

Corinne D. Engelman

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EDUCATION

- 1995 B.S. Biological Sciences, University of Wisconsin-Parkside, Kenosha, Wisconsin
- 2002 M.S. Public Health, University of Colorado Health Sciences Center, Denver, Colorado
Thesis: *Calpain-10 gene, physical inactivity and type 2 diabetes mellitus: a possible gene-environment interaction*
Mentor: Jill Norris
- 2006 Ph.D. Epidemiology, University of Colorado Denver and Health Sciences Center, Denver, Colorado
Dissertation: *Effects of Vitamin D Genes on Measures of Insulin Secretion, Insulin Sensitivity and Adiposity: An Ancillary Study to the Insulin Resistance Atherosclerosis Study (IRAS) Family Study*
Mentor: Jill Norris

PROFESSIONAL EXPERIENCE

- 1995-1998 Clinical Research Data Manager, Abbott Laboratories, Abbott Park, Illinois
- 1998-2006 Clinical Research Programmer/Analyst, Allos Therapeutics, Westminster, Colorado
- 2001-2006 Research Assistant, Department of Preventive Medicine and Biometrics, University of Colorado Denver and Health Sciences Center, Denver, Colorado
- 2007-present Assistant Professor, Population Health Sciences, University of Wisconsin School of Medicine and Public Health, Madison, Wisconsin
- 2009-present Affiliate Faculty Appointment, Molecular and Environmental Toxicology Center, University of Wisconsin School of Medicine and Public Health, Madison, Wisconsin

HONORS AND AWARDS

- 1993-1995 Kenosha Foundation Scholarship
2001 Public Health/Epidemiology Traineeship
2003 University of Alabama at Birmingham Short Course in Statistical Genetics
Scholarship
2005 Society of Epidemiologic Research Student Workshop Scholarship
2007 Teaching Academy Summer Institute Award (\$500 grant to support teaching
project)

PROFESSIONAL MEMBERSHIP

American Society of Human Genetics
Genome Center of Wisconsin, University of Wisconsin
Institute on Aging, University of Wisconsin
International Genetic Epidemiology Society
International Society to Advance Alzheimer Research and Treatment
University of Wisconsin Comprehensive Cancer Center

SERVICE ACTIVITIES

Manuscript Review for the Following Journals

Alzheimer's and Dementia Journal
Clinical Endocrinology
Current Pharmaceutical Design
Diabetes
Diabetes Care
Diabetes/Metabolism Research and Reviews
European Journal of Human Genetics
Hypertension
International Journal of Obesity
Journal of Clinical Endocrinology and Metabolism

Other Review Work

- 2008 Grant Application Reviewer, Type 2 Pilot Grant Program, Institute for Clinical
and Translational Research (ICTR)
2008 Manuscript Reviewer, Type 1 Diabetes Genetics Consortium Major
Histocompatibility Complex (MHC) Fine Mapping Workshop

Department of Population Health Sciences Service

- 2007-present Member, Recruitment and Admissions Committee
2007-present Member, Space Committee
2008-2009 Co-Chair, 50th Anniversary Symposium

School of Medicine and Public Health Service

- 2008-2009 Junior Faculty Representative, Associate Dean for Public Health search
2009-2010 Member, Chair of Pathology Search Committee

University Service

2009 Member, Professor of Human Genetics Search Committee

State, National and International Service

2001-present Member, Mentor Network, American Society of Human Genetics (ASHG)
2007-2009 Scientist, Geneticist Educator Network of Alliances (GENA), American Society of Human Genetics (ASHG) and Genetics Society of America (GSA)
2008 Judge, National DNA Day Essay Contest, American Society of Human Genetics (ASHG)
2008-present Member, Wisconsin Genetics Advisory Committee, Wisconsin Department of Health Services

TEACHING EXPERIENCE

Post-doctoral Mentor

2009-present Kristin Meyers, MPH, PhD (University of Michigan)
ICTR Post-doctoral Fellow

Population Health PhD Thesis Committee Member

2008-present Amy Kind, MD
Title: The Hospital Discharge Summary's Impact on Sub-Acute Care Patient Outcomes
2009-present Wenjun Zhong
Title: Vascular Factors and Cognitive Function

