HCHS/SOL Ancillary Studies Funded and Completed
1/03/2024
(listing here does not include all site-specific awards)

Active Ancillary Studies Contacting Participants

1. **Bronx and Chicago Asthma Study:** Nasal Epithelial Epigenomics and Transcriptomics of Asthma (6/2021-5/2026; R01HL152475; PIs Juan Celedon and Carmen Isasi). This study will assess the role of the nasal epithelium in asthma. The purpose is to understand the links between genes, lifestyle factors and environmental factors influencing asthma and lung function in Puerto Ricans and Dominicans in the Bronx and Chicago, the ethnic groups with the highest prevalence of asthma in the United States. The study will explore epigenetic factors that activate or deactivate certain parts of the genes and modify how the genes work and the type of protein or hormones they produce. HCHS/SOL Approved tracking #2019.06. Chicago amendment approved on 11/9/2023.

2. **C4R: Collaborative Cohort of Cohorts for COVID-19 Research** (10/2020-2/2024; NIH/NHLBI: 1OT2HL156812-02 and RTI 22-312-0217571-66178; PIs Elizabeth Oelsner and R. Graham Barr). This collaborative research effort aims to determine factors that predict disease severity and long-term health effects of COVID-19 in adults and, in doing so, to evaluate social determinants of COVID-19 disparities. The HCHS/SOL cohort will be combined with cohorts from 13 other long-term studies to reflect the racial/ethnic, socioeconomic, and geographic diversity of the U.S. population. Participants are surveyed regarding whether they have tested positive for SARS-CoV-2, any symptoms experienced and their duration, and whether they have been hospitalized. The study proposes to collect small blood samples from home that will detect asymptomatic cases and provide general information about the immune system. A proposed follow-up survey will address mental health and other potential health impacts. Additionally, the review of medical records will be used to determine any COVID-19 treatments participants may have received as well as any complications experienced. HCHS/SOL Approved tracking #2020.03. Amendments approved on 9/22/2023 and 3/8/2023.

3. **CAC: Presence and Extent of, and Factors Associated with Coronary Artery Calcium, Plaque Density, and Coronary Remodeling in Diverse US Hispanic/Latino Adults** (6/2021-5/2025; R01HL152692; PIs Martha Daviglus and Matt Budoff). This study will assess the presence of early stages of heart disease ("subclinical" heart disease) in Hispanics/Latinos. It will also examine why some people develop subclinical heart disease and others do not, and will find out what factors protect people from developing heart disease. Participants will have a computed tomography (CT) scan of their heart. HCHS/SOL Approved tracking #2017.32

4. **DAMAS (DensidAd de las MAmaS)** (April 2023-August 2026); R01CA255082; PI Sara Lindstroem.
The impact of lifestyle and genetic factors on mammographic density in HCHS/SOL.
The purpose of the DAMAS study is to understand factors that affect breast density. This study collects mammograms and related reports to study determinants of breast tissue composition (fat and connective tissue). This research can help us understand the factors that contribute to the proportion of connective (or non-fat) tissue a woman has in her breast, and how this is further linked to breast cancer risk. We will then examine sociocultural, reproductive and anthropometric factors with mammographic density phenotypes in US Hispanic women as well as conduct genetic association studies of their mammographic density phenotypes.
HCHS/SOL Approved tracking #2019.13

5. **ECHO-SOL 3** is formally known as the Epidemiologic Determinants of Cardiac Structure and Function among Hispanics study (R01AG075758; PI: Carlos Rodriguez). This study had aims to examine the prevalence of echocardiographic left ventricular hypertrophy and systolic and diastolic heart failure; to examine the determinants of cardiac structure and assess the potential contributions of psychosocial, behavioral, and socioeconomic factors. HCHS/SOL Approved tracking #2018.17 amended 9Dec2020 AirSOL

6. **GOLD 1, 2 and 3: Gut Origins of Latino Diabetes Study** (07/08/2016 – 02/28/2024; R01MD011389; GOLD 3 R01DK134672 PIs Robert Kaplan and Robert Burk);. A multisite study at the four HCHS/SOL sites which aims to investigate factors affecting the gut microbiome (GMB) among Latinos and evaluate the association of the GMB with the presence of diabetes and pre-diabetes. The study will make use of existing HCHS-SOL data already in place including metabolomics, sociodemographics, health behaviors and genetics. HCHS/SOL Approved tracking #2013.08

