

## CYNTHIA M. BEALL

BUSINESS ADDRESS: Department of Anthropology  
Case Western Reserve University  
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EDUCATION:	1970	University of Pennsylvania	B.A., Biology
	1972	The Pennsylvania State University	M.A., Anthropology
	1976	The Pennsylvania State University	Ph.D., Anthropology

## FIELDS OF SPECIALIZATION:

Physical anthropology, human biology, human evolution and adaptation to the environment, especially high altitudes; life course; human variability; genetic, environmental, and socio-cultural influences on human biology; evolutionary medicine; Andean Plateau (Bolivia, Peru), Tibetan Plateau (Nepal, Tibet), Simien and Bale Plateaux (Ethiopia), Mongolia.

## ACADEMIC APPOINTMENTS:

2010-	Distinguished University Professor, Case Western Reserve University
2005-2015	Adjunct Staff, Department of Pathobiology, Lerner Research Institute, The Cleveland Clinic Foundation (secondary appointment)
2004-	Research Associate in Physical Anthropology, Cleveland Museum of Natural History (secondary Appointment)
2003-2019	Professor of Global Health and Diseases, School of Medicine, Case Western Reserve University (secondary appointment)
1995-	Professor of Anatomy, School of Medicine, Case Western Reserve University (secondary appointment)
1994-	S. Idell Pyle Professor of Anthropology, Case Western Reserve University.
1987-94	Professor, Department of Anthropology, Case Western Reserve University.
1982-87	Associate Professor (with tenure), Department of Anthropology, Case Western Reserve University.
1976-82	Assistant Professor, Department of Anthropology, Case Western Reserve University.

## HONORS:

2013	Member, American Academy of Arts and Sciences
2012	Recipient, Raymond Pearl Award, Human Biology Association
2011-12	John Simon Guggenheim Fellow
2009	Recipient, Franz Boas Distinguished Achievement Award, Human Biology Association
2001	Member, American Philosophical Society
1997	Fellow, American Association for the Advancement of Science
1996	Member, National Academy of Sciences

## CURRENT EDITORIAL BOARDS:

Evolution, Medicine, and Public Health,  
Editor in Chief, 2022 -  
American Journal of Human Biology, 2002-  
High Altitude Medicine and Biology, 1999-

## CURRENT PROFESSIONAL SERVICE:

2022 - Editor-in-Chief, [\*Evolution, Medicine, and Public Health\*](#)

2020 – 2024 Board of Directors, American Association for the Advancement of Science (AAAS)

2020 - AAAS Governance Modernization Committee member

2020 - National Academy of Sciences Modernization Committee member

## MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Association for the Advancement of Science  
American Association of Biological Anthropologists  
American Physiological Society  
Human Biology Association  
International Society for Evolution, Medicine and Public Health  
International Society for Mountain Medicine  
Sigma Xi, The Scientific Research Council

## SELECTED RECENT INVITED PAPERS/PRESENTATIONS

2020 Detecting Past and Ongoing Selection in Tibetan Populations., UCSD School of Medicine, March 11,

2019 Symposium on Evolution, Medicine and Public Health Symposium, Dartmouth College, September 21, 2019. Evolution and the diagnosis of anemia.

2018 Sesquicentennial symposium at Wayne State University, September 13, 2018

## PAST PROFESSIONAL SERVICE:

2017 – 2021 Member, Advisory Board for the National Academy of Sciences Koshland Public Engagement Program

2020 - 2021 National Academy of Sciences Committee on Elections and Sections

2020-2021 Chair, Nominating Committee, National Academy of Sciences

2019-2021 International Society for Mountain Medicine Program Committee for 2019 Congress,

postponed to June, 2021 owing to the SARS-CoV2 pandemic

- 2020 - Steering Committee for Malnutrition and anaemia in the Andean Region Workshop, scheduled for fall 2020, postponed to January 2021 owing to the SARS-CoV2 pandemic
- 2017-2019 Chair, Nominating Committee Section III:5, American Academy of Arts and Sciences
- 2015-2017 Member, National Academies of Sciences, Engineering, and Medicine's Committee on the Science and Practice of Learning, May 2015 – June 2017.

