Duncan Family Institute

Annual Report | Year 7

THE UNIVERSITY OF TEXAS
MD Anderson Cancer Center
Making Cancer History®

The Duncan Family Institute at-a-glance 2015

166 Peer reviewed publications

$37M In awarded grants leveraging investments in research resources and strategic initiatives

67% Fellows who have been appointed to tenure track faculty positions

A Message from the Vice President

I am delighted to provide the FY15 Annual Report for The Duncan Family Institute for Cancer Prevention and Risk Assessment (DFI), highlighting its seventh year of working to advance the discovery and translation of new knowledge about cancer risk and prevention in the laboratory, clinic and community.

This past year saw strategic expansion of the DFI Research and Clinical Programs to include two new Research Resources: the Shared Decision-Making Core Collaborative (SDMCC) and the Bionutrition Research Core (BRC). The SDMCC seeks to aid patients in the many difficult medical care decisions related to cancer prevention through rapid development of novel, shared decision-making tools, with subsequent research on the implementation and impact of these tools. The BRC serves as a research kitchen to support science to better understand the roles of diet and obesity in cancer and supports energy balance interventions to help individuals and cancer survivors reduce their cancer risk and improve quality of life. The BRC is an expansion of the Center for Energy Balance in Cancer Prevention and Survivorship. Details of these new Initiatives, along with overviews of FY15 progress for the DFI's two centers and other Strategic Initiatives, can be found on this report.

In additon, DFI Research Resources were active this year, supporting a variety of clinical and community-based projects. The Center for Community-Engaged Translational Research collaborated on the Healthy Communities Initiative with the Moon Shots' Cancer Prevention and Control Platform, which resulted in a grant award from the BUILD Health Challenge, supported in part by the Robert Wood Johnson Foundation. The Clinical Cancer Prevention Research Core provided infrastructure for eight clinical trials and two laboratory trials, and engaged with the Women's Cancer Moon Shot to develop a project to maximize the use of breast cancer preventive therapy in women with precancerous breast lesions. More details of this work, as well as additional science supported by all of DFI's Research Resources, can be found on the following pages.

Our Seed-funding Research Program continued to support early career investigators as they seek to develop the preliminary data necessary to compete for peer-reviewed support for larger studies. This year, we received a total of 51 proposals. Four awards were made to projects focusing on molecular cancer prevention and one award supported a community-based project seeking to address disparities in access to healthy food among African-Americans. Four additional awards were made in collaboration with the Survivorship Research Working Group addressing quality of life issues in cancer survivors.

Finally, we are pleased to report that we awarded a new Duncan Family Institute Mentored Junior Faculty Fellowship to Matthew Cox-Martin, Ph.D., an instructor in the department of Behavioral Sciences. Dr. Cox earned his doctoral degree in Clinical Psychology from Virginia Tech. His research aims to develop and refine health behavior-focused cancer prevention interventions through rigorous quantitative and methodological evaluation. To address the Institute's education objective, it supported six lectures from leading experts in pediatric cancer survivorship, tobacco control, cervical cancer, and global health, among other areas.

In closing, I offer my deepest gratitude to the Duncan Family for their continued support of our mission to advance cancer prevention research across the lab, the clinic and the community. I would also like to thank each and every staff and faculty member affiliated with the DFI for their efforts to advance our mission this past year. It is through your dedication that we will ultimately make cancer prevention a reality in the daily lives of individuals and communities everywhere

Sincerely,

Ernest Hawk, M.D., M.P.H.,
on behalf of the Executive Committee
Duncan Family Institute for Cancer Prevention
and Risk Assessment

Overview

Duncan Family Institute for Cancer Prevention and Risk Assessment (DFI)

Our Mission

To advance the discovery and translation of knowledge regarding cancer risk and prevention in the laboratory, the clinic, and the community. Cancer prevention is a broad field encompassing multiple scientific disciplines, thus the Institute advances a wide range of research, supporting scientists from departments across MD Anderson.

- Research and Clinical Programs encompass the Institute's Seed Funding Program, its Centers, and its Strategic Initiatives, supporting a set of high-priority areas determined by the DFI's Executive Committee.
- Research Resources are the critical components of the scientific infrastructure necessary to carry out state-of-the-science research that are often not covered through traditional grant mechanisms or other funding sources.
- Educational Resources support fellowships to develop future generations of cancer prevention researchers and sponsor lectures and events to build the intellectual environment to engage the current generation.

Duncan Family Institute

Research and Clinical Programs

- Center for Energy Balance in Cancer Prevention and Survivorship
- Center for Translational and Public Health Genomics
- Premalignant Genome Atlas
- Integrative Health
- Seed Funding

Research Resources

- Center for Community-Engaged Translational Research
- Clinical Cancer Prevention Research Core
- e-Health Technology
- Mexican American Cohort Study
- Health Services Research Core Data Resource
- Bionutrition Research Core
- Shared Decision-Making Collaborative

Educational Resources

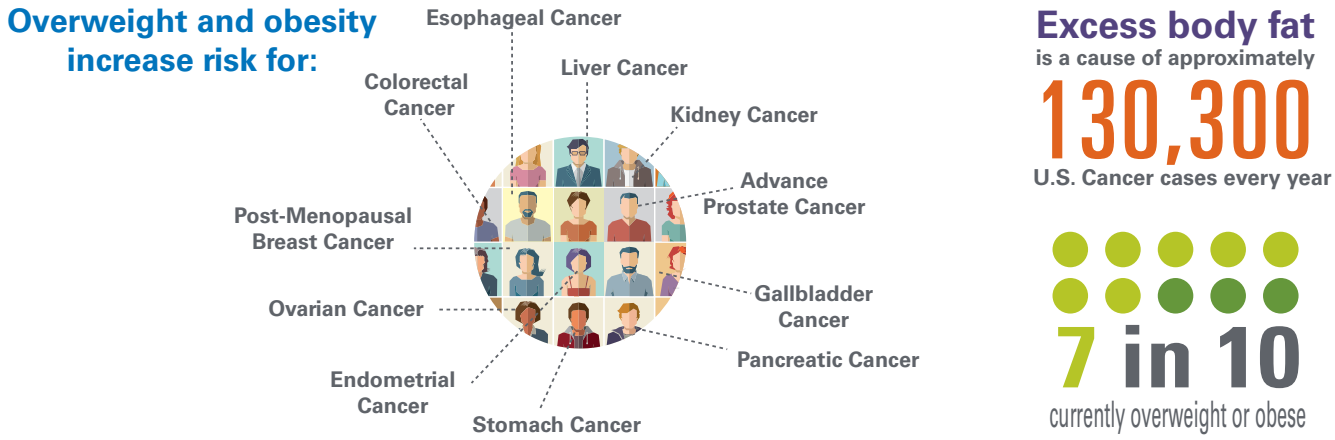
- Fellowships
- Lecture series

Duncan Family Institute programs have actively engaged with four of the Moon Shots disease site programs as well as with the Cancer Prevention and Control Platform. Details on how the DFI initiatives are interacting with the Moon Shots can be found throughout the report wherever the Moon Shot symbol appears.