7. **Myosteatosis: Activity, Myosteatosis, and Insulin Resistance Study** (9/21-6/25; R01HL152790; PIs Matthew Allison and Iva Miljkovic). This study will assess the pathway from lifestyle behaviors to body composition to cardiometabolic risk to arterial stiffness to cardiac structure and function using existing HCHS-SOL cohort data with the addition of computed tomography scans of the abdomen and mid-thigh to obtain measurements of skeletal muscle myosteatosis and lean mass, as well as subcutaneous, visceral and hepatic adiposity, and then determine the applicability of myosteatosis to the physical activity, body composition, dysglycemia/diabetes, arterial stiffness and heart failure pathway among Hispanic/Latino Americans from diverse background groups, independent of other measures of body composition. Participants will undergo CT scanning of the abdomen and mid-thigh. HCHS/SOL Approved tracking #2019.10

8. **NAFLD: Nonalcoholic Fatty Liver Disease, Cardiovascular Disease, and their Associations in Hispanics/Latinos** (9/19-8/24; R01HL144707; PI Jorge Kizer and Joao Lima). This study will enroll 2000 returning participants to complete questionnaires and undergo CE MRI of the heart and liver. The study will assess the relationships between nativity and duration of US residence with liver fibrosis and GCS, and parlay longitudinal measures of lifestyle, psychosocial, and sociocultural factors to assess their cumulative impact on these hepatic and cardiac outcomes, while exploring the latter factors' potential mediating effects. The study will also evaluate the associations of DAT, defined from MRI-determined visceral adiposity and adiponectin, and PNPLA3 and TM6SF variants, alone and in combination, with liver fibrosis. An investigation will be conducted into the association between liver fibrosis and both diffuse myocardial fibrosis and myocardial scar, as well as the association between inflammatory sCD14 and procoagulant FVIII and AT with these cardiac phenotypes, exploring whether these attenuate the hypothesized liver-heart relationship. HCHS/SOL Approved tracking #2017.30

9. **PWV: Pulse Wave Velocity** (2/19-11/24; R01AG061088; PI Michelle Meyer). This study is focused on the stiffening of the arteries and the associated structural damage to small vessels in the brain and reduced cognitive function that precede cognitive impairment and Alzheimer's disease and related dementias. Pulse wave velocity, a non-invasive arterial stiffness measurement, will be measured in participants who complete HCHS/SOL Visit 3. HCHS/SOL Approved tracking #2017.21

10. **SANAR: Sleep in Neurocognitive Aging and Alzheimer's Research** (2/21-1/26; R01AG067568; PI Alberto Ramos). This study will examine the mechanistic links among obstructive sleep apnea (OSA), non-dipping of blood pressure and vascular brain injury with the outcomes of cognitive decline, mild cognitive impairment (MCI), and Alzheimer's disease and related dementias. SANAR will obtain new measures of OSA (>10 years after visit-1) with home sleep apnea testing and 24 hour-ambulatory blood pressure (AMBP) monitoring in approximately 3,000 SOL-INCA2 participants from all four HCHS/SOL sites. ABPM will provide novel data linking OSA with nocturnal blood pressure, brain vascular disease, and cognitive outcomes. HCHS/SOL Approved tracking #2018.08

11. **SGM: Stress Gender and Minority** (3/20-2/25; R01HL149778; PIs Krista Perreira and Tonia Poteat). The overall aims of this study are to examine the associations among sexual orientation, gender identity, stigma/discrimination, stress and cardiovascular disease risk in a diverse Hispanic cohort, using the Minority Stress Model as a framework. The research will be conducted with all Visit 3 participants from HCHS/ SOL as well as a 1:2 matched sub-cohort of SGM and non-SGM participants. By expanding the assessment of HCHS/SOL to

include measures of sexual orientation, gender identity, stigma, and discrimination, the SGM HCHS/SOL Ancillary Study will provide a significant complement to the parent study, achieve the goal of examining varied risk and protective factors in Hispanic health, and inform future prevention and intervention efforts for distinct Hispanic subgroups in the US. HCHS/SOL Approved tracking #2018.22

