The Section of Epidemiology and Population Sciences studies the role that endogenous and exogenous sources have in the development of complex human diseases. Sources of exposures include genetic, behavioral and environmental factors that can have effects through intermediate processes such as epigenetic obesity or metabolic processes. Because we focus on complex disease etiology we also use and develop quantitative approaches and study model systems to understand mechanisms in disease biology. Particular strengths of the section include genetic and molecular epidemiology, statistical genetics, geospatial effects on risk and behavioral epidemiology. The Institute of Clinical and Translational Research is housed in the Section of Epidemiology and Population Sciences and co-led by Dr.s Amos and Balasubramanyam.

Our mission is to create a premiere multidisciplinary research program in epidemiology and population sciences (including but not limited to cancer prevention sciences) that is translational in nature and has relevance to the patients and the population that the College serves. Our goal is to foster the highest quality epidemiologic research and to serve as the centralized resource for the college for innovative epidemiologic research, collaboration, education, and service.

- To achieve these objectives, we will conduct nationally and internationally recognized and well-funded multidisciplinary epidemiology research.
- Continue focus on areas of existing faculty expertise in adult and pediatric cancer epidemiology i.e. molecular, genetic, and viral/immunoprevention/infectious disease epidemiology. Additional faculty recruitment in nutritional epidemiology/obesity research; pharmacogenomics, cancer control and screening, survivorship/outcomes.
- Extend research into diabetes, neuosciences and cardiovascular clinical science.
- Generate community-based research in high-risk and minority/underserved populations.
- Develop strong collaborations with the University of Texas School of Public Health and the BCM Center for Precision Environmental Health.
- Translate research to the scientific community, general public and beyond.
**HIGHLIGHTS**

Dr’s Amos and Cheng, showed that baseline or post-diagnostic exposure to simvastatin and atorvastatin was associated with extended survival in non-small-cell lung cancer. Drs Amos and Cheng applied a biological model to characterize outcomes following immunotherapy for renal cancer. Dr. Amos serves as PI of the Coordinating Center for the Molecular Characterization of Screen-Detected Lesions Network (U01) that includes the design of new studies. Dr’s Amos and Cheng developed a computational immune profiling model for early stage lung cancer. This algorithm can infer immune cell infiltration in tumor tissues based on gene expression data. Dr. Cheng recently completed a study of the role that VISTA has in the development of autoimmunity and suppression of cancer by studying its impact in immunomodulation using single cell RNA sequencing methods. Dr. Amos assisted Dr. El-Serag to develop a coordinating center grant for studying hepatocellular carcinoma. Dr. Amos serves as a co-leader for the newly awarded NIEHS core grant supporting the Center for Precision Environmental Health under Dr. Cheryl Walker.

Dr. Badr is currently conducting a multi-site randomized controlled trial of CareSTEPS, a psychosocial intervention for informal caregivers of advanced lung cancer patients. Dr. Badr received a discovery award from the NCI to participate in the Speeding Research Interventions into Practice (SPRINT) program and develop an implementation plan for moving CareSTEPS into clinical practice settings.

Dr’s Thrift and El-Serag have an active research program in Barrett’s Esophagus (BE), a precursor to esophageal adenocarcinoma (EAC). EAC is a rapidly advancing cancer in white males in our catchment area. Dr’s Thrift and El-Serag have published >25 relevant papers during the past five years and identified risk factors associated with BE and EAC.

Prostate cancer in African-American (AA) men is one of the high-risk cancers in our catchment area. There are several initiatives underway to address this problem. Dr’s Bondy and Thrift are the Texas PIs for the RESPOND African American Prostate Cancer Study, the largest study to date of prostate cancer in AAs.

An inter-programmatic collaboration among Dr’s Liu, Amos, and Spitz led to the discovery of rare variants in the lymphotoxin beta gene, prolyl 3-hydroxylase gene, and disheveled associated activator of morphogenesis 2 gene that strongly associated with increased risk of lung cancer among individuals with a family history of lung cancer. Dr. Li used data from the Oncoarray project to identify novel gene-gene interactions that affect lung cancer risk, which led to her successful R21 application.

Dr. Minard leads the biostatistical core for the ICTR and won an award from the Graduate School for Biomedical Science with Dr. Hilsenbeck for best teaching for a required course in biostatistics for graduate students.