- 2012-2017 Treasurer, International Society for Evolution, Medicine and Public Health
- 2011- 2017 Member of Advisory Council, National Academies' Division of Behavioral and Social Sciences and Education (DBASSE), three-year term beginning 5/2011
- 2015-2016 Chair, Annual Meetings Program Committee, International Society for Evolution, Medicine and Public Health
- 2013- 2016 Chair, Temporary Nomination Group for Foreign Associates from underrepresented countries, Class V (Social Sciences), National Academy of Sciences, member since 2007.
- 2012-2016 Member, Advisory Council, Wenner-Gren Foundation for Anthropological Research
- 2014-2015 Co-Chair, NAS/NRC Roundtable on Public Interfaces with the Life Sciences
- 2012-2014 Member, organizing committee for 2014 Keystone Hypoxia Symposium (with Peter Ratcliffe, MD)
- 2010-2012 Member, proposal reviewing panel, Wenner-Gren Foundation for Anthropological Research
- 2011- Member, NEScent (National Evolutionary Synthesis Center) Working Group: Infusing Medical Education with Evolutionary Thinking, Mark D Schwartz, MD and Peter Ellison, PhD, Co-chairs
- 2011- Chair, Nominating Committee, National Academy of Sciences
- 2005-2013 Member, Steering Committee, Section H Anthropology, American Association for the Advancement of Science (AAAS), chair-elect, chair, retiring chair 2010 – 2012.
- 2011 Chair, organizing committee for convocation "Thinking Evolutionarily: Evolution Education Across the Life Sciences; Organized by: Board on Life Sciences, National Research Council, National Academy of Sciences, October 25-26, 2011
- 2010-2011 Organizer, Symposium on Anthropology and Global Health: integrating genes, biology, and culture, for the annual meetings of the AAAS, February 2011
- 2008-09 Co-Organizer, with Peter Robbins, National Evolutionary Synthesis Center, international catalysis meeting on Human evolution and adaptation to High-altitude Hypoxia, March 19-21, 2009, Durham, N Carolina
- 2008-09 Organizer, Plenary Session for Annual Meetings of the Human Biology Association, The Past 10,000 years of human evolution. Chicago, IL, April 2009
- 2003-2008 Chair, National Academy of Sciences Board on International Scientific Organizations (BISO), member 2001 – 2003. *The Board on International Scientific Organizations (BISO) oversees many groups whose effort is to strengthen U.S. participation in international scientific, engineering, and medical organizations.*
- 2005-2008 Executive Board, International Council on Science (ICSU).  
*ICSU is a non-governmental organization with a global membership that is frequently called upon to speak on behalf of the global scientific community and to act as an advisor in matters ranging from the environment to conduct in science.*

- 2002-2007 Member, Advisory Committee for the Social, Behavioral and Economic Sciences (SBE)  
Directorate of the National Science Foundation
- 2002-2005 Councilor, National Academy of Sciences
- 2002-2005 Chair, Section 51 Anthropology, National Academy of Sciences
- 2001-2003 Chair, U. S. National Committee for the International Union of Biological Sciences, member,  
1998-2003
- 1995 Chair, Electorate Nominating Committee, Section on Anthropology, American Association for  
the Advancement of Science (AAAS), member 1993 – 1995.
- 1991-1995 President-elect, President, and Past-President. Human Biology Council (now Human Biology  
Association). The mission of the Human Biology Association is to advance the understanding  
human biological variation.
- 1989-1991 Executive Committee, Human Biology Council (now Human Biology Association)
- 1984-1986 Nominations Committee, Human Biology Council (now Human Biology Association)
- 1989-1992 Executive Committee, American Association of Physical Anthropology (AAPA)
- 1983-1986 Executive Committee Member, American Anthropological Association (AAA), Biological  
Anthropology Unit
- 1981-1987 Sub-Editor for Bio-Cultural and Physical Aging, Association for Anthropology and Gerontology  
(AAGE) Newsletter
- 1983 Corresponding secretary, Association for Anthropology and Gerontology (AAGE)  
Sub-Editor for Bio-Cultural and Physical Aging

