

**BIOGRAPHICAL SKETCH**

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NAME: Martin, Melanie

eRA COMMONS USER NAME (credential, e.g., agency login): melanieamartin

POSITION TITLE: Assistant Professor

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	END DATE MM/YYYY	FIELD OF STUDY
University of Puerto Rico, Rio Piedras, San Juan, Puerto Rico	BA	05/2007	Anthropology
University of California Santa Barbara, Santa Barbara, California	MA	03/2011	Anthropology
University of California Santa Barbara, Santa Barbara, California	PHD	12/2015	Anthropology

**A. Personal Statement**

I am a biological anthropologist combining field, laboratory, and statistical methods to understand health, developmental, and reproductive outcomes under diverse environmental and socioeconomic circumstances. I am the Co-PI of the Biodemography Laboratory at the University of Washington Center for Studies in Demography and Ecology, which specializes in measurement of health outcomes across globally diverse populations using minimally invasive biomarkers. I am a collaborator on several projects investigating health across the life course in relation to environmental and psychosocial stressors. I also conduct community-engaged field research on reproduction, health, and child growth and development with two South American Indigenous populations—peri-urban Qom/Toba communities in Formosa, Argentina, and Tsimane forager-horticulturalists in the Bolivian Amazon. My combined population and community health research is designed to benefit participant well-being while informing broader scientific understanding of the health impacts of globalized changes in diet, activity, disease exposures, social structures, and birth and child care practices.

1. Keith MH, Martin MA. Social Determinant Pathways to Hypertensive Disorders of Pregnancy Among Nulliparous U.S. Women. *Womens Health Issues*. 2024 Jan-Feb;34(1):36-44. PubMed Central PMCID: PMC10840909.
2. Martin MA, Keith M, Pace RM, Williams JE, Ley SH, Barbosa-Leiker C, Caffé B, Smith CB, Kunkle A, Lackey KA, Navarrete AD, Pace CDW, Gogel AC, Eisenberg DTA, Fehrenkamp BD, McGuire MA, McGuire MK, Meehan CL, Brindle E. SARS-CoV-2 specific antibody trajectories in mothers and infants over two months following maternal infection. *Front Immunol*. 2022;13:1015002. PubMed Central PMCID: PMC9596287.
3. Martin MA, Gurven M. Traditional and biomedical maternal and neonatal care practices in a rural Indigenous population of the Bolivian Amazon. *Glob Public Health*. 2022 Jun;17(6):971-985. PubMed Central PMCID: PMC9810376.
4. Martin M, Keith M, Olmedo S, Edwards D, Barrientes A, Pan A, Valeggia C. Cesarean section and breastfeeding outcomes in an Indigenous Qom community with high breastfeeding support. *Evol Med Public Health*. 2022;10(1):36-46. PubMed Central PMCID: PMC8830290.

**B. Positions, Scientific Appointments and Honors****Positions and Scientific Appointments**

2018 - Assistant Professor, University of Washington, Department of Anthropology, Seattle, WA  
2016 - 2018 Postdoctoral Associate, Yale University, Department of Anthropology, New Haven, CT

## **Honors**

2024	Outstanding Undergraduate Research Mentor Award, University of Washington
2023	Michael A. Little Early Career Award, Human Biology Association
2021	Decoding Maternal Morbidity Data Challenge Award (Awards for Innovation and Addressing Health Disparities), NICHD
2020	Technology Teaching Fellow, University of Washington
2019	New Investigator Award, Evolutionary Anthropology Society
2019	Summer Grant Writing Program Stipend, University of Washington Center for Studies in Demography and Ecology
2013 - 2014	President's Dissertation Year Fellowship, University of California
2010 - 2011	Dean's Fellowship, University of California Santa Barbara
2008 - 2009	Dean's Fellowship, University of California Santa Barbara

