



## Ethel Austin Martin Program in Human Nutrition The Second Decade Progress Report –2007-2017

**Refer to “EAM Program in Human Nutrition: The First Decade (1997-2006)” for past lecturers, highlights & the following:**

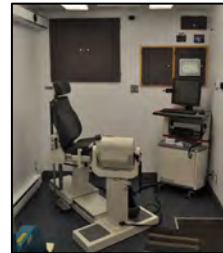
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## Update on Facilities



In early 2008, the EAM Program expanded to the 3<sup>rd</sup> floor of Wecota Hall adding 16 offices, a conference room, and a general workroom. The program continues to use the space in the EAM Building for laboratory activities.

In 2011, a new Mobile Research Unit with improved heating and cooling capacity was purchased. On board are state-of-the-art imaging equipment can be used for bone measurements and body composition analyses. This equipment includes a dual energy x-ray absorptiometer (DXA, Hologic Discovery/Apex) and two peripheral quantitative computed tomography for both arm and leg use (pQCT XCT 2000 & XCT 3000, Norland/Stratec). A Biodex System Multi-joint Isokinetic machine is also on board and allows measurement of muscle strength. The mobile units provide an important resource for investigators at SDSU.



## Ethel Austin Martin Distinguished Lecturers

- 2007 **Joan McGowan**, PhD, National Institute of Arthritis and Musculoskeletal Diseases, National Institutes of Health: "Trials and Tribulations: Lessons Learned from the NIH Women's Health Initiative."
- 2008 **Frank Rauch**, MD, Shriners Hospital for Children, McGill University, Montreal, Quebec, Canada: "Importance of Diet and Activity in Bone Growth."
- 2009 **Pat McGovern**, PhD, University of Minnesota, "Maternal Employment and Breastfeeding: Findings from the Minnesota Postpartum Health Study."
- 2010 **Frank Greer**, MD, University of Wisconsin, Chair of the Committee on Nutrition of the American Academy of Pediatrics, "Controversies in Pediatric Nutrition Including Vitamin D and Iron Requirements".
- 2011 **Laurie Moyer-Mileur**, PhD, Professor of Pediatrics & Director of the Center for Pediatric Nutrition Research at the University of Utah, "Stress Relief for Premies: How Massage Therapy Benefits Growth, Development and Metabolism".
- 2012 **Kate Ward**, PhD, Senior Research Scientist, MRC Human Nutrition Research Center, Cambridge, England, "The Role of Nutrition in Muscle-Bone Relationships Throughout Life"
- 2013 **Jeff Murray**, MD, PhD, Professor of Pediatrics, Biology, Nursing & Epidemiology, University of Iowa, & President of the American Society of Human Genetics, "Nutrigenomics – the Intersection of Personalized Health and Tasty Food"
- 2014 **Jon Vanderhoof**, M.D., University of Nebraska Medical Center, Boston Children's Hospital & Harvard Medical School, "Allergy & the Microbiome"
- 2015 **Scott Smith**, Ph.D. NASA Johnson Space Center, Houston, "Space Flight Nutrition: Implications for Earth, the International Space Station, and Beyond".
- 2016 **Martin Runge**, M.D. Geriatric Center, Esslingen, Germany, "Keep Strong, Keep on Your Feet! – A Key to Successful Aging".
- 2017 **Menachem Miodovnik**, M.D. National Institute of Child Health and Human Development, National Institutes of Health: "Maternal Mortality – A Global Crisis".



*Drs. Specker & McGowan*

## EA Martin Nutrition Symposium

### "The Rural Food Environment in South Dakota"

- 2015 **Mike Wimberly**, Ph.D, Professor of Natural Resource Management and Senior Scientist, Geospatial Sciences Center of Excellence, South Dakota State University, "From Food Deserts to Food Mountains: The Nutritional Landscape of Rural Communities"
- Fred Waldner**, German Teacher and Head Gardener, Orland Hutterian Brethren Colony, Montrose, SD, "Garden Planning & Planting on Hutterite Colonies"
- Tim Glanzer**, German Teacher and Head Gardener, Hillside Hutterian Brethren Colony, Doland, SD, "Garden Harvesting & Preservation on Hutterite Colonies"
- Julie Ross**, Farm Owner, Good Roots Farm & Gardens, Brookings, SD, "Sustainability and the CSA Farm Model"
- Suzanne Stluka**, M.S., Food and Families Program Director, South Dakota State University Extension, "SDSU Extension Healthy Food, Healthy Families & Healthy Communities Initiatives"
- Holly Tilton Byrne**, Community Organizer, Dakota Rural Action, Brookings, SD, "Local Food Systems in South Dakota"

## Research Highlights



*Participant of the Vibration Study*

The E.A. Martin Program supports nutritional research involving a wide variety of disciplines. There are several ongoing research projects initiated from within the EAM Program, as well as collaboration on projects from outside the program. Active research projects provide SDSU faculty and students the opportunity to expand their knowledge base and participate in research.

South Dakota Rural Bone Health Study (SDRBHS): The aim of this study is to determine whether a rural lifestyle leads to high bone density in young adulthood and lowers the rate of bone loss later in life. Approximately 1,200 men and women aged 20 to 66 years with equal numbers of Hutterites, rural

non-Hutterites, and non-rural non-Hutterites are being followed for 7.5 years. Yearly blood samples, bone measurements and quarterly assessments of activity levels and dietary intake are obtained. The goal of the project is to determine whether bone density during young adulthood and the rate of later bone loss, among the Hutterite population is similar to other populations, and whether greater activity levels and calcium intake can account for the high bone density observed among the Hutterites. We also will investigate genetic factors affecting bone strength. Further understanding of the role of genetics and lifestyle factors as determinants of bone density among Hutterites is necessary because they appear to be less likely to develop osteoporosis than the normal U.S. population. In addition to the 1,200 adults who are enrolled, an additional 800 Hutterites aged 8 years and older also are being followed with the same protocol.



