Significant Publications


In this study Dr. Altaye and colleagues constructed the first infant probability template which is used to spatially normalize and the segment infant brain as the basis for imaging research on the infant brain. This is the first such template for infants. The template has been downloaded from our web site more than 100 times by researchers across the globe.


The diagnosis of a hearing loss is a critical life event with profound effects on parents and the family system. For the first time, Dr. Meinzen-Derr and colleagues delineated different forms of stress in parents of children who are deaf/hard of hearing and have shown that this stress changes over time. This knowledge can go a long way to
better anticipate areas of need and support for the families we serve, with the goal of strengthening the parent-child relationship and improving child outcomes.


Dr. Woo recently published a novel study of the relationship between a human milk component and infant development. The paper, published in the May 2009 issue of Breastfeeding Medicine, reports that higher levels of human milk adiponectin is associated with lower infant weight and thinner body proportionality during the first six months of life in two independent cohorts of breastfeeding infants. Since adiponectin is associated with lower obesity and improved health in adults, these findings suggest that exposure to human milk adiponectin may be protective in infants, as well.


Dr. Woo also explored the utility of administrative hospital datasets to identify the prevalence of obesity and obesity-related comorbidities in hospitalized pediatric patients. Published in the Journal of Pediatrics in March 2009, Dr. Woo found that ICD-9 discharge codes for obesity vastly underestimated the prevalence of true obesity, ascertained by measured height and weight. In addition, using ICD-9 codes to identify obese patients also resulted in misrepresentation of their comorbid conditions. Thus, extreme caution is warranted when using obesity diagnoses to study healthcare utilization by obese children.


Dr. Amy Cassedy and faculty in the Division of Clinical Effectiveness described the instability of health insurance coverage for children aged 2 to 17 and found that children with gaps in insurance coverage were less likely than insured children to have a usual source of care and receive well-child care. Thus insurance gaps are critical events in child health nationwide.

**Division Highlights**

**Bin Huang**

Dr. Huang continued her R01 on statistical modeling of puberty and mediation/surrogacy effects. Through this grant award, she validated a novel approach to assessment of pubertal timing via statistical modeling. The primary publication from this study was accepted for publication this year and is now in press. She had another methodologic paper accepted this year, which proposes a more efficient method for assessing surrogacy effect for a continuous measure in a randomized clinical trial setting. The application of validated statistical methods to standardization of clinical assessment of puberty has important application to adolescent care and research protocols.

**Jane Khoury, Judy Bean**

Dr. Khoury and Dr. Bean led the biostatistical core of the renewal of the large stroke grant awarded to Dr. Joseph Broderick, Chair, Department of Neurology, University of Cincinnati College of Medicine. This 5-year grant was for a Specialized Program of Translational Stroke Research (SPOTRIAS). The program is comprised of two clinical trials and five cores. The Core is responsible for the working with the investigators on the design and implementation of the trials, data management, monitoring of the trials, and reporting of the results. The CLEAR-ER trial is a multi-center trial of intravenous t-PA combined with eptifibatide in patients within 3 hours of the onset of acute stroke. The Biostatistics Core working with the Division of Biomedical Informatics has implemented a Web site for randomization of the participants and the entry of data collected. This trial is underway and has enrolled patients using the Web. The STOP-IT trial is a multi-center, randomized controlled pilot clinical trial of Factor VIIa, and the Biostatistical Core is responsible for considering changes in the design of this trial.

**Jareen Meinzen-Derr**

This year, Dr. Meinzen-Derr was awarded an outcomes research grant from CCHMC to study language and functional outcomes among deaf children with developmental disabilities who have received a cochlear implant. Dr. Meinzen-Derr followed 20 children with hearing loss and another disability who received a cochlear implant before 54 months of age and matched hearing patients. The cognitive abilities of children with initial hearing loss was a strong predictor of the outcomes of cochlear implant, more so than the child’s disability. This is the first longitudinal study ever conducted on the post-implant outcomes of children with multiple disabilities. The study has already had impact on the treatment of some children, and received press attention at the Pediatric Academic Societies meeting, where the data were
Jessica Woo, Lisa Martin
This past year, Dr. Daniel Woo of the Department of Neurology, University of Cincinnati College of Medicine, was awarded a grant on the Genetic and Environmental Risk Factors for Hemorrhagic Stroke (GERFHS) grant, which is a multi-year genome-wide association study of hemorrhagic stroke. Dr. Jessica Woo and Dr. Lisa Martin were awarded a subcontract for the statistical genetics core of that grant. Preliminary results from 192 cases and 472 controls have identified several promising associations, which were presented in June at the International Stroke Genetics Consortium meeting in Munich, Germany.

