CRIC Funded Ancillary Studies

Study Title
Principal Investigator
University Affiliation
Year funded
Keywords

Nutrition Assessment in Chronic Renal Insufficiency Cohort (CRIC) Study Population
Cheryl Anderson, PhD, MPH
The Johns Hopkins University
2002
nutrition, cerebrovascular disease, protein-energy malnutrition, metabolism

A Structural Approach to Renal Bone Disease in CRIC
Mary Leonard, MD, MSCE
Children’s Hospital of Philadelphia
2003
renal bone disease, renal osteodystrophy, bone mineral density

Hypertension and Hypercholesterolemia Control in Patients with CKD
Paul Muntner, PhD
University of Alabama at Birmingham
2003
hypertension, hypercholesterolemia, cardiovascular disease, hemodynamics, nutrition

CRIC Heart Failure Detection Cohort and the CRIC Heart Failure Progression Cohort
Michael Shlipak,
University of California, San Francisco
2003

Development and Validation of GFR Estimating Equations
Andrew Levey, MD
Tufts University
2004
estimated glomerular filtration rate, meta analysis, equation

Carotid Intima-Media Thickness in Chronic Kidney Disease
Sylvia Rosas, MD, MSCE
University of Pennsylvania
2004
carotid intima-media thickness, carotid plaque, progression, cardiac outcomes

Hispanic Recruitment in CRIC
Julio Vijil, Jr., MD
University of Illinois, Chicago
2004
recruitment, Hispanic

*Cognitive Function in Chronic Renal Insufficiency
Kristine Yaffe, MD

*Please note that this list is limited to approved CRIC ancillary studies that have received funding. The CRIC Steering Committee reviews and approves new proposals on a rolling basis and maintains a separate list of approved but not yet funded proposals which are also considered when vetting new submissions.
CRIC Funded Ancillary Studies

**Study Title**

**Principal Investigator**

**University Affiliation**

**Year funded**

**Keywords**

---

University of California, San Francisco
2005
cognitive function, gfr, depression

---

*Pulse Wave Velocity and Chronic Kidney Disease*
Raymond Townsend, MD
University of Pennsylvania
2005
pulse wave velocity, hypertension, cardiovascular disease

---

*Sleep Disturbances as a Non-traditional Risk Factor in CKD*
Eve Van Cauter, PhD
University of Chicago
2005
sleep, risk factor, c-reactive protein

---

*Diabetic and Hypertensive Retinopathy and CRI*
Juan E. Grunwald, MD
University of Pennsylvania
2005
retinopathy, hypertension, diabetes, ophthalmology

---

*Hispanic Chronic Renal Insufficiency Cohort*
James Lash, MD
University of Illinois, Chicago
2005
hispanic, cardiovascular disease, progression

---

*Cytokine Gene Polymorphism in the CRIC Cohort*
Dominic Raj, MD
George Washington University
2006
cytokine, polymorphism, inflammation

---

*Genetics of Atherosclerosis in Renal Disease*
Muredach P. Reilly, MB BCH, MSCE
University of Pennsylvania
2006
genetics, atherosclerosis, metabolic syndrome, inflammation

---

*Vitamin D Deficiency, Physical Performance and Cardiovascular Disease*
Mary Leonard, MD, MSCE
CRIC Funded Ancillary Studies

**Study Title**  
Principal Investigator  
University Affiliation  
Year funded  
Keywords

Children’s Hospital of Philadelphia  
2006  
vitamin D, calcidiol, frailty, PTH

*Sodium and Cardiovascular Disease in Patients with CKD*  
Jiang He, MD, PhD  
Tulane University  
2006  
Sodium, electrolyte excretion, potassium, cardiovascular disease, cardiac outcomes

*Study of Advanced Chronic Renal Insufficiency*  
Chi-yuan Hsu, MD, MSc  
University of California, San Francisco  
2006  
progression, transition to ESRD, GFR

*KDQOL and the Spanish-Speaking CKD Population*  
Julio Vijil, Jr., MD  
University of Illinois, Chicago  
2007  
KDQOL, hispanic, HCRIC

*Health Literacy and Acculturation in Hispanic Patients with Chronic Kidney Disease*  
Claudia Lora, MD  
University of Illinois, Chicago  
2007  
HCRIC, health literacy, Hispanic, acculturation, risk factor, cardiovascular disease

