IBT researchers part of “Moon Shots Program” team

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(HOUSTON) — The Texas A&M Health Science Center (TAMHSC) Institute of Biosciences and Technology is part of the “Moon Shots Program” recently unveiled by The University of Texas M.D. Anderson Cancer Center – an ambitious, comprehensive action plan designed to make a giant leap for patients by dramatically accelerating the pace of converting scientific discoveries into clinical advances that reduce cancer deaths.

Fen Wang, Ph.D., professor and director of the Center for Cancer and Stem Cell Biology (CCSCB) in the TAMHSC-Institute of Biosciences and Technology, and Wallace McKeehan, Ph.D., J.S. Dunn Foundation Endowed Regents and Distinguished Professor and CCSCB member, are part of the prostate cancer team.

Prostate was one of five cancers out of eight identified by a panel of worldwide experts to receive an intense focused team-approach equivalent to that used to put a man on the moon. Goals include identifying those at risk of a particular cancer, increasing survival rates, improving quality of life, implementing new methods of diagnosis and treatment, and more.

“This initiative occurs 40 years after President (Richard) Nixon initiated the War on Cancer and 50 years to the date of President (John F.) Kennedy’s visit to Houston announcing putting a man on the moon by the end of the ‘60s,” Dr. McKeehan said. “The idea is to apply with the same focus and determination the technological advances that have occurred since those times to alleviate the disease and learn more about it.”

Drs. McKeehan and Wang have been a part of the prostate program for some time as active collaborators in funded National Institutes of Health Specialized Programs of Research Excellence (SPORE) and Cancer Prevention and Research Institute of Texas (CPRIT) grants. Prostate cancer research has been a major focus of the CCSCB since its inception in 1993.

“The Prostate Cancer Moon Shot will extend the capacity of molecular targeting to the rational application of pharmacologic therapy to the prostate cancer microenvironment, thus reducing prostate cancer mortality,” Dr. Wang said. “The IBT team members will contribute to the problem of molecular and cellular heterogeneity of prostate cancers through identification of signature signaling pathways to target therapeutically.”

Wallace McKeehan,
Ph.D.

Prostate cancer is the most frequent cancer in men and second leading cause of death. While prostate-specific antigen (PSA) screening has led to a substantial increase in the incidence of diagnosed cases and subsequent treatment, a predictive biomarker that can reliably distinguish between clinically insignificant and significant cancer has not emerged. As a result, uncertainty drives over-treatment and delays aggressive therapy for those needing it most.

The Moon Shots Program goals for prostate cancer are to reduce mortality by 30 percent in newly diagnosed patients at risk for recurrence and to increase progression-free survival in patients with treatment-refractory cancer.
Project priorities are currently being developed, and not all will be completed at once. Some may begin early next year or even sooner, funded by a combination of traditional research grants, philanthropy and commercialization.

“Prostate cancer is most lethal when it is resistant to therapies that target the male hormone testosterone,” Dr. McKeehan said. “The main goals of the prostate Moon Shot Program will be to determine which men can be spared costly, painful and unnecessary intervention and which need aggressive treatment, as well as how to extend therapeutic benefits to patients who have the most life-threatening forms.”

In his 40-year career, Dr. McKeehan has made significant contributions in the areas of cell culture media development, mechanisms of growth factor action and cancer biology. Among his findings in prostate cancer is the basic failure of cells in the microenvironment to communicate properly, thereby revealing multiple steps in tumor progression that may be potentially reversed by treatment.

“Our past research efforts have suggested using cell and animal models as specific targets for therapy of the most resistant forms of prostate cancer, especially those that metastasize to bone,” Dr. McKeehan said. “The M.D. Anderson Moon Shot team is applying specific drugs based on these findings in the clinical setting with significant promise.”

Dr. Wang studies how activated signaling mechanisms transmit signals to downstream targets and regulate the proliferation, differentiation, homeostasis and function of cells that include prostate and cardiovascular system development. His lab also examines how certain aberrant signals promote tumor initiation, progression and metastasis, along with the contribution of environmental factors.

“The prostate research team in the IBT has extensive experience in characterizing how aberrant cell signaling contributes to prostate cancer progression and metastasis,” Dr. Wang said. “The IBT team members will participate in work groups in identifying oncogenic pathways as well as in establishing new shoot-for-the-moon strategies based on genetically engineered mouse models for identifying novel new drug targets for prostate cancer therapy.”

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