Richard Ittenbach, Shelia Salisbury, Mi-Ok Kim
These faculty led different arenas of biostatistical and study design consulting this year that has the potential to strengthen biostatistical consulting at CCHMC. Dr. Ittenbach led the initial planning process in the division this year for data management development, and for the development of the newly established Heart Institute’s biostatistics core. During the past year, this division also collaborated with Dr. James Heubi and others in the development of the Center for Clinical and Translational Sciences and Training (CCTST). The CCTST was approved for NIH funding this past year. Dr. Salisbury provided substantial support to assist the development of the CCHMC biostatistical consulting component of that major award. In addition, Dr. Kim led development of the division’s Webinar series for continuing education in biostatistics. These seminars are held monthly and now involve attendees from across the campus. She also led the biostatistics core for the Translational Research Initiative and the Cancer and Experimental Hematology Divisions, leading to planning for a robust biostatistics core as part of the future Cancer and Blood Disease Institute being developed by CCHMC and UC.

Division Collaboration
Collaboration with Adolescent Medicine
Collaborating Faculty: Dr. Frank Biro; Dr. Lorah Dorn; Dr. Jessica Kahn; Dr. Jill Huppert; Dr. Chris Kraus; Dr. Lea Widdice
Statistical support by Dr. Bin Huang and Dr. Shelia Salisbury

Collaboration with Allergy and Immunology
Collaborating Faculty: Dr. Marc Rothenberg
Statistical and research support by Dr. Lisa J. Martin

Collaboration with Anesthesiology
Collaborating Faculty: Dr. Dean Kurth; Dr. Joel Gunter; Dr. Anna Varughese; Dr. Anne Boat; Dr. Clifford Hoffman; Dr. Matthias Konig; Dr. Andreas Loepke; Dr. Mohamed Mahmoud; Dr. John McAuliffe; Dr. Mario Patino; Dr. Senthikumar Sadhasivam; Dr. Thomas Sheckleford; Dr. Alexandra Szabova
Statistical support by Dr. Todd Nick and Dr. Shelia Salisbury

Collaboration with Asthma Research and Personalized & Predictive Medicine
Collaborating Faculty: Dr. Neeru Hershey; Dr. Melinda Butsch-Kovacic
Statistical support by Dr. Shelia Salisbury and Todd Nick
Research by Dr. Melinda Butsch Kovacic and Dr. Lisa J. Martin

Collaboration with Behavioral Medicine and Clinical Psychology
Collaborating Faculty: Dr. Lori Stark; Dr. Scott Powers; Dr. Dennis Drotar; Dr. Avani Modi; Dr. Korey Hood; Dr. Kevin Hommel; Dr. Ahna Pai; Christina Ramey; Dr. Robert Ammerman; Dr. Jeffrey Epstein; Dr. Joshua Langberg; Dr. Kelly Byars
Statistical support by Drs. Judy Bean, Richard Ittenbach, Mekhib Altaye, Todd Nick, Lisa J. Martin

Collaboration with Biomedical Informatics
Collaborating Faculty: Dr. Jun Ma; Dr. Michael Wagner; Dr. Jarek Meller
Statistical support by Dr. Rhonda VanDyke, Dr. Jane Khoury, Dr. Lisa J. Martin, Dr. Ardythe L. Morrow
Informatics consultation provided by BMI to Drs. Lisa J. Martin, Ardythe L. Morrow, Jessica Woo