*Genomics of myocardial transcription factors in cardiac remodeling*  
Thomas P. Cappola, MD, ScM  
University of Pennsylvania  
2007  
genetics, cardiac remodeling, transcription factors

*Pulse Wave Velocity and Chronic Kidney Disease*  
Stephanie DeLoach, MD  
Thomas Jefferson University  
2007  
pulse wave velocity, cardiovascular disease

*Corin Allelle and Heart Disease*  
Daniel L. Dries, MD

20190227
CRIC Funded Ancillary Studies

Study Title
Principal Investigator
University Affiliation
Year funded
Keywords

Yale University
2007
genetics, cardiovascular disease, natriuretic peptide system, cardiac hypertrophy, corin

CRIC Plus – Race Group Analysis
Vanessa Grubbs, MD, MPH
University of California, San Francisco
2007
racial disparities, progression, CRIC-plus, ESRD

Carotid Intima-Media Thickness in Chronic Kidney Disease (Renewal)
Sylvia Rosas, MD, MSCE
University of Pennsylvania
2007
carotid intima-media thickness, carotid plaque, progression, cardiac outcomes

Using 2-D Gel to Identify Patterns of Urine Protein Excretion that Predict Loss of GFR
Chi-yuan Hsu, MD, MSc
University of California, San Francisco
2008
two-dimension differential gel electrophoresis, GFR, proteinuria

Molecular Predictors of Progressive Renal Failure in the Chronic Renal Insufficiency Cohort
Matthias Kretzler, MD
University of Michigan
2008
progression, molecular predictors, biomarkers

Clinical Outcomes of Pre-ESRD CKD Patients with Hepatitis C Infection
Akinlolu O. Ojo, MD, PhD, MPH
University of Michigan
2008
HCV, pre-ESRD

Genetic of Lipoprotein Metabolism and CVD in CKD
Daniel J. Rader, MD
University of Pennsylvania
2008
lipoproteins, metabolism, genetics

Role of FGF-23 in Mineral Metabolism and CVD in Pre-dialysis CKD
Myles S. Wolf, MD, MMSc
CRIC Funded Ancillary Studies

Study Title
Principal Investigator
University Affiliation
Year funded
Keywords

University of Miami
2008
FGF-23, phosphate therapy, hyperphosphatemia, left ventricular mass

The Renin-Angiotensin-Aldosterone System and Cardiac Arrhythmias
Rajat Deo, MD
University of Pennsylvania
2009
atrial fibrillation, renin, aldosterone, angiotensin, cardiovascular disease

CKD, Metabolic Syndrome and Cardiovascular Disease
Harold I. Feldman, MD, MSCE
University of Pennsylvania
2009
metabolic syndrome, insulin resistance, cardiovascular disease, progression

GWAS in CKD: The CRIC Study
Harold I. Feldman, MD, MSCE
University of Pennsylvania
2009
GWAS, genetics, GFR, progression

Chronic Kidney Disease Biomarker Validation
Chi-yuan Hsu, MD, MSc and Kathleen D. Liu, MD, PhD, MAS
University of California, San Francisco
2009
biomarkers, kidney injury

The Role of Neuregulin in Human Cardiac Remodeling and Heart Failure
Bonnie Ky, MD, MSCE
University of Pennsylvania
2009
NRG-1, cardiac remodeling

Hypertension in Advanced Chronic Kidney Disease
Nisha Bansal, MD, MAS
University of California, San Francisco
2010
hypertension, progression, ESRD, blood pressure, cardiovascular disease

The Effect of Sickle Cell Trait upon Progression of Chronic Kidney Disease
Vimal Dereabail, MD, MPH

20190227
CRIC Funded Ancillary Studies

**Study Title**
**Principal Investigator**
**University Affiliation**
**Year funded**
**Keywords**

University of North Carolina  
2010  
risk factors, sickle cell trait, hemoglobinopathy

*Elevated Nighttime BP – Clinical and Demographic Features, Correlates, and Changes Over Time*
Paul E. Drawz, MD, MHS  
Case Western Reserve University  
2010  
hypertension, blood pressure, nighttime ABP

*Joint Analysis of Longitudinal Outcomes and Clinical Events in Chronic Kidney Disease Cohorts*
Tom Greene, PhD  
University of Utah  
2010  
longitudinal analysis, statistical methods, multi-state models, causal models