12. **SOL-AIR: Environmental Factors and Diabetes Development in Latinos**, (09/22/2020-06/30/2025, NIEHS award R01ES030994, PIs: Joel Kaufman and Jianwen Cai) is a study that measures neighborhood air quality, including pollutants from traffic. Poor air quality can make it hard to breath, which can affect many aspects of health. SOL-AIR aims to learn whether Hispanics/Latinos who live in neighborhoods with poor air quality are more likely to have cardiovascular disease or type 2 diabetes. Investigators are also studying biological reasons that may explain how air quality influences these diseases.
SOL-Air is also measuring opportunities for physical activity and healthy eating in neighborhoods where Hispanics/Latinos live. Some neighborhoods make it easier to stay fit and active when they are safe, have sidewalks & parks, and implement traffic control signs and devices to protect the community from traffic. People are also more likely to eat healthy when healthy and affordable foods are available nearby. Investigators aim to learn which neighborhood factors are important to support the health of Hispanics/Latinos. HCHS/SOL Approved tracking #2018.21

13. **SOL-FLOR: Family Lifestyle Outcomes Research** (9/18-6/24; R01DK116028; PIs Anna Maria Siega-Riz and Daniela Sotres-Alvarez). SOL-FLOR offers a unique opportunity to prospectively investigate the role of preconceptional maternal health status (cardiometabolic biomarkers and diet) on the development of childhood obesity and to understand drivers of overeating, such as food reward related behaviors and psychological stress of women as predictors of child feeding practices and weight. The study proposes to recruit 440 mother-child dyads from HCHS/SOL where the children (age 3-9y) were born after the baseline examination. The study will measure child's weight, height and adiposity (total fat mass as measured by dual-energy X-ray absorptiometry (DXA)), genetic susceptibility for obesity, eating and other lifestyle behaviors, and mothers' food reward-related behaviors. The findings of this research endeavor can help inform future randomized controlled trials aimed at directly changing the psychosocial and behavioral aspects of Hispanic/Latino mother-child dyads to prevent childhood obesity. HCHS/SOL Approved tracking #2014.07

14. **INCA 2: Investigation of Neurocognitive Aging** (R01AG075758) PIs Charles DeCarli and Hector Gonzalez). The study funded by the National Institute of Aging is a multisite prospective cohort study of mild cognitive impairment, Alzheimer's disease, and vascular dementia among middle-aged and older multiethnic Latinos. HCHS/SOL Approved tracking #2013.07

15. **SOL-INCA-MRI: Investigation of Neurocognitive Aging Magnetic Resonance Imaging** (7/17-6/22; RF1AG054548; PI Charles DeCarli). This study will perform comprehensive MRI scans of 2800 Latinos in the HCHS/SOL cohort with normal and impaired cognition. MRI quantification includes measures of vascular brain injuries (i.e., white matter hyperintensities and integrity, MRI evidence of cerebral infarction) as well as measures of cortical volume, cortical thickness and hippocampal volume to estimate AD patterns of cerebral atrophy. The study will also leverage fine-scale population structure to identify novel genetic loci for MRI-defined vascular injury and structural endophenotypes and their neurocognitive outcomes. HCHS/SOL Approved tracking #2016.02

16. **SOL-Ojos: Study of Latinos Eye Study** (9/19-7/24; UG1EY030410; PIs Charlotte Joslin and David Lee). This study is designed to assess the 2010 age-standardized prevalence of chronic eye disease and its associations with risk factors across participants of diverse backgrounds. The HCHS/SOL cohort will be over sampled at the Visit 3 examination to identify 3,000 older adults to maximize detection of visual problems and provide an estimate of disease prevalence. Cohort members will be recruited for a detailed eye exam at two field centers (Chicago and Miami). Exams will include the National Eye Institute visual functioning questionnaire and standardized non-

invasive measurement and classification protocols for ocular disease detection. HCHS/SOL Approved tracking #2015.22