#### **PAST EDITORIAL BOARDS:**

American Anthropologist, Biological Anthropology  
Associate Editor, 2016 – 2018  
Evolution, Medicine and Public Health, 2013- 2018  
Annual Review of Anthropology: 2004 – 2009  
Yearbook of Physical Anthropology, 1983-1997  
Journal of Cross-Cultural Gerontology: founding Co-Editor, with M.C. Goldstein and C. Ikels, 1986-1995  
Human Biology 1985-1987, 1988-91, 1997-2008  
Journal of Wilderness Medicine, 1992-2002

#### **PUBLICATIONS**

#### **THESES:**

- M.A. Respiratory diseases in Migrant Populations living in a Peruvian Coastal Valley, 1972.
- Ph.D. The Effects of High Altitude on Growth, Morbidity and Mortality of Peruvian Infants, 1976.

## MONOGRAPHS:

- 1993 Goldstein, M.C. and C.M. Beall. *The Changing World of Mongolia's Nomads*. University of California Press, Berkeley. ISBN: 9780520085510
- 1990 Goldstein, M.C. and C.M. Beall. *Nomads of Western Tibet: The Survival of a Way of Life*. The Guidebook Company, Ltd., Hong Kong. Co-Published by University of California Press, Berkeley. ISBN 0-520-07210-3 (German edition 1991 Erst Auflage).
- 1982 Beall C.M. (editor) *Cross-Cultural Studies of Biological Aging*. Plenum Press, Oxford. Reprinted from special issue of *Social Science and Medicine*, volume 16(2). ISBN 0 08 028946 0

## PUBLICATIONS IN REFEREED JOURNALS:

- In press Strohl, K.P., Beall, C.M., Netzer, N.C. High altitude physiology and its clinical disorders. Chapter accepted for publication in Fishman's Principles of Pulmonary Medicine, Elsevier, Amsterdam
- 2022 Yu JJ, Non AL, Heinrich EC, Gu W, Alcock J, Moya EA, Lawrence ES, Tift MS, O'Brien KA, Storz JF, Signore AV, Khudyakov JI, Milsom WK, Wilson SM, Beall CM, Villafuerte FC, Stobdan T, Julian CG, Moore LG, Fuster MM, Stokes JA, Milner R, West JB, Zhang J, Shyy JY, Childebayeva A, Vázquez-Medina JP, Pham LV, Mesarwi OA, Hall JE, Cheviron ZA, Sieker J, Blood AB, Yuan JX, Scott GR, Rana BK, Ponganis PJ, Malhotra A, Powell FL, Simonson TS. Time Domains of Hypoxia Responses and -Omics Insights. *Front Physiol*. 2022 Aug 8;13:885295. doi: 10.3389/fphys.2022.885295. PMID: 36035495; PMCID: PMC9400701.
- 2022 Beall CM, Childs G, Craig SR, Strohl KP, Quinn E, Basnyat B. Repeatability of adaptive traits among ethnic Tibetan highlanders. *Am J Hum Biol*. 2022 34(4):e2367 <http://dx.doi.org/10.1002/ajhb.23670>
- 2021 Sarna K, Cioffi G, Craig S, Barnholtz-Sloan JS, Basnyat B, Beall, CM. Varied Reproductive Histories of Ethnically Tibetan Women. *J. Nepal Health Res Counc* 19(53): 748-53 <https://jnhrc.com.np/index.php/jnhrc/article/view/3273>
- 2021 Beall, Cynthia M., and Strohl, Kingman P. "Adaptations to High-Altitude Hypoxia." In *Oxford Research Encyclopedia of Anthropology*. Oxford University Press, 2018—published September 29, 2021. doi: <https://doi.org/10.1093/acrefore/9780190854584.013.204>
- 2020 Basnyat B, Beall CM. Extending strong research to high-altitude infants. *Lancet Glob Health*. 2020;8(3):e310-e311. Invited and reviewed. [https://doi.org/10.1016/S2214-109X\(20\)30009-7](https://doi.org/10.1016/S2214-109X(20)30009-7) PMID 32087156
- 2020 Beall CM. Hemoglobin, altitude, and sensitive Swiss men. *Blood*. 2020;135(13):984-985. [doi.org/10.1182/blood.2020005251](https://doi.org/10.1182/blood.2020005251) PMID:32219350
- 2020 Sarna K, Brittenham GM, Beall CM. Current WHO hemoglobin thresholds for altitude and misdiagnosis of anemia among Tibetan highlanders. *Am J Hematol*. 2020. <https://doi.org/10.1002/ajh.25765> PMID 32096880
- 2020 Sarna K, Brittenham GM, Beall CM [Kaylee Sarna](#), Detecting anaemia at altitude. *Evolution, Medicine, and Public Health*, Volume 2020, Issue 1, 2020, Pages 68–69, <https://doi.org/10.1093/emph/eoaa011>