Collaboration with Cardiology
Collaborating Faculty: Dr. Woody Benson; Dr. Thomas Kulik; Dr. Brad Marino; Dr. William Gottliebson; Dr. Kan Hor; Dr. Erik Michelfelder; Dr. Jeanne James; Dr. Elaine Urbina; Dr. John Morrison; Dr. Shelly Kirk
Statistical support by Drs. Richard Ittenbach, Rhonda VanDyke
Genetic research with Dr. Lisa J. Martin, Dr. Todd Nick, Dr. Jessica Woo
Collaboration with Clinical Pharmacology
**Collaborating Faculty:** Dr. Sander Vinks; Dr. Michael Spigarelli; Dr. Shannon Saldana
Statistical support by Dr. Todd Nick, Dr. Shelia Salisbury

Collaboration with Developmental Disabilities & Behavioral Pediatrics
**Collaborating Faculty:** Dr. Tanya Froehlich; Dr. Patty Manning; Dr. Donna Murray; Dr. Susan Wiley; Dr. Sandra Grether; Dr. Bonnie Patterson; Dr. Michelle Zimmer; Dr. Heidi Castillo; Dr. Cynthia Molloy
- Autism research collaboration
- Hearing and deafness research collaboration with Dr. Jareen Meinzen-Derr, Dr. Lisa J. Martin

Collaboration with Emergency Medicine
**Collaborating Faculty:** Dr. Melinda Mahabee-Gittens
Statistical support by Dr. Bin Huang, Dr. Jane Khoury

Collaboration with Endocrinology
**Collaborating Faculty:** Dr. Larry Dolan; Dr. Nancy Crimmins; Dr. Debra Elder; Dr. Philippe Backeljauw; Dr. Meilan Rutter, Dr. Susan Rose; Dr. Iris Little; Dr. Amy Shah
- Research with Dr. Jessica Woo, Dr. Lisa J. Martin, Dr. Shelia Salisbury
- Statistical support by Dr. Jane Khoury

Collaboration with Every Child Succeeds
**Collaborating Faculty:** Dr. Robert Ammerman
Statistical collaboration with Dr. Mekibib Altaye

Collaboration with Experimental Hematology
**Collaborating Faculty:** Dr. Susanne Wells; Dr. James Mulloy; Dr. Tim Cripe; Dr. Nancy Ratner; Dr. Punam Malik; Dr. Marie-Dominique Filippi; Dr. Jose Cancelas-Perez; Dr. Pan Dao
- Statistical support by Dr. Mi-Ok Kim

Collaboration with Gastroenterology, Hepatology & Nutrition
**Collaborating Faculty:** Dr. Lee Denson; Dr. Kathleen Campbell; Dr. Ajay Kaul
- Research collaboration with Dr. Cynthia Molloy and Dr. Ardythe L. Morrow

Collaboration with General and Community Pediatrics
**Collaborating Faculty:** Dr. Robert Kahn; Dr. Kieran Phelan; Dr. Kim Yolton; Dr. Sheela Geraghty; Dr. Richard Hornung
- Statistical support by Dr. Bin Huang, Dr. Jane Khoury
- Research with Dr. Ardythe Morrow

Collaboration with General Clinical Research Center
**Collaborating Faculty:** Dr. James Heubi etal
- Study design, review, and analysis support by Drs. Judy Bean, Shelia Salisbury, Ardythe Morrow, and Jane Khoury

Collaboration with Global Child Health
**Collaborating Faculty:** Dr. Adekunle Dawodu; Dr. Mark Steinhoff
- Statistical support by Drs. Shelia Salisbury, Mekibib Altaye
- Research with Dr. Ardythe L. Morrow

Collaboration with Health Policy and Clinical Effectiveness
**Collaborating Faculty:** Dr. Jacqueline Grupp-Phelan; Dr. Ed Donovan
- Statistical support by Drs. Jane Khoury, Shelia Salisbury. Dr. Jareen Meinzen-Derr