Centers and Strategic Initiatives

The Center for Energy Balance in Cancer Prevention and Survivorship

Mission: To facilitate and conduct state-of-the-science research to understand the relationships among physical activity, nutrition, obesity, and cancer, and use this knowledge to optimize interventions to decrease cancer risk and improve cancer outcomes.



Source: American Institute for Cancer Research

Goals

1. To develop practice-changing research and data resources in five focus areas: trials in cancer survivors; trials in people at risk of cancer; mechinisms underlying the relationship between physical activity, diet, weight and cancer; mechanisms underlying weight changes; dissemination and implementation research
2. To increase transdisciplinary collaboration among researchers conducting energy balance research at MD Anderson
3. To improve the infrastructure for conducting research on energy balance and cancer
4. To increase awareness, knowledge, and skills related to energy balance and cancer among researchers, health care professionals, trainees, and the community

Accomplishments

- Submitted 24 grants totaling $29.6M; four funded and 10 pending review
- Supported 24 active projects totaling $12.8M
- Published 34 papers related to Center activities
- Established Bionutrition Research Core
- Supported Visceral Adipose Workgroup
- Increased Center membership from 163 in FY14 to 182 in FY15

Scientific Highlights

Funded by the Women's Cancer Moon Shot, the HEALTH4Families pilot uses a novel strategy to optimize energy balance interventions for high risk families affected by hereditary breast and ovarian cancers. Fifty-three participants have been recruited. An additional pilot, HEALTH4 MDAnderson is also being conducted in MD Anderson employees where 25 individuals have been enrolled. R01 grant applications based on these pilots are planned.

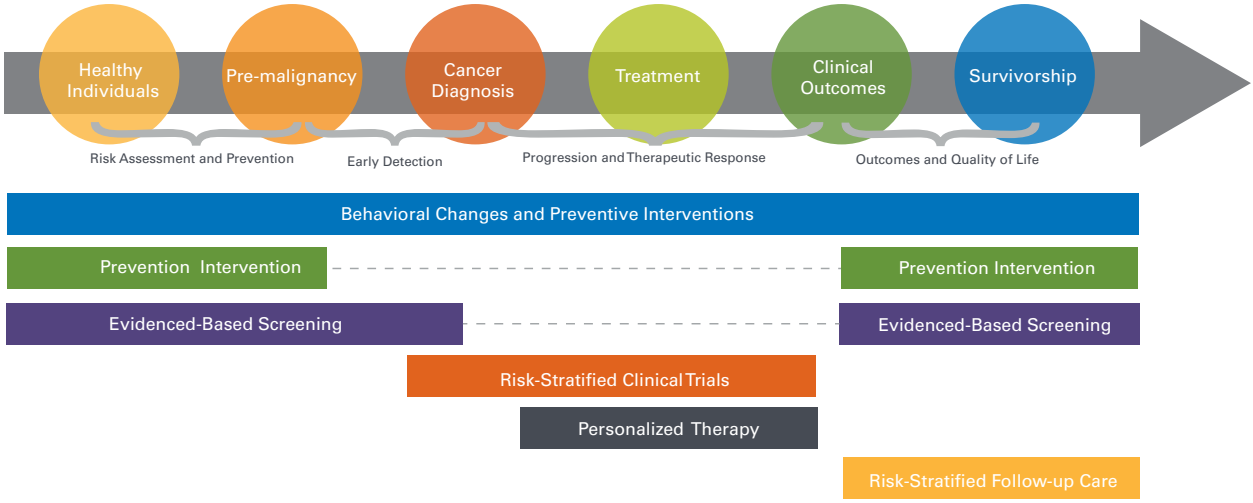
- Steps to Health II - Based on findings from Steps to Health I that demonstrate the importance of daily self-efficacy in driving exercise behavior, the Center is developing a smart phone intervention for cancer survivors that will provide messaging to increase exercise self-efficacy in real time.

Future Plans

- Advance Bionutrition Research Core
- Recruit additional energy balance faculty
- Develop grant proposals related to the role of visceral adiposity in cancer
- Establish new workgroups and sub-committees focused on emerging high priority topics

The Center for Translational and Public Health Genomics

Mission: To bridge the gap between epidemiologic discoveries and their translation into clinical and public health applications to benefit cancer patients, individuals at elevated risk for cancer, and the general population.



Goals

1. To develop Blood Specimen Research Resource (BSRR)
2. To discover, develop and validate blood-based biomarkers
3. To develop and refine personalized risk prediction models
4. To build research networks

Accomplishments

- Submitted 37 proposals totaling $73.8M, of which 6 were funded, totaling $13.3M, and 15 were pending, totaling $19.5M
- Published 65 manuscripts, 17 of which were published in in high-impact journals, including Science and Nature
- Enrolled 18,615 patients in the BSRR during reporting period
- Rcruited and banked biospecimens from 2,190 survivors for the Long-Term Survivors Cohort
- Expanded the Pediatric Cancer Cohort, enrolling 300 patients and healthy sibling transplant donors

Scientific Highlights

- Developed novel personalized risk prediction models with high accuracy for renal cell carcinoma, aggressiveness of prostate cancer, breast cancer recurrence and survival, and radiation-induced toxicity in lung cancer
- Identified a genetic variant that could stratify patients with Gleason score 7 prostate cancer into higher and lower risk groups