17. **SOL-PASOS: Peripheral Artery Disease Study of SOL** (8/19-7/24; R01HL146132; PIs Robert Kaplan and Kuni Matsushita). This study examines the factors that help maintain a healthy blood flow to the legs and feet, and how a reduced blood supply to the legs and feet affects our health. The overarching goals of this study are to characterize the impact of peripheral artery disease (PAD) on free-living daily physical activity and to examine the value of objective assessment of daily physical activity for PAD management and diagnosis. The study proposes to evaluate ~6,000 Hispanic Community Health Study/Study of Latinos (HCHS/SOL) cohort participants aged 45 and older. At the upcoming HCHS/SOL visit 3 core examination cycle, the study will collect resting and post-exercise ABI, toe-brachial index (TBI), leg symptoms, 7-day accelerometry (Actigraph), walking endurance (2-min walk), and Duplex ultrasound of the major conduit arteries of the lower extremities. This project builds upon a unique long-term cohort study of Hispanics, supported by extensive prior data relating to PAD and physical activity. HCHS/SOL Approved tracking #2017.31

18. **SOL-RHYTHM** (4/22-3/27; R01NS127266; PI Lin Yee Chen). This study investigates the relationship between arrhythmias and vascular cognitive impairment. The overarching goals are to (1) define the prevalence and frequency of arrhythmias in Hispanic/Latino adults using ambulatory heart rhythm monitoring, (2) evaluate the association of antecedent 10-year lifestyle/cardiovascular disease risk factor trajectories with the prevalence and frequency of arrhythmias, and (3) evaluate the association of arrhythmias with mild cognitive impairment, Alzheimer's Disease and related dementias, and brain morphology. HCHS/SOL Approved tracking #2021.01

19. **SOL-VIDA: Variations in Daily Activity** (7/19-6/24; R01HL148463; PI Jordan Carlson). This observational cohort study will investigate how various sedentary patterns are cross-sectionally and prospectively associated with CVD risk markers of adiposity, insulin resistance, and blood glucose in 2600 Hispanics/Latinos from 4 regions across the US. Sedentary-risk marker associations will be compared between hip accelerometers (the traditional method) and activPAL (the more accurate method). The role of physical activity and total sedentary time as effect modifiers of the association of sedentary patterns with CVD risk markers will also be investigated to inform efforts targeting the full spectrum of light, moderate, and vigorous activity. The role of key settings for sedentary time will be explored to inform setting- and individually-tailored efforts and recommendations. These settings will be assessed by Global Positioning Systems and include the home, worksite, neighborhood, and transportation. HCHS/SOL Approved tracking #2018.05

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Completed Ancillary Studies

1. **CALiCo** (Links to http://www.pagestudy.org/). HCHS/SOL Approved tracking #2012.02

2. **COMPASS: Cardiometabolic Outcomes in Multi-Ethnic Physical Activity & Sedentary Behavior Study** (12/16-11/20; R01HL136266; PIs Yasmin Mossavar-Rahmani, Robert Kaplan, Vasan S. Ramachandran). The study leveraged the Hispanic Community Health Study/Study of Latino Hispanics as well as the Framingham Heart Study (FHS) Third Generation and Omni Gen 2 (FHS Gen3/Omni2) cohorts of multiple race/ethnic groups. COMPASS Ancillary recruited at total of 2,880 participants from the Bronx, Chicago and Miami. It can be combined with HCHS/SOL CASAS Ancillary conducted only at San Diego. All participants have 7-day baseline Actical accelerometry data (2008-2011) and it was repeated in COMPASS during 2017-2020. HCHS/SOL Approved tracking #2015.12

3. **ECHO-SOL and ECHO SOL 2: Epidemiologic Determinants of Cardiac Structure and Function among Hispanics -** (9/11-3/15 and 4/16-5/19; R01HL104199; PI Carlos Rodriguez). This study had aims to examine the prevalence of echocardiographic left ventricular hypertrophy and systolic and diastolic heart failure; to examine the determinants of cardiac structure and assess the potential contributions of psychosocial, behavioral, and socioeconomic factors. HCHS/SOL Approved tracking #2009.04, #2014.13, #2018.17

4. **PAXGENE** (PI Robert Kaplan). This study involves the collection of a single Paxgene tube to facilitate whole blood RNA expression studies. HCHS/SOL Approved tracking #2014.08