Collaboration with Hematology-Oncology
**Collaborating Faculty:** Dr. Frank Smith; Dr. Tim Cripe; Dr. Nancy Ratner; Dr. Rajaram Nagarajan; Dr. Rebecca Marsh; Dr. Denis Adams; Dr. James Geller; Dr. John Perentesis; Dr. Lisa Filipovich; Dr. Maryam Fouladi; Stella Davies
- Statistical support by Dr. Mi-Ok Kim
- Research by Dr. Melinda Butsch Kovacic

Collaboration with Human Genetics
**Collaborating Faculty:** Dr. Greg Grabowski; Dr. Cindy Prows, Dr. Dan Prows; Dr. Brad Tinkle; Dr. Min Xin
Guan; Dr. Mēhdi Keddache; Dr. Ŭ Qi Xiaoyang; Dr. Kejían Zhang; Dr. Bill Nichóls; Dr. Betty Schorry; Dr. Nancy Leslie

Research collaborations with Dr. Lisa J. Martin
Research collaborations with Dr. Cynthia Molloy
Statistical support by Dr. Todd Nick

Collaboration with Immunobiology
Collaborating Faculty: Dr. Marsha Wills-Karp
Research with Dr. Lisa Martin and Dr. Cynthia Molloy

Collaboration with Infectious Disease
Collaborating Faculty: Dr. Xi Jiang; Dr. Mary Staat; Dr. David Bernstein
Statistical support by Dr. Mekibib Altaye, Dr. Shelia Salisbury
Research with Dr. Ardythe L. Morrow

Collaboration with Molecular Immunology
Collaborating Faculty: Dr. Clare Chougnet
Statistical support by Dr. Bin Huang

Collaboration with Nephrology and Hypertension
Collaborating Faculty: Dr. John Bissler; Dr. Jens Goebel; Dr. David Hooper; Dr. Mark Mitsnefes
Statistical support by Drs. Shelia Salisbury and Todd Nick

Collaboration with Neurology
Collaborating Faculty: Dr. Tracy Glauser; Dr. Douglas rose; Dr. Diego Morita; Dr. Andrew Hershey; Dr. Brenda Wong
Statistical support by Drs. Rhonda VanDyke and Todd Nick

Collaboration with Orthopaedics
Collaborating Faculty: Dr. Eric Wall
Statistical support by Dr. Todd Nick

Collaboration with Otolaryngology
Collaborating Faculty: Dr. David Brown; Dr. Dan Choo; Dr. John Greinwald; Dr. Ellis Arjmand; Dr. Lisa Hunter
Research with Dr. Jareen Meinzen-Derr

Collaboration with Pediatric Dentistry
Collaborating Faculty: Dr. Erwin G. Turner
Teaching residents by Dr. Todd Nick

Collaboration with Pediatric General and Thoracic Surgery
Collaborating Faculty: Dr. Thomas Inge; Dr. Gregory Tiao; Dr. Timothy Crombleholme
Statistical support by Dr. Judy Bean, Dr. Shelia Salisbury, Dr. Jane Khoury
Research with Dr. Jessica Woo

Collaboration with Pediatric Physical Medicine and Rehabilitation
Collaborating Faculty: Dr. Shari Wade
Statistical supports by Drs. Shelia Salisbury, Lisa Martin, Jane Khoury and Judy Bean

Collaboration with Psychiatry
Collaborating Faculty: Dr. Robert Kowatch
Statistical support by Dr. Judy Bean

Collaboration with Pulmonary Medicine
Collaborating Faculty: Dr. Michael Seid; Dr. Raouf Samy Amin; Dr. Daniel Grossoehme; Dr. Jamie Woolridge
Research with Dr. Jessica Woo
Statistical support by Dr. Bin Huang, Dr. Rhonda VanDyke, Dr. Shelia Salisbury

Collaboration with Radiology
Collaborating Faculty: Dr. Scott Holland; Dr. Robert Fleck; PNRC
Research collaboration with Dr. Mekibib Altaye
Statistical support by Dr. Rhonda VanDyke

Collaboration with Rheumatology
Collaborating Faculty: Dr. Ed Giannini; Dr. Dan Lovell
Statistical support by Dr. Bin Huang