Dr. Bondy is a leading force in glioma epidemiology, having established two international glioma consortia of 14 sites that collected both glioma families (Gliogene) and sporadic cases and control (GICC). Dr’s Bondy, Huse (MDACC), and Amos have an inter-institutional project in the MDACC Brain Tumor SPORE entitled “Somatic and germline distinctions arising in Black and Hispanics”. Dr. Bondy and colleagues from the GICC Consortium have multiple publications using Mendelian randomization. Her group is collaborating with the quantitative modeling group to develop novel methods such as LD Score Regression to determine novel phenotypes associated with glioma and lung cancer using UK Biobank Data.
FACULTY

EPIDEMIOLOGY & POPULATION SCIENCES

Melissa Bondy, Ph.D.
Yanhong Liu, Ph.D., M.S.
Aaron Thrift, Ph.D.
Margaret Spitz, M.D.

POSTDOCTORAL ASSOCIATES

Jing Dong, Ph.D.
Quinn Ostrom, Ph.D., M.P.H.
Jeremy Schraw, Ph.D.
Xiaotao Zhang, Ph.D.

INSTITUTE FOR CLINICAL & TRANSLATIONAL RESEARCH

Chris Amos, Ph.D., M.S.
Jinyoung Byun, Ph.D.
Chao Cheng, Ph.D., M.S.
Younghun Han, Ph.D.
Yafang Li, Ph.D.
Charles Minard, Ph.D.

FACULTY – SECONDARY APPOINTMENT

Richard Finnell, Ph.D.
Philip Lupo, Ph.D.
Michael Scheurer, Ph.D., M.P.H.
Cheryl Walker, Ph.D.
PRESS

Melissa Bondy: #BrainTumorAwarenessMonth, Better Together with Maria Menounos. In this interview with host and glioma survivor Maria Menounos, Dr. Bondy discusses Gliogene, the largest study of familial brain cancer. Podcast-Maria Menounos-Melissa Bondy.

Melissa Bondy: Did Harvey make us sick? Still more questions than answers. Baylor College of Medicine has three Harvey health-related projects under way. Each of these studies is examining contaminants, their sources and possible toxicity. Houston Chronicle-Hurricane Harvey.

Harvey Symposium - 2 Years After, Mayor Turner Proclamation that on August 22nd, 2019 is Hurricane Harvey Research Day. Also pictured, Judge Ed Emmett, Baylor President, Dr. Paul Klotman.

Jing Dong and Aaron Thrift: An article by Jing Dong, Ph.D., and Aaron Thrift, Ph.D., “Less surgery among blacks linked to worse esophageal cancer survival.” Discussing racial disparities in esophageal cancer treatment is featured in Healio Gastroenterology.


Melissa Bondy and Aaron Thrift: A NCI press release regarding the largest coordinated research effort to study biological and non-biological factors associated with aggressive prostate cancer in African-American men. Cancer.gov-Respond

Jourdan Brown, Research Coordinator for the RESPOND Study
TEACHING ACTIVITIES

Hoda Badr
- Translational Research & Population Health (TRAP), Baylor College of Medicine
- Mentorship of Post-doctoral Fellows, Graduate and Undergraduate Students, Baylor College of Medicine

Jinyoung Byun
- Bioinformatics and Genome Analysis, Baylor College of Medicine and U.T. M.D. Anderson

Jing Dong
- Genetic Epidemiology & Population Genetics, Baylor College of Medicine

Charles Minard
- Biostatistics, Graduate School for Biomedical Sciences, Baylor College of Medicine

Quinn Ostrom
- Fundamentals of Epidemiology, Baylor College of Medicine

Jeremy Schraw
- Introductory Data Analysis in R, Baylor College of Medicine
- Fundamentals of Epidemiology, Baylor College of Medicine

Xiaotao Zhang
- Fundamentals of Epidemiology, Baylor College of Medicine
- Overview of Epidemiology Study Designs, Texas Children's Hospital
AWARDS AND HONORS

Chao Cheng

🌟 Rising Stars Award funded by Cancer Prevention and Research Institute of Texas (CPRIT)

Quinn Ostrom

🌟 Enrico Anglesio Prize, International Association of Cancer Registries

Jeremy Schraw

🌟 Young Investigator Talent Award, International Society of Pediatric Oncology (SIOP)

Aaron Thrift

🌟 American Gastroenterological Association (AGA) Institute Clinical Guidelines Committee

CARE Team

The Section of Epidemiology and Population Sciences instituted a CARE Team. Responsible for recognizing academic achievement and promoting employee wellness activities.

Younghun Han and Jinyoung Byun, EPI/ICTR - Annual Volunteer Day

Jesus Sotelo - Annual Volunteer Day

Katelin Reishus - Annual Volunteer Day - Project C.U.R.E.
### RESEARCH ACTIVITIES

#### CHRIS AMOS

<table>
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<tr>
<th>Grant ID</th>
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<td>U01CA230997-01 (Pl: Kanwal)</td>
<td>NIH/NCI</td>
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<td>U01CA196386 &amp; CA196386S1</td>
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<td>1R01CA239342-01 (Pl: Wang)</td>
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<td>RR170048</td>
<td>CPRIT</td>
<td>$1,200,000</td>
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- **Risk Stratification for Early Detection of Liver Cancer**
  The Translational Research Center (TRC) includes a multidisciplinary team of clinical and translational researchers that has a strong record of accomplishment of collaborative work, with the collective mission of reducing the burden of HCC.