*Colony Visit for SDRBHS*

The Vibration Study is evaluating the effect of exercise using vibration on the bone and muscle development in the forearm of healthy children. The forearm is the most common site of fracture in children. Low bone density and smaller bone size are associated with increased fracture risk in this population. Therefore, it is wise to consider methods to increase bone mass and bone size to help prevent fractures. Vibration platforms deliver significant impact forces that cause muscles to contract 20-50 times per second and mechanically stimulate the skeleton. We are not aware of any studies conducted that have incorporated exercise using vibration platforms as a means to target the forearm of growing children with the intent to increase bone mass and size.

EAM Researchers are collaborating with the South Dakota Department of Health (SDDOH) on a variety of projects including:

- Maternal and Child Health (MCH) Block Grant
- Pregnancy Health Surveys
- Nurse Family Partnership/Bright Start programs
- Infant Death Review
- Rape Prevention Education
- Title X Family Planning
- Hearing Screening

SDSU collaborators are assisting with MCH epidemiological services, including performing data explorations, contributing content for benchmark and program reporting and investigating data management platforms. In addition, work has been done on several Pregnancy Risk Assessment Monitoring System (PRAMS)-like statewide surveys. The 2014 SD PRAMS-like survey was the first ever-statewide survey that collected valuable information from new mothers on maternal attitudes and experiences before, during, and shortly after pregnancy. The survey is helping the DOH obtain information that can be used to improve the health of mothers and children. A 2016 survey is currently ongoing.



*EAM Group at Experimental Biology Meeting in San Diego*

There are several ongoing longitudinal studies of student athletes, including studies with football and soccer players. These studies are designed to investigate changes in muscle strength, body composition and bone measures over a competitive year, as well as after the student-athletes complete their collegiate careers. The occurrence of stress fractures is also being studied, along with muscle and bone differences between athletes with and without stress fractures.

Muscle-Bone Relationship Study: The primary purpose of this study was to determine whether muscle strength is more important than muscle size in influencing bone geometry and how muscle-bone relationships vary across the lifespan. A total of 280 children and young adults (6 to 19 y) and 360 older adults (20 to 100 y) were to be enrolled in this cross-sectional study. Measurements of muscle strength (power), body composition, bone area and volumetric bone density, bone geometry, and cross-sectional area of muscle, as well as diet and activity measures were obtained. This study has provided a significant amount of data for junior faculty and students to address specific hypotheses.

ACL Injuries and the Menstrual Cycle: The purpose of this study was to determine how hormonal fluctuations throughout the menstrual cycle affect neuromuscular factors associated with ACL injuries. Females are 3 to 12 times more likely to tear their ACL than males while participating in athletics and military training. To address this disparity, we are measuring changes in joint laxity and muscle strength throughout the menstrual cycle and how oral contraception use influences these changes. Using the findings from this study we hope to propose preventative treatments in an effort to decrease the incidence of ACL injuries in females.

### **Collaborative & Multi-Center Research Studies:**

National Children's Study (NCS): The National Children's Study will examine the effects of environmental influences on the health and development of more than 100,000 children across the United States, following them from before birth until age 21. The goal of the NCS is to identify environmental factors that are important in the growth and development of children and long-term health outcomes. Brookings County, South Dakota, and Yellow Medicine, Pipestone & Lincoln (BYPL) counties in Minnesota were randomly chosen from all counties across the US to serve as one of the seven Vanguard sites for the study. SDSU was awarded this multi-million dollar contract to serve as the BYPL Vanguard Center in 2007 and recruited over 300 families from this area. In 2011 NCS operations were moved to a Regional Center in Chicago.

Iron Status in Physically Active Females: The purpose of this study was to investigate whether increasing iron intake through the consumption of meat improves iron status of physically active females exercising 5 days per week. There is a high prevalence of iron deficiency in female athletes which is likely due to foot strike anemia or a diet high in the non-heme form of iron. Thus, female athletes who are highly active may require a higher intake of iron than the RDA recommends for non-active healthy individuals or they may require a better source of iron. Females aged 18 to 25 years participated in a 60-minute exercise program, 5 days per week for 10 weeks. Iron status was assessed prior to and at 5- and 10-weeks of intervention. This study was funded by the South Dakota Beef Industry and the lead investigators were from the Department of Health & Nutritional Sciences.

Dietary fiber has several health promoting effects. A handful of studies have investigated effects of resistant starch type - IV (RS4), a type of chemically modified dietary fiber, on isolated risk factors of metabolic syndrome. The purpose of this study was to investigate the biological effects of RS4-supplemented diet in over-weight individuals pre-disposed with two or more risk factors of metabolic syndrome. Two Hutterite colonies participated in this study, each colony consuming both RS4-enriched flour and regular flour for 12-week periods and changes in risk factors for metabolic syndrome (blood sugar, blood pressure, triglycerides, and cholesterol) were monitored before and after each intervention. In addition, colon microbial profiles were obtained to determine whether RS4-enriched flour alters the gut microbiome. The lead investigator on this project was Dr. Moul in the Department of Health & Nutritional Sciences.