Collaboration with Schmidlapp Center
Collaborating Faculty: Dr. Lorah Dorn
Schmidlapp awardee - Drs. Lisa J. Martin and Jessica Woo
Mentorship and committee service by Dr. Ardythe L. Morrow

Collaboration with Section of Neonatology, Perinatal and Pulmonary Biology
Collaborating Faculty: Dr. Kurt Schibler; Dr. Tanya Cahill; Dr. James Greenberg; Dr. Andrew South; Dr. Henry Akinbi; Dr. Heather Kaplan; Dr. Vivek Narenderan
Statistical and teaching support by Dr. Jareen Meinzen-Derr, Dr. Lisa J. Martin, Dr. Mekibib Altaye
Research collaboration and mentorship by Dr. Ardythe L. Morrow
Research collaboration with Dr. Sheela Geraghty

Collaboration with Sports Medicine
Collaborating Faculty: Dr. Timothy Hewett; Dr. Gregory Myer; Dr. Mark Paterno
Statistical support by Drs. Jane Khoury and Todd Nick

Faculty Members

Ardythe L. Morrow, PhD, Professor; Division Director
Research Interests: Molecular epidemiology of human milk, epidemiologic methods, prevention of infectious disease, predictive biomarkers of neonatal outcomes

Mekibib Altaye, PhD, Research Assistant Professor
Research Interests: Design and analysis of correlated, clustered and longitudinal data. Design and analysis of functional brain image data. Inference procedures for reliability data.

Judy A. Bean, PhD, Professor Emeritus
Research Interests: General biostatistics consulting

Bin Huang, PhD, Research Assistant Professor
Research Interests: Application motivated statistics development include statistical modeling of mediation or surrogacy effect, censored outcome and measurement errors, statistics evaluation of gene by environment intera

Richard F. Ittenbach, PhD, Research Associate Professor
Research Interests: Scale development and analysis; Rausch analysis

Jane C. Khoury, PhD, Research Assistant Professor
Research Interests: Experimental design of cohort studies and trials

Mi-Ok Kim, PhD, Assistant Professor
Research Interests: Cancer Biostatistics: Advancing statistical methods frequently applied in clinical and preclinical cancer studies.

Lisa J. Martin, PhD, Research Associate Professor
Research Interests: Genetic Epidemiology, Obesity, Heart Malformations

Jareen Meinzen-Derr, PhD, Research Assistant Professor
Research Interests: Hearing and deafness, neonatal outcomes

Todd G. Nick, PhD, Professor
Research Interests: Development of reliable statistical models with particular emphasis in statistical genetics and pharmacogenetics

Shelia R. Salisbury, PhD, Research Assistant Professor
Research Interests: Cancer research: Design and analysis of correlated longitudinal data

Rhonda VanDyke, PhD, Research Assistant Professor
Research Interests: Mixture Models and Functional Data Analysis, integration of fMRI and MEG modalities; classification of arterial pressure waveform data from children through Bayesian statistics

Jessica G. Woo, PhD, Research Assistant Professor
Research Interests: Molecular epidemiology, with a particular research interest in pediatric obesity
Joint Appointment Faculty Members

Melinda Butsch-Kovacic, PhD, Assistant Professor
Personalized & Predictive Medicine
Epidemiologic methods

Adekunle Dawodu, MD, Professor
Center for Global Child Health
Vitamin D and child health

Sheela Geraghty, MD, Associate Professor
General & Community Pediatrics
Breastfeeding research

Richard Hornung, DrPH, Professor
General & Community Pediatrics
Statistical methods

Cynthia A. Molloy, MD, Research Assistant Professor
Neurology
Molecular epidemiology of autism

Jennie G. Noll, PhD, Associate Professor
Behavioral Medicine & clinical Psychology
Statistical methods

Trainees
- Meredith Tabangin, MPH,
- Stephanie Donauer, MS,
- Matthew Fenchel, MS,
- Chen Chen, MS,
- Lili Ding, MS,
- Trisha Herbers, MS,
- Dandan Li, BS,
- Yan Ren, MS,
- Yang Xiao, MS,