- 2018 John Lindo, Randall Haas, Courtney Hofman, Mario Apata, Mauricio Moraga, Ricardo Verdugo, James T. Watson, Carlos Viviano Llave, David Witonsky, Enrique Vargas Pacheco, Mercedes Villena, Rudy Soria, Cynthia Beall, Christina Warinner, John Novembre, Mark Aldenderfer, Anna Di Rienzo: The genetic prehistory of the Andean highlands 7,000 Years BP though European contact. *Sci Adv.* 2018 Nov 8;4(11):eaau4921. doi: 0.1126/sciadv.aau4921. eCollection 2018 Nov.
- 2018 Choongwon Jeong, David B. Witonsky, Buddha Basnyat, Maniraj Neupane, Cynthia M. Beall, Geoff Childs, Sienna R. Craig, John Novembre, Anna Di Rienzo | Detecting past and ongoing natural selection among ethnically Tibetan women at high altitude in Nepal. *PLoS Genet.* 2018 Sep 6;14(9):e1007650. doi: 10.1371/journal.pgen.1007650.
- 2018 Sarna, K., A. Gebremedin, G. M. Brittenham and C. M. Beall WHO hemoglobin thresholds for altitude increase the prevalence of anemia among Ethiopian highlanders." *Am J Hematol.* PMID:30040139 DOI: [10.1002/ajh.25194](https://doi.org/10.1002/ajh.25194)
- 2017 Cho JI, Basnyat B, Jeong C, Di Rienzo A, Childs G, Craig SR, Sun J, Beall CM. Ethnically Tibetan women in Nepal with low hemoglobin concentration have better reproductive outcomes. *Evol Med Public Health.* 2017 Apr 21;2017(1):82-96. doi: 10.1093/emph/eox008. eCollection 2017. PMID:28567284
- 2017 Janocha AJ, Comhair SAA, Basnyat B, et al. Antioxidant defense and oxidative damage vary widely among high-altitude residents. *Am J Hum Biol.* 2017;e23039.

