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ACADEMIC APPOINTMENTS

- 2020- Assistant Professor, Center for Evolution and Medicine, Arizona State University.
- 2020- Assistant Professor, School of Life Sciences, Arizona State University.
- 2017-2019 Assistant Professor, Department of Psychology, University of Washington.
- 2019-2019 Adjunct Assistant Professor, Department of Biology, University of Washington.
- 2017-2019 Research Affiliate, Center for Studies in Demography & Ecology, University of Washington.
- 2017-2019 Research Affiliate, Washington National Primate Research Center, University of Washington.
- 2012-2017 Postdoctoral Fellow and Senior Research Scientist, Department of Evolutionary Anthropology, Duke University Population Research Institute, Duke Center for Aging. (mentor: Dr. Jenny Tung)

EDUCATION

- 2012 Ph.D., Psychology, University of Pennsylvania (mentor: Dr. Robert Seyfarth)
- 2008 M.A., Psychology, University of Pennsylvania
- 2007 B.A., Psychology, University of Pennsylvania

AWARDS, FELLOWSHIPS, & GRANTS

Current

- **NIH** "Single cell transcriptional and epigenomic atlas of the macaque brain across the lifespan" (U01MH121260). Role: co-PI. \$5,774,650
- **NIH** "Social Modifiers of the Pace of Aging" (R01AG060931). Role: co-PI. \$3,546,164.
- **NSF** "Functional genomics of high-altitude adaptation in a nonhuman primate model" (1848900). Role: PI. \$493,841.
- **NIH** "Neurogenomics of Vulnerability and Resilience" (R01MH118203). Role: co-I. \$1,029,410
- **NIH** "Gene regulatory analysis of social integration and resilience during aging" (R00AG051764). Role: PI. \$747,000; 2017-2020
- **NSF** SBE Collaborative research grant (1723228). Role: PI. \$129,444; 2017-2020

Past

- **UW Royal Research Fund**, Role: PI. \$37,916; 2018-2019
- **UW Student Technology Fee** resource grant, Role: PI. \$137,296
- **NIH** Pathway to Independence Award (K99AG051764), \$236,450 direct; 2016-2017
- **NIA** Butler-Williams Scholar, 2016
- **NIH** Postdoctoral Fellowship Duke Center for Study of Aging (T32AG000029); 2015
- **NSF** Office of Multidisciplinary Studies Postdoctoral Fellowship (SMA-1306134), \$199,449 direct costs; 2013-2015
- **NIH** NRSA Postdoctoral Fellowship (F32) – 7th percentile – declined for NSF fellowship; 2013
- **NIH** Postdoctoral Fellowship, Duke University Population Research Institute (T32); 2012-2013
- Animal Behavior Society Allee Competition, best dissertation, Runner-up, 2012
- **NSF** Graduate Research Fellowship; 2008-2012
- **NSF** Doctoral Dissertation Improvement Grant in Physical Anthropology, \$19,500 (BCS-0962118); 2010
- **L.S.B. Leakey** Foundation General Grant, \$11,024; 2010

PUBLICATIONS

(Snyder-Mackler lab members in bold; * denotes equal contributions)

Chiou KL, Montague MJ, Goldman EA, **Watowich MM**, **Sams SN**, Song J, Horvath JE, Sterner KN, Ruiz-Lambides AV, Martinez MI, Higham JP, Brent LJJ, Platt ML, **Snyder-Mackler N** (2020). "Rhesus macaques as a tractable physiological model of human ageing." *Philosophical Transactions of the Royal Society B*, in press. preprint: doi: 10.1101/2020.06.10.143669v1

Snyder-Mackler N, Burger JR, Gaydosh L, Belsky D, Noppert GA, Campos FA, Bartolomucci A, Yang YC, Aiello AE, O'Rand A, Mullan Harris K, Shively CA, Albert SC, Tung J (2020). "Social determinants of health and survival in humans and other animals." *Science*, doi: 10.1126/science.aax9553

Schneider-Crease I, Beehner JC, Bergman T, Gomery M, Koklic L, Lu A, **Snyder-Mackler N** (2020). "Ecology eclipses phylogeny as a major driver of nematode parasite community structure in an herbivorous primate." *Functional Ecology*, doi: 10.1111/1365-2435.13603.

