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Special Feature

Five outstanding young Chinese scholars received the Third Scholar Award from the Asian Fund for Cancer Research (AFCR) and the US Chinese Anti-Cancer Association (USCACA)

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Chinese researchers and physicians are being increasingly recognized for making significant contributions that advance biomedical research, including cancer research, in both China and the world. 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 US National Foundation for Cancer Research (USNFCR) have established the *Scholar Excellence Award* for the USNFCR-USCACA Scholar Exchange and Fellowship Program in Basic, Translational, and Clinical Studies. Since 2010, 5 young Chinese researchers and physicians have received the *Scholar Excellence Award* for their outstanding achievements in cancer research performed while in the United States, as well as their continuous contributions to eradicate cancer after their return to China. This year, the USCACA joined the Asian Fund for Cancer Research, Ltd. (AFCR) in selecting 5 promising individuals for their excellence in basic or clinical cancer research. Here, we are proud to introduce the 5 winners of the 2012 *AFCR-USCACA Scholar Excellence Award*:

- Dr. Xiuli Bi at the College of Life Science, Liaoning University, Shenyang;
- Dr. Binghui Li in the Laboratory of Cancer Cell Biology, Tianjin Medical University Cancer Institute and Hospital, Tianjin;
- Dr. Lina Zhang in the Department of Breast Cancer, Tianjin Medical University Cancer Institute and Hospital, Tianjin;
- Dr. Yi Zhang in the Department of Pharmacology, College of Pharmaceutical Sciences, Soochow University, Suzhou, Jiangsu;
- Dr. Yuhua Zhao in the Department of Biochemistry and Molecular Biology, Sichuan University, Chengdu, Sichuan.

We have invited these awardees to contribute a short essay that summarizes their achievements in cancer research. As illustrated in their essays, these outstanding young scholars have received excellent training under their US mentors. They have not only made impressive discoveries in the mechanisms underlying the causes or progression of human cancers but also discovered new approaches for improving treatment for cancer patients. Our ultimate goal is to expedite novel cancer drug development by stimulating the translation of lab discoveries into novel cancer treatments, fostering collaborations in clinical cancer drug development, and sharing expert knowledge and medical practices between China and the United States.

About the US Chinese Anti-Cancer Association

The USCACA is a non-profit professional organization founded in 2009; http://www.uscaca.org. With members from academia, industry, and government, the 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. The USCACA collaborates with the Chinese Anti-Cancer Association (CACA), the Chinese Society for Clinical Oncology (CSCO), and other professional associations. Our mandate is to improve cancer treatment through research, education, and collaboration.

About the Asian Fund for Cancer Research

The AFCR is a non-profit organization committed to curing cancers that have significant impacts on Asian populations; http://www.afcr.org.hk. Established in 2005 and headquartered in Hong Kong, the AFCR is uniquely positioned in Asia to implement the newest cancer research discoveries and techniques from around the world, to investigate the distinct causes of cancer in Asian populations through innovative genetic and molecular research, and to develop more effective therapies tailored to Asian cancer patients. The AFCR is

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dedicated to bridging the scientific and educational gaps in cancer research and cancer prevention between Asian countries and the rest of the world through promoting, coordinating, and funding international collaboration in cancer research and public education.

In recent years, as a newly established organization in Hong Kong, the AFCR has provided funding to support cancer research projects at Hong Kong University and a China-focused cancer tissue bank program—the Tissue Bank Consortium in Asia (TBCA). The AFCR is working proactively with our partners in China and in other Asian countries to build up a greater collaborative network at high academic levels to reduce the incidence of cancers and to increase the survival rate of cancer patients in Asia.

The Common Goal of the USCACA and the AFCR

The common goal of the USCACA and the AFCR 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 AFCR-USCACA 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.

Dr. Xiuli Bi, College of Life Science, Liaoning University, Shenyang

Dr. Xiuli Bi is currently an associate professor at the College of Life Science, Liaoning University in Shenyang, China. She received her B.S. in Pharmaceutical Science from Hebei Medical University in 2000 and a Ph.D. in Pharmacology from Shenyang Pharmaceutical University in 2005. In 2005, Dr. Bi did her first postdoctoral fellowship in cancer biology at the University of Alabama in Birmingham, Alabama. In 2007, Dr. Bi joined Dr. Wancai Yang's laboratory at the University of Illinois in Chicago, Illinois to pursue her studies on carcinogenesis and chemoprevention of colorectal cancer.

