listed in 2012 in various media including *Signaling Breakthroughs of the Year, Science Signaling*; and highlighted in *Cell Leading Edge*, *Nature Reviews Cancer, Cancer Discovery, Cell Cycle, Faculty of 1000 Biology* (as a must-read article), and MD Anderson News Release.

Furthermore, Dr. Yang has two additional first-authorship publications. One was published in *Molecular Cell* (2012). The other one was published in *Nature Cell Biology* (2012). Both of the findings highlight the importance of PKM2 metabolic and non-metabolic functions in the development of brain tumor, breast cancer, and prostate cancer.

Selected Publications:

1. Yang W*, Lu Z. Regulation and function of pyruvate kinase M2 in cancer. Cancer Lett, 2013,339:153–158. (*corresponding author).
2. Xia Y, Yang W, Bu W, et al. Differential regulation of c-Jun plays an instrumental role in chemoresistance of cancer cells. J Biol Chem, 2013,288:19321–19329.
3. Yang W, Zheng Y, Xia Y, et al. ERK1/2-dependent nuclear translocation of PKM2 promotes the Warburg effect. Nat Cell Biol, 2013,15:124.
4. Yang W, Xia Y, Zheng Y, et al. EGFR-induced NF-κB activation upregulates PKM2 expression and promotes the Warburg effect. Mol Cell, 2012,48:771–784.
5. Yang W, Xia Y, Hawke D, et al. PKM2 phosphorylates histone H3 and promotes gene transcription and tumorigenesis. Cell, 2012,150:685–696.
6. Yang W, Xia Y, Ji H, et al. Nuclear PKM2 regulates beta–catenin transactivation upon EGF stimulation. Nature, 2011,480:118–122.
7. Zheng Y, Yang W, Xia Y, et al. Ras-induced and ERK1/2 phosphorylation-dependent isomerization of PTP–PEST by PIN1 promotes FAK dephosphorylation by PTP–PEST. Mol Cell Biol, 2011,31:4258–4269.
8. Yang W, Shu B, Zhu Y, et al. E2F6 inhibits cobalt chloride-mimetic hypoxia-induced apoptosis through E2F1. Mol Biol Cell, 2008,19:3691–3700.
9. Yang W, Wang ZH, Zhu Y, et al. E2F6 negatively regulates ultraviolet-induced apoptosis via modulation of BRCA1. Cell Death Differ, 2007,14:807–817.

Dr. Chenfang Dong, Zhejiang University School of Medicine, Hangzhou

Dr. Chenfang Dong is currently a professor at the Department of Pathology, Zhejiang University School of Medicine in Hangzhou, China. Dr. Dong received his PhD degree in Immunology from Chinese Center for Disease Control and Prevention in 2008. Subsequently, Dr. Dong joined Dr. Binhua Peter Zhou's laboratory for cancer research as a postdoctoral fellow at the University of Texas Medical Branch in Galveston, Texas and then at University of Kentucky in Lexington, Kentucky, USA.

Dr. Chenfang Dong's research focuses on studying the role and mechanism of the epigenetic and metabolic program in epithelial-mesenchymal transition (EMT) and cancer metastasis. He described the molecular role and mechanism of chromatin-modifying enzymes (G9a and Suv39H1) in controlling the transcription repression and promoting DNA methylation of E-cadherin in basal-like breast cancer (BLBC) (Dong *et al*. *J Clin Invest* 2012; Dong *et al*. *Oncogene* 2013). These findings not only reveal a critical mechanism underlying the epigenetic regulation of

EMT but also could lead to the development of new treatment strategies for basal-like breast cancer. In addition, Dr. Dong demonstrated that loss of FBP1 by Snail-mediated repression provided metabolic advantages in basal-like breast cancer (Dong *et al*. *Cancer Cell* 2013). This study provides a novel insight into the crosstalk among Snail, metabolic reprogramming, and cancer stem cell traits in BLBC and has direct clinical ramifications in the treatment of this aggressive cancer.

At present, Dr. Dong leads a research group working on cancer research at the Zhejiang University School of Medicine. He plans to build on his extensive expertise to investigate metastasis-regulating epigenetic and metabolic program through molecular, genetic, epigenetic, transcriptomic, and pharmacologic approaches. His exciting research will enable better evaluation of the role and mechanism of these programs in EMT and metastatic progression.

Selected Publications:

1. Dong C, Yuan T, Wu Y, et al. Loss of FBP1 by snail-mediated repression provides metabolic growth advantages in basal-like breast cancer. Cancer Cell, 2013,23:316–331.
2. Dong C, Wu Y, Yao J, et al. G9a interacts with Snail and is critical for Snail-mediated E-cadherin repression in human breast cancer. J Clin Invest, 2012,122:1469–1486.
3. Dong C, Wu Y, Wang Y, et al. Interaction with Suv39H1 is critical for Snail-mediated E-cadherin repression in breast cancer. Oncogene, 2012,32:1351–1362.
4. Lin Y, Wu Y, Li J, et al. The SNAG domain of snail1 functions as a molecular hook for recruiting lysine-specific demethylase 1. EMBO J, 2010,29:1803–1816.
5. Zhu X, Su D, Dong C*, et al. Gene therapy of gastric cancer using LIGHT-secreting human umbilical cord blood–dderived mesenchymal stem cells. Gastric Cancer, 2013,,16:155–166. (*Corresponding author)

Dr. Haizhong Feng, Stem Cell Research Center, Renji Hospital, School of Medicine, Shanghai Jiao Tong University, Shanghai

Dr. Haizhong Feng is a professor of Oncology and Stem Cell, Stem Cell Research Center, Renji Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai. He received his PhD degree in plant molecular biology from Institute of Genetics and Developmental Biology, Chinese Academy of Sciences in 2007. In 2006, He did his postdoctoral research training at Texas Tech University, Lubbock, Texas. In October 2007, he joined Dr. Shi-Yuan Cheng's laboratory as a postdoctoral associate at Department of Pathology & Cancer Institute, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania. In October 2011, he was promoted to be a research associate at the same department. In July 2012, he became a research assistant professor at the Department of Neurology, Northwestern University Feinberg School of Medicine, Chicago, Illinois. Because of his outstanding work in USA, in April 2013, Dr. Feng was recruited back to China as a principal investigator and a professor of Stem Cell Research at Renji Hospital, Shanghai Jiao Tong University School of Medicine.