<https://doi.org/10.1002/ajhb.23039>

- 2017 Jeong C, Peter BM, Basnyat B, Neupane M, Beall CM, Childs G, Craig SR, Novembre J, and Di Rienzo A. A longitudinal cline characterizes the genetic structure of human populations in the Tibetan plateau. *PLoS One* 12: e0175885, 2017.
- 2016 Cheong, H.I., Janocha, Allison J., Monocello, Lawrence T., Garchar, Adrianna C., Gebremedhin, Amha, Erzurum, Serpil C., Beall, Cynthia M. Alternative hematological and vascular adaptive responses to high-altitude hypoxia in East African Highlanders. *American Journal of Physiology Lung Cellular and Molecular Physiology*. 15 December 2016.  
DOI: 10.1152/ajplung.00451.2016.
- 2016 Mallick S., Li H., Lipson M., Mathieson I., Gymrek M., Racimo F., Zhao M., Chennagiri N., Nordenfelt S., Tandon A., Skoglund P., Lazaridis I., Sankararaman S., Fu Q., Rohland N., Renaud G., Erlich Y., Willems T., Gallo C., Spence J.P., Song Y.S., Poletti G., Balloux F., van Driem G., de Knijff P., Romero I.G., Jha A.R., Behar D.M., Bravi C.M., Capelli C., Hervig T., Moreno-Estrada A., Posukh O.L., Balanovska E., Balanovsky O., Karachanak-Yankova S., Sahakyan H., Toncheva D., Yepiskoposyan L., Tyler-Smith C., Xue Y., Abdullah M.S., Ruiz-Linares A., Beall C.M., Di Rienzo A., Jeong C., Starikovskaya E.B., Metspalu E., Parik J., Villems R., Henn B.M., Hodoglugil U., Mahley R., Sajantila A., Stamatoyannopoulos G., Wee J.T., Khusainova R., Khusnutdinova E., Litvinov S., Ayodo G., Comas D., Hammer M.F., Kivisild T., Klitz W., Winkler C.A., Labuda D., Bamshad M., Jorde L.B., Tishkoff S.A., Watkins W.S., Metspalu M., Dryomov S., Sukernik R., Singh L., Thangaraj K., Pääbo S., Kelso J., Patterson N., Reich D. [The Simons Genome Diversity Project: 300 genomes from 142 diverse populations](#). *Nature* September 21 PMID: 27654912
- 2016 Craig, S. R., Child, G., and Beall, C.M. [Closing the Womb Door: Contraception Use and Fertility Transition Among Culturally Tibetan Women in Highland Nepal](#). *Matern Child Health J. May 11* PMID: 27167869
- 2015 Sudmant, P. H., S. Mallick, B. J. Nelson, F. Hormozdiari, N. Krumm, J. Huddleston, B. P. Coe, C. Baker, S. Nordenfelt, M. Bamshad, L. B. Jorde, O. L. Posukh, H. Sahakyan, W. S. Watkins, L. Yepiskoposyan, M. S. Abdullah, C. M. Bravi, C. Capelli, T. Hervig, J. T. Wee, C. Tyler-Smith, G. van Driem, I. G. Romero, A. R. Jha, S. Karachanak-Yankova, D. Toncheva, D. Comas, B. Henn, T. Kivisild, A. Ruiz-Linares, A. Sajantila, E. Metspalu, J. Parik, R. Villems, E. B. Starikovskaya, G. Ayodo, C. M. Beall, A. Di Rienzo, M. F. Hammer, R. Khusainova, E. Khusnutdinova, W. Klitz, C. Winkler, D. Labuda, M. Metspalu, S. A. Tishkoff, S. Dryomov, R. Sukernik, N. Patterson, D. Reich and E. E. Eichler (2015). [Global diversity, population stratification, and selection of human copy-number variation](#). *Science* 349(6253): aab3761.
- 2014 Beall, C. M. [Adaptation to High Altitude: Phenotypes and Genotypes](#). *Annual Review of Anthropology* 43(1): 251-272. DOI: 10.1146/annurev-anthro-102313-030000
- 2014 Childs, G.C., Craig, S.C. and Beall, C.M. Depopulating the Himalayan Highlands: Education and Outmigration from Ethnically Tibetan Communities of Nepal. *Mountain Research and Development* 34(2):85-94. doi: <http://dx.doi.org/10.1659/MRD-JOURNAL-D-14-00021.1>
- 2014 Beall CM, Leslie PW, Collecting women's reproductive histories. *Am J Hum Biol.* 26(5): 577-589 DOI: 10.1002/ajhb.22543
- 2014 Jeong C, Alkorta-Aranburu G, Basnyat B, Neupane M, Witonsky DB, et al. Admixture facilitates genetic adaptations to high altitude in Tibet. *Nature Communications* 5: 3281 doi:



10.1038/ncomms4281.