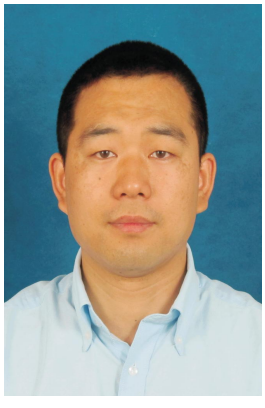
Colorectal cancer is a significant and common public health problem worldwide. In the United States, colorectal cancer is the second-leading cause of cancer-related deaths in both men and women. With recent life style changes in China, the incidence and lethality of colorectal cancer have increased to 10.6% and 7.8%, respectively. Thus, a better understanding of cellular and molecular mechanisms underlying the development and progression of colorectal cancer is crucial for identifying new targets for effective prevention and treatment. Dr. Bi and her colleagues first found that the genetic deficiency of decorin, a member of the small leucine-rich proteoglycans (SLRPs), causes intestinal tumor formation through disruption of intestinal cell maturation, which is associated with aberrant expression of β-catenin and E-cadherin. These findings were then published in *Carcinogenesis* in 2008. Her recent work conducted in China further showed that decorin plays a critical role in controlling cancer cell migration via its interaction with E-cadherin. These findings were recently published in *Carcinogenesis* (2012). She also used food intervention as a promising strategy for colorectal cancer prevention. Dr. Bi and her colleagues found that freezing-dried black raspberries (BRB) could efficiently prevent intestinal tumorigenesis in Apc and Muc2 mouse models of colorectal cancer. This novel finding was published in *Cancer Prevention Research* in 2010 and received positive responses from both the academic community and the public.

In October 2010, Dr. Bi returned to China and assumed a faculty position as an associate professor at the College of Life Science, Liaoning University. She has been continuing her studies on colorectal carcinogenesis, metastasis, prevention, and treatment. She has successfully developed the cancer research program at Liaoning University and established various collaborations nationally and internationally. Her research has been supported by the National Science Foundation of China, the Board of Education of Liaoning Province, and a Start-up Fund from Liaoning University. Her studies that were performed in China have recently been published in high-impact journals including *Carcinogenesis* (2012), *Journal of Agricultural and Food Chemistry* (2012), *and European Journal of Medicinal Chemistry* (2012). Based on her achievements, Dr. Bi was selected for several prestigious awards, including Outstanding Young Talents of Liaoning Province and Outstanding Talents of Shenyang in 2011.

Selected publications

1. Bi X, Pohl NM, Qian Z, et al. Decorin-mediated inhibition of colorectal cancer growth and migration is associated with E-cadherin *in vitro* and in mice. Carcinogenesis, 2012,33:326–330.
2. Bi X, Pohl NM, Yin Z, et al. Loss of JNK2 increases intestinal tumor susceptibility in Apc1638+/– mice with dietary modulation. Carcinogenesis, 2011,32:584–588.
3. Bi X, Fang W, Wang LS, et al. Black raspberries inhibit intestinal tumorigenesis in apc1638+/– and Muc2–/– mouse models of colorectal cancer. Cancer Prev Res, 2010,3:1443–1450.
4. Bi X, Tong C, Dockendorff A, et al. Genetic deficiency of decorin causes intestinal tumor formation through disruption of intestinal cell maturation. Carcinogenesis, 2008,29:1435–1440.

Dr. Binghui Li, Laboratory of Cancer Cell Biology, Tianjin Medical University Cancer Institute and Hospital, Tianjin



Dr. Binghui Li is currently a professor in the Laboratory of Cancer Cell Biology, Tianjin Medical University Cancer Institute and Hospital in Tianjin. He received his B.S. in Bioengineering from Nanchang University, Nanchang, Jiangxi, in 2000 and his Ph.D. in Biochemistry and Molecular Biology from the Graduate University of Chinese Academy of Sciences, Beijing, in 2006. He was awarded with the President's Scholarship from the Chinese Academy of Sciences in 2006.