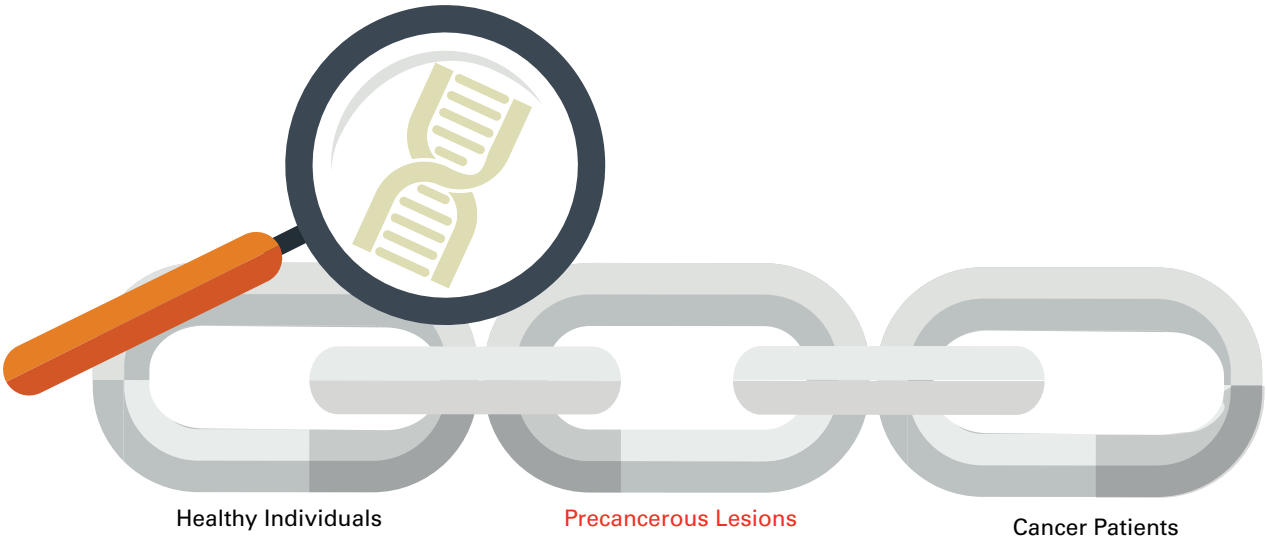
Center resources have been actively utilized and integrated with several Moonshot programs including prostate, lung and colorectal cancers to identify bio-markers and develop prediction models to enable better risk stratification at diagnosis, personalized medicine, and better prediction of malignant progression

Future Plans

- Identify clinical liaisons to improve clinical data collection and integration into cohorts
- Expand research into long-term survivors, both adult and pediatric, including late-effects and toxicities
- Advance risk signatures and models into the clinic
- Assist investigator-driven research projects
- Pursue peer-reviewed extramural funding and philanthropic support

Strategic Initiatives
Premalignant Genome Atlas

Mission: To assess the spectrum of risk factors contributing to the progression of healthy individuals to those with precancerous lesions to those with cancer and to determine molecular differences among these patients. Such differences could potentially serve as markers of risk or preventive response and/or targets for cancer prevention.



Accomplishments

- Recruited 604 new patients to the High-Risk Colorectal Cancer Cohort
- Enrolled approximately 82 patients in the Oral Premalignant Lesions Cohort
- Developed and launched a web-based Oracle database for rapid and secure query of epidemiologic, demographic, clinical, and other data
- Submitted seven grants, with four funded
- Published 17 manuscripts

Scientific Highlights

- Somatic mutation profiling of patients with colon adenoma - targeted sequencing of a panel of 767 genes linked to colorectal carcinogenesis identified differences in the genes most frequently mutated among non-advanced adenomas, advanced adenomas and colorectal cancers
- Impact of obesity on colon adenoma and colorectal cancer development – a case-control study to examine BMI and obesity in polyp and colorectal cancer development collected information on BMI at 3 different ages and preliminary findings suggest that obesity at a younger age is strongly associated with risk of adenomas and CRC later in life

Future Plans

- Expand patient cohort and biospecimen collection
- Build novel technology platforms for molecular and phenotypic profiling, including miRNAs, epigenetic alterations in ctDNA, and exosomes
- Explore collaborations on prevention trials
- Support junior faculty research on diet, the microbiome and risk of colorectal cancer to enable submission of R01 and R21 grants focused on both etiology and intervention

Integrative Health

Misson: : To optimize health, quality of life, and clinical outcomes of patients and families through exceptional clinical care, research, and education in integrative health services across the cancer continuum of prevention, active treatment and survivorship.

Services are delivered in two locations: the Cancer Prevention Center and, for those undergoing active treatment, the Integrative Medicine Center.

Accomplishments

Cancer Prevention Center (CPC)

- Completed 7,761 patient interventions, a 37% increase over FY14
  - 3,682 provided by two health navigators
  - 2,219 provided by two exercise physiology technicians
  - 1,522 provided by two registered dietitians
  - 338 provided by one social work counselor
- Created and published 7 patient education documents and 2 patient education videos in collaboration with the Integrative Health Working Group

Integrative Medicine Center (IMC)

- Completed 4,002 patient interventions, a nearly 300% increase over FY14
  - 527 meditation interventions
  - 799 nutrition interventions
  - 957 physical therapy interventions
  - 798 psychology interventions
  - 924 acupuncture interventions
- Planned an 8-week program which seeks to teach participants skills for sustained health behavior change with the goal of maintaining weight loss and improved fitness, including a follow-up maintenance program to encourage accountability until sustainable behavior change is realized.

Scientific Highlights

- Work of the CPC was presented in 9 scientific posters at 7 conferences
- The IMC published 3 scientific papers and presented 7 posters at 2 conferences

Future Plans

- Expand Program to survivorship clinics (CPC)
- Begin development of a nutrition algorithm
- Evaluate clinical impact on patient care
- Create additional patient education materials (CPC)
- Explore mechanisms for financial sustainability
- Pilot an Integrative Health Initiative program in a disease center (IMC)
- Create and implement a comprehensive weight management program (IMC)