*Health Literacy, Acculturation and Social Support in Hispanics with Chronic Kidney Disease*
Claudia Lora, MD  
University of Illinois, Chicago  
2010  
HCRIC, health literacy, Hispanic, acculturation, risk factors, cardiovascular disease

*Validation of the Beck Depression Inventory in Hispanics with Chronic Kidney Disease*
Ana C. Ricardo, MD, MPH, MS  
University of Illinois, Chicago  
2010  
Beck depression inventory, Hispanic, depression,

*Carbamylated LDL and Cardiovascular Events*
Sudhir V. Shah, MD  
University of Arkansas  
2010  
carbamylated LDL, cardiovascular disease, risk factors, atherosclerosis

*Pulse Wave Velocity (Renewal)*
Raymond Townsend, MD  
University of Pennsylvania  
2010  
pulse wave velocity, hemodynamics, blood pressure

*Modifiable and Novel Risk Factors for and Consequences of Acute Kidney Injury in the Setting of Chronic Kidney Disease: a CRIC Ancillary Study*
CRIC Funded Ancillary Studies

**Study Title**
**Principal Investigator**
**University Affiliation**
**Year funded**
**Keywords**

Amanda Hyre Anderson, PhD, MPH
University of Pennsylvania
2011
acute kidney injury, progression, mortality

*Do patient safety events account for adverse outcomes in CKD?*
Jeffrey Fink, MD
University of Maryland
2011
safety incidents, outcomes, metabolic disturbance

*Abrupt Transition to ESRD from CKD*
Chi-yuan Hsu, MD, MSc
University of California, San Francisco
2011
ESRD, transition

*CKD Blood Biomarker Discovery (sub-protocol of the CKD Biomarkers Consortium)*
Lesley Inker, MD, MS
Tufts University
2011
biomarkers, progression, proteomics

*Hispanic Chronic Renal Insufficiency Cohort (Renewal)*
James Lash, MD
University of Illinois, Chicago
2011
Hispanic, cardiovascular disease, progression

*Novel Paradigm to Understand Diabetic Complications*
Kumar Sharma, MD
University of California, San Diego
2011
mitochondria, urine metabolomics, nephropathy, retinopathy

*Cognitive Decline in Chronic Renal Insufficiency (Renewal)*
Manjula Tamura, MD, MPH and Kristine Yaffe, MD
Stanford University
2011
cognitive function, gfr, decline, oxidative stress markers

*Health Disparities in Chronic Kidney Disease*
James Lash, MD
CRIC Funded Ancillary Studies

**Study Title**
**Principal Investigator**
**University Affiliation**
**Year funded**
**Keywords**

University of Illinois, Chicago
2012
socioeconomic status, health literacy, health disparities

*Acidosis, Net Acid Excretion and Morbidity in CKD*
Julia Scialla, MD, MHS
Duke University
2012
metabolic acidosis, nutrition, bone and mineral metabolism, urinary electrolytes, progression, cardiovascular disease, mortality

*Genetics of Race and Disordered Mineral Metabolism in CKD*
Myles S. Wolf, MD, MMSc
Northwestern University
2012
phosphate, FGF23, klotho, CKD, CVD, genetics, ancestry, racial disparities

*Mexico Chronic Renal Insufficiency Cohort (MCRIC)*
James Lash, M.D.
University of Illinois, Chicago
2012
Chronic kidney disease progression, Hispanics, Mexico

*Metabolomic Studies in Chronic Kidney Disease*
Harold I. Feldman, MD, MSCE
University of Pennsylvania
2012
metabolomics

*Gender Disparities and Endogenous Estrogen in Chronic Kidney Disease Outcomes*
Ana Ricardo, MD, MPH, MS
University of Illinois, Chicago
2013
Sex hormones, gender disparities

*Mediators & Prognostic Value of Muscle Mass & Function in Chronic Kidney Disease*
Perry Wilson, M.D.
CRIC Funded Ancillary Studies

**Study Title**

**Principal Investigator**

**University Affiliation**

**Year funded**

**Keywords**

Yale University
2013
Sarcopenia, creatinine generation rate, chronic kidney disease, myostatin, caspase-3, activin A, inflammation, tnf-alpha, tgf-beta, frailty

*FGF-23 and Clinical Outcomes in ADPKD Patients*
Myles S. Wolf, MD, MMSc
Northwestern University
2013
FGF23, CKD, ADPKD, phosphate