Genetics PhD Thesis Committee Member

2009-present Jon Schefers
Title: Genomic Selection for Specific Fatty Acids in Cow's Milk

Colorado School of Public Health Department of Epidemiology PhD Thesis Committee Member

2008-present Kendra A. Young
Title: The Role of Vitamin D in Adiposity and Non-Alcoholic Fatty Liver Disease

Population Health MS Thesis Committee Chair

2007-2008 Kimberly Brown, MS
Title: Association of vitamin D and vitamin D-processing genes with blood pressure in Hispanic and African Americans: an ancillary study to the Insulin Resistance Atherosclerosis (IRAS) Family Study
Current Position: MPH Researcher for Science Applications International Corporation (SAIC), San Diego, California
2009-2010 Martha O'Brien
Title: Effect of physical activity on levels of vitamin D
2009-2010 Megan Zuelsdorff
Title: Social Interaction and Cognitive Performance in Middle-aged and Older Adults

Population Health MS Thesis Committee Member

- 2007-2008 Shaneda Warren Andersen, MS
Title: Breast cancer survival in relation to genetic polymorphisms in *CYP1A1*, *CYP1A2*, *CYP1B1*, *IL6R* AND *TNF*
Current Position: student in University of Wisconsin-Madison Population Health PhD program
- 2008-2009 Samantha Bromfield
Title: Predictors of HIV Infection in Pregnant Women in Kampala, Uganda
Current Position: student in University of Alabama-Birmingham Epidemiology PhD program

Population Health PhD Academic Advisor

- 2009-present Christine Muganda

Population Health MS Academic Advisor

- 2007-2009 Samantha Bromfield
2008-2010 Martha O'Brien
2008-2010 Megan Zuelsdorff

Population Health Independent Reading Supervisor

- Fall 2007 Claudia Pereira
Topic: Economic factors in genetic innovation
- Summer 2008 Samantha Bromfield
Topic: Chronic disease epidemiology
- Spring 2009 Martha O'Brien
Justin Lo
Topic: Statistical Genetics: Use of three machine learning approaches to explore gene-gene and gene-environment interactions

Genetic Counseling MS Research Mentor

- 2009-2010 Liga Bivina
Topic: Association between vitamin D binding protein (*DBP*) SNPs, rs4588 and rs7041, and hypertension in Hispanics and African Americans of the IRAS Family Study

Undergraduate Independent Study Supervisor

- Fall 2008 Lesli Kiedrowski
Topic: Literature review and introduction to manuscript of vitamin D and type 2 diabetes/glucose homeostasis
- 2008-2009 Emily Phelps
Topic: Development of a vitamin D exposure questionnaire
- 2008-2009 Lindsay Bohnert
Topic: Reflectance spectrophotometry measurement of skin color as a predictor of 25-hydroxyvitamin D
- Spring 2009 Lesli Kiedrowski

Topic: Service project: Development of a Public Health Genetics module for a High School curriculum
Fall 2009 Lesli Kiedrowski
Topic: Inter-rater Reliability of the Wisconsin Assessment of the Social and Built Environment (WASABE) Instrument

Summer Science Institute Research Mentor

2009 Lesli Kiedrowski (undergraduate student mentor), Santiago Barajas (high school student), Que Xiong (high school student)
Topic: Inter-rater Reliability of the Wisconsin Assessment of the Social and Built Environment (WASABE) Instrument

Other mentoring

2008-2009 Oscar González-Recio, PhD (post-doc)
2008-2009 Matthew J. Maenner (PhD candidate)
2008-2009 Li Yao (PhD candidate)
2008-2009 Heejung Shim (post-doc)

Course Development

2008 Genetic Epidemiology – POP HLTH 904 Section 002 – 2 credits
2008 Analytic Methods in Genetic Epidemiology – POP HLTH 904 Section 003 – 2 credits
2009 Public Health Genomics – POP HLTH 650 Section 023 – 1 credit