Prevention and Survivorship Seed Funding

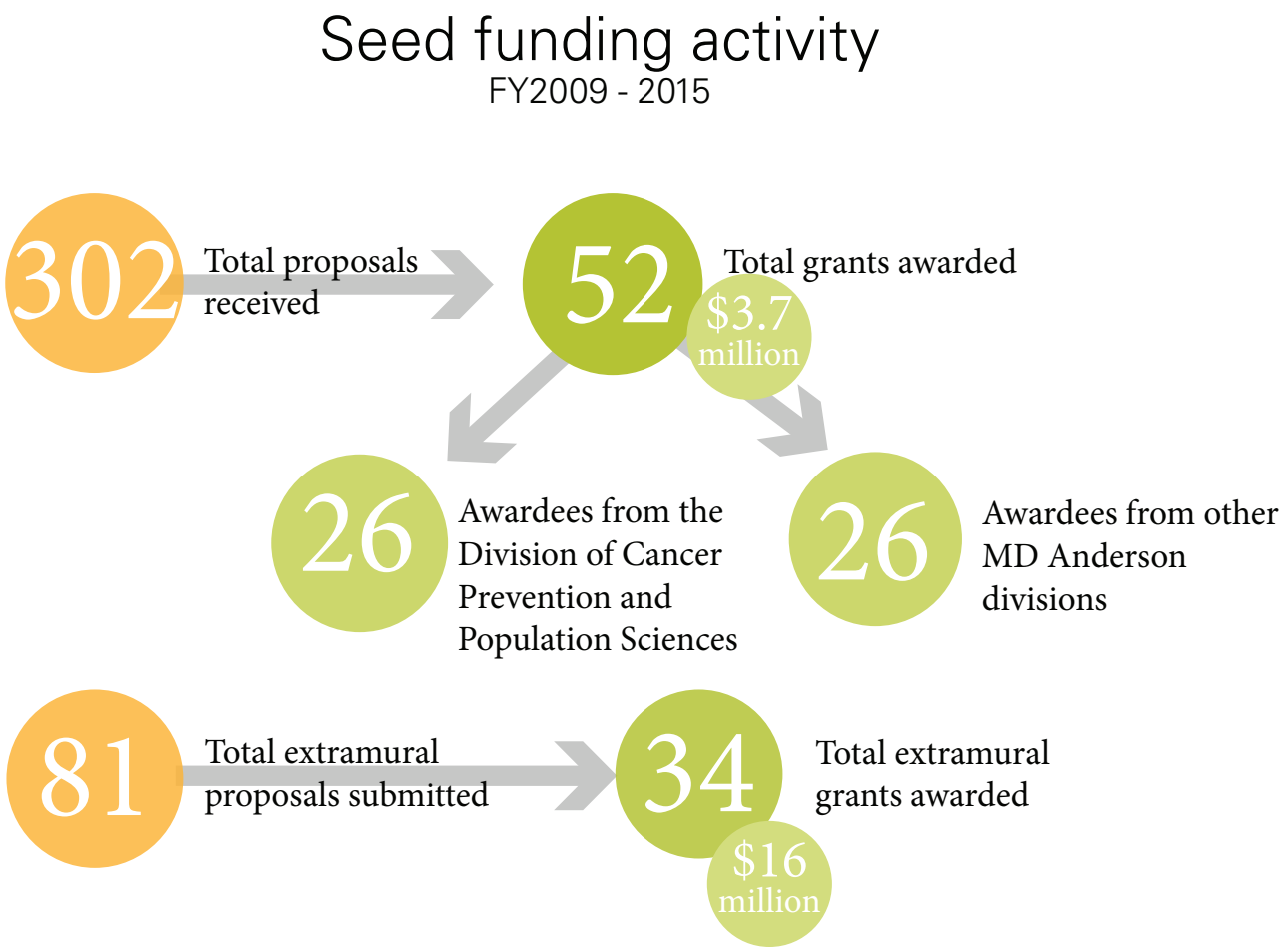
Supporting the Development of Preliminary Data for Innovative Research

The DFI's Seed-Funding Program provides financial support to investigators working to generate the preliminary data necessary to improve competitiveness for extramural support for larger and innovative hypothesis-driven studies. Funding is awarded through a peer review process.

Awards are available to faculty throughout MD Anderson and support work across the continuum of cancer prevention research, from early detection to survivorship.

Seed Funds Awarded in Year 7

The institute competitively awarded seed funds to nine new projects, which are briefly described on the following pages. The DFI awarded seven of these nine awards to investigators residing in departments outside the Division of Cancer Prevention and Population Sciences, realizing the Institute's promise of reaching across disciplinary boundaries to advance prevention research.



Seed Funding Awardees

Seed Funding Research Program Round 9: 3 awards

Petra den Hollander, Ph.D., Translational Molecular Pathology

"PTP4A3 is critical for the early progression of triple-negative breast cancer"

Triple-negative breast cancer (TNBC) affects young women and is more aggressive and deadly than ER-positive breast cancer. Selective agents currently used for the prevention and treatment of breast cancer are very effective in ER-positive breast cancer, but these agents are not effective in TNBC. For this large group of women, there is a critical need to develop new and more targeted therapies. To develop such targeted therapies for TNBC, we need to identify what 'drives' this cancer, and what alterations these 'drivers' induce in the cancer cells. In this study, we aim to identify the role of the signaling protein PTP4A3 in the development and progression of TNBC, as well as to identify altered pathways and proteins that may interact with PTP4A3. These findings will enable us to develop targeted, effective treatments for women at high risk of TNBC and for those already diagnosed with it.

Lorna McNeill, Ph.D., M.P.H., Health Disparities Research

" Food Deserts in Houston? Increasing Fruit and Vegetable Consumption to Reduce Cancer Risk"

Obesity continues to be highly prevalent in the African American (AA) population, affecting nearly 40% of AA men and a staggering 59% of AA women. Unfortunately, this trend is also present in AA children and adolescents, resulting in AA children facing a lifelong struggle with obesity and increased cancer risk. Called "food deserts," areas without access to healthy food options have been shown to be more prevalent in African-American neighborhoods and are associated with obesity. The proposed study aims to use a community-based approach to expand the Project CHURCH partnership to engage faith-based communities, the Houston Food Bank, the Brighter Bites program, and MD Anderson Cancer Center in utilizing churches as effective food co-ops that provide consistent access to fresh fruits and vegetables. This concept uses low-cost strategies combined with nutrition education for low-income AA children and their families, thereby addressing cancer-related health disparities among African Americans in Houston.

Scott Kopetz, M.D., Ph.D., GI Medical Oncology

" Preclinical Studies of a Novel Safer Aspirin for Colorectal Cancer Prevention"

In the U.S., more than 130,000 individuals will be diagnosed with colorectal cancer (CRC) and more than 50,000 will die from this disease in 2014. It is estimated that regular aspirin use has the potential to reduce the new cases of CRC by approximately 20% and reduce death from this disease by 35%. However, a safer aspirin is needed, as the risks associated with regular aspirin use currently outweigh the benefits. A new, safer aspirin was recently approved by the FDA, but has not yet

been tested for CRC prevention. Our project will test this new, safer aspirin for use as a CRC prevention agent in animal models. If this new aspirin is effective and safer in animal models, then we will have the evidence and rationale to begin a clinical trial in humans. If the new aspirin is not effective in animal models, or not safer, then we will know not to pursue this drug for CRC prevention in humans. Broader use of a safer aspirin for CRC prevention has the potential to greatly reduce the burden of this disease.