## Research Funding:

### 2007-2011

National Institutes of Health (N01-HD-6-3416), "National Children's Study – Vanguard Center," Specker (principal investigator), 2005-2010, direct costs \$8,693,938

Metabolic Technologies, Inc, "Effect of a Combination of  $\beta$ -hydroxy- $\beta$ -methylbutyrate (HMB) and Vitamin D on Markers of Bone Turnover, Muscular Strength, and Functionality in Older Adults," Specker & Binkley (co-investigators), Vukovich (principal investigator), 2008, direct costs: \$145,000

USDA NRI: SA0800154. "Influences of Physical and Social Landscapes on the Health of Rural Communities," Specker (co-investigator), Wimberly (principal investigator), 5% effort, 2008-2011, direct costs \$360,000

National Institutes of Health (R03-AR055734). "FSH as a Biomarker of Bone Strength in Younger Postmenopausal Women," Specker (consultant), Gourlay, University of North Carolina (principal investigator), 2008-2011, direct costs \$221,791

South Dakota Beef Industry Council, "Iron Status in Physically Active Females: Effect of Adequate Iron Intake through Beef Consumption," Vukovich (principal investigator), 2009, direct costs \$50,000

SDSU Research/Scholarship Support Fund 2010, "Delayed Nighttime Feeding as a Prevention of Childhood Obesity Pilot Study", Specker (principal investigator), 2010, \$7,215

National Institutes of Health (HHSN 2752011-00004C), "National Children's Study Vanguard Center," Specker (principal investigator), 2011-2012, direct costs \$3,095,992 (numerous formative research projects were also funded by the NCS).

### 2012-2017

SDSU Scholarly Excellence Fund Award, "Can Low Intensity Exercise Using a Vibration Platform Modify Bone Growth in Healthy Children?" Binkley (principal investigator), 2012-2013



*EAM Retreat at Oak Lake ~ 2007*

South Dakota Department of Health, "Maternal & Child Health Epidemiology", 2013-2014, Specker (principal investigator), 2012-2013, \$389,652.

SDSU Scholarly Excellence Fund Award, "The Role of Female Sex Hormones on Neuromuscular Factors Related to ACL Injuries", Weidauer (principal investigator), 2014-2015

South Dakota Department of Health, "Maternal & Child Health Epidemiology", principal investigator, 2014-2015, \$358,879

DHHS/IHS FPT Great Plains Tribal Chairmen's Health Board, "Northern Plains Tribal Epidemiology Center -

Translation, Prioritization and Quality Improvement of the 2007 South Dakota PRAMS" and "Northern Plains Tribal Epidemiology Center – 2014 Tribal PRAMS", principal investigator, 2014, \$87,561

South Dakota Department of Health, "Maternal & Child Health Epidemiology", principal investigator, 2015-2016, \$379,074

NIH-NIMHD Collaborative Research Center for American Indian Health, co-principal investigator of subproject "Pregnancy Health Survey for Parents of Newborns on the Lake Traverse Indian Reservation", 5% effort, 2015-2017, direct costs \$66,355

DHHS/IHS FPT Great Plains Tribal Chairmen's Health Board, "Northern Plains Tribal Epidemiology Center – Dissemination of 2015 PRAMS Results to Winnebago Tribe of Nebraska, Yankton Sioux Tribe, Sak & Fox of Iowa, Ponca of Nebraska", principal investigator, 2015-16, \$9,448

South Dakota Department of Health, "Maternal & Child Health Epidemiology", principal investigator, 2016-2017, \$447,773.

DHHS/IHS FPT Great Plains Tribal Chairmen's Health Board, "Northern Plains Tribal Epidemiology Center – Assistance with South Dakota 2017 Tribal PRAMS, funded by CDC, 2016-2019, co-investigator, \$35,672

## Teaching Highlights

### Introduction:

Formal courses and lectures at SDSU and in the surrounding communities provide only one aspect of the educational enrichment provided by the E.A. Martin Program. The E.A. Martin Program also brings nationally renowned speakers to SDSU, providing an educational enrichment for both faculty and students. Student involvement at both the undergraduate and graduate level is important to the goals of the E.A. Martin Program. Extramural grant funding allows students to participate in research projects, providing not only a financial resource but also an excellent learning experience.



*Tianna Beare & Teresa Binkley having a serious discussion*

### Speakers Brought to SDSU:

In addition to the Ethel Austin Martin Distinguished Lecturers (see above), the EAM Program has sponsored numerous other national and internationally renowned speakers:

#### 2007-2011

**Alan Fleischman**, MD, Senior Advisor, New York Academy of Medicine; Clinical Professor of Pediatrics, Epidemiology & Population Health, Albert Einstein College of Medicine, NY; Chairman Federal Advisory Committee & Ethics Advisor to National Children's Study, "Protecting Human Subjects – Is the System Broken?" January, 2007

**James Painter**, PhD, Chair, School of Family & Consumer Sciences, Eastern Illinois University, "Food Psychology: Why we eat more than we think", SDSU 24<sup>th</sup> Annual Nutrition Seminar, 2007

**Melinda Beck**, Ph.D., Director of Biochemical Nutrition, University of North Carolina, "Obesity and Immune Function", SDSU 25<sup>th</sup> Annual Nutrition Seminar, 2008

**James Swanson**, Ph.D., Professor of Pediatrics, University of California at Irvine, "Role of Food Additives in ADHD", SDSU 25<sup>th</sup> Annual Nutrition Seminar, 2008

**Steve Chernausek**, MD, Chair, Pediatric Endocrinology at University of Oklahoma Health Sciences Center, "Role of IGF-1 in Health and Disease", April, 2009

**Jerry Combs, Jr.**, Ph.D. Director of the Grand Forks USDA Human Nutrition Research Center, "Obesity Prevention Research in USDA" SDSU 26<sup>th</sup> Annual Nutrition Seminar, 2009