In 2007, Dr. Li joined Dr. Wei Du's Laboratory at the Ben May Department for Cancer Research at the University of Chicago in Chicago, Illinois. A major focus of Dr. Li's research was to study the interactions between retinoblastoma (Rb) tumor suppressor and tuberous sclerosis protein 2 (TSC2) in cancer cell models because Rb is frequently inactivated in human cancers. In Dr. Du's laboratory, a genetic screen was carried out in *Drosophila* to identify mutations that are lethal in Rb-mutant cells. The protein gig (a fly version of TSC2) was identified, and the inactivation of both rbf (fly version of Rb) and gig was found to synergistically induce cell death. Dr. Li showed that the inactivation of TSC2 also kills Rb-mutant cancer cells under stress conditions, and this effect is related with an inhibition of tumor growth. Furthermore, cancer cell death induced by concomitant inactivation of Rb and TSC2 is mediated by increased cellular stress, including oxidative stress. Inactivation of TSC2 and Rb synergistically induced oxidative stress via increased protein synthesis, inhibited *de novo* lipid synthesis, and decreased induction of the ROS scavenger enzyme SOD2. Although tumor suppressors such as Rb are often inactivated in cancer cells, this knowledge has yet to be exploited to develop targeted cancer therapies. These results suggest that TSC2 could be a target for the specific elimination of Rb-deficient cancer cells, which are frequently found in human cancers. This outstanding work was published in *Cancer Cell* in 2010 and subsequently highlighted at the journals *Science* and *Cancer Research*.

In Dr. Du's laboratory, Dr. Li also demonstrated that the extract of American ginseng was able to induce apoptosis in colon cancer cells. Simultaneously, it increased reactive oxygen species (ROS) that activated the NF-κB signaling pathway and thus enhanced the survival of colon cancer cells, demonstrating that antioxidants increased the cancer-killing ability of American ginseng extract. Its main bioactive components, ginsenosides, induced both apoptosis and paraptosis-like cell death in colon cancer cells by activating *p53*.

At present, Dr. Li leads a research group that studies cancer metabolism by determining how irreversibly upsetting metabolic homeostasis induces cancer cell death.

Selected publications

1. Tian W, Ma X, Zhang S, et al. Fatty acid synthase inhibitors from plants and their potential application in the prevention of metabolic syndrome. Clin Oncol Cancer Res, 2011,8: 1–9.
2. Li B, Zhao J, Wang CZ, et al. Ginsenoside Rh2 induce apoptosis and paraptosis-like cell death in colon cancer cells through activating p53. Cancer Lett, 2011,301:185–192.
3. Li B, Gordon GM, Du CH, et al. Specific killing of Rb mutant cancer cells by inactivating TSC2. Cancer Cell, 2010,17: 469–480.
4. Li B, wang CZ, He TC, et al. Antioxidants potentiate American ginseng-induced killing of colorectal cancer cells. Cancer Lett, 2010,289:62–70.

Dr. Lina Zhang, Department of Breast Cancer, Tianjin Medical University Cancer Institute and Hospital, Tianjin

Dr. Lina Zhang is currently an attending doctor in the Department of Breast Cancer at the Tianjin Medical University Cancer Institute & Hospital. She received her B.S. in Clinical Medicine in 2002, her M.S. in Oncology in 2008, and her Ph.D. in Epidemiology and Health Statistics in 2011 from the Tianjin Medical University. Subsequently, Dr. Zhang joined the faculty of Tianjin Medical University Cancer Institute & Hospital, where she works as a breast cancer surgeon and a cancer researcher.

In 2010, Dr. Zhang joined Dr. Wei Zhang's lab in the Department of Pathology at the M.D. Anderson Cancer Center at the University of Texas in Houston, Texas as a Global Academic Program associate and an exchange Ph.D. student from the lab of Dr. Kexin Chen at Tianjin Medical University Cancer Institute and Hospital. Dr. Zhang demonstrated that ryanodine receptor gene 3 (*RYR3*), a gene encoding a large protein involved in calcium channels, is important for breast cancer cell growth, morphology, and migration. She identified a putative binding site for microRNA-367 (*miR-367*) located in the 3'-untranslated region (3'-UTR) of the *RYR3* gene. She then identified a novel single nucleotide polymorphism (SNP) within the *miR-367*-binding site that affects breast cancer risk, calcification, and patient survival. Her Ph.D. thesis work resulted in a publication in *Proceedings of the National Academy of Sciences of the United States of America* (*PNAS*). Currently, she is focused on functional validation of discoveries from the Genome Wide Association Studies (GWAS) and has accumulated evidence that an unknown gene, *C6orf97*, is important for breast cancer. Dr. Zhang's studies have been published in high-impact journals in biomedical research, including *PNAS*, *PLoS One*, *Breast Cancer Research and Treatment*, and *PLoS Genetics*. After a highly productive training in Dr. Wei Zhang's lab at the M.D. Anderson Cancer Center, Dr. Zhang returned to the Cancer Institute & Hospital of Tianjing Medical University in Tianjin, China in 2011.

