



Peer Reviewed Cancer Research Program

VISION

To advance mission readiness of U.S. military members affected by cancer and to improve quality of life by decreasing the burden of cancer on Service members, their families and the American public

MISSION

To successfully promote high-impact research for cancer prevention, detection, treatment, and survivorship

PROGRAM HISTORY

Since fiscal year 2009 (FY09), Congress has appropriated \$429.8 million (M) to the Department of Defense Peer Review Cancer Research Program (PRCRP), which in turn has invested in cancer research covering over 20 topic areas. Each year, Congress determines which topic areas will be funded through the program. The PRCRP offers a variety of funding mechanisms.

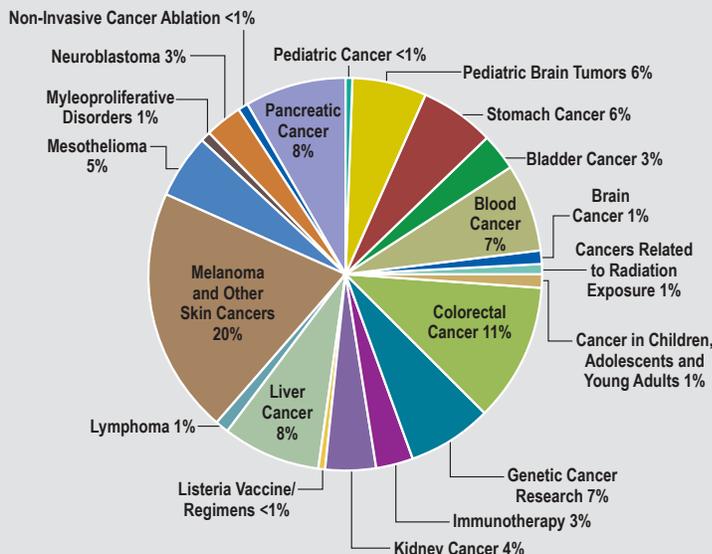
PRCRP MILITARY HEALTH FOCUS AREAS

- Exposure Research: Addresses risks associated with environmental exposures due to deployment.
- Mission Readiness Research: Addresses knowledge gaps in cancer research or patient care that may affect mission-readiness and the health of all military beneficiaries.

HIGH-IMPACT ADVANCES SUPPORTED BY THE PRCRP

- A combination of CXCL12/CXCR4 blockade with a mesothelin targeted immunotherapy produced two provisional patents for treatment of mesothelioma and ovarian cancer.
- A combination of anti-RANKL antibody and checkpoint inhibitors produced a phase II clinical trial for the treatment of metastatic melanoma.

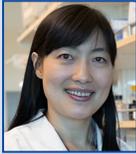
PROGRAM PORTFOLIO



TOPIC AREAS¹

- Bladder Cancer
- Brain Cancer
- Colorectal Cancer
- Immunotherapy
- Listeria Regimens for Cancer
- Melanoma and Other Skin Cancers
- Mesothelioma
- Stomach Cancer

¹ Two program summary sheets were prepared. The following topic areas are discussed on the second program summary sheet: Adrenal Cancer, Blood Cancers, Cancer in Children, Adolescents and Young Adults, Liver Cancer, Lymphoma, Myeloma, Neuroblastoma, Pancreatic Cancer, and Pediatric Brain Tumors.

Biology/Etiology	 <p>Dr. Tyler Curiel, funded by a FY14 Idea Award with Special Focus, is generating <i>Listeria</i> and <i>E. coli</i> vectors that modify colon epithelial B7-H1 expression, a protein that regulates colon inflammation by preventing microbial imbalance within the gut.</p>	Colorectal Cancer / <i>Listeria</i>
Diagnosis/ Detection	 <p>Dr. Ying Bao received a FY15 Career Development Award to determine the metabolic alterations associated with early stomach cancer. Through this work, Dr. Bao is defining a metabolomic “fingerprint” for stomach cancer that can be detected in blood samples. Metabolites are being analyzed from the blood drawn from patients prior to diagnosis using a state-of-the-art metabolomics platform to identify novel biomarkers.</p>	Stomach Cancer
Prevention	 <p>Colorectal cancer (CRC) is the third most frequently diagnosed cancer among Department of Veterans Affairs patients. With support from a FY14 Career Development Award, Dr. Jae-II Park demonstrated that transmembrane protein TMEM9 is upregulated in CRC cells and showed that increased expression of TMEM9 initiated intestinal tumorigenesis. Complete loss of TMEM9 expression protected mice from developing genetically induced colon cancer.</p>	Colorectal Cancer
	 <p>Dr. Daniel Bikle demonstrated that, following acute ultraviolet B radiation exposure, there is delayed clearance of specific indicators of DNA damage in Vitamin D Receptor (VDR) knockout mice. These novel data indicate that VDR plays an important role in facilitating DNA damage repair and that any damage not repaired could potentially lead to the formation of melanoma or non-melanoma skin cancers.</p>	Melanoma and Other Skin Cancers
Prognosis	 <p>Through her FY12 Career Development Award, Dr. Haining Yang discovered how mesothelioma patients with different mutations in BRCA1-associated protein-1 exhibit altered exposure outcomes. These results were leveraged to obtain an additional \$1M in FY15 PRCRP funding. Dr. Yang has filed two U.S. patents and published a paper in <i>Carcinogenesis</i> describing how patients with a germline mutation in BRCA1-associated protein-1 exhibit seven-fold improved long-term survival compared to patients with stochastic mutations.</p>	Mesothelioma
Treatment	 <p>Immune checkpoint inhibitors target PD1/PD1-L1 binding, thus releasing the control of T cell response and hopefully increasing the ability of the body to kill off cancer cells. Dr. Vivek Arora, with a FY16 Career Development Award, plans to better understand the factors that influence bladder cancer surveillance and sensitivity to checkpoint blockade. Through investigations into the intricacies of immune regulation, Dr. Arora will be able to delineate the factors impacting checkpoint blockade in bladder cancer and expand successful immunotherapy to more patients.</p>	Bladder Cancer
Survivorship	 <p>Dr. Youngjae You was awarded a FY16 Idea Award with Special Focus to support the development of a novel prodrug system to target and deliver chemotherapy to cancer cells. The idea is to use the U.S. Food and Drug Administration-approved technology for the formation of a photosensitizer (protoporphyrin IX) within a cancer cell to target light-activatable prodrugs to those cancer cells. Photodynamic therapy using visible light will then activate the prodrug to its cytotoxic form, ultimately resulting in ablation of the cancer cells with minimal systemic side effects.</p>	Bladder Cancer