Course Director

Spring 2007 Graduate Research Seminar – POP HLTH 820 – 1 credit – 18 graduate students (Co-director)
Spring 2008 Genetic Epidemiology – POP HLTH 904 Section 002 – 2 credits – 15 graduate students and post-docs (11 enrolled for grade)
Summer 2008 Analytic Methods in Genetic Epidemiology – POP HLTH 904 Section 003 – 2 credits – 10 graduate students and post-docs (7 enrolled for grade)
Fall 2008 Genetic Epidemiology – POP HLTH 904 Section 002 – 2 credits – 13 graduate students (11 enrolled for grade)
Fall 2008 Graduate Research Seminar – POP HLTH 820 – 1 credit – 8 graduate students (Co-director)
Summer 2009 Public Health Genomics – POP HLTH 650 Section 023 – 1 credit – 9 graduate students
Fall 2009 Genetic Epidemiology – POP HLTH 904 Section 002 – 2 credits – 8 graduate students and post-docs (6 enrolled for grade)

Course Discussion Group Leader

Fall 2003 Introduction to Epidemiology – PRMD 6630 – 6 sessions
2007-present Principles of Population Medicine and Epidemiology – POP HLTH 717 – 3-10 sessions – 30 Medical students

Course Lecturer

- 2002, 04, 06 Methods in Genetic Epidemiology – PRMD 6639 – Basic Concepts in Genetics; Uses of Public Databases in Genetic Studies
- 2003-2006 Advanced Epidemiology – PRMD 6632 – Genetic Study Designs
- 2005 Statistical Methods in Genetic Association – BIOS 6655 – Software Implementation of Family Based Tests for Association
- 2006-present Introduction to Epidemiology – POP HLTH 797 – Genetic Epidemiology
- 2008 Seminar in Animal Breeding: Statistical and Quantitative Genetics – AN SCI 951 – Genetic Epidemiology
- 2008 Human Emphasis Group Graduate Student Seminar – NUTR SCI 881 – Basic Genetics and Genetic Association Studies
- 2008-present Seminar in Genetics – MD GENET 993 – Genetic Epidemiology and Public Health Genomics
- 2008-present Population Health Sciences: Concepts and Methods – POP HLTH 375 – Genetics in Population Health

Journal Club Organization

- 2009-present Co-Organizer of the Human Genetics Journal Club – 23 graduate students and 11 faculty or academic staff

K-12 Curriculum Development

- 2009 Ethical, Legal, and Social Issues (ELSI) of Genomics Research – 17 day curriculum – publicly available at <http://gena.mspnet.org/index.cfm/17965>

K-12 Teaching

- 2009-present Ethical, Legal, and Social Issues (ELSI) of Genomics Research unit in the Introduction to Genetics class at Malcolm Shabazz City High School, Madison, WI – 6 classes – 12 students in grades 9-12

GRANTS

Active

Telomere length, telomere maintenance genes and cancer risk

Principal Investigator: Lisa A. Boardman

Role: Sub-award; Co-Investigator (percent effort – 10%)

Sponsor: NIH, NCI PA-07-070

Project period: 09/18/08 – 07/31/13

Total award: \$3,354,934

The goal of this project is to understand the relationship between telomere maintenance genes, telomere length, and colorectal cancer (CRC) risk in young individuals (≤ 50 years old) with CRC that is microsatellite stable (MSS). Through this sub-award we provide study design, data management, and analytical support for the project.

Breast Cancer GWAS: Function and Environmental Interactions

Principal Investigators: Michael N. Gould and Michael A. Newton

Role: Co-Investigator (percent effort – 4%)

Sponsor: NIH, NCI CA-08-017, Comparative Systems Genetics of Cancer, R01

Project period: 12/11/08 – 10/31/13

Total award: \$2,176,860

The goal of this project is to develop an integrated approach combining global genetic information together with environmental exposure to form a network model that begins to describe the etiology of breast cancer. Such a model, when complete, could allow us to move from the estimation of population risk for breast cancer to individual risk. This model will also provide functional information underlying genetic/environmental risk that could lead to strategies for risk reduction to this disease.