**Lisa Jahns**, Ph.D. Grand Forks USDA Human Nutrition Research Center "Freshman Fifteen: Fact or Fiction" SDSU 26<sup>th</sup> Annual Nutrition Seminar, 2009

**Martin Bloem**, M.D., Director of Nutrition, World Food Program, Rome, Italy "Nutrition, HIV/AIDS and Infection", 2010

**Dennis Stevens**, M.D., Director of Neonatology, Sanford Health, "Environmental Stresses in the NICU", EAM-sponsored Nutrition & Environmental Health Seminar Series, 2010

#### 2012-2017

**Zulf Mughal**, M.B.B.S., Director, Department of Pediatrics, St. Mary's Hospital in Manchester, England, "Nutritional Rickets", SDSU & USD Pediatric Grand Rounds, 2012

## Student Involvement:

### Undergraduate:

Katie Anderson (Dietetics)  
Lacey Arneson (Dietetics): SDSU faculty  
Caitlin Berry (PreDental): nurse  
Ryan Berry (PreMed): nurse  
Lindsey Binger (Health Promotion): Americorp  
Amanda Crawford (Exercise Science)  
Ellssa Eisenbraun (Athletic Training)  
Hanna Fetzer attended graduate school in California  
Logan Gesinger (Athletic Training)  
Christine Holm (Dietetics)  
Cory Koenig (PreMed): Pediatric Anesthesiologist  
Nathan Koens (Pre-Athletic Training)  
Courtney Grimsrud (PreMed): physician  
Abha Mistry (Architectural Sciences): architect  
Jonathan Mochel (PreMed)  
Mia Morton (Psychology [UM])  
Jen O'Connor (Nursing)  
Emily Parupsky (Mechanical Engineering)  
Aaron Peterson (Statistics)  
Josie Sanderson (Early Childhood Education): teacher & working for non-profit organizations  
Lily Sanderson (Dietetics)  
J.D. Shape (Athletic Training)  
Erin Short (Dietetics)  
Christee Staufer (Health Promotion): MPH at University of Michigan  
Ryan Steenson (Biology)  
Kaila Weihe (Dietetics)  
Christy Wey (Biology/Statistics): PhD, University of Colorado/Denver Health Sciences  
Rachel Wormer (Pre-professional Studies)



EAM Picnic @ Pioneer Park ~ 2007

### Graduate (Advisees):

Haifa Abou-Samra, PhD. Student in Biological Sciences, graduated May 2007: "Determinants of Bone Mass and Size in Term, Near-Term, and Preterm Children". She is on the faculty in the College of Nursing at SDSU.

Teresa Binkley, PhD. Student in Biological Sciences, graduated December 2007: "Use of Peripheral Quantitative Computed Tomography to Obtain Bone and Muscle Measures in Children." She is on the faculty in the Department of Nutrition and works in the EAM Program.

Jane Osowski, PhD Student in Biological Sciences, graduated June 2008: "Factors Associated with Iron Status in a Hutterite Population". She is Assistant Professor of Nutrition at Mississippi State University.

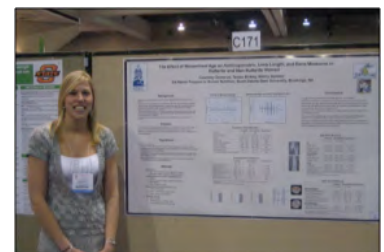
Marcella Gilbert, MS Student in Nutrition and Food Science (FCS) December 2008: "Role of Fruits and Vegetables in Bone Health". She currently works for Ag Extension at Cheyenne River Reservation.

Hussam Alwafi, MD, MS Student in Nutritional Sciences, "Role of Early Sugar Intake on Later Sugar Intake and Body Composition". He is currently on faculty in Tripoli, Libya.

Ramu Sudhagoni, PhD in Statistics (2011), "Longitudinal Data Analysis: Longitudinal Effects of Fat and Lean Mass on Bone Accrual in Infants", currently on faculty at the University of South Dakota

Lee Weidauer, Ph.D. in Nutritional Sciences (2012), "Effect of Participation in Different Types of Physical Activity and Age on Bone Mass, Density, and Geometric Properties", currently on faculty in the Department of Health & Nutritional Sciences, SDSU

Lacey McCormack, Ph.D. in Nutritional Sciences (2013), "Longitudinal Examination of Diet, Physical Activity and Weight Changes in Rural and Non-Rural Populations", currently on faculty in the Department of Health & Nutritional Sciences, SDSU



Courtney Grimsrud & Corey Koenig  
presenting their research at Experimental  
Biology in San Diego, 2008



Maggie Minett, Ph.D. in Biological Sciences (2017), “Effect of Sports Participation on Bone”, currently a Research Associate in the EA Martin Program

*Other Graduate Involvement:*

Larissa Peterson, MS Student in Statistics  
Lori Sissing, MS Student in Statistics

*Post-doctoral Fellows:*

Wei Bai, Ph.D. Natalie Thiex, Ph.D.  
Lee Weidauer, Ph.D.

