



## CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:  
R1218

Project Title:  
Recruitment of First-Time, Tenure-Track Faculty Members

Award Mechanism:  
Recruitment of First-Time, Tenure-Track Faculty Members

Principal Investigator:  
Yang, Liuqing

Entity:  
The University of Texas M.D. Anderson Cancer Center

### Lay Summary:

When I was young, my dream is to become a doctor, who will save lives and free people from suffering with diseases. Especially, I have been interested in cancer since my undergraduate. My enthusiasm for cancer problems was initially sparked by "Stopping Cancer in Its Tracks", a cover story of Time magazine in 1994. This story enlightened me that for decades doctors treated cancer with the blunt tools of radiation and chemotherapy, which indiscriminately kill healthy and tumor cells alike and we are still only on the brink of an era of narrowly targeted, genetically geared therapies tailored to just small slices of the patient population even though the unraveling of the human genome during the last century has dramatically increased our understanding of cancer. Thus the war on cancer remains a grueling battle of attrition and demands new mechanisms underlying cancer development to be revealed and new drug target to be identified. The story has encouraged me to make a commitment to fight cancer and remember that cancer is a disease of real people rather than DNA and biochemical reaction in a test tube. For almost a decade as molecular cancer researcher, I define my career goal as making cancer history by challenging the status quo through studying novel molecular mechanisms responsible for cancer formation, survival, recurrence, and resistance to therapy, which ultimately may lead to the eradication of cancer.

My interests in cancer research grew during my graduate study and further inspired by my innovative discovery illustrating the molecular mechanism underlying the colon cancer metastasis published on Cell in 2006. Since 2006, I have been trained in the laboratory of Dr. Michael G. Rosenfeld at University of California, San Diego and became focused on investigating the molecular strategies responsible for integrating the genome-wide transcriptional programs critical for homeostasis and tumorigenesis in breast and prostate. With such opportunity, I was rigorously trained in several aspects from experimental design to manuscript organization, from in vitro biochemical studies to mouse model handling, from traditional molecular biology skills to modern genome-wide sequencing technologies, and from supervising undergraduate/graduate students to grant managing, which cannot be learned from any courses or individual books. Supported by Era of Hope Postdoctoral Award from Department of Defense, I successfully conducted several projects interrogating the functional roles of nuclear receptor-dependent nuclear architecture change in gene transcription, chromosomal rearrangement, and tumor development. I start to appreciate the molecular strategies that link noncoding RNAs and regulated dynamic alterations in nuclear architecture to diverse signaling systems critical for physiological and pathologic regulation. Thus, the

proposed study focusing on the role of noncoding RNA-mediated relocation of transcription units in breast tumor growth and metastasis serves as the perfect domain to unite my motivation, background and research experience with the new training in a more specialized manner. This study will be successfully implemented by establishing independent laboratory and initiating active collaborations with experts in MD Anderson Cancer Center.

First Time Tenure Track CPRIT Award has created an intellectual atmosphere for young investigators that is conducive to integrate the successful achievements at early career stage with the launch of a career in academic research. Thus, by direct of interests, past achievements, and hopefully, new idea proposed, I believe that I am well suited to apply for this award. I hope to be awarded this award to conduct a highly innovative study aiming to gain deeper mechanistic insights into the noncoding RNAs and regulated spatial nuclear architecture machinery for breast cancer gene expression, thus providing a novel platform for breast cancer diagnosis and therapy. Under the support of First Time Tenure Track CPRIT Award, I will approach my career goal, which is to become a "best and brightest" leader and to establish a dynamic laboratory dedicated to molecular biology aimed at understanding the molecular mechanisms of epigenetics, nuclear architecture and noncoding RNAs in homeostasis and cancer.

Throughout my scientific career, I have had the good fortune to work with a variety of mentors that have inspired me to pursue a career in academics. My graduate advisor, Professor Zhi-Ren Liu, has been an amazing role model, who is exceptionally creative in all projects he elects to pursue. My postdoctoral mentor, Professor Michael Rosenfeld, has demonstrated the vital role of vision, ingenuity and hard work in establishing a tremendously fruitful scientific program. Together, they have provided highly stimulating and motivational research environments in which to pursue science. Through their encouragement and support, I have matured into a creative and productive investigator with the ability to successfully conduct high-impact research, independently generate hypotheses and effectively communicate with other scientists.