Dr. Feng's main research areas were the molecular mechanisms and signal pathways of human cancer initiation, progression, invasion, metastases, and angiogenesis, focusing on brain cancer. During his postdoctoral training, he has published 8 papers in high-impact journals including *J Clin Invest, PNAS, Oncogene, Mol Cancer Ther*, and *Nero Oncol.* He received the first prize award in the 2009 Joint Annual Meeting of the Society for Neuro-Oncology and the AANS/CNS Section on Tumors in New Orleans, Louisiana. He has also been invited to present his research in other international meetings. He is a member of the Society for Neuro-Oncology (SNO) and American Association for Cancer Research (AACR). He is also a regular reviewer for *Cancer Letters, Journal of Neuro-Oncology, Frontiers in Enthopharmacology, and Chinese Journal of Cancer*.

Within 6 month after he returned to China, Dr. Feng quickly established his research laboratory. Currently, he studies non-coding RNA metabolism in glioma tumor recurrence, roles of histone modification on GSC-mediated radiotherapy and chemotherapy resistance and molecular signaling associated with GSC-mediated cancer invasion. He collaborated with Dr. Shi-Yuan Cheng at Northwestern University and published their new studies of Dock180 in gliomas in *Oncogene*. He has also collaborated with Dr. Tao Cheng at Institute of Hematology and Blood Diseases Hospital, Center for Stem Cell Medicine, Chinese Academy of Medical Sciences and Peking Union Medical College, and reported their results of PUMA-regulated iPS generation in *Nature Communications*. He also successfully obtained research grants from the China National Natural Science Foundation and Shanghai Municipal Education Commission. He was recently selected as one of "New One Hundred Talents" of Shanghai Municipal Health Bureau.

Selected Publications

1. Feng H, Hu B, Liu K, et al. Activation of Rac1 by Src–dependent Phosphorylation of Dock180^{Y1811} mediates PDGFRα–stimulated glioma tumorigenesis in mice and humans. J Clin Invest, 2011,121:4670–4684.
2. Feng H, Hu B, Jarzynka M, et al. Phosphorylation of dedicator of cytokinesis 1 (Dock180) at tyrosine residue Y722 by Src family kinases mediates EGFRvIII–driven glioblastoma tumorigenesis. Proc Natl Acad Sci USA, 2012,109:3018–3023.
3. Li Y*, Feng H*, Yuan Y, et al. The p53-PUMA axis suppresses iPSC generation. Nature Communications, 2013,4:2174. (*co-first authors).

4. Feng H, Liu K, Guo P, et al. Dynamin 2 mediates PDGFRα-SHP-2-promoted glioblastoma growth and invasion. Oncogene, 2012,31:2691–2702.
5. Feng H, Hu B, Vuori K, et al. EGFRvIII stimulates glioma growth and invasion through PKA-dependent serine phosphorylation of Dock180. Oncogene, 2013. doi: 10.1038/onc.2013.198. [Epub ahead of print]

About US Chinese Anti-Cancer Association

USCACA is a non-profit professional organization founded in 2009 (http://www.uscaca.org). With members from academia, industry, and government, USCACA facilitates collaborations among cancer researchers and physicians in the United States and China. Our current focus is on expediting novel cancer drug development by fostering clinical trial networks, sharing expert medical practices and knowledge of clinical trials, and providing education and training opportunities. USCACA collaborates with Chinese Anti-Cancer Association (CACA), Chinese Society for Clinical Oncology (CSCO), Chinese Medical Association (CMA), and Chinese Society for Oncology (CSO), as well as other professional associations. Our mandate is to improve cancer treatment through research, education, and collaboration.

About the National Foundation for Cancer Research

NFCR, established in 1973 located in Washington D.C. in the United States, supports basic and translational research that is leading to cures for cancer. Research supported by NFCR encompasses all types of cancer. The NFCR promotes and facilitates worldwide collaboration among scientists to accelerate the pace of translation of laboratory discoveries into patient-benefiting clinical applications. NFCR's support of discovery oriented cancer research in the laboratory is opening the way to better prevention strategies, earlier diagnostic techniques, and new anticancer drugs and therapies. The NFCR has provided over $309 million for cancer research and cancer prevention education in the US, Europe, and Asia. The NFCR is dedicated to bridging the scientific and educational gaps in cancer research, treatments, and prevention between US and other countries.

The Common Goal of USCACA and NFCR

The common goal of USCACA and NFCR is to improve our understanding of cancer and to provide more efficacious and safe treatment options to cancer patients through expediting novel cancer drug development that stimulates the translation of laboratory discoveries into novel cancer treatments. We aim to foster collaborations in clinical cancer drug development and share both knowledge and expert medical practices between China and the United States. The USCACA-NFCR Scholar Exchange and Fellowship Program provides a unique opportunity for young Chinese scholars who have an interest in advancing their basic, translational, and clinical knowledge and skills. It also allows these scholars to establish long-term collaborations with leading scientists in the United States who can support their continued work and future success in China.