Genetic and environmental predictors of serum levels of 25-hydroxyvitamin D

Principal Investigator: Corinne D. Engelman (percent effort – 25%)

Sponsor: Medical Education and Research Committee (MERC) New Investigator Program

Project period: 07/01/09 – 06/30/11

Total award: \$90,000

The goals of this project are to 1) determine the behavioral and environmental predictors of 25-hydroxyvitamin D (25[OH]D), 2) replicate the findings from a genome-wide association study (GWAS) of 25[OH]D, and 3) use a machine learning approach to test for gene-gene and gene-environment interactions. We will utilize 300 participants of the Survey of the Health of Wisconsin (SHOW) to complete these goals.

Survey of the Health of Wisconsin (SHOW)

Principal Investigator: F. Javier Nieto

Role: Co-Investigator (percent effort – 7.5%)

Sponsor: Medical Education and Research Committee

Project period: 07/01/09-06/30/12

Total award: \$4,178,396

The goal of this project is to create a permanent database on the population health needs and risks of the residents of Wisconsin and on the condition of the Wisconsin health care delivery system. These data will be used by health researchers around the state to profile health risks, possible causes of disease, environmental/social impact on health and to evaluate health interventions.

Novel population health approach to address CVD and pulmonary health disparities

Principal Investigator: F. Javier Nieto

Role: Co-Investigator (percent effort – 2.5%)

Sponsor: NIH, NHLBI OD-09-004, Recovery Act Limited Competition for NIH Grants:

Research and research Infrastructure “Grand Opportunities” (RC2)

Project period: 09/30/09-07/31/11

Total award: \$5,326,080

The goal of this project is to establish the Network for Health Equity in Wisconsin (NHEW), a state-wide resource for comprehensive monitoring of the determinants of disparities in cardiovascular and respiratory health.

The role of social activity in preserving cognition despite brain volume decline

Principal Investigator: Corinne D. Engelman (percent effort – 0%)

Sponsor: Graduate School Fall Research Competition

Project period: 07/01/10 – 06/30/11

Total award: \$34,905

The purpose of this study is to test for an interaction between social activity and brain volume in predicting neuropsychological test performance in 300 participants of the Wisconsin Registry for Alzheimer's Prevention (WRAP).

Pending

Genetic Architecture of Alzheimer's-Related Functional and Structural Brain Aging

Principal Investigator: Corinne D. Engelman (percent effort – 0%)

Sponsor: Wisconsin Comprehensive Memory Program (WCMP)

Project period: 01/01/10 – 12/31/10

Total award: \$30,000

The purpose of the study is to follow up the top single nucleotide polymorphisms (SNPs) from existing genome-wide association (GWA) studies of late-onset Alzheimer's disease (AD) and functional and structural brain aging. Completion of the project may provide novel insights about the mechanisms of AD in order to suggest strategies for prevention, diagnosis, and therapy. This is especially important for AD, a disease for which there is currently no treatment that can delay or stop the deterioration of brain cells.

Genetic Architecture of Alzheimer's-Related Functional and Structural Brain Aging

Principal Investigator: Corinne D. Engelman (percent effort – 10%)

Sponsor: Alzheimer's Association New Investigator Research Grant (NIRG)

Project period: 07/01/10 – 06/30/12

Total award: \$100,000

The purpose of the study is to follow up the top single nucleotide polymorphisms (SNPs) from existing genome-wide association (GWA) studies of late-onset Alzheimer's disease (AD) and functional and structural brain aging. Completion of the project may provide novel insights about the mechanisms of AD in order to suggest strategies for prevention, diagnosis, and therapy. This is especially important for AD, a disease for which there is currently no treatment that can delay or stop the deterioration of brain cells.

Completed

Effects of vitamin D genes on measures of insulin secretion, insulin sensitivity and adiposity

Principal Investigator: Jill M. Norris

Role: Research Assistant

Sponsor: American Diabetes Association (ADA)

Project period: 7/1/04-6/30/06

Total award: \$200,000

The purpose of this study was to examine the association between the vitamin D-related genes, vitamin D receptor, 1 α -hydroxylase, and vitamin D binding protein, and insulin secretion, insulin sensitivity and adiposity, and how this association may be modified by interactions

between the genes and with physical activity in Hispanic-American and African-American families in the IRAS Family Study.