*National Children’s Study Employees (2005-2012):*

Barb Anderson, Community Outreach Coordinator  
Oscar Andres Hernandez, Call Center Interviewer  
Jessica Bendewald, Research Assistant  
Samantha Darnall, Research Assistant  
Kevin Donnelly, Call Center Interviewer  
Dave Everding, Computer Support Specialist  
Christa Friedrich, Call Center Supervisor  
Bonnie Gilbertson, Research Coordinator  
Pete Gilbertson, Research Assistant  
Kathy Gums, Research Assistant  
Karen Gutzman, Research Assistant  
Emily Hansen, MS, Research Coordinator  
Nate Hansen, MS, Research Assistant  
Shelby Hintze, Research Coordinator  
Brittany Kleinsasser, Information Assistant  
Kriston Koeppe, MS, Research Coordinator  
Margo Law, Statistical Programmer  
Kari Loft, Research Coordinator  
Ann Martin, MS, RN, Hospital Negotiator/ Liaison  
Dan McCormack, Information Assistant

Zach McCreedy, Research Assistant  
Amanda Mitchell, Research Coordinator  
Callie Molengraaf, Research Assistant  
Travis Rust, Computer Support  
Kelsey Schurrer, Research Assistant  
Betty Steen, Research Coordinator  
Kristina Stulken, Program Assistant  
Natalie Thiex, PhD, Post Doc Research Assistant  
Mary Thum, MS, Research Coordinator  
Bonnie Tonsager, Research Coordinator  
Craig Walters, Research Assistant  
Lee Weidauer, MS, Research Assistant  
Julie Westberg, Program Assistant  
Anne Wimberly, Information Assistant  
Li Zhong, Research Assistant  
Julie Zaruba, Research Assistant  
Krista Zeug, Research Coordinator

*NCS Enumerators (many of these individuals were undergraduate or graduate students):*

Michele Adamson, Donnell Anderson, Janelle Anderson, Joanne Anderson, Kristin Anderson, Amanda Banker, Melissa Berry, Ryan Berry, Benda Berseth, Ashutosh Bhogle, Nicholas Biershach, Steve Binkley, Kayla Blindert, Jenna Carsrud, Andrea Cota, Lucas Davidson, CeCe Des Marais, Quinn Fairchild, Michael Feikema, Jillian Gibson, Alex Gilbertson, Mary Hall, Kirsten Hansen, Kendra Hill, Kayla Johnson, Amy Kaemingk, Renae Kreutner, Kalli Kurtenbach, Lelly Lehnert, Christine Lovett, Amanda Lynn, Kimberly Markham, Nicole Meyer, Marla Mitchell, Adam Monke, Sue Morarie, Sara Olenich, Cindy Olson, Denise Olson, Kelsie Reeves, Lindsey Reid, Jessica Rozeboom, Corrinna Schwartz, Kelsey Solberg, Dan Stluka, Jane Syltie, Karen Thaler, Kathie Tuntland, Ameya Vaidya, Lynda Venhuizen, Emma Wey, Kelsey Wick, Shivaram Arunachalam, Craig Bailey, Carmen Bot, Jaclyn Castleberry, Stephanie Cooper, Kyle Dalsted, Heidi Demuth, Samantha Fausti, Donn Fetzer, Patricia Galipeau, Andrea Helland, Spencer Hintze, Mary Husman, Mychal McKeown, Macie Michelson, Angela Miles, Zachary Milner, Courtney Moberg, Prenil Poulouse, James Rogers, Rachele Schrader, Pam Siverhus, Andrew Wey, Daniel Winders.

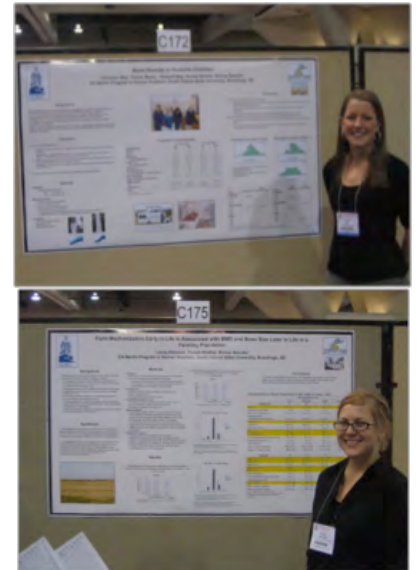


*NCS Employees taking part in a research discussion group*

## Formal Courses or Lectures at SDSU & In the Community

### Formal Courses (Specker):

2007 Spring	Ph.D. Biology Seminar (BIOS 890), 1 semester hour
2008 Spring	Epidemiology (HSC782), 3 semester hours
2008 Fall	Biostatistics I (HSC 631), 3 semester hours (Wey primary instructor)
2009 Spring	Biostatistics II (HSC731), 3 semester hours (Wey primary instructor)
2009 Summer	Individual Study: Meta-Analysis (CSS 891), 3 semester hours
2010 Spring	Epidemiology (HSC/NFS/BIOS 782), 3 semester hours
2011 Fall	Statistical Methods in Epidemiology (CSS 891), 2 semester hours (Wey primary instructor)
2012 Spring	Analysis of Complex Surveys (NFS 702), 3 semester hours (Wey primary instructor)
2012 Fall	Epidemiology (HSC/NFS/BIOS 782), 3 semester hours
2014 Spring	Independent Study: Research Methods (HNS 891), 3 semester hours
2014 Spring	Independent Study: Biostatistics (HNS 891), 3 semester hours
2014 Spring	Epidemiology (HNS/BIOS 782), 3 semester hours
2016 Spring	Epidemiology (HNS/BIOS 782), 3 semester hours
2017 Spring	Epidemiology (HNS/BIOS 782), 3 semester hours



*Christy Wey & Lacey McCormack presenting study results at Experimental Biology, San Diego, 2008*

### Formal Courses (Other EAM Staff):

2012 – 2017: Introduction to Athletic Training (AT 164), 2 semester hours (Weidauer - instructor)

## Lectures at SDSU & In the Community:

### 2007 - 2011

“National Children’s Study” to SDSU GIScCE, January 2007 (Specker)

“National Children’s Study” to SDSU Human Nutrition Class, February 2007 (Specker)

“National Children’s Study” during SDSU New Faculty Orientation, August 2007 (Specker)