- 2013 Lundgrin, E. L., A. J. Janocha, C. D. Koch, A. Gebremedhin, A. Di Rienzo, G. Alkorta-Aranburu, G. M. Brittenham, S. C. Erzurum and C. M. Beall (2013). "Plasma hepcidin of Ethiopian highlanders with steady-state hypoxia." *Blood* 122(11): 1989-1991. doi: 10.1182/blood-2013-03-491068.
- 2013 Beall, C. M. Human adaptability studies at high altitude: research designs and major concepts during fifty years of discovery. *Am J Hum Biol.* 25(2): 141-147. DOI: 10.1002/jhb.22355
- 2012 Alkorta-Aranburu, G, Beall, C.M., Witonsky D.B., Gebremedhin A., Pritchard JK, Di Rienzo A. The genetic architecture of adaptations to high altitude in Ethiopia. *PLoS Genetics* 8(12), e1003110. doi:10.1371/journal.pgen.1003110
- 2012 Beall, C.M., Laskowski, D., Erzurum, S.C. [Nitric oxide in adaptation to altitude](#). *Free Radical Biology and Medicine* 52(7):1123-34. Epub 2012 Jan 20.
- 2011 Janocha, A., Koch, C., Tiso, M., Ponchia, A., Doctor, A., Gibbons, L., Gaston, B., Beall, C.M. Erzurum, S. [Nitric oxide during altitude acclimatization](#). *New England Journal of Medicine*, 365(20), 1942-4. doi:10.1056/NEJMc1107887. PubMed ID: 22087700
- 2011 Beall CM. [Genetic changes in Tibet](#). *High Alt Med Biol.* 2011 Summer;12(2):101-2. PubMed ID: 21718152
- 2011 Howes RE, Patil AP, Piel FB, Nyangiri OA, Kabaria CW, Gething PW, Zimmerman PA, Barnadas C, Beall CM, Gebremedhin A and others. 2011. [The global distribution of the Duffy blood group](#). *Nat Commun* 2:266, PubMed ID: 21468018 DOI: 10.1038/ncomms1265
- 2011 Hancock AM, Witonsky DB, Alkorta-Aranburu G, Beall CM, Gebremedhin A, Sukernik R, Utermann G, Pritchard JK, Coop G, Di Rienzo A. [Adaptations to climate-mediated selective pressures in humans](#). *PLoS Genetics* 7(4):e1001375, PubMed ID: 21533023
- 2011 Hoit BD, Dalton ND, Gebremedhin A, Janocha A, Zimmerman PA, Zimmerman AM, Strohl KP, Erzurum SC, Beall CM. [Elevated pulmonary artery pressure among Amhara highlanders in Ethiopia](#). *Am J Hum Biol.* 2011 Mar-Apr;23(2):168-76. doi: 10.1002/ajhb.21130. Epub 2010 Dec 22, Pub MedID: 21319245
- 2010 Beall CM, Cavalleri GL, Deng L, Elston RC, Gao Y, Knight J, Li C, Li JC, Liang Y, McCormack M, Montgomery HE, Pan H, Robbins PA, Shianna KV, Tam SC, Tsering N, Veeramah KR, Wang W, Wangdui P, Weale ME, Xu Y, Xu Z, Yang L, Zaman MJ, Zeng C, Zhang L, Zhang X, Zhaxi P, Zheng YT. [Natural selection on EPAS1 \(HIF2alpha\) associated with low hemoglobin concentration in Tibetan highlanders](#). *Proc Natl Acad Sci U S A.* 107(25):11459-64. Epub 2010 Jun 7. PubMed PMID: 20534544; PubMed Central PMCID: PMC2895075.
- 2010 Hancock AM, Witonsky DB, Ehler E, Alkorta-Aranburu G, Beall C, Gebremedhin A, Sukernik R, Utermann G, Pritchard J, Coop G, Di Rienzo A. [Colloquium paper: human adaptations to diet, subsistence, and ecoregion are due to subtle shifts in allele frequency](#). *Proc Natl Acad Sci U S A.* 2010 May 11;107 Suppl 2:8924-30. Epub May 5. PubMed PMID: 20445095.
- 2010 Beall CM, Strohl KP, Laskowski D, Hutte R, Erzurum SC. [Response to "Lowered exhaled nitric oxide in acute hypobaric than in normobaric hypoxia by T. Hemmingsson and D. Linnarsson. Respir. Physiol. Neurobiol 169: 74-77"](#). *Respir Physiol Neurobiol.* 2010 Feb 1. [Epub ahead of print], Pub MedID: 20123043