Watowich MM, MacLean EL, Hare B, Call J, Kaminski J, Miklósi A, **Snyder-Mackler N** (2020). "Age influences domestic dog cognitive performance independent of average breed lifespan." *Animal Cognition*, doi: 10.1007/s10071-020-01400-4.

Amato KR, Kuthyar S, Ekanayake-Weber M, Salmi R, **Snyder-Mackler N**, Wijayathunga L, Vandercone R, Lu A (2020). "Gut Microbiome, Diet, and Conservation of Endangered Langurs in Sri Lanka." *Biotropica*, in press.

Ellis S, **Snyder-Mackler N**, Ruiz-Lambides A, Platt ML, Brent LJJ (2019). "Deconstructing sociality: the types of social connections that predict longevity in a group-living primate." *Proceedings of the Royal Society B: Biological Sciences*, doi: 10.1098/rspb.2019.1991

Fisher J, Higham JP, Alberts SC, Barrett L, Beehner JC, Bergman TJ, Carter AJ, Collins A, Elton S, Fagot J, Ferreira da Silva MJ, Hammerschmidt K, Henzi P, Jolly CJ, Knauf S, Kopp GH, Dogers J, Roos C, Ross C, Seyfarth RM, Silk J, **Snyder-Mackler N**, Staedele V, Swedell L, Wilson ML, Zinner D (2019). "Insights into the evolution of social systems and species from baboon studies." *eLife*, 8:e50989. doi: 10.7554/eLife.50989

Schneider-Crease I, **Chiou KL**, **Snyder-Mackler N**, Bergman TJ, Beehner JC, Lu A (2019). "Beyond infant death: the hidden costs of male immigration in geladas." *Animal Behaviour*, doi:10.1016/j.anbehav.2019.11.010.

Sanz J, Maurizio PL, **Snyder-Mackler N**, Simons ND, Voyles TP, Kohn JN, Michopoulos V, Wilson ME, Tung J*, Barreiro LB* (2019). "Social history and exposure to pathogen signals modulate social status effects on gene regulation in rhesus macaques." *Proceedings of the National Academy of Sciences*, doi:10.1073/pnas.1820846116.

MacLean E*, **Snyder-Mackler N***, vonHoldt B, Serpell J (2019). "Highly heritable and functionally relevant breed differences in dog behavior." *Proceedings of the Royal Society B: Biological Sciences*, doi: 10.1098/rspb.2019.0716.

Lu A, Petrullo L, Carrera S, Feder J, **Schneider-Crease I**, **Snyder-Mackler N** (2019). "Developmental Responses to Early-Life Adversity: Evolutionary and Mechanistic Perspectives." *Evolutionary Anthropology*, doi:10.1002/evan.21791

Petrullo L, Jorgensen MJ, **Snyder-Mackler N**, Lu A (2019). "Composition and stability of the vervet monkey milk microbiome." *American Journal of Primatology*. e22982. (doi: 10.1002/ajp.22982).

Debray R*, **Snyder-Mackler N***, Kohn JN, Wilson ME, Barreiro LB, Tung J (2019). "Social integration predicts mitochondrial DNA copy number in rhesus macaques." *Biology Letters*. 15, 1. (doi: 10.1098/rsbl.2018.0643).

Snyder-Mackler N, Sanz J, Kohn JN, Voyles TN, Pique-Regi R, Wilson ME, Barreiro LB, Tung J