Seed Funding Research Program Round 10: 2 awards

Jessica Hwang, M.D., M.P.H., General Internal Medicine

"Human papillomavirus (HPV)-associated second malignancies in patients who receive allogeneic stem cell transplantation"

Patients with cancer may harbor asymptomatic, but cancer-causing, human papillomavirus (HPV) infection. Stem cell transplantation increases the risk of HPV-associated second malignancies such as oropharyngeal, cervical, and anal cancer. Survivors of allogeneic stem cell transplantation are especially at risk and need intensive HPV screening and management strategies to prevent HPV-associated second cancers. This study will determine the incidence and predictors of HPV-associated second malignancies after allogeneic stem cell transplantation and establish the prevalence of high-risk HPV types among survivors. Data from this study will be used to determine the use of HPV vaccines to prevent HPV-associated second malignancies in all allogeneic stem cell transplantation survivors.

Ju-Seog Lee, Ph.D., Systems Biology

"Non-invasive biomarkers for prevention of liver cancer in high risk patients"

Hepatocellular carcinoma (HCC) is accountable for an estimated 600,000 world-wide deaths annually and its incidence rate in the U.S. has doubled over the past 25 years, and is expected to double again over the next 10 to 20 years. Surgical resection is the major curative treatment of patients with HCC. However, long-term results of such curative therapies are far from satisfactory, due to the high rate of intrahepatic recurrence. In a previous study, we identified a unique gene expression signature that identifies high risk patients developing new HCC after treatment. However, liver biopsy, which is necessary for the generation of the gene expression data, is costly and frequently discouraged due to its potential complications. In this study, the investigators will screen candidate plasma markers to identify markers that are most significantly associated with a high risk of HCC development and validate identified markers in independent cohorts of patients.

Survivorship Seed Funding Awardees

Survivorship Seed Funding Research Program FY15: 4 awards

Katherine A. Hutcheson, Ph.D., Head and Neck Surgery

"Towards preventing pneumonia in chronic aspirators after head and neck radiotherapy"

Chronic aspiration is a life-threatening survivorship issue, affecting up to 30% of patients treated with curative radiotherapy for head and neck cancers. Aspirators are almost 5-times more likely to develop pneumonia than non-aspirators, and pneumonia confers a 42% increased risk of mortality among head and neck cancer survivors. While swallowing therapies positively impact on quality of life and scope of oral diet, there is no effective treatment to reverse chronic radiation-associated aspiration. Expiratory muscle strength training (EMST) shows promise as a treatment for aspiration in other challenging pathologies such as dysphagia associated with progressive neurodegenerative disease. The long-term goal of this work is to prevent pneumonia in chronic aspirators after head and neck radiotherapy. The objectives of the pilot studies in this application are to estimate the underlying mechanism, effect size, feasibility, and acceptability of EMST as a therapeutic approach for chronic aspiration after head and neck radiotherapy.

Carol M. Lewis, M.D., M.P.H., Head and Neck Surgery

"Optimizing post-treatment surveillance of head and neck cancer"

Current HNC post-treatment surveillance practices have not been evaluated. Significant long-term sequelae of HNC and its treatment include dysphagia, speech impairment, lymphedema, osteoradionecrosis, and diminished quality of life. According to the findings of a recent study, as many as 45 percent of late HNC treatment sequelae go unreported. Post-treatment surveillance patterns and functional rehabilitation utilization for HNC have not been studied systematically. Addressing this knowledge gap is critical to identifying optimal post-treatment surveillance strategies that incorporate interventions for these treatment-related functional impairments. The long-term goal is to improve HNC survivorship care. The overall objective of this project to describe and quantify institutional and national patterns of HNC post-treatment surveillance and resource utilization, while identifying predictors of resource use and corresponding long-term functional outcomes.

Joseph D. Khoury, M.D., Hematopathology

"Risk modeling and predictive biomarker discovery for therapy related myeloid neoplasms risk in breast cancer patients"

Patients who receive cytotoxic chemotherapy and/or radiation therapy for breast cancer are at risk of developing therapy-related myeloid neoplasms (t-MN). Notably, breast cancer is the most common malignant solid tumor among patients with t-MN. Thus, in addition to its primary effect as a public health burden, breast cancer exerts an additional adverse effect through t-MN. Accordingly, we premise that developing predictive tools to assess the risk of t-MN development in any given

patient can inform risk-modulated therapy decisions that should ultimately reduce the risk of secondary malignancies among susceptible breast cancer survivors. The aims of this study are to identify acquired and/or inherited genomic alterations that predispose some breast cancer patients to development of t-MN; and to create a biomarker-based predictive model to identify such a predisposition to secondary myeloid neoplasms among breast cancer patients.

Robert L. Satcher, Jr., M.D., Ph.D., Orthopaedic Oncology

"Using telemonitoring to optimize the mobility of cancer survivors with skeletal metastases after surgery to preserve limb function"

The use of mobile devices has the potential to improve the delivery of cost-effective, high-quality, standardized surveillance of cancer survivors. New technological developments in telecommunications have allowed HIPPA-compliant telemonitoring of patients; however, the Center for Medicare and Medicaid Services (CMS) has requested demonstration of equivalence to an in-person clinic visit. In contrast to other medical subspecialties, long-term survivorship research on patients after surgery using mobile devices has been uncommon. This study proposes to develop and test a novel web-based and mobile technology for surveillance of cancer survivors following surgery for bone metastases.

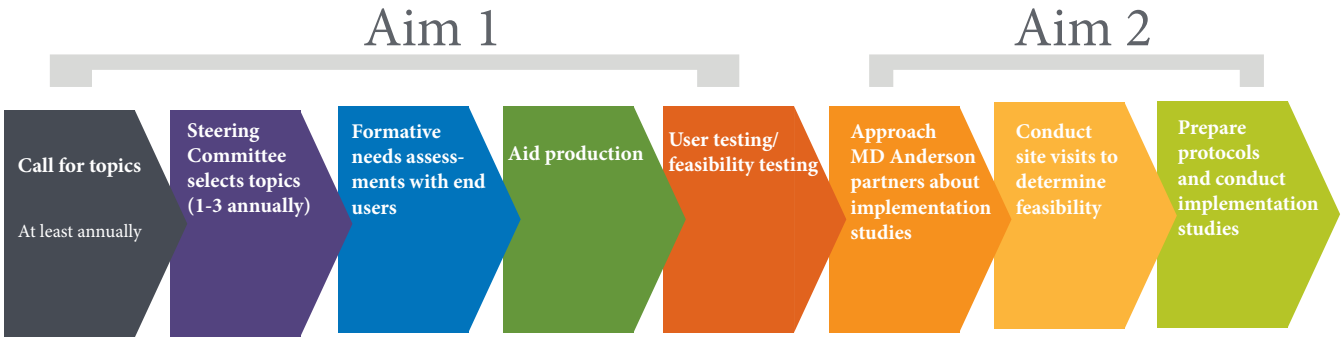
Research Resources

Shared Decision-Making Collaborative (New in FY15)

Mission: To enhance the quality of decision making in cancer prevention by providing patients and their health care providers with evidence-based tools to facilitate their working in partnership to make difficult decisions consistent with the values and preferences of the patient.