- 2009 Laskowski D, Beall CM, Dweik R, Strohl KP, Hutte R, Erzurum SC. [Response to “Measuring exhaled nitric oxide at high altitude.”](#) *Respir. Physiol Neurobiol* 167:292-298. *Respir Physiol Neurobiol*. 2010 Jan 31;170(1):1-2 [Epub 2009 Nov 14.], Pub MedID: 19922816
- 2009 Vitzthum VJ, Worthman CM, Beall CM, Thornburg J, Vargas E, Villena M, Soria R, Caceres E, Spielvogel H. [Seasonal and circadian variation in salivary testosterone in rural Bolivian men.](#) *Am J Hum Biol*. 21(6):762-8. Apr 14. [Epub ahead of print], Pub MedID: 19367574
- 2007 Erzurum, S.C., Ghosh, S., Janocha, A.J., Xu, W., Bauer, S., Bryan, N.S., Tejero, J., Hemann, C., Hille, R., Stuehr, D.J., Feelisch, M., Beall, C.M [Higher blood flow and circulating NO products offset high-altitude hypoxia among Tibetans.](#) *Proceedings of the National Academy of Sciences* 104, 17593, Pub MedID: 17971439
- 2007 Beall, C.M. [Detecting natural selection in high-altitude human populations.](#) *Respir Physiol Neurobiol*. 158:161-171. [2007 Jun 8; Epub ahead of print], Pub MedID: 17644049
- 2007 Beall, C.M. [Two routes to functional adaptation: Tibetan and Andean high-altitude natives.](#) *Proc Natl Acad Sci U S A*. 2007 May 15;104 Suppl 1:8655-60. Epub 2007 May 9, Pub MedID: 17494744
- 2006 Brown, D. E., Beall, C. M., Strohl, K. P., and Mills, P. S. [Exhaled Nitric Oxide Decreases upon Acute Exposure to High-Altitude Hypoxia.](#) *Am J Hum Biol*. 18(2): 196-202, Pub MedID: 16493632
- 2006 Beall, C. M. [Andean, Tibet, and Ethiopian Patterns of Adaptation to High-Altitude Hypoxia.](#) *Journal of Integrative and Comparative Biology* [Advance Access, January 6, 2006] *Integrative and Comparative Biology* 2006 46(1):18-24; doi:10.1093/icb/icj004
- 2005 Geoff Childs, M.C. Goldstein, Ben Jiao, C.M. Beall. [Tibetan Fertility Transitions in China and south Asia.](#) *Population and Development Review* (31):2: 337-351.
- 2005 Hoit BD, Dalton ND, Erzurum SC, Laskowski D, Strohl KP, Beall CM. Jul 14; [Nitric Oxide and Cardio-Pulmonary Hemodynamics in Tibetan Highlanders.](#) *J. Appl Physiol*. 99:1796-1801. First published July 14, 2005; doi: 10.1152/jappphysiol.00205.2005, Pub MedID: 16024527
- 2004 Beall, C. M., Song, K., Elston, R. C., Goldstein, M. C. [Higher offspring survival among Tibetan women with high oxygen saturation genotypes residing at 4000m.](#) *Proc. Nat. Acad. Sci*. 101(39):14300-4, Pub MedID: 15353580
- 2003 Goldstein, M. C., Jiao, B., Beall, C.M., and Tsering, P. 2003 [Development and Change in rural Tibet. Problems and Adaptations.](#) *Asian Survey* 43:5: 758-779.
- 2002 Beall CM, Decker MJ, Brittenham GM, Kushner I, Gebremedhin A and Strohl KP. [An Ethiopian pattern of human adaptation to high-altitude hypoxia.](#) *Proc Natl Acad Sci U.S.A.* 99: 17215-17218, 2002, Pub MedID: 12471159
- 2002 Goldstein, Melvyn C., Jiao Ben (Benjor), Beall, C. M., and Tsering P. [Fertility and Family Planning in rural Tibet.](#) *The China Journal* 47: 19-39.
- 2001 Beall, C., Laskowski, D., Strohl, K. P., Soria R., Villena, M., Vargas, E., Alarcon, A. M., Gonzales, C. and Erzurum, S. C. [Pulmonary nitric oxide in mountain dwellers.](#) *Nature* 414: 411-412, Pub MedID: 11719794