Updated: June 2020

- (2019). "Social status alters chromatin accessibility and the gene regulatory response to glucocorticoid stimulation in rhesus macaques." *Proceedings of the National Academy of Sciences*. 10.1073/pnas.1811758115
- Snyder-Mackler N*** & Lea AJ* (2018). "Functional genomic insights into the environmental determinants of mammalian fitness." *Current Opinion in Genetics & Development*. doi:10.1016/j.gde.2018.08.001
- Ramos-Fernandez G, King AJ, Beehner JC, Bergman TJ, Crofoot MC, Di Fiore A, Lehmann J, Schaffner CM, **Snyder-Mackler N**, Zuberbühler K, Aureli F, Boye D (2018). "Quantifying uncertainty due to fission–fusion dynamics as a component of social complexity." *Proceedings of the Royal Society B: Biological Sciences*. 285; doi: 10.1098/rspb.2018.0532
- Madlon-Kay S, Montague MJ, Brent L JN, Ellis S, Zhong B, **Snyder-Mackler N**, Horvath JE, Skene JHP, Platt ML (2018). Weak effects of common genetic variation in oxytocin and vasopressin receptor genes on rhesus macaque social behavior. *American Journal of Primatology*. doi:10.1002/ajp.22873
- Tinsley Johnson E, **Snyder-Mackler N**, Lu A, Bergman TJ, Beehner JC (2018). Social and ecological drivers of reproductive seasonality in geladas. *Behavioral Ecology*. 29:3, 574–588. doi: 10.1093/beheco/ary008
- Belsky D and **Snyder-Mackler N** (2017). Invited Commentary: Integrating Genomics and Social Epidemiology—Analysis of Late-Life Low Socioeconomic Status and the Conserved Transcriptional Response to Adversity. *American Journal of Epidemiology*, doi: 10.1093/aje/kwx145
- Snyder-Mackler N** and Tung J (2017) "Vasopressin and the neurogenetics of parental care" *Neuron*, 94:1, 9–11, doi: 10.1016/j.neuron.2017.06.027
- Schneider-Crease I, Griffin RG, Dorny P, Noh JC, Handali S, Chastain HM, Wilkins PP, Nunn CL, **Snyder-Mackler N**, Beehner JC, Bergman TJ (2017) "Non-invasive diagnosis of endemic *Taenia serialis* infection in a wild primate population" *PLoS Neglected Tropical Diseases*, doi: 10.1371/journal.pntd.0005709.
- Snyder-Mackler N***, Sanz J*, Kohn JN, Brinkworth JF, Morrow S, Shaver AO, Grenier J-C, Pique-Regi R, Johnson ZP, Wilson ME, Barreiro LB, Tung J. (2016) "Social status alters immune regulation and response to infection in macaques" *Science*, 354:6315, 1041-1045, doi: 10.1126/science.aah3580. *co-first author
- Kohn JN, **Snyder-Mackler N**, Barreiro LB, Johnson ZP, Tung J, Wilson ME (2016) "Dominance rank causally affects personality and glucocorticoid regulation in female rhesus macaques" *Psychoneuroendocrinology*, 74, 179-188, doi: 10.1016/j.psyneuen.2016.09.005
- Wall JD, Schlebusch SA, Alberts SC, Cox L, **Snyder-Mackler N**, Nevenon K, Carbone L, Tung J (2016) "Genome-wide ancestry and divergence patterns from low-coverage sequencing data reveal a complex history of admixture in wild baboons" *Molecular Ecology*, 25:14, 3469-3483, doi: 10.1111/mec.13684.
- Snyder-Mackler N**, Majoros B, Yuan ML, Shaver AO, Gordon JB, Kopp GH, Schlebusch SA, Wall JD, Alberts SC, Mukherjee S, Zhou S, Tung J (2016) "Efficient genome-wide sequencing and low coverage pedigree analysis from non-invasively collected samples." *Genetics*, 203:2, 699-714, doi: 10.1534/genetics.116.187492.
- Charruau P, Johnston R, Stahler DR, Lea AJ, **Snyder-Mackler N**, Smith DW, vonHoldt BM, Cole SW, Tung J, Wayne RK (2016) "Pervasive effects of aging on gene expression in wild wolves" *Molecular Biology and Evolution*, 33:8, 1967-1978, doi: 10.1093/molbev/msw072.
- Snyder-Mackler N**, Kohn JN, Barreiro LB, Johnson ZP, Wilson ME & Tung J (2016) "Social status drives social relationships in groups of unrelated female rhesus macaques" *Animal Behaviour*, 111, 307-317, doi: 10.1016/j.anbehav.2015.10.033.
- Snyder-Mackler N**, Alberts, SC & Bergman TJ (2014) "The socio-genetics of a complex society: Female gelada monkey relatedness patterns mirror association patterns in a multi-level