Survey of the Health of Wisconsin (SHOW)

Principal Investigator: F. Javier Nieto

Role: Co-Investigator (percent effort – 10%)

Sponsor: Medical Education and Research Committee

Project period: 07/01/06-06/30/09

Total award: \$4,116,906

The goal of this project is to create a permanent database on the population health needs and risks of the residents of Wisconsin and on the condition of the Wisconsin health care delivery system. These data will be used by health researchers around the state to profile health risks, possible causes of disease, environmental/social impact on health and to evaluate health interventions.

PATENTS

Rotter JI, Taylor KD, Fingerlin TE, Norris JM, Haffner SM, Wagenknecht LE, Langefeld CD, **Engelman CD**. Methods of diagnosing and treating vitamin D deficiency in Hispanics. US Provisional Application Number 61/095,904 filed September 10, 2008.

PUBLICATIONS IN PEER-REVIEWED JOURNALS

Underlined names indicate Dr. Engelman's student as first author.

1. Parikh CR, McCall D, **Engelman C**, Schrier RW. Congenital renal agenesis: case-control analysis of birth characteristics. *Am J Kidney Dis* 2002;39(4):689-94.
2. James K, Weitzel L, **Engelman CD**, Zerbe G, Norris JM. The use of linear mixed models for phenotype identification in a genetic linkage study: genome scan linkage results for longitudinal systolic blood pressure phenotypes in subjects from the Framingham Heart Study. *BMC Genetics* 2003;4(Suppl 1):S83.
3. **Engelman CD**, Brady HL, Baron AE, Norris JM. Comparison between two analytic strategies to detect linkage to obesity with genetically determined age of onset: the Framingham Heart Study. *BMC Genetics* 2003;4(Suppl 1):S90.
4. **Engelman CD**, Fingerlin TE, Langefeld CD, Hicks PJ, Rich SS, Wagenknecht LE, Bowden DW, Norris JM. Genetic and environmental determinants of 25-hydroxyvitamin D and 1,25-dihydroxyvitamin D levels in Hispanic and African Americans. *J Clin Endocrinol Metab* 2008 Sep;93(9):3381-8.
5. Schmitz KJ, Skinner HG, Bautista LE, Fingerlin TE, Langefeld CD, Hicks PJ, Haffner SM, Bryer-Ash M, Wagenknecht LE, Bowden DW, Norris JM, **Engelman CD**. Association of 25-hydroxyvitamin D with Blood Pressure in Predominantly 25-hydroxyvitamin D Deficient Hispanic and African Americans. *Am J Hypertens* 2009 Aug;22(8):367-70.

6. Young KA, **Engelman CD**, Langefeld CD, Hairston KG, Haffner SM, Bryer-Ash M, Norris JM. Association of plasma vitamin D levels with adiposity in Hispanics and African Americans. *J Clin Endocrinol Metab* 2009 Sep;94(9):3306-13.
7. An P, Mukherjee O, Chanda P, Yao L, **Engelman CD**, Huang C, Zheng T, Kovac IP, Dubé M, Liang X, Li J, Andrade M, Culverhouse R, Malzahn D, Manning AK, Clarke GM, Jung J, Province MA. The Challenge of Detecting Epistasis (GxG Interactions): Genetic Analysis Workshop 16. *Genet Epidemiol* 2009 Nov;33(S1):S58-S67.
8. **Engelman CD**, Baurley JW, Chiu YF, Joubert BR, Maenner MJ, Murcay CE, Shi G, Gauderman, WJ. Detecting Gene-Environment Interactions in Genome-Wide Association Data. *Genet Epidemiol* 2009 Nov;33(S1):S68-S73.
9. **Shim H**, Chun H, **Engelman CD**, Payseur BA. Genome-wide association studies using single-nucleotide polymorphisms versus haplotypes: an empirical comparison with data from the North American Rheumatoid Arthritis Consortium. *BMC Proceedings* 2009 Dec;3(S7):S35.
10. **González-Recio O**, López de Maturana E, Vega AT, **Engelman CD**, Broman KW. Detecting single-nucleotide polymorphism by single-nucleotide polymorphism interactions in rheumatoid arthritis using a two-step approach with machine learning and a Bayesian threshold least absolute shrinkage and selection operator (LASSO) model. *BMC Proceedings* 2009 Dec;3(S7):S63.
11. **Yao L**, Zhong W, Zhang Z, Maenner MJ, **Engelman CD**. Classification tree for selection of single-nucleotide polymorphism (SNP)-by-SNP interactions related to heart disease: Framingham Heart Study. *BMC Proceedings* 2009 Dec;3(S7):S83.
12. **Maenner MJ**, Denlinger LC, Langton A, Meyers KJ, **Engelman CD**, Skinner HG. Detecting gene-by-smoking interactions in a genome-wide association study of early-onset coronary heart disease using random forests. *BMC Proceedings* 2009 Dec;3(S7):S88.
13. Bendlin BB, Carlsson CM, Gleason CE, Johnson SC, Sodhi A, Gallagher CL, Puglielli L, **Engelman CD**, Ries ML, Xu G, Wharton W, Asthana S. Midlife predictors of Alzheimer's disease. *Maturitas* 2009 Dec 29 [Epub ahead of print].
14. Young K, **Engelman CD**, Fingerlin TE, Langefeld CD, Haffner SM, Bryer-Ash M, Hanley AJG, Bergman R, Norris JM. Association of 25-hydroxyvitamin D with Baseline and Follow-up Measures of Glucose Homeostasis and Incident Diabetes in Hispanic and African Americans: the IRAS Family Study. In press *J Clin Endocrinol Metab* 2010.