5. **Persistent Organic Pollutants, Endogenous Hormones and Diabetes in Latinos Study** (PI Victoria W. Persky). This study selected HCHS/SOL participants stratified by baseline glucose measurements (1,175 with prediabetes at baseline and 1,175 with normal baseline glucose measurements) and equally divided between men and postmenopausal women ages 45 -74 years, and with only one participant per household. 1 cc of plasma and 0.5 cc of serum previously collected at baseline were used for measurements of persistent organic pollutants and endogenous hormones. HCHS/SOL Approved tracking #2013.06

6. **SOL San Diego CASAS:** Neighborhood Environments and Cardiometabolic Disorders in Hispanics/Latinos (7/15-6/19; R01DK106209; PIs Linda Gallo and Mathew Allison). This project determined if macro-scale social and built neighborhood environments were associated with 6-year changes in (1) metabolic health, (2) physical activity, and (3) depression, and whether changes in activity and depression mediated the association between the environment and metabolic health change. HCHS/SOL Approved tracking #2014.09

7. **SOL San Diego CASITAS:** Biopsychosocial and Ecological Correlates of Latina Women's Sedentary Behavior (4/16-3/20; 16SFRN27940007; PIs Sheila Castañeda, Daniela Sotres-Alvarez, and Mathew Allison). This study explored innovative psychosocial and ecological correlates of sedentary behavior within the home and/or workplace among 400 San Diego female HCHS/SOL participants who were also participating in SOL San Diego CASAS. SOL CASAS assessed neighborhood impacts on cardiometabolic health. SOL San Diego CASITAS combined existing data from the HCHS/SOL Visit 1 and Visit 2 exams and SOL CASAS with new sedentary-specific survey data. HCHS/SOL Approved tracking #2015.22

8. **SOL-INCA: Investigation of Neurocognitive Aging** (3/19-2/24; RF1AG061022; PIs Charles DeCarli and Hector Gonzalez). The study funded by the National Institute of Aging is a multisite prospective cohort study of mild cognitive impairment, Alzheimer's disease, and vascular dementia among middle-aged and older multiethnic Latinos. Original study was extended as INCA2 into 2024. HCHS/SOL Approved tracking #2013.07

9. **SOCIOCULTURAL** (7/09-7/11; RC2HL101649; PIs Linda Gallo and Frank Penedo). This study involved administration of a comprehensive battery of socioeconomic, cultural, and psychosocial measures to help achieve HCHS/SOL goals of understanding how such processes may contribute to CVD risks and outcomes in the Hispanic population. HCHS/SOL Approved tracking #2008.02

10. **SOLNAS:** SOL Nutrition and Physical Activity Assessment Study (4/10-3/14; R01HL095856; PI Yasmin Rahmani). This study (1) obtained objective biomarker measures of total and resting energy expenditure and of protein, sodium and potassium expenditure, (2) compared these biomarkers with energy and protein data from the 24-hr dietary recall, and (3) used these data to calibrate self-reported nutrient and physical activity data to increase reliability of analyses on associations with outcomes. HCHS/SOL Approved tracking #2008.03

11. **SUEÑO: Sleep Patterns as a Risk Factor for Disease in SOL** (7/10-6/14; R01HL098297; PI Sanjay Patel). This study (1) determined the prevalence of abnormal sleep patterns among Hispanic/Latinos, (2) examined the association between sleep-related factors with chronic disease risk factors and outcomes, and (3) assessed the role of poor sleep in mediating the effect of SES, demographic, and psychiatric factors on adverse health outcomes. HCHS/SOL Approved tracking #2008.08

12. **VISION: Ocular Healthcare Utilization and Ocular Risk in Hispanics** (9/11-9/14; CDC IU58DP002652; PI David Lee). This study determined the prevalence of visual disorders and risk factors for vision disorders and assessed ocular healthcare utilization and knowledge of recommended ocular healthcare visits and risk factors for the development of visual disorders. HCHS/SOL Approved tracking #2011.03

13. **SOL YOUTH** (4/11-11/14; R01HL102130; PIs Shrikant Bangdiwala, Carmen Isasi, Mercedes Carnethon, Linda VanHorn; Alan Delamater). This study measured 1,600 boys and girls ages 8-14 years, whose parent/ legal guardian completed the core components of the HCHS/SOL study. A comprehensive assessment of health determinants was administered. HCHS/SOL Approved tracking #2008.05