Updated: June 2020

- society” *Molecular Ecology*, 23:24, 6179-6191, doi: 10.1111/mec.12987.
- Snyder-Mackler N**, Somel M & Tung J (2014) – “Shared signatures of social stress and aging in PBMC gene expression profiles.” *Aging Cell*, 13:5, 954-957, doi: 10.1111/accel.12239.
- Tinsley Johnson E*, **Snyder-Mackler N***, Beehner JC & Bergman TJ (2014) “Kinship and dominance rank influence the strength of social bonds in female geladas” *International Journal of Primatology*, 35:1, 288-304, doi: 10.1007/s10764-013-9733-5. *co-first author
- Scheider-Crease I*, **Snyder-Mackler N***, Jarvey JC & Bergman TJ (2013) “Molecular identification of *Taenia serialis* coenurosis in a wild Ethiopian gelada (*Theropithecus gelada*)” *Veterinary Parasitology*, 198:1-2, 240-243, doi: 10.1016/j.vetpar.2013.08.015. *co-first author
- Le Roux A, **Snyder-Mackler N**, Roberts EK, Beehner JC & Bergman TJ (2013) “Evidence for tactical concealment in a wild primate” *Nature Communications*, 4:1462, doi: 10.1038/ncomms2468. PMID: 23403563
- Snyder-Mackler N**, Alberts SC & Bergman TJ (2012) “Concessions of an alpha male: Cooperative reproductive transactions in a polygynous primate” *Proceedings of the Royal Society B: Biological Sciences*, 279:1743, 3788-3795. doi: 10.1098/rspb.2012.0842. PMID: 22764162
- Pappano DJ*, **Snyder-Mackler N***, Bergman TJ & Beehner JC (2012) “Social predators in a multi-level society” *Animal Behaviour*, 84:3, 653-658, doi: 10.1016/j.anbehav.2012.06.021. *co-first author
- Snyder-Mackler N**, Beehner JC & Bergman TJ (2012) “Defining higher levels in the multilevel societies of geladas (*Theropithecus gelada*)” *International Journal of Primatology* – 33:5, 1054:1068. doi: 10.1007/s10764-012-9584-5
- Gersick AS, **Snyder-Mackler N** & White DJ (2012) “Ontogeny of social skills: social complexity improves mating and competitive strategies in male brown-headed cowbirds” *Animal Behaviour*, 83:5, 1171–1177. doi: 10.1016/j.anbehav.2012.02.005.
- White DJ, Gersick AS & **Snyder-Mackler N** (2012) “Social networks and the development of social skills in cowbirds.” *Philosophical Transactions of the Royal Society of London B: Biological Sciences*, 367:1597, 1892-1900. doi: 10.1098/rstb.2011.0223. PMID: 22641827
- Snyder-Mackler N** & White DJ (2011). “The developmental ecology of acoustic sensitivities: reactions to song playbacks by male cowbirds change across their first year of life.” *Behaviour*, 148:7, 747-764. doi: 10.1163/000579511X575951
- White DJ, Gersick AS, Freed-Brown SG & **Snyder-Mackler N** (2010). “The ontogeny of social skills: experimental increases in social complexity enhance reproductive success in adult cowbirds.” *Animal Behavior*, 79:2, 385-390. doi: 10.1016/j.anbehav.2009.11.014

PREPRINTS

- Lu A, Feder JA, **Snyder-Mackler N**, Bergman TJ, Beehner JC. “Male-mediated maturation in a wild primate.” *bioRxiv*, doi: 10.1101/2020.05.25.114934.
- Johnson CSC, Shively CA, Michalson KT, Lea AJ, DeBo RJ, Howard TD, Hawkins GA, Appt SE, Liu Y, McCall CE, Herrington D, Register TC*, **Snyder-Mackler N***. “Divergent effects of Western and Mediterranean diets on behavior and monocyte polarization.” *bioRxiv*, doi:10.1101/2020.01.27.917567.
- Tinsley Johnson E*, **Snyder-Mackler N***, Lu A, Bergman TJ, Beehner JC (2018). “The Goldilocks Effect: Female geladas in mid-sized groups have higher fitness.” *bioRxiv* 348383; doi: 10.1101/348383.