## **C. Contribution to Science**

1. **Maternal health** My collaborative work examines maternal health outcomes through pregnancy and postpartum in relation to behavioral and cultural factors in distinct populations. Recently, we conducted secondary analysis of the NICHD nuMoM2b dataset demonstrating that maternal hypertensive risks among first time U.S. mothers were more strongly associated with pathways linking social environments and allostatic load than they were with behaviorally mediated pathways related to diet, exercise, or smoking. In an original study with U.S. mothers, we demonstrated novel differences in diurnal patterns of maternal salivary inflammatory markers in relation to frequency of breastfeeding vs. pumping. My research with Indigenous Tsimane and Qom mothers has examined how traditional birth and breastfeeding practices vary owing to individual circumstances (perceived milk sufficiency, maternal age and parity, family composition and support) and changing local biomedical practices and health care policies. This work has demonstrated continued near universal rates of breastfeeding in these populations despite increasing medicalization of birth and availability of breast milk substitutes, which likely reflects the continued high valorization and social support for breastfeeding. Surveys conducted with the Tsimane further demonstrated emerging inequities in prenatal care access due to regional differences in public-private health care availability.
  - a. Hove C, Chua KJ, Martin MA, Hubble M, Boddy AM. Variation in maternal lactation practices associated with changes in diurnal maternal inflammation. *Sci Rep.* 2024 Feb 22;14(1):4376. PubMed Central PMCID: PMC10883910.
  - b. Keith MH, Martin MA. Social Determinant Pathways to Hypertensive Disorders of Pregnancy Among Nulliparous U.S. Women. *Womens Health Issues.* 2024 Jan-Feb;34(1):36-44. PubMed Central PMCID: PMC10840909.
  - c. Martin MA, Gurven M. Traditional and biomedical maternal and neonatal care practices in a rural Indigenous population of the Bolivian Amazon. *Glob Public Health.* 2022 Jun;17(6):971-985. PubMed Central PMCID: PMC9810376.
  - d. Martin M, Keith M, Olmedo S, Edwards D, Barrientes A, Pan A, Vallengia C. Cesarean section and breastfeeding outcomes in an Indigenous Qom community with high breastfeeding support. *Evol Med Public Health.* 2022;10(1):36-46. PubMed Central PMCID: PMC8830290.
2. **Infectious disease and infant health** A main theme of my collaborative work in the U.S and South America is examining infant health and developmental outcomes through the lens of local disease ecologies. In the immediate months following the COVID-19 pandemic outbreak in the U.S., collaborators and I mobilized to recruit mothers acutely infected with SARS-CoV-2 to investigate maternal-infant transmission risks and antibody responses. Our results collaborated other emerging work demonstrating that the human milk is not a source of SARS-CoV-2 virus, but is a source of long-lasting specific antibodies. We observed significantly reduced risk of infection and symptoms among infants as compared to their mothers and other household adults, but similar risks to other exposed household children. Differences in maternal and infant infection risk were further reflected in marked differences in fecal shedding within dyads. Among Qom

infants, we observed that risks of gastrointestinal and respiratory infections were unexpectedly lower among cesarean-born as compared to vaginally born infants, which may be the result of more growth and greater body fat related to cesarean-associated gut microbial composition.