Goals:

1. Rapid development of new shared decision-making tools for topics nominated by our clinical faculty
2. Research on implementation of new shared decision-making tools and their impact on quality of cancer care delivered at MD Anderson and its partners



Expected Outcomes:

Year 1

- Topic selection process finalized
- Initial topics selected for production
- Completion of first tool

Year 2

- Evaluation of first tool
- Additional topics selected
- Production of two new tools
- Evaluation of new tools
- Proposal for first implementation study

Year 3

- Sustainability plan completed
- Additional topics selected
- Tools produced
- Implementation study launched

Years 3-5 (mid-term)

- Sustainability activities underway
- Ongoing presence at Global Academic Programs, with broader dissemination and implementation activities
- Numerous spin-off funding applications

Years 5+ (long-term)

- Leader in shared decision-making implementation and research in cancer care
- Primary training site for shared decision-making
- Expansion of faculty

Bionutrition Research Core (New in FY15)

Mission: To support investigators at MD Anderson Cancer Center and other Texas Medical Center Institutions in their efforts to apply dietary approaches to cancer prevention by providing the resources necessary to plan and conduct human feeding studies that demand state-of-the-art nutritional science.

Goals:

- Understand the relationships among diet, obesity, and cancer
- Use this knowledge to optimize interventions that decrease cancer risk and improve outcomes

Services that will be provided by the BRC include, but are not limited to:

1. Designing, producing, delivering, monitoring, and documenting nutrient-controlled meals for human feeding studies with accuracy and precision;
2. Collecting, coding, and summarizing study-related nutrient intake data using specialized software programs, food composition databases, and manufacturer contacts; and
3. Providing a controlled environment for the feeding and observation of "in house" study participants; and providing foods and beverages packed "to go" for weekends and "free-living" participants.

Expected Outcomes:

Year 1

- Establish infrastructure
- Extend currently provided services
- Activate research collaborations

Years 2 and 3

- Expand the breadth and complexity of services in order to expand research portfolio

Years 3-5 Goals

- Maximize the Core's services and re-evaluate infrastructure needs
- Apply external funds to support sustainability
- Foster external collaborations to conduct multi-institutional studies

Years 5+ Goals

- Participate in multi-institutional collaborations
- Successfully compete for Core funding

Center for Community-Engaged Translational Research (CCETR)

Mission: To bring communities and researchers together to create long-term solutions to prevent cancer and improve health.

Goals:

1. To facilitate research development and implementation between MD Anderson investigators and diverse communities
2. To establish and maintain equitable research partnerships
3. To increase the capacity of investigators to recruit and retain diverse patients to clinical studies

Accomplishments

- Provided assistance to 25 grant submissions totaling over $67M
- Supported 23 active projects totaling over $45M
- Published 28 papers, with 3 in high-impact journals
- Collaborated on the Cancer Prevention and Control Platform's Healthy Communities Initiative, which successfully led to a grant award from the BUILD Health Challenge

Science Supported by the Resource

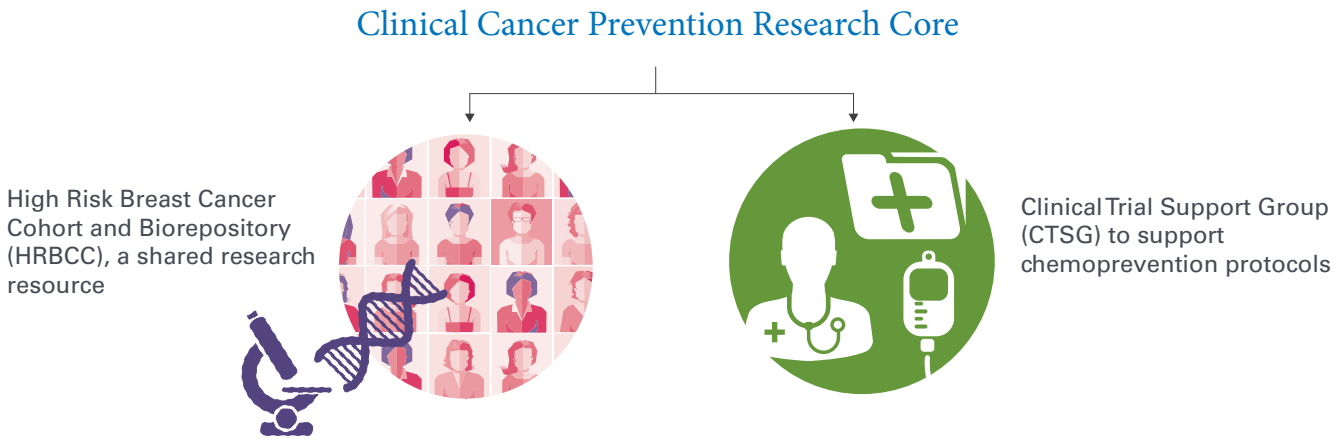
- Faith, Health and Family Collaborative (FHFC) – a community-academic partnership that integrates concerns around African-American obesity and church readiness for evidence-based programming to collaboratively develop a research agenda to engage African-American churches in addressing family-based obesity
  - CCETR contribution: provides overall project management, advisory board development, materials development, community engagement, meeting facilitation, and grant planning activities; created an 18-member advisory board and is collaboratively planning/implementing youth data collection, training in capacity-building, and church audits
- Community Networks Program – a NCI-funded center at both MD Anderson and the UT School of Public Health that combines innovative research, community outreach and a training program to reduce cancer-related disparities and build a competitive cadre of researchers in community-based participatory research
  - CCETR contribution: provides program planning and administrative support to the Training Core; nine trainees graduated from the Program in FY15 alone, with all obtaining tenure- or research-track faculty positions

Future Plans

- Hire new faculty to focus on writing community-engaged research proposals
- Continue close collaboration on current projects, with a potential expansion in Project CHURCH

Clinical Cancer Prevention Research Core (CCPRC)

Mission: To provide an infrastructure for prevention research supporting the conduct of collaborative translational and clinical research investigating risk assessment, risk reduction interventions, cancer risk and early detection markers, and cancer screening.



