

EPIDEMIOLOGY AND POPULATION SCIENCES



INTERIM SECTION CHIEF
Christopher Amos, Ph.D.

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 Drs.

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 to focus on areas of existing faculty expertise in adult and pediatric cancer epidemiology.
- Perform additional faculty recruitment in nutritional epidemiology/obesity research, pharmacogenomics, cancer control and screening, and survivorship/outcomes.
- Extend research to diabetes, neurosciences 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.

A handwritten signature in black ink that reads "Chris Amos". The signature is written in a cursive, flowing style.

Christopher Amos, Ph.D.
Professor of Medicine
Interim Chief, Section of Epidemiology and Population Sciences

HIGHLIGHTS

Drs. 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), which includes the design of new studies. Drs. 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.



Epidemiology Section Art - Cancer Below the Belt #CBTB www.cancerbelowthebelt.com

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.

Drs. 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. Drs. 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 men is one of the high-risk cancers in our catchment area. There are several initiatives under way to address this problem. **Drs. Bondy and Thrift** are the Texas PIs for the RESPOND African-American Prostate Cancer Study, the largest study to date of prostate cancer in African Americans.

An inter-programmatic collaboration among **Drs. 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).

Drs. Bondy, Huse (MD Anderson Cancer Center), and **Amos** have an inter-institutional project in the MDACC Brain Tumor SPORE entitled “Somatic and germline distinctions arising in Blacks 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

Interim Chief

- Chris Amos, Ph.D.

Faculty

- Hoda J. Badr, Ph.D.
- Jinyoung Byun, Ph.D.
- Chao Cheng, Ph.D.
- Ivan P Gorlov, Sc.D.
- Olga Y. Gorlova, Ph.D.
- Younghun Han, Ph.D.
- Yafang Li, Ph.D.
- Yong Li, Ph.D.
- Yanhong Liu, Ph.D.
- Charles G. Minard, M.D.
- Abiodun Oluyomi, M.D.
- Margaret Spitz, M.D.
- Aaron Thrift, M.D.
- Pedro Flores Villanueva, M.D., Ph.D.

Postdoctoral Associates

- Wilson Da Costa Jr., M.D., M.D.

- Jing Dong, Ph.D.
- Maral Fahmideh, Ph.D.
- Chongming Jiang, Ph.D.
- Wei Li, Ph.D.
- Quinn Ostrom, Ph.D.
- Syed Raza, Ph.D.
- Alex Renwick, Ph.D.
- Jeremy Schraw, Ph.D.
- Xinfang Yu, Ph.D.
- Xiaotao Zhang, M.D., Ph.D.
- Zhihui Zhang, Ph.D.
- Jing Zhao, Ph.D.

Secondary Appointment

- Richard Finnell, Ph.D.
- Philip Lupo, Ph.D.
- Michael Scheurer, Ph.D.
- Lea Steele, Ph.D.
- Cheryl Walker, Ph.D.

PRESS

Melissa Bondy: #BrainTumorAwareness Month, 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. In Houston Chronicle - Hurricane Harvey.



Highway 288 into Medical Center — Hurricane Harvey



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



Panel discussion emergency response planning—preparing for Harvey

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.

Jeremy Schraw: An Article by **Jeremy Schraw**, Ph.D. “Birth Defects Linked to Increased Risk of Childhood Cancer. Certain non-chromosomal defects are strongly associated with specific childhood cancers.” In TheScientist.

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.

HONORS AND AWARDS

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



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



Jesus Sotelo – Annual Volunteer Day

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



Katelin Reishus – Annual Volunteer Day – Project C.U.R.E.

RESEARCH ACTIVITIES

Amos, Chris, Ph.D.

- Risk Stratification for Early Detection of Liver Cancer; NIH/NCI; \$505,467
- Center for Molecular and Cellular Finding of Screen-Detected Lung Lesions; NCI/NIH; \$804,583
- Genome-Wide Association Study in Hepatocellular Carcinoma; NIH/NCI; \$98,125 (sub)
- Gulf Coast Center for Precision Environmental Health; NIH/NIEHS; \$1,000,000

- Statistical Methods and Tools for Cancer Risk Prediction in Families with Germline Mutations in TP53; NIH/NCI; \$9,282 (sub only)
- Integrative Analysis of Lung Cancer Etiology and Risk; NIH/NCI; \$2,499,464
- Evaluating Lung Cancer Etiology and Risk through Clinical and Genomic Analysis; CPRIT; \$1,200,000

Bondy, Melissa, Ph.D.

- Research on Prostate Cancer in African American Men; NIH/NCI; \$217,776 (sub only)
- Discovery, Biology and Risk of Inherited Variants in Glioma; NIH/NCI; \$736,536
- Characterizing Germline and Somatic Alterations by Glioma Subtypes and Clinical Outcome; NIH/NCI; \$954,904

Cheng, Chao, Ph.D.

- Computational Identification of New Candidate Drugs for Lung Cancer Treatment; NIH/NCI \$217,776
- Integrative Computational Approaches for Improving Cancer Immunotherapy; CPRIT; \$1,200,000
- Tissue Resident Memory T-Cell Responses to Cancer; NIH/NCI; \$9,557 (sub only)

Li, Yafang, Ph.D.

- Genetic Interaction Analysis Involving Oncogenesis Related Genes in Lung Cancer; NCI/NIH; \$239,984

Spitz, Margaret, M.D.

- Cancer Prevention Post-Graduate Training Program in Integrative Epidemiology; CPRIT; \$750,097

Thrift, Aaron, Ph.D.

- The Gut Microbiome in Cirrhosis and Hepatocellular Carcinoma; NCI; \$50,000
- Admixture Mapping of Cirrhosis and Hepatocellular Carcinoma in African Americans; NCI; \$50,000
- Prevent HCC – Through Screening Vaccination and Treatment of Viral Hepatitis; CPRIT; \$494,590
- Prevalence and Predictors of Non-Alcoholic Fatty Liver Disease in Veterans; Dept. Veterans Affairs; \$200,000
- DCC HHS Smoking Cessation Treatment Program; NCI; \$157,729

Publications

American Journal of Cancer Research (IF **3.264**) – 1
 American Journal of Gastroenterology (IF **10.303**) – 1
 BMC Bioinformatics (IF **2.213**) – 2
 BMJ Supportive and Palliative Care (IF **3.208**) – 1
 Cancer (IF **6.102**) – 1
 Cancer Epidemiology, Biomarkers and Prevention (IF **4.125**) – 1
 Cancer Genetics (IF **2.599**) – 2

Carcinogenesis (IF **5.334**) – 1
Clinical Gastroenterology and Hepatology (IF **7.896**) – 7
Digestive Diseases and Sciences (IF **2.937**) – 1
Frontiers in Psychology (IF **2.129**) – 1
International Journal of Cancer (IF **7.360**) – 1
Journal of Geriatric Oncology (IF **3.359**) – 1
Journal of Neuro-Oncology (IF **3.129**) – 2
Journal of Psychosocial Oncology (IF **3.455**) – 2
Journal of Thoracic Oncology (IF **12.460**) – 1
Melanoma research (IF **2.615**) – 1
Nature Communications (IF **11.880**) – 1
Neuro-Oncology (IF **10.091**) – 2
Oncoimmunology (IF **5.333**) – 1
Oncotarget (IF **5.168**) – 1
Oral Oncology (IF **3.730**) – 1
Seminars in Oncology Nursing (IF **1.412**) – 1
Translation Research (IF **5.03**) – 1