As an oncology surgeon specializing in breast cancer, a major disease that afflicts women in China and all over the world, she continues to work with Dr. Chen and colleagues on a GWAS project for breast cancer and is an active member of the surgery team. Dr. Zhang was a key researcher on two grants from the Natural Science Foundation of China (NSFC) and recently successfully competed for a NSFC grant as a young principal investigator. In 2011, she won the first prize in a research competition at the Tianjin Medical University. In 2011, her research was highlighted as an example of Chinese trainees who return to China to become a driving force for cancer research in China in an article published by the *Cancer Discovery*, a flagship journal of the American Association of Cancer Research (AACR). Her findings and current research show that Dr. Zhang is dedicated to breast cancer research and treatments in China.

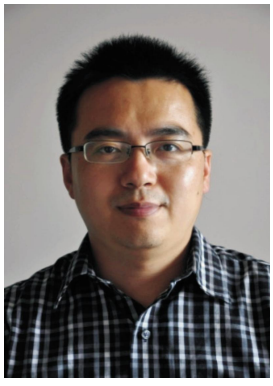
Selected publications

1. Zhang L, Liu Y, Song F, et al. A functional SNP in the miR-367 binding site in the 3´UTR of the calcium channel gene RYR3 affects breast cancer risk and calcification. Proc Natl Acad Sci U S A, 2011,108:13653–13658.
2. Cheng H, Zhang L, Cogdell D, et al. Circulating plasma MiR–141 is a novel biomarker for metastatic colon cancer and predicts poor prognosis. Plos One, 2011,6:e17745.
3. Zhang L, Gu L, Qian B, et al. Association of genetic polymorphisms of ER-alpha and the estradiol–synthesizing enzyme genes CYP17 and CYP19 with breast cancer risk in Chinese women. Breast Cancer Res Treat, 2009,114:327–338.
4. Dai H, Zhang L, Cao M, et al. The role of polymorphisms in circadian pathway genes in breast tumorigenesis. Breast Cancer Res Treat, 2011,127: 531–540.
5. Long J, Cai Q, Shu XO, et al. Identification of a functional genetic variant at 16q12.1 for breast cancer risk: results from the Asia Breast Cancer Consortium. PLoS Genet, 2010,6:e1001002.

Dr. Yi Zhang, Department of Pharmacology at the College of Pharmaceutical Sciences, Soochow University, Suzhou, Jiangsu

Dr. Yi Zhang is currently a lecturer in the Department of Pharmacology at the College of Pharmaceutical Sciences, Soochow University. Dr. Zhang attended Suzhou Medical College (now Soochow University) in China and graduated summa cum laude in his class with a major in Pharmacy. He also received his M.S. in 2004 and his Ph.D. in 2012 in Pharmacology from Soochow University.

In May, 2010, Dr. Zhang joined Dr. Jin-Ming Yang's lab as a visiting scholar at the Pennsylvania State University College of Medicine in Hershey, Pennsylvania. At the Penn State, Dr. Zhang studied the role and mechanisms of nucleus



accumbens-1 (*NAC1*), a transcriptional co-factor that belongs to the BTB/POZ gene family, in cancer development and progression. Dr. Zhang demonstrated an oncogenic role of *NAC1* that is closely associated with the molecular function of this transcriptional co-factor in controlling autophagy and cellular senescence. He found that under stress conditions, *NAC1* activates autophagy via modulating the expression and translocation of HMGB1, a highly conserved chromatin-associated nuclear protein functioning as a critical regulator of autophagy. Dr. Zhang also showed that *NAC1*-mediated autophagy affects the efficacy of cisplatin-induced cancer cell death. These results not only shed light on the molecular regulation of autophagy but also provide a better approach to achieve the maximum therapeutic benefits of cisplatin, a commonly used chemotherapeutic drug for cancer treatment. This work was published in *Oncogene* in February of 2012. In another research project, Dr. Zhang identified *NAC1* as a previously unrecognized suppressor of senescence that affects the pathogenesis of tumor development and progression, and this work was subsequently published in *Cancer Research* in August of 2012. During his 2-year training with Dr. Yang, Dr. Zhang published 5 first author papers in *Oncogene, Cancer Research*, *Autophagy, Biochemical and Biophysical Research Communication*, and *Acta Pharmacologica Sinica*. Additionally, he is the co-first author or co-author in a number of publications in *Cancer Research, Molecular Cancer Therapeutics*, and *PLoS ONE* as well as in a book chapter.