- **Center for Molecular and Cellular Findings of Screen-Detected Lung Lesions**
  This grant coordinates design and analysis of a network of grants involved in molecular studies of screen-detected lesions. Additionally, we will support data collection across the network.

- **Genome-Wide Association Study (GWAS) in Hepatocellular Carcinoma (HCC)**
  This grant studies genetic and environmental contributions to the development of Hepatocellular Carcinoma in U.S. populations. Genetic effects will be elucidated with a genome-wide association study and environmental effects will be studied by Mendelian Randomization and mediation analyses.

- **Gulf Coast Center for Precision Environmental Health**
  The GC-CEPH will be the focal point and catalyst for impactful EHS research, bi-directional communication with local communities and stakeholders, and the engine driving translation of precision environmental health research advances to improve human health.

- **Statistical methods and tools for cancer risk prediction in families with germline mutations in TP53**
  To improve the clinical management of individuals with a family history of early-onset cancers by developing mathematical models to assess 1) germline mutation carrier probability prior to TP53 testing and 2) the absolute lifetime risk of developing cancers in individuals with TP53 mutations.

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#### MELISSA BONDY

<table>
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<td>1U19CA214254-01-A1</td>
<td>NIH/NCI (sub only)</td>
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Research on Prostate Cancer in African American Men
The overall goal of this proposal is to better understand and define the roles of genetics, immunity, and access to care among African American men with prostate cancer.

51R01CA232754-01 NIH/NCI $954,904 05/09/2019 - 04/30/2023

(MPI) Characterizing germline and somatic alterations by glioma subtypes and clinical outcome.
The overall goal of this proposal is to identify interactions between germline risk SNPs, somatic mutations, and clinical outcomes in glioma patients.

CHAO CHENG

1R21CA227996 NIH/NCI $217,776 (sub only) 04/01/2019 – 03/31/2021

Computational Identification of new candidate drugs for lung cancer treatment
The major goal of this project is to integrate genomic data and population-based longitudinal healthcare data to identify new candidate drugs for the treatment of lung cancer from FDA approved drugs.

RR180061 CPRIT $1,200,000 04/01/2019 – 03/31/2021

Integrative computational approaches for improving cancer immunotherapy
The major goal of this project is to develop computational models that integrate diverse genomic data to categorize cancer types and stratify patients within a cancer type to improve treatment efficacy of immunotherapy.

R01CA225028-01A1 (PI: Turk) NIH/NCI $9,557 (sub only) 02/01/2018 – 01/31/2023

Tissue resident memory T cell responses to Cancer
The major goal of this project is to test the hypotheses that a diverse complement of functional memory T cells in peripheral tissues underlies the durable tumor immunity observed in mice and melanoma patients with vitiligo and other cutaneous inflammatory events.

AARON THRIFT

P30 CA0125123-S (PI: Osborne, CK) Pilot Award NCI $50,000 01/01/2019 – 12/31/2019

The gut microbiome in cirrhosis and Hepatocellular carcinoma
The goal of this study is to characterize the gut microbiome in cirrhosis patients and examine for differences by race/ethnicity and underlying etiology

P30 CA0125123-S (PI: Osborne, CK) Pilot Award NCI $50,000 06/01/2018 - 05/30/2019

Admixture mapping of cirrhosis and Hepatocellular carcinoma in African Americans
The goal of this study is to discover genes that underlie ethnic variation in risk of cirrhosis and, in an exploratory aim, how this variation relates to risk of Hepatocellular carcinoma.

PP160089 CPRIT $494,590 09/01/2016 – 08/31/2019

PREVENT HCC – through Screening, Vaccination and Treatment of Viral Hepatitis
The goal of this study is to reduce liver cancer incidence in high-risk residents of Harris County, TX through education, screening, vaccination and treatment.


PRESENTATIONS


5. **Zhang X.** Malnutrition and overall survival in older adults in US, findings from National Health and Nutrition Examination Survey (NHANES). APHA’s 2018 Annual Meeting & Expo (Nov. 10 - Nov. 14), San Diego, CA. Poster presentation.


10. **Thrift, A.** Esophageal and gastric cancer risk in HIV-infected individuals. CNIHR Workshop, Bethesda, Maryland, August 2018.