- a. Pace RM, King-Nakaoka EA, Morse AG, Pascoe KJ, Winkvist A, Caffé B, Navarrete AD, Lackey KA, Pace CDW, Fehrenkamp BD, Smith CB, Martin MA, Barbosa-Leiker C, Ley SH, McGuire MA, Meehan CL, Williams JE, McGuire MK. Prevalence and duration of SARS-CoV-2 fecal shedding in breastfeeding dyads following maternal COVID-19 diagnosis. *Front Immunol.* 2024;15:1329092. PubMed Central PMCID: PMC10996396.
  - b. Martin MA, Keith M, Pace RM, Williams JE, Ley SH, Barbosa-Leiker C, Caffé B, Smith CB, Kunkle A, Lackey KA, Navarrete AD, Pace CDW, Gogel AC, Eisenberg DTA, Fehrenkamp BD, McGuire MA, McGuire MK, Meehan CL, Brindle E. SARS-CoV-2 specific antibody trajectories in mothers and infants over two months following maternal infection. *Front Immunol.* 2022;13:1015002. PubMed Central PMCID: PMC9596287.
  - c. Pace RM, Williams JE, Järvinen KM, Meehan CL, Martin MA, Ley SH, Barbosa-Leiker C, Andres A, Yeruva L, Belfort MB, Caffé B, Navarrete AD, Lackey KA, Pace CDW, Gogel AC, Fehrenkamp BD, Klein M, Young BE, Rosen-Carole C, Diaz N, Gaw SL, Flaherman V, McGuire MA, McGuire MK, Seppo AE. Milk From Women Diagnosed With COVID-19 Does Not Contain SARS-CoV-2 RNA but Has Persistent Levels of SARS-CoV-2-Specific IgA Antibodies. *Front Immunol.* 2021;12:801797. PubMed Central PMCID: PMC8733294.
  - d. Martin MA, Veile AJ, Valeggia CR. Birth mode and infectious morbidity risks in Qom children of Argentina. *Am J Hum Biol.* 2019 Mar;31(2):e23200. PubMed PMID: 30565345.
3. *Growth and Development* Human growth and development respond flexibly to environmental conditions before and during distinct growth phases. Understanding local contexts of growth, development, and early life exposures is crucial to unraveling late life health risks. I have spearheaded collaborative work using minimally invasive biomarkers to examine interacting longitudinal processes of hormonal and microbial development, linear growth, and body composition from infancy through adolescence. Through longitudinal biomarker research conducted with Indigenous Qom adolescents, colleagues and I have demonstrated accelerated female pubertal development relative to other Latin American Indigenous populations that may reflect both ethnic genetic factors and obesogenic community influences. Through a recent systematic review, we documented that studies of psychosocial influences on female pubertal timing rarely consider confounding with energetic influences, and that among studies that do, energetic factors account for more variation in earlier pubertal timing than do psychosocial stressors. Through robust statistical comparisons, I have also demonstrated that z-scores calculated from WHO growth standards can obscure statistical variation in some local growth determinants when applied to within-population studies. My earlier collaborative work on infant microbial development has demonstrated that maternal transmission has less influence on infant gut and salivary microbial development relative to infant physiological and shared environmental factors.
- a. Glass DJ, Geerkens JT, Martin MA. Psychosocial and energetic factors on human female pubertal timing: a systematized review. *Evol Hum Sci.* 2022;4:e28. PubMed Central PMCID: PMC10426011.
  - b. Sprockett DD, Martin M, Costello EK, Burns AR, Holmes SP, Gurven MD, Relman DA. Microbiota assembly, structure, and dynamics among Tsimane horticulturalists of the Bolivian Amazon. *Nat Commun.* 2020 Jul 29;11(1):3772. PubMed Central PMCID: PMC7391733.
  - c. Martin M, Blackwell A, Kaplan H, Gurven M. Differences in Tsimane children's growth outcomes and associated determinants as estimated by WHO standards vs. within-population references. *PLoS One.* 2019;14(4):e0214965. PubMed Central PMCID: PMC6469771.
  - d. Martin MA, Valeggia C. Timing of pubertal growth and menarche in indigenous Qom girls of Argentina. *Ann Hum Biol.* 2018 Jun;45(4):321-329. PubMed PMID: 30033762.
4. *Variation in human milk composition* Human milk composition varies across and within populations in relation to differences in culturally-influenced breastfeeding dynamics and ecological exposures. Understanding the range of this variation has implications for devising policy to best support feeding practices and infant health outcomes. I have collaborated on several interdisciplinary, cross-cultural

projects aimed at understanding variation in milk immune and fatty acid composition, specifically assisting with study design and milk sample collection to address cultural concerns, participant safety, and field logistics.

- a. Pace RM, King-Nakaoka EA, Morse AG, Pascoe KJ, Winquist A, Caffé B, Navarrete AD, Lackey KA, Pace CDW, Fehrenkamp BD, Smith CB, Martin MA, Barbosa-Leiker C, Ley SH, McGuire MA, Meehan CL, Williams JE, McGuire MK. Prevalence and duration of SARS-CoV-2 fecal shedding in breastfeeding dyads following maternal COVID-19 diagnosis. *Front Immunol.* 2024;15:1329092. PubMed Central PMCID: PMC10996396.
- b. Vinjamuri A, Davis JCC, Totten SM, Wu LD, Klein LD, Martin M, Quinn EA, Scelza B, Breakey A, Gurven M, Jasienska G, Kaplan H, Vallengia C, Hinde K, Smilowitz JT, Bernstein RM, Zivkovic AM, Barratt MJ, Gordon JI, Underwood MA, Mills DA, German JB, Lebrilla CB. Human Milk Oligosaccharide Compositions Illustrate Global Variations in Early Nutrition. *J Nutr.* 2022 May 5;152(5):1239-1253. PubMed Central PMCID: PMC9071347.
- c. Klein LD, Huang J, Quinn EA, Martin MA, Breakey AA, Gurven M, Kaplan H, Vallengia C, Jasienska G, Scelza B, Lebrilla CB, Hinde K. Variation among populations in the immune protein composition of mother's milk reflects subsistence pattern. *Evol Med Public Health.* 2018;2018(1):230-245. PubMed Central PMCID: PMC6222208.
- d. Martin MA, Lassek WD, Gaulin SJ, Evans RW, Woo JG, Geraghty SR, Davidson BS, Morrow AL, Kaplan HS, Gurven MD. Fatty acid composition in the mature milk of Bolivian forager-horticulturalists: controlled comparisons with a US sample. *Matern Child Nutr.* 2012 Jul;8(3):404-18. PubMed Central PMCID: PMC3851016.

Complete List of Published Work in My Bibliography:

<https://www.ncbi.nlm.nih.gov/myncbi/melanie.martin.1/bibliography/public/>