Goals

1. To support core prevention research activities with an infrastructure of experienced personnel of the Clinical Trial Support Group (CTSG)
2. To establish a shared Research Resource for MD Anderson scientists in the High Risk Breast Cancer Cohort and Biorepository (HRBCC)

Accomplishments

- Contributed to 16 submitted grants totaling $14.4M
- Clinical Trials Support Group provided infrastructure for eight clinical trials and two laboratory trials
- HRBCC met accrual goal of 2000 individuals, with 200 new registrations in FY15
- Received funding from Womens' Cancer Moon Shot for project entitled "Preventing Breast Cancer in Women with Precancerous Lesions: Implementing a Program Improvement Project to Maximize Breast Cancer Preventive Therapy"

Science Supported by the Resource

- Phase Ib biomarker trial of naproxen in patients at risk of DNA Mismatch Repair Deficient Colorectal Cancer
  - CCPRC contribution: enrolled 20 of 34 patients enrolled to date (accrual goal=60)
- A multicenter phase II study of docosahexaenoic Acid (DHA) in patients with a history of breast cancer, premalignant lesions or benign breast disease
  - CCPRC contribution: enrolled 32 of 51 patients randomized to date (accrual goal=63)

Future Plans

- Increase use of the High Risk Breast Cancer Cohort and Biorepository for research purposes
- Implement on-line follow-up questionnaires to enhance the collection of longitudinal data
- Pilot on-line newsletter for study participants

e-Health Technology

Mission: To focus on the advancement of interactive interventions and data capture tools for research, patient care, and education .

Goals

1. To design and support web, mobile and wearable sensor interface applications for cancer prevention and control projects
2. To serve as a technology resource for cancer center support-grant programs
3. To add quality and provide innovation to technology initiatives
4. To develop cross-cultural application capabilities

Accomplishments

- Submitted 17 grants totaling $17.1M (10 funded totaling $16M)
- Supported 21 active projects totaling $15M
- Provided 27 consultations; initiated, developed and completed 15 projects; and serviced six on-going maintenance and support projects
- Successfully published mobile applications to Google and Apple app stores for user downloads to personal smart phones

Science Supported by the Resource

- Social Networking for Arthritis Patients (SNAP) - with Maria Suarez-Almazor, M.D., Ph.D., Professor, General Internal Medicine, MD Anderson
  - e-Health contribution: built a web-based application for data collection (Google Analytics) and collected social media analytics; developed a public-facing website and an internal Content Management System administrative website.
- UT Public Health Ecological Momentary Assessment –Susan Tortolero Emery, Ph.D., Professor, UT School of Public Health
  - e-Health contribution: designed and implemented the mobile application, database, an interactive user interface, secure data collection and transfer, remote data uploads and downloads; created assessment and distribution software, supplied training, support, and project management.

Future Plans

- Design reusable programming architecture for mobile applications to interface with innovative, wearable medical sensors
- Expand program capabilities to include international deployment of applications and cloud technology
- Design and implement project dashboards to enhance the visibility of project progress
- Implement and test web services and web APIs to interface with a variety of organizational systems
- Implement a robust marketing plan to include updated web pages, brochures, and an interactive e-Health Technology Day conference
- Incorporate technology growth through in-house training and staff participating in certification programs offered by the institution

Mexican-American Cohort Study (MACS)

Mission: To study cancer and other chronic disease risks as they emerge in a population undergoing social change; to develop population-specific prevention strategies for cancer and cancer-predisposing conditions; and to serve as a valuable resource to advance population science at MD Anderson. The Cohort is a unique resource for the study of health issues among Mexican Americans.

Goals

1. To identify determinants of risk for cancer and other chronic diseases
2. To develop cancer prevention strategies using epidemiological, behavioral, genetic, and molecular risk factors
3. To serve as an infrastructure to advance population science research at MD Anderson

Accomplishments

- Conducted a physical activity methodology study to evaluate the reliability of self-reported physical activity
- Published an informative Cohort descriptive manuscript in *The Journal of Epidemiology*
- Convened an External Advisory Board meeting on September 26, 2014
- Convened an Internal Advisory Board meeting on July 24, 2015
- Performed molecular characterization of Cohort samples
- Submitted four proposals totaling $6.7M
- Supported five active projects totaling $3.7M
- Published 27 manuscripts

Science Supported by the Resource

- Thus far, many cohort analyses have focused on examining the effect of acculturation on cancer and other chronic disease risk factors. To date, data suggest that individuals with higher levels of acculturation have increased risk for obesity, diabetes and high blood pressure
- Data from MACS was leveraged to help develop a model to predict smoking experimentation in Mexican-American youth as a way to target interventions to prevent smoking. This model is available on-line at *https://biostatistics.mdanderson.org/SmokingExperimentRisk/*

Future Plans

- Initiate a pilot study on psychosocial/cultural risk factors
- Conduct further molecular analyses
- Plan a new environmental component incorporating GIS research
- Increase collaboration across the Division of Cancer Prevention and Population Sciences
- Increase Cohort visibility and community involvement
- Renovate the Cohort website and content

Health Services Research Core Data Resource

Mission: To create a core data resource consisting of large datasets to promote health services research studies at MD Anderson, as such data are one of the most important resources for studying health care delivery, economics of care, cost-effectiveness, quality of care, and treatment outcomes.

Goals

1. To purchase, maintain, and update large databases to be used by MD Anderson researchers
2. To maintain licenses, data use agreements, and confidentiality agreements to ensure regulatory compliance with the use of such databases
3. To provide guidance and analytic support on studies using these databases

Accomplishments

- Submitted 26 grants totaling $48.5M, with six funded, totaling $800K
- Supported 16 active projects, totaling $2.9M
- Published 14 manuscripts, with two in high-impact journals
- Finalized exclusive academic partnership with Health Care Cost Institute (HCCI)
- Hired statistical analyst

Science Supported by the Resource

- Supported a study examining cardiac monitoring in older breast cancer patients receiving trastuzumab, use of which is associated with cardiotoxicity. Findings demonstrated that the majority of studied patients received suboptimal monitoring and highlight the need for efforts to improve cardiac monitoring in this vulnerable population.
- Provided data for recently awarded survivorship seed funding grant that will evaluate surveillance and second malignancies in survivors of HPV-associated cancers. Knowledge gained from this study will be used to develop strategies and inform recommendations on the appropriate surveillance of such patients.