Significant Accomplishments

Statistical Genetics Program
Drs. Lisa Martin, Mi-Ok Kim, and Jessica Woo have been developing this research program over the past six years in collaboration with the Division of Human Genetics and others. Faculty in this program conduct independent and collaborative studies of genomic risk factors/modifiers for disease and drug metabolism. Areas of research include family based linkage, population based association, microarray, and pharmacogenetic studies. The program collaborates with a diverse group of investigators from the Heart Institute, Allergy and Immunology, Anesthesia, Pediatric Rehabilitation, Human Genetics, Biomedical Informatics, and Endocrinology. In the past year, there have been several notable accomplishments. First, Drs. Jessica Woo and Lisa Martin were awarded a substantial NIH subcontract for genome wide association analysis for ischemic stroke. Drs. Woo and Martin are utilizing the web based genotyping interface (established by the Statistical Genetics Program in conjunction with the Division of Biomedical Informatics) to perform genotype calling and ensure that only the highest quality data moves forward for statistical genetic analysis. Second, Dr. Martin in collaboration with Drs. Hinton and Benson published the first report localizing genomic regions responsible for Hypoplastic Left Heart Syndrome. This is the first critical step in identifying the genes responsible for this devastating condition. In addition to these accomplishments, we are gearing up our expertise to examine copy number variants in the genome. These copy number variants are distributed across the genome and are thought to be responsible for disease.

Human Milk and Perinatal Epidemiology Program
Human milk feeding provides powerful protection against infectious diseases, and optimizes infant nutrition and health. This program focuses on human milk components that may explain the protective effects of human milk, in order to develop novel strategies to improve child health based on human milk components. The Human Milk Program Project (P01 HD13021, Morrow, PI) underwent competitive review, received an excellent score (5th percentile), and was approved by the National Institute for Child Health and Human Development (NICHD) Council. Research on that program...
A major ongoing contribution and focused activity of this division is methodologic studies that advance our ability to conduct research on child health. This year, Dr. Mekibib Altaye published a study with Dr. Scott Holland et al providing the first infant brain templates for magnetic resonance imaging — fundamental for important studies of brain imaging in infancy. Research on child growth and obesity are a focus of this division and internationally. Dr. Jess Woo published the document that some normal weight preterm infants are short and have higher than normal weight for length. She thus reported that in preterm infants, monitoring growth by weight alone (as is the current practice) is inadequate, as it fails to document that some normal weight preterm infants are short and have higher than normal weight for length. She thus recommended measuring body length and proportionality in preterm infants as a routine part of care. In other arenas of research and care, Dr. Meinzen-Derr conducted a meta-analysis of studies and found that Amplitude-Integrated EEG Is Useful in Predicting Neurodevelopmental Outcome in Full-Term Infants with Hypoxic-Ischemic Encephalopathy. Dr. Bin Huang continued her R01 on statistical modeling of puberty and mediation/surrogacy effect. She proposed and validated a new easy to use approach for assessing pubertal timing via statistical model. Dr. Mi-Ok Kim continued research on NEC; this study interacts with the research of the human milk program project to determine infants at high risk of NEC and how human milk oligosaccharides may help protect against NEC. In another research publication, Dr. Jess Woo et al reported that human milk adiponectin is associated with infant growth in two collaborative sites in Mexico and Cincinnati. In addition, Dr. Sheela Geraghty et al continued research on the chemicals that can be found in mother’s milk, and reported that providing mothers with test results on environmental chemicals in their milk could result in premature weaning. In addition, a new perinatal epidemiology faculty member, Dr. Laurie Nommsen-Rivers, joined the division as a secondary appointment (primary in neonatology), strengthening the overall campus capacity in lactation research. This program also became a major component of the Perinatal Institute this year. Thus, this unique program has achieved international recognition for its research on the bioactive components of human milk, and is developing a strong reputation in factors affecting mothers’ ability to breastfeed.