“Research Methods” for University Affiliated Program USD (1-day lecture), summer 2007 (Binkley)

Speaker, SDSU Foundation Board, “National Children’s Study”, September 2007 (Specker)

Speaker, 2<sup>nd</sup> Annual Children’s Environmental Health Seminar, “National Children’s Study”, October 2007 (Specker)

“National Children’s Study” at the 3<sup>rd</sup> Medical District Seminar in Brookings, SD, October 2007 (Specker)

“National Children’s Study” to SDSU College of Family and Consumer Science, November 2007 (Specker)

“National Children’s Study” to Brookings, SD, Optimist Club, November 2007 (Specker)

“National Children’s Study” LEND Affiliated Program, USD Medical School, December 2007 (Specker)

“National Children’s Study” at USD/Sanford Department of Pediatrics, Pediatric Grand Rounds, Sioux Falls, SD, December 2007 (Specker)

EAM/NCS staff & faculty gave numerous NCS-related talks in local communities, including over 40 meetings with local community organizations (health agencies, social service agencies, law enforcement personnel, etc.).

EAM/NCS participated in approximately 20 parades over the summers of 2008 & 2009

Operated a booth at Dakotafest “Bone Health in Rural Populations” and “National Children’s Study,” August 2008 & 2009

Bonny Specker appeared on On-Call television program with Dr. Richard Holm and Tami Watson regarding Children’s Health Issues, April 9, 2009

“SDSU & the National Children’s Study” at the Brookings Lions Club, 2009

“National Children’s Study” at the USD LEND University Affiliated Program at Sanford Health, 2009

“South Dakota Rural Bone Health Study” at the Brookings Optimist Club, 2009

“SDSU & the National Children’s Study” at the Brookings Altrusa Club, 2009

Presented “National Children’s Study” at the USD LEND University Affiliated Program at Sanford Health, 2010

Presented “Bone Loss in Young Men” at the SDSU Annual Nutrition Seminar, 2010

Guest, On-Call television show, “Vitamin D Recommendations”, January, 2011

## **2012 - 2017**

- Speaker, South Dakota Public Health Association Annual Meeting, Sioux Falls, SD, "Governor's Task Force on Infant Mortality", 2012
- Speaker, South Dakota Public Health Association Annual Meeting, Sioux Falls, SD, "Update on the National Children's Study", 2012
- Panel of Panelists, Colleges of Education and Human Sciences, College of Arts and Sciences, College of Agriculture and Biological Sciences, SDSU, 2012
- Speaker, Pediatric Grand Rounds, Sanford USD School of Medicine, 2012
- Speaker, Science at the Pub, "Is Osteoarthritis a Disease of Childhood?" 2012
- Speaker, SDSU Annual Nutrition & Health Conference, "Implications of Vitamin D Deficiency in Pregnancy", 2013
- Panel of Panelists, Colleges of Education & Human Sciences, Arts & Sciences, Agriculture & Biological Sciences, SDSU, 2013
- Speaker, 1st Annual Sanford Research Summit, "Pediatric Origins of Osteoarthritis", 2013
- Speaker - Weidauer, SDSU Health and Nutrition Conference, "Bone Changes in Athletes: Beyond Bone Density", 2013
- Speaker, SDSU Annual Nutrition & Health Conference, "Hey Baby, What's Happening? An Update on Maternal & Children Health in South Dakota", 2014
- Guest, On-Call television show, South Dakota Public Broadcasting, "Keeping Your Baby Safe", April, 2014
- Speaker, Creativity Seminar Series, "Creativity in Sciences," Brookings Humanities Council, September 2014
- SDSU Rural Health Seminar, "South Dakota Pregnancy Risk Assessment Monitoring System (SD-PRAMS)", EAM Program group presentation, April, 2014
- Speaker, "South Dakota 2014 Pregnancy Risk Assessment Monitoring System (PRAMS) Survey", Computer Science & Statistics Seminar, October, 2016
- Guest, Prairie Doc radio show, "The 4ME Program", October, 2017

## **National and International Visibility**

Peer-reviewed scientific articles provide national and international visibility for SDSU. This is important not only for faculty, but for staff and students as well.

### **Publications:**

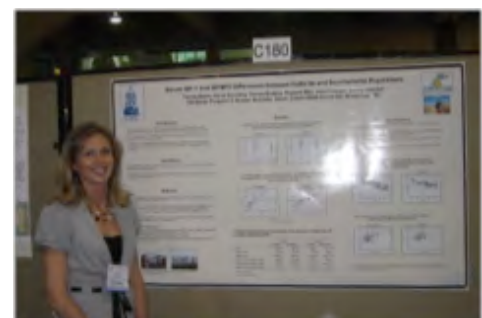
#### **2007-2011**

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*Tianna Beare presenting at Experimental Biology, San Diego, 2008*

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*Ryan Berry presenting at EAM Retreat @ Oak Lake ~ 2007*

## **Formal Presentations** (only the presenter's name is given)

### **2007-2011**

Specker: Gene-by-Activity Interactions on Bone Geometry. Presented at the Black Forest Forum for Musculoskeletal Interactions, Bad Liebenzell, Germany, 2007.

Binkley: Role of Muscle Function vs. Size on Bone Geometry. Presented at the 1st Black Forest Forum for Musculoskeletal Interactions, Bad Liebenzell, Germany, 2007.

Abou Samra. Determinants of Bone Mass and Size in Term, Near-Term, and Preterm Infants. Presented at the American Society for Bone and Mineral Research, Honolulu, 2007

Grimsrud C. The effect of menarcheal age on anthropometric, limb length and bone measures in Hutterite and non-Hutterite women. Presented at the American Society for Nutrition Annual Meeting at Experimental Biology, San Diego, 2008.