*Validation of the Kidney Knowledge Survey (KiKS) in Hispanics with Chronic Kidney Disease.*
Claudia Lora
University of Illinois at Chicago
2013
Hispanics, Chronic Kidney Disease Knowledge, Spanish language

*Estimating GFR from a Panel of Endogenous Filtration Markers (Panel eGFR)*
Lesley Inker
Tufts Medical Center
2013
GFR, beta trace protein, beta 2 microglobulin, cystatin C, creatinine

*Serum Bicarbonate and Cardiovascular Risk in Patients with Chronic Kidney Disease*
Mirela Dobre, M.D.
Case Western Reserve University
2013
metabolic acidosis, metabolic alkalosis, cardiovascular disease, mortality

*Role of Sclerostin in Disordered Mineral Metabolism in CKD*
Tamara Isakova, MD, MMSc
Northwestern University
2013
CKD, sclerostin, FGF23, PTH, phosphate

*Pathophysiologocal Role of Prorenin*
Alfred Cheung, M.D.
University of Utah
2013
Prorenin, chronic kidney disease, retinopathy, cardiovascular disease, diabetes

*Enhancing appreciation of the clinical significance of acute kidney injury*
Raymond Hsu

20190227
CRIC Funded Ancillary Studies

**Study Title**

**Principal Investigator**

**University Affiliation**

**Year funded**

**Keywords**

University of California, San Francisco  
2013  
Acute kidney injury (AKI), chronic kidney disease (CKD)

*Vitamin D catabolism in chronic kidney disease*

Ian de Boer  
University of Washington  
2013  
Vitamin D, mineral metabolism, CKD

*Plasma KIM-1 and Chronic Kidney Disease*

Sushrut Waikar  
Brigham and Women’s Hospital  
2014  
Tubular injury; biomarkers of progression

*Novel metabolites associated with renal outcomes*

Tammy Sirich  
Stanford University  
2014  
mass spectrometry, metabolomic, CKD

*Is there a digital divide in chronic kidney disease?*

Clarissa Diamantidis  
Duke University  
2014  
CKD, health information technology, e-literacy, patient safety

*Performance of Vitamin D-Binding Protein (DBP) ELISA by Genotype: Validation using Mass Spectrometry*

Mary Leonard, Michelle Denburg  
Stanford University/Children’s Hospital of Philadelphia  
2014  
Vitamin D, vitamin D-binding protein, genotype

*Visceral adiposity and fitness among CRIC participants (phase 3)*

Sankar Navaneethan  
Cleveland Clinic  
2014  
Obesity, fitness, and kidney disease

*Measures of fibrosis and clinical outcomes in chronic kidney disease*

Amanda Hyre Anderson, PhD, MPH
CRIC Funded Ancillary Studies

**Study Title**
**Principal Investigator**
**University Affiliation**
**Year funded**
**Keywords**

**University of Pennsylvania**
2015
fibrosis, CKD progression, cardiovascular disease, galectin-3, CTGF or CCN2, collagen type III, MMP-2

**Heart failure and arrhythmias in CKD**
Nisha Bansal, MD, MAS
University of California, San Francisco
2015
heart failure, prediction, cardiac arrhythmias, biomarkers

**Whole-exome sequencing study of diabetic nephropathy**
Tanika Kelly
Tulane University
2015
diabetic nephropathy; next-generation sequencing; whole-exome sequencing; rare variants; low frequency variants

**Longitudinal Changes in Metabolomic Biomarkers and CKD Progression**
Eugene Rhee
Massachusetts General Hospital/Broad Institute
2015
metabolomics, CKD, CKD progression

**Oxalate in CKD Pathogenesis and Progression**
Sushrut Waikar
Brigham and Women’s Hospital
2015
oxalate; chronic kidney disease; cardiovascular disease; decline in GFR

**Epigenetic dysregulation in diabetic kidney disease**
Katalin Susztak
University of Pennsylvania
2015
cytosine methylation, epigenetics

**Prognostic biomarkers in chronic kidney disease**
Farsad Afshinnia
University of Michigan
2015
chronic kidney disease, progression, end stage renal disease, biomarker, metabolomics, Mass spectrometry

**Pilot Study on Proteomics of Kidney Disease Progression in the CRIC Study**
Rajat Deo
CRIC Funded Ancillary Studies

Study Title
Principal Investigator
University Affiliation
Year funded
Keywords

University of Pennsylvania
2015
proteomics, progressive kidney disease, SOMAscan

Targeted Biomarkers of Chronic Kidney Disease (CKD) and its Complications
Jeffrey Schelling
Case Western Reserve University
2015
Chronic kidney disease, diabetic nephropathy, biomarker, case-cohort study