**Statistical and Epidemiologic Methods Research**

A major ongoing contribution and focused activity of this division is methodologic studies that advance our ability to conduct research on child health. This year, Dr. Mekibib Altaye published a study with Dr. Scott Holland et al providing the first infant brain templates for magnetic resonance imaging — fundamental for important studies of brain imaging in infancy. Research on child growth and obesity are a focus of this division and internationally. Dr. Jess Woo published two noteworthy papers on methodologic issues in obesity studies, reporting that in severely obese adolescents, the body mass index Z-score can be a poor measure, and that the true prevalence of obesity is not systematically captured in the hospital data system. Another methodologic study published by faculty and colleagues of this division (Olsen et al) reported that in preterm infants, monitoring growth by weight alone (as is the current practice) is inadequate, as it fails to document that some normal weight preterm infants are short and have higher than normal weight for length. She thus recommended measuring body length and proportionality in preterm infants as a routine part of care. In other arenas of research and care, Dr. Meinzen-Derr conducted a meta-analysis of studies and found that Amplitude-Integrated EEG Is Useful in Predicting Neurodevelopmental Outcome in Full-Term Infants with Hypoxic-Ischemic Encephalopathy. Dr. Bin Huang continued her R01 on statistical modeling of puberty and mediation/surrogacy effect. She proposed and validated a new easy to use approach for assessing pubertal timing via statistical model. Dr. Mi-Ok Kim continued research on NEC; this study interacts with the research of the human milk program project to determine infants at high risk of NEC and how human milk oligosaccharides may help protect against NEC. In another research publication, Dr. Jess Woo et al reported that human milk adiponectin is associated with infant growth in two collaborative sites in Mexico and Cincinnati. In addition, Dr. Sheela Geraghty et al continued research on the chemicals that can be found in mother’s milk, and reported that providing mothers with test results on environmental chemicals in their milk could result in premature weaning. In addition, a new perinatal epidemiology faculty member, Dr. Laurie Nommsen-Rivers, joined the division as a secondary appointment (primary in neonatology), strengthening the overall campus capacity in lactation research. This program also became a major component of the Perinatal Institute this year. Thus, this unique program has achieved international recognition for its research on the bioactive components of human milk, and is developing a strong reputation in factors affecting mothers’ ability to breastfeed.

**Division Publications**

25. Yuan W, Altaye M, Ret J, Schmithorst V, Byars AW, Plante E, Holland SK. Quantification of head motion in


Grants, Contracts, and Industry Agreements

<table>
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<tr>
<th>Grant and Contract Awards</th>
<th>Annual Direct / Project Period</th>
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<tr>
<td>BEAN, J</td>
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<td>Recanalization Therapies and Markers of Outcomes in Acute Ischemic Stroke</td>
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<td>Innovative Modeling of Puberty and Substance Use Risk</td>
<td>R01 DA 019965</td>
<td>04/10/06 - 12/31/09</td>
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<td>Innovative Modeling Of Puberty and Substance Use Risk</td>
<td>R01 DA 019965 (supplement)</td>
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<td>Hemorrhagic and Ischemic Stroke Among Black and Whites</td>
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<td>11/01/05 - 06/30/09</td>
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<td>KIM, M</td>
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<td>Empirical Likelihood and Censored Quantile Regression</td>
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MORROW, A
Novel Genetic and Salivary Glycan Biomarkers for Risk of NEC in ELBW Infants
National Institutes of Health
R01 HD 059140 01/15/09 - 12/31/13 $568,882 / $2,905,073

CTSA: Design, Biostatistics and Ethics
National Institutes of Health (University of Cincinnati)
UL1 RR026314 04/03/09 - 03/31/14 $33,851 / $33,851

NICK, T
Epithelial Genes in Allergic Inflammation
National Institutes of Health
U19 AI 070235 09/01/08 - 08/31/09 $79,250 / $79,250

WOO, J
Genetic and Environmental Risk Factors for Hemorrhagic Stroke
National Institutes of Health (University of Cincinnati)
R01 NS 036695 09/30/08 - 06/30/13 $36,507 / $182,535

Current Year Direct $1,041,869

Industry Contracts

Morrow, A
Bristol-Myers Squibb $ 332,219

Current Year Direct Receipts $332,219

Total $1,364,088