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Updated: June 2020

MENTORING

Postdoctoral Researchers

- Kenny Chiou – NIH T32 fellow in the Shock Center for the Biology of Aging
- India Schneider-Crease – NSF SBE postdoctoral fellow.
- Trisha Zintel
- Alice Baniel (co-mentored with Dr. Amy Lu at Stony Brook University)

PhD Students

- Corbin Johnson (University of Washington)
- Marina Watowich (University of Washington)
- Elisabeth Goldman (co-mentored with Dr. Kirsten Sterner at U Oregon)

PhD Committees

- Kelly Jin (University of Washington)
- Peter Zambetti (University of Washington)
- Lauren Petrullo (Stony Brook University)
- Marcy Weber (Stony Brook University)
- Sharmi Sen (University of Michigan)
- Joey Orton (Arizona State University)
- Mollie Peters (Arizona State University)

Undergraduate students

- Matthew Harrington – Psychology honors student (alumni of lab)
- Abigail Lam – Psychology student (alumni of lab)
- Lia Koklic – Biology honors student (alumni of lab)
- Grace De Castro – Biology student (alumni of lab)
- Reena DeBray (mentored while at Duke. Reena is now a PhD student at UC Berkeley)

TEACHING

University of Washington

- Core Concepts in Genetics and Behavior (PSYCH-503A). Graduate course with 13 students enrolled (Spring 2018)
- Practical Data Analysis and Visualization (PSYCH-530). Graduate course with 30 students enrolled (Spring 2019)

Duke University, Durham, NC, USA

- Guest Lecturer, Evolutionary Anthropology Graduate Student Tutorial Prof. Jenny Tung-2014, 2016
- Guest Lecturer, Primate Evolutionary Genetics – Prof. Jenny Tung – 2013 & 2014

University of Delaware, Newark, DE, USA

- Guest Lecturer, Topics in Evolutionary Anthropology - Prof. Karen Rosenberg - 2012

University of Pennsylvania, Philadelphia, PA, USA

- Teaching Assistant, Animal Behavior - Prof. David White - 2007 & 2008
- Teaching Assistant, Physiology of Motivated Behavior – Prof. Harvey Grill – 2008

PROFESSIONAL SERVICE AND AFFILIATIONS

- A past contributor to the popular science blog, “The Molecular Ecologist”, which has thousands of followers on Facebook and Twitter, and a past contributor to the New York Times’ “Scientist at Work” column.
- Journal reviewer: *Nature Communications*, *Proceedings of the National Academy of Sciences*, *Journal of Animal Ecology*, *Animal Behaviour*, *Behavioral Ecology and Sociobiology*, *Journal of Human Evolution*, *American Journal of Primatology*, *Primate Biology*, *International Journal of Primatology*, *Zoo Biology*, *Functional Ecology*,

Updated: June 2020

Cognitive Science, Molecular Ecology, Molecular Ecology Resources, Behavioral Ecology, Behaviour.

- Grant reviewer: *National Institutes of Health, National Science Foundation, the Leakey Foundation*
- Membership: *Society for Molecular and Biology and Evolution, American Society of Naturalists, Animal Behavior Society, International Primatological Society, American Association of Physical Anthropologists*

OUTREACH

- Board member and co-founder of the Save the Simiens foundation (<https://savethesimiens.org/>), a 501(c3) aimed at conserving the Simien Mountains National Park and empowering and assisting the local communities.
- Public presentation on the effects of social relationships on health. Given at the Horizon House in Seattle, WA
- Presentation and tour of lab to students from Villa Academy, Seattle, WA.
- Public outreach presentations and visits to multiple K-8 students in Delaware (Newark Charter School, Newark Center for Creative Learning), Pennsylvania (Thomas Fitzwater Elementary School, Paul V. Fly Elementary School), New Jersey (Cedar Grove Elementary School), and North Carolina (Southern Middle School).
- Animal Behavior Outreach Fair, Princeton, NJ, 08/07/2014