Future Plans

- Continue to provide analytic support
- Renew license/update SEER-Medicare, Marketscan, AMA
- Continue HCCI agreement
- Submit second research proposal to HCCI
- Anticipate new research projects from new trainees and investigators due to the availability of data resources

Educational Resources

Mentored Junior Faculty Fellowship

The Duncan Family Institute's competitively awarded fellowships are designed to bridge the gap in funding between postdoctoral training and independent researcher status. They provide the mentoring and financial support for instructor-level faculty to focus on developing their research questions, generating preliminary data, and enhancing their publication record to compete successfully for peer reviewed extramural grants — an early and critical milestone on the path to research independence.

We are pleased to report that Matthew Cox-Martin, Ph.D., instructor in Behavioral Sciences, is this year's fellowship recipient

Matthew Cox-Martin, Ph.D.

Dr. Cox-Martin is interested in advancing the field of cancer prevention research by ensuring that the theories driving this research reflect the most current, accurate, and empirically-based science. His ultimate research goal is to identify the causal mechanism of physical activity interventions so as to create the most effective interventions for cancer prevention. He holds a Ph.D. in Clinical Psychology from Virginia Tech and has previous research experience in a number of prevention-focused areas, including alcohol use among college students, morbidity and mortality due to motor vehicle crashes, cardiovascular disease, and cancer prevention.

Progress of Previously Funded Fellow

Thanh C. Bui, M.D., Dr.P.H.

Dr. Bui's work focuses on behavioral risk factors for Human Papillomavirus (HPV) infection, with a special emphasis on vulnerable populations, such as people living with HIV/AIDS, or the sexual partners of people diagnosed with HPV-related malignancies. HPV infection is the most common sexually transmitted disease in the world. During his first year as a DFI Mentored Junior Faculty Fellow, Dr. Bui published four papers, with two as first-author, submitted two grant applications to the National Cancer Institute, and presented at an international conference on HPV.

Supported Seminars

The Institute contributed to enhancing the intellectual environment in support of the current generation of scientists by co-sponsoring speakers in collaboration with the Division of Cancer Prevention and Population Sciences' Cancer Prevention and Control Grand Rounds lecture series.

Internatinally renowned experts addressed a wide range of real-world issues relevant to cancer prevention. The six DFI-supported lectures for this past year were:

- *"Long-term Outcomes Among Adult Survivors of Childhood Cancer"*
  Leslie Robinson, Ph.D.
  Member, St. Jude Faculty; Chair, Department of Epidemiology and Cancer Control; Associate Director for Cancer Prevention and Control, Comprehensive Cancer Center; Co-Leader, Cancer Prevention and Control Program, St. Jude Children's Research Hospital
- *"Electronic Nicotine Delivery Systems: The Promise, the Peril and the Urgent Need for Regulation"*
  Jack Henningfield, Ph.D.
  Vice President, Research Health Policy, Pinney Associates; Professor, Behavioral Biology, Adjunct, Department of Psychiatry and Behavioral Sciences, Johns Hopkins University, School of Medicine
- *"Obesity, White Adipose Inflammation and Breast Cancer"*
  Andrew Dannenberg, M.D.
  Professor of Medicine, Weill Cornell Medical College
- *"Lifestyle and Breast Cancer"*
  Jennifer A. Ligibel M.D.
  Director, Leonard P. Zakim Center for Integrative Therapies; Assistant Professor of Medicine, Dana-Farber Cancer Institute
- *"How a U.S. Mexico Border Town Won the 2014 Robert Wood Johnson Foundation Culture of Health Prize"*
  Belinda Reininger, Dr.P.H.
  Associate Professor, The University of Texas School of Public Health, Brownsville
- *"Preventing and Treating Cervical Cancer Globally: Innovative Approaches and Partnerships"*
  Kathleen Schmeler, M.D.
  Associate Professor, Department of Gynecologic Oncology and Reproductive Medicine, Division of Surgery, The University of Texas MD Anderson Cancer Center; and
  Rebecca Richards-Kortum, Ph.D.
  Professor of Bioengineering and Electrical and Computer Engineering; Director, Rice 360°: Institute for Global Health; Director, Institute of Biosciences and Bioengineering; Department of Bioengineering, Rice University

Governance and Oversight

The Duncan Family Institute for Cancer Prevention and Risk Assessment is guided by the Executive Committee. Members include the Vice President for Cancer Prevention and Head, Division of Cancer Prevention and Population Sciences, the chairs of the five departments within the Division, the directors of the Institute and Division centers, and the Vice President for Health Policy. The Executive Committee continued its focus on ensuring excellence through annual reviews of its initiatives and in exploring ideas to sustain the Institute's diverse programs spanning MD Anderson's four mission areas: research, clinical care, education, and cancer control.

Ernest Hawk, M.D., M.P.H.
Vice President and Division Head

Karen Basen-Engquist, M.P.H. Ph.D.
Director
Center for Energy Balance in Cancer Prevention and Survivorship

Therese B. Bevers, M.D.
Medical Director
Cancer Prevention Center

Powel H Brown, M.D., Ph.D.
Chair
Department of Clinical Cancer Prevention

Paul M. Cinciripini, Ph.D.
Director
Behavioral Research and Treatment Center

Lewis E. Foxhall, M.D.
Vice President
Health Policy

Sharon H. Giordano, M.D., M.P.H.
Chair
Department of Health Services Research

Lorna H. McNeil, M.P.H., Ph.D.
Director
Center for Community-Engaged Translational Research

Xifeng Wu, M.D., Ph.D.
Director
Center for Translational and Public Health Genomics

Hua Zhao, Ph.D.
Associate Professor
Department of Epidemiology

Jennifer H.Tektiridis, Ph.D.
Executive Director
Research Planning and Development

Your Impact

The Duncan Family Institute is primarily supported by a transformative gift from the Duncan Family, to whom we extend our most sincere appreciation and deepest gratitude for making the Institute possible. We are also greatly indebted to all of our new and sustaining donors who contribute to our mission. The generosity of these individuals has been and will continue to be critical to the efforts of the Duncan Family Institute as we seek to advance the discovery and translation of new scientific knowledge about cancer risk and prevention in the laboratory, clinic and community.

Contact Us

To learn more about the work of the DFI, visit us on the web at www.mdanderson.org/duncanfamilyinstitute or contact us at:

dfi@mdanderson.org

Duncan Family Institute for Cancer Prevention and Risk Assessment

Division of Cancer Prevention and Population Sciences – Unit 1370

PO Box 301439

Houston TX 77230-1439

THE UNIVERSITY OF TEXAS
MD Anderson Cancer Center
Making Cancer History®