INVITED PUBLICATIONS

1. **Engelman CD**. Genetic architecture of vitamin D. *WMJ* 2009;108(5):273.

MANUSCRIPTS UNDER REVIEW

1. **Engelman CD**, Meyers KJ, Ziegler J, Taylor K, Haffner SM, Fingerlin TE, Rich SS, Wagenknecht LE, Rotter JI, Langefeld CD, Norris JM (under review at *JCEM*). Genome-wide association study of vitamin D levels in Hispanic Americans: the IRAS Family Study.

ABSTRACTS SELECTED FOR ORAL PRESENTATION

1. Contribution of UCSNP-43 and UCSNP-19 within the *Calpain-10* Gene to Risk of Type 2 Diabetes stratified by Environment. Epidemiological Research Exchange, Denver, Colorado, November 30, 2001.
2. *Calpain-10* gene, physical inactivity and type 2 diabetes mellitus: a possible gene-environment interaction. International Genetic Epidemiology Society (IGES) Conference, New Orleans, Louisiana, November 14-16, 2002.
3. Contribution of two polymorphisms in the *CYP19* gene to the risk of type 2 diabetes in Colorado Caucasians. Epidemiological Research Exchange, Denver, Colorado, March 25, 2005.
4. Introducing the Survey of the Health of Wisconsin (SHOW). Step Forward Together: 2008 Public Health Partners Conference, Madison, Wisconsin, July 24, 2008.

PUBLISHED ABSTRACTS IN PAST TWO YEARS

1. **Engelman CD**, Fingerlin TE, Langefeld CD, Bowden DW, Hicks PJ, Wagenknecht LE, Norris JM. Genetic contribution to vitamin D status in Hispanic and African Americans: the IRAS Family Study. *Am J Hum Genet* 2007;Oct: 2007.
2. **Engelman CD**, Langefeld CD, Ziegler J, Taylor K, Rotter JI, Fingerlin TE, Norris JM. Genome-wide association study of vitamin D levels in Hispanic Americans: the IRAS Family Study. *Am J Hum Genet* 2008;Nov: 2394.
3. **Engelman CD**, Lo J, O'Brien M, Langefeld CD, Fingerlin TE, Norris JM. Comparison of three machine learning approaches to examine the genetic and environmental predictors of vitamin D levels. *International Genetic Epidemiology Society* 2009; Oct: 76.

INVITED TALKS

1. Appropriate Integration of Human Genome Discoveries into Health Care. RWJ Scholar Seminar Series, Department of Population Health Sciences, University of Wisconsin School of Medicine and Public Health, October 27, 2008.
2. Potholes and Progress on the Road to Personalized Medicine. Population Health Sciences 50th Anniversary Symposium, Madison, Wisconsin, August 27, 2009.

INVITED WORKSHOPS

1. Benefits of Higher Education – American Society of Human Genetics (ASHG) – June 12-13, 2009.