Wey C. Bone density in Hutterite children. Presented at the American Society for Nutrition Annual Meeting at Experimental Biology, San Diego, 2008.

Arneson. Farm mechanization early in life is associated with BMD and bone size later in life in a farming population. Presented at the American Society for Nutrition Annual Meeting at Experimental Biology, San Diego, 2008.

Donnelly. The effect of dietary protein on serum IGF-1 levels in adult humans. Presented at the American Society for Nutrition Annual Meeting at Experimental Biology, San Diego, 2008.

Beare. Serum IGF-1 and IGFBP-3 differences between Hutterite and non-Hutterite populations. Presented at the American Society for Nutrition Annual Meeting at Experimental Biology, San Diego, 2008.

Koenig. Comparison and precision of the XCT300 and XCT2000 peripheral quantitative computed tomography densitometers for geometric and material bone parameters of the radius. *FASEB Journal* 2008; 22:883.12 Presented at the American Society for Nutrition Annual Meeting at Experimental Biology, San Diego, 2008.

Specker: Invited Speaker, State-of-the-Art: Nutrition & Skeletal Health: "Does Calcium Modify the Bone Response to Activity in Children?" ISCD-IOF Meeting, Orlando, March 2009

Specker: Invited Speaker, Osteoporosis in Men: How Far Have We Come? Symposium; "High Rates of Bone Loss in Young Men", ISCD-IOF Meeting, Orlando, March, 2009

Specker: Invited Plenary Speaker, "Activity and Calcium Requirements for Optimal Bone Development" at 6<sup>th</sup> International Workshop for Musculoskeletal and Neuronal Interactions, Cologne, Germany, May 2008

Wey H. Heritability of grip strength and total body lean mass in a Hutterite population. Presented at the 6th International Workshop for Musculoskeletal and Neuronal Interactions, Cologne, Germany, 2008 (received the Harold Frost Poster Award for the best poster presentation).

Wey H. Role of lean and fat mass on bone accrual in Hutterite children aged 8-19 years. Presented at the Annual Pediatric Academic Societies meeting, Baltimore, May, 2009.

- Specker. Higher BMC and BMD in daughters and granddaughters of individuals with joint replacement. Presented at the annual American Society for Bone and Mineral Research, Denver, September, 2009.
- Wey. Role of lean and fat mass on bone accrual in Hutterite children aged 8-19 years. Presented at the Muscle-Bone Working Group Symposium, American Society for Bone and Mineral Research, Denver, September, 2009.
- Binkley. Lower Volumetric Cortical Density Increases Variation Within the Cortical Shell. Presented at the Annual American Society for Bone and Mineral Research, Denver, September, 2009.
- Specker B. Issues of Vitamin D in At-Risk Populations: Skin Pigmentation and Body Composition, Indo-US International Life Sciences Institute (ILSI) Conference on Recent Scientific Developments in Vitamin D and Health, Hyderabad, India, November, 2009
- Specker B. Vitamin D during Pregnancy and Lactation, Indo-US International Life Sciences Institute (ILSI) Conference on Recent Scientific Developments in Vitamin D and Health, Hyderabad, India, November, 2009
- Specker. Invited speaker, "Issues Related to Disclosure of Research Questions and Blinding of Participants", Quest for Research Excellence: The Intersection of Standards, Culture and Ethics in Childhood Obesity, DHHS, Denver, 2010
- Sudhagoni. Combining longitudinal studies on bone mineral content of infants. Presented at the Joint Statistical Meetings, Miami, August 2011
- McCormack. Effect of level of farm mechanization early in life on bone later in life. Presented at the Black Forest Forum for Musculoskeletal Interactions, Bad Liebenzell, Germany, May, 2011
- Specker. Growth and pQCT Bone Measures in Children and Grandchildren of Individuals with Hip or Knee Replacement. Presented at the Black Forest Forum for Musculoskeletal Interactions, Bad Liebenzell, Germany, May, 2011
- Specker. Invited Speaker, "Maternal Diet and Bone Growth in Utero – Does Nutrition during Pregnancy Impact Offspring Bone?", joint meeting of the Nutrition Society and the American Society for Nutrition, Cork, Ireland, 2011
- Weidauer. "The Effect of Different Sport Activities on Cortical Bone in the Tibia. American College of Sports Medicine Annual Meeting, May 2011.