In May 2012, Dr. Zhang returned to College of Pharmaceutical Sciences at Soochow University. In addition to teaching, Dr. Zhang continues to pursue his independent research and also collaborates with his colleagues in Suzhou, Shanghai (China), and Hershey, PA (USA). Dr. Zhang's studies are currently supported by the NSFC, Priority Academic Program Development of Jiangsu Higher Education Institutions (PAPD), the Jiangsu Province College Natural Science Foundation, and Soochow University. Dr. Zhang's achievements have clearly demonstrated his potential for excellence and future contribution to cancer research.

Selected publications

1. Zhang Y, Cheng Y, Ren X, et al. Dysfunction of nucleus accumbens-1 activates cellular senescence and inhibits tumor cell proliferation and oncogenesis. Cancer Res, 2012,72:4262–4275.
2. Zhang Y, Cheng Y, Ren X, et al. NAC1 modulates sensitivity of ovarian cancer cells to cisplatin by altering the HMGB1-mediated autophagic response. Oncogene, 2012, 31:1055–1064.
3. Zhang Y, Yang JW, Ren X, et al. NAC1 and HMGB1 enter a partnership for manipulating autophagy. Autophagy, 2011,7:1557–1558.
4. Zhang Y, Cheng Y, Zhang L, et al. Inhibition of eEF-2 kinase sensitizes human glioma cells to TRAIL and down-regulates Bcl-xL expression. Biochem Biophys Res Commun, 2011,414:129–134.
5. Zhang L, Zhang Y, Liu XY, et al. Expression of elongation factor-2 kinase contributes to anoikis resistance and invasion of human glioma cells. Acta Pharmacol Sin, 2011,32:361–367.

Dr. Yuhua Zhao, Department of Biochemistry and Molecular Biology, Sichuan University, Chengdu, Sichuan

Dr. Yuhua Zhao, currently an associate professor in the Department of Biochemistry and Molecular Biology at Sichuan University, received her B.S. in Pharmacy from West China University of Medical Sciences in 1992, her M.S. in Biochemistry from West China University of Medical Sciences in 1995, and her Ph.D. in Biochemistry and Molecular Biology from Sichuan University in 2003.

In July 2007, Dr. Zhao joined Dr. Ming Tan's lab at the Mitchell Cancer Institute at University of South Alabama in Mobile, Alabama as a postdoctoral fellow. Dr. Zhao's research projects focused on glucose metabolism and ErbB2-mediated breast cancer progression. For the first time, Dr. Zhao showed that in human breast cancer cells, ErbB2 promotes glycolysis through the HSF1-mediated up-regulation of LDH-A, showing that ErbB2 may play a significant role in regulating glucose metabolism in breast cancer cells. This work was published in *Oncogene* and attracted significant interest from the cancer research community and the local news media. In another research project, Dr. Zhao showed that increased glycolysis contributes to trastuzumab resistance and combining trastuzumab with glycolysis inhibition synergistically suppressed trastuzumab-sensitive and -resistant breast cancers. These results were published in *Cancer Research*, featured on the journal homepage and in Nature/SciBX.

In August 2010, Dr. Zhao returned to Sichuan University to continue her career as both a teacher and researcher. She continues to work on targeted treatment of breast cancer and is actively seeking extramural funding from the

Chinese government. Meanwhile, she is diligently working to establish a collaborative research lab between Sichuan University and Mitchell Cancer Institute at the University of South Alabama that focuses on cancer metabolism. The goal of Dr. Zhao's research is to translate the knowledge acquired in the laboratory into clinical prognosis and treatment for human cancers.

Selected publications

1. Zhao Y, Liu H, Liu Z, et al. Overcoming trastuzumab resistance in ErbB2-positive breast cancer by targeting dysregulated glucose metabolism. Cancer Res, 2011,71:4585–4597.
2. Zhao Y, Liu H, Riker AI, et al. Emerging metabolic targets in cancer therapy. Front Biosci, 2011,16:1844–1860.
3. Zhou M, Zhao Y, Ding Y, et al. Inhibition of lactatedehydrogenase-A re-sensitizes Taxol-resistant cancer cells to Taxol. Mol Cancer, 2010,9(1):33.
4. Zhao Y, Weng CC, Tong M, et al. Restoration of leukotriene B(4)-12-hydroxydehydrogenase/15-, oxo-prostaglandin 13-reductase (LTBDH/PGR) expression inhibits lung cancer growth *in vitro* and *in vivo*. Lung Cancer, 2010,68:161–169.
5. Zhao Y, Zhou M, Liu H, et al. Upregulation of lactate dehydrogenase A by ErbB2 through heat shock factor 1 promotes breast cancer cell glycolysis and growth. Oncogene, 2009,28:3689–3701.