Identifying Modifiable Biomarkers/Mediators for Cardiovascular Disease in Chronic Kidney Disease
Peter Ganz
University of California, San Francisco
2016
cardiovascular risk prediction model; chronic kidney disease; proteomics

Tubular Secretion and Chronic Kidney Disease Complications
Bryan Kestenbaum
University of Washington
2016
tubular secretion, biomarkers, kidney, hippurate

Assessing the accuracy of information in the CMS Medical Evidence Report (form CMS-2728)
Chi-yuan Hsu
University of California, San Francisco
2016
incident ESRD, co-morbidity, information bias

Novel Diagnostics and Therapeutic Targets for Calcification in CKD
Tamara Isakova
Northwestern University
2016
vascular calcification; calcification propensity; calciprotein particles

Assessment of nicotine exposure from toenail clippings of CRIC participants
Edgar Jaimes
MSKCC
2016
nicotine, smoking, chronic kidney disease (CKD)

Metabolomics for Identifying Biomarkers of Dietary Intake & Kidney Disease Progression
Casey Rebholz

20190227
CRIC Funded Ancillary Studies

**Study Title**

**Principal Investigator**

**University Affiliation**

**Year funded**

**Keywords**

Johns Hopkins University
2016
diet; metabolomics; kidney disease progression

*The Gut Microbiome and the metabolome in CKD*

Amanda Anderson
University of Pennsylvania
2016
gut microbiota, metabolomics, metabolic profiling, CKD

*Weight trajectory in chronic kidney disease and risk of adverse outcomes*

Elaine Ku
University of California, San Francisco
2016
Weight loss, BMI, CKD, ESRD

*Vitamin K status, CVD and arterial stiffness in chronic kidney disease: The Chronic Renal Insufficiency Cohort*

Kyla Shea
Tufts University
2017
Vitamin K, matrix gla protein, kidney function, CVD, arterial stiffness

*MicroRNAs in progressive renal disease – a pilot study in CRIC (MIRROR-TRIC)*

Christos Argyropoulos
University of New Mexico
2017
microRNAs, Chronic Kidney Disease, Proteinuria, RNA-seq, biomarkers, measures of renal function

*Developing and validating prognostic metabolomic signatures of diabetic kidney disease*

Loki Natarajan
University of California, San Diego
2017
Diabetic kidney disease; metabolomics; prognostic models; variable selection

*Health literacy and Self-Management in Chronic Kidney Disease: a CRIC Ancillary Study*

Sarah Schrauben
University of Pennsylvania
2017
Self-management; CKD progression; Health literacy

*Hispanic CRIC Study renewal*

James Lash

20190227
CRIC Funded Ancillary Studies

**Study Title**

**Principal Investigator**

**University Affiliation**

**Year funded**

**Keywords**

University of Chicago Illinois  
2017  
Hispanic/Latino; chronic kidney disease  

*Soluble Fms-Like Tyrosine Kinase-1 (sFlt-1), Placental growth factor (PlGF) and CVD in Participants with CKD*

Saif Anwaruddin and Rajat Deo  
University of Pennsylvania  
2018  
Cardiovascular disease, soluble Fms-Like Tyrosine Kinase-1, Placental growth factor (PlGF)

*The effects of protein carbamylation in chronic kidney disease (CKD)*

Sahir Kalim  
Massachusetts General Hospital  
2018  
Protein carbamylation; CKD; kidney function; mortality; chronic renal insufficiency cohort (CRIC), CKD progression

*Statistical Methods for Genomics of CKD*

Andrea Foulkes  
Mount Holyoke  
2018

*Acute kidney injury among patients with chronic kidney disease*

Chi Hsu  
University of California, San Francisco  
2018  
Acute kidney injury (AKI)

*The role of functional iron deficiency in systemic complications of CKD*

Monique Cho  
University of Utah  
2018  
Iron, chronic kidney disease, hepcidin, cardiovascular disease

*Sleep disordered breathing as a predictor of outcomes in chronic kidney disease*

Ana Ricardo  
University of Illinois at Chicago  
R01  
Sleep apnea, chronic kidney disease progression, cardiovascular disease