## **2012-2017**

- Invited Speaker, European Society for Pediatric Endocrinology (ESPE), "Implications of Vitamin D Deficiency in Pregnancy", Leipzig, Germany, 2012.
- Wey. Population Differences in Rates of Change for pQCT Measures at the Radius in Adult Males. Presented at the American Society for Bone and Mineral Research, Minneapolis, October, 2012.
- Weidauer. Bone Changes in Athletes throughout a Competitive Season. Presented at the American Society for Bone and Mineral Research, Minneapolis, October, 2012 (winner of the President's Young Investigator Poster Award)
- Wey. Population Differences in Rates of Change for pQCT Measures at the Radius in Adult Males. Presented at the American Society for Bone and Mineral Research, Minneapolis, October, 2012.
- Weidauer. Bone Changes in Athletes throughout a Competitive Season. Presented at the American Society for Bone and Mineral Research, Minneapolis, October, 2012 (winner of the President's Young Investigator Poster Award)
- Specker. Invited symposium speaker, "Building Better Bones", North American Society Pediatric Exercise & Medicine, Minneapolis, 2014.
- Specker. Invited symposium speaker, "Influence of Exercise on Bone and Muscle Development in Children", American Academy of Orthopaedic Surgeons, Clinical Orthopaedics and Related Research Symposium on Musculoskeletal Sex Differences Throughout the Lifespan, Chicago, 2014.
- Specker. Invited Briggs Lecture, "Evidence-based Science in the Development of Dietary Recommendations", Society for Nutrition Education and Behavior (SNEB), Milwaukee, 2014.
- McCormack. Changes in weight, body fat and physical activity patterns in men after marriage. APHA 142nd Annual Meeting, New Orleans, November, 2014.
- Specker. Invited speaker, "Groups at Risk for Vitamin D Insufficiency", Vitamin D Conference, Office of Dietary Supplements, National Institutes of Health, Bethesda, 2014.
- Weidauer. "Falls and Fractures in Three Populations Aged 20 to 66 Years. American Academy of Orthopedic Surgeons: Musculoskeletal Sex Differences Throughout the Lifespan Symposium, Chicago, July 2014.
- Invited Speaker, "South Dakota Hospital Discharge Data on Neonatal Abstinence Syndrome, Infant Drug Exposure and Maternal Use of Opiates", First 1,000 Days Initiative: Maternal and Child Health Resiliency Conference and Roundtable, Great Plains Tribal Chairman Health Board and Northern Plains Tribal Epidemiology Center, Rapid City, June, 2014
- Speaker, "Epidemiological Research in the Hutterite Community of South Dakota", Applied Global Health Epidemiology (EPID 6670), University of Colorado School of Public Health, Denver, October, 2014
- Specker. Vitamin D and rickets: A worldwide consensus. 7<sup>th</sup> International Conference on Children's Bone Health, Salzburg, Austria, June 2015

- Binkley. Sitting time has a stronger effect on bone than moderate plus vigorous activity. 7th International Conference on Children's Bone Health (ICCBH), Salzburg, Austria, June 2015.
- Specker. Invited Speaker, "South Dakota Hospital Discharge Data on Neonatal Abstinence Syndrome, Infant Drug Exposure and Maternal Use of Opiates", First 1,000 Days Initiative: Maternal and Child Health Resiliency Conference and Roundtable, Great Plains Tribal Chairman Health Board and Northern Plains Tribal Epidemiology Center, Rapid City, June, 2015
- Specker. Invited speaker, "Making a Difference with Tribal PRAMS Data: A Collaboration between Tribes, a Tribal Epidemiology Center & South Dakota Department of Health", CityMatCH and MCH Leadership Conference, Philadelphia, September, 2016
- Specker. Invited speaker, "Global Consensus on Nutritional Rickets: Pregnancy & Lactation", 7th International Conference on Children's Bone Health (ICCBH), Salzburg, Austria, June, 2015
- Specker. Invited Symposium Speaker, "Influence of Exercise and Nutrition on Bone Acquisition in Childhood", 5th Pediatric Bone Health Symposium, University of California at San Francisco, March, 2017
- Specker. Invited Symposium Speaker, "Body Composition and Physical Activity", 8th International Conference on Children's Bone Health (ICCBH), Wurzburg, Germany, June, 2017

## Honors & Awards

### *Bonny Specker:*

- Member, National Institutes of Health Integrative Nutrition and Metabolic Processes (INMP) Study Section, 2004-2008
- Dairy Management, Inc., National Scientific Research Advisory Committee, 2006 – 2008
- Member, Scientific Program Review Expert Panel, USDA Grand Forks Human Nutrition Research Center, June, 2007
- F.O. Butler Foundation Award Winner For Excellence in Research, 2007
- Member, Scientific Review of the Medical Research Council (MRC) Human Nutrition Unit, Cambridge, England (March) 2009
- Member, Planning Committee for Meeting on Integrity in Research Focused on Childhood Obesity", Office on Research Integrity, Dept Health & Human Services (DHHS), 2009
- Honorary Marshall, SDSU Spring Commencement, 2010
- Data Safety Monitoring Board member & Chair for National Institutes of Health /NIAMS sponsored grants, 2011
- National Institutes of Health NIAMS Peer Review - SCOR - Editorial Board Review, 2011
- Chair, Symposium on "Muscle and Bone Function in Health and Disease", Black Forest Forum, International Society for Musculoskeletal and Neuronal Interactions, 2011
- Nominated for 2012-2013 Excellence in Graduate Student Mentoring Award, SDSU, 2013
- Task Force Member, Densitometry in Infants and Young Children, International Society for Clinical Densitometry (ISCD) 2013 Guidelines
- Section Lead, European Society for Pediatric Endocrinology Working Group to develop worldwide consensus on prevention and therapy of nutritional rickets and osteomalacia (lead for lactation & pregnancy), 2013-2015
- Member, NIH/NICHHD Maternal-Fetal Medicine Units (MFMU) Network review, Bethesda, November, 2015.

### *Teresa Binkley:*

- American Society of Nutrition Award to Attend National Institutes of Health Conference on Vitamin D in the 21<sup>st</sup> Century, Bethesda, 2007
- Travel Award from Novartis Pharmaceuticals, Switzerland to attend the International Society for Neuromusculoskeletal Interactions meeting in Cologne, 2008
- 2014 South Dakota Education Association – Friend of Education Award

### *Howard Wey:*

- Winner of the Harold Frost Poster Award for the best poster presentation at the International Society for Neuromusculoskeletal Interactions in Cologne, Germany, 2008

### *Lee Weidauer:*

- Winner of the ASBMR President's Young Investigator Poster Award, 2012
- Young Investigator Travel Award, American Academy of Orthopedic Surgeons: Musculoskeletal Sex Differences Throughout the Lifespan Symposium, Chicago, 2014