- 2001 Beall, C. [Adaptations to Altitude: A Current Assessment](#). *Annual Review of Anthropology* 16: 423-455.
- 2000 Beall, C. [Tibetan and Andean patterns of adaptation to high-altitude hypoxia](#). *Human Biology* 72(1): 201-228, Pub MedID: 10721618
- 2000 Beall, C. [Oxygen saturation increases during childhood and decreases during adulthood among high altitude native Tibetans residing at 3800-4200m](#) *High Altitude Medicine and Biology* 1(1): 25-32, Pub MedID: 11258584
- 1999 Beall, C. M., Almasly, L. A., Blangero, J., Williams-Blangero, S., Brittenham, G. M., Strohl, K. P., Decker, M. J., argas, E., Villena, M., Soria, R., Alarcon, A. M., and Gonzales, C. [Percent of oxygen saturation of arterial hemoglobin among Bolivian Aymara at 3900-400m](#). *American Journal of Physical Anthropology*. 108(1): 41-52, Pub MedID: 9915300
- 1998 Beall, C. M., Brittenham, G. M., Strohl, K. P., Blangero, J. Williams-Blangero, S., Goldstein, M. C., Decker, M. J., Vargas, E., Villena, M., Soria, R., Alarcon, A. M., Gonzales, C. [Hemoglobin concentration of high-altitude Tibetans and Bolivian Aymara](#). *American Journal of Physical Anthropology*. 106: 385-400, Pub MedID: 9696153
- 1997 Beall, C. M., K. P. Strohl, J. Blangero, S. Williams-Blangero, L. A. Almasly, M. J. Decker, C. M. Worthman, M. C. Goldstein, E. Vargas, M. Villena, R. Soria, A. M. Alarcon, C. Gonzales. [Ventilation and hypoxic ventilatory response of Tibetan and Aymara high altitude natives](#). *American Journal of Physical Anthropology* 104: 427-447, Pub MedID: 9453694
- 1997 Beall, C. M., K. P. Strohl, J. Blangero, S. Williams-Blangero, G. M. Brittenham, and M. C. Goldstein [Quantitative genetic analysis of arterial oxygen saturation in Tibetan Highlanders](#). *Human Biology* 69(5): 597-604, Pub MedID: 9299881
- 1997 Beall, C. M., A. Gebremedhin, G. M. Brittenham, and M. Shamebo. [Blood pressure variation among Ethiopians on the Simien Plateau](#). *Annals of Human Biology* 24(4): 333-342, PubMedID: 9239439
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- 1981 Beall, C.M. A Comparison of Chest Morphology in High Altitude Asian and Andean Populations. *Human Biology* 54(1):145-163.
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## OTHER PUBLICATIONS: INVITED CONTRIBUTIONS:

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- 2012 Beall, C. M. Human Evolution at High Altitude, chapter 19 in Erik R. Swenson and Peter Bartsch, editors, *Hypoxia: Human adaptation to high altitude*, second edition, New York, N.Y.: Marcel Dekker, Inc.
- 2012 Beall, C. M., Jablonski, N and A. T. Steegmann, Jr. Human Adaptation to Climate: Temperature, Ultraviolet Radiation, and Altitude. In *Human Biology. An Evolutionary and Biocultural Perspective*, 2<sup>nd</sup> edition, S. Stinson, B. Bogin, R. Huss-Ashmore, and E. O'Rourke (eds.), Wiley-Liss, Inc., New York. chapter 6, pp. 177 – 250.
- 2011 Beall CM Guest Editorial. Genetic changes in Tibet. In press *High altitude medicine & biology*. 12 (2): 101-102. DOI: 10.1089/ham.2011.1007
- 2008 Beall, C. M. Why Are We Vulnerable to Acute Mountain Sickness? Pp. 259-276 in Trevathan, W., McKenna, J. M. and E. O. Smith (eds.), *Evolutionary Medicine and Health. New Perspectives*, Oxford University Press, New York.
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- 2000 Beall, C. M. [Tibetan and Andean Contrasts in Adaptation to High-Altitude Hypoxia](#). In Oxygen Sensing. Molecule to Man. S. Lahiri, N. R. Prabhakar, R. E. Forster (eds.), *Advances in Experimental Medicine and Biology*, volume 475, pp. 63-74, Pub MedID: 10849649
- 1999 Beall, C. M. and A. T. Steegmann, Jr. Human Adaptation to Climate: Temperature, Ultraviolet Radiation, and Altitude. In *Human Biology. An Evolutionary and Biocultural Perspective*. S. Stinson, B. Bogin, R. Huss-Ashmore, and E. O'Rourke (eds.), Wiley-Liss, Inc., New York, pp. 163-224.

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- 1997 Goldstein, M. C. and C. M. Beall. Growing Old in Tibet—Tradition, Family and Change. In: *Aging: Asian Concepts and Experiences Past and Present*. S. Formanek and S. Linhart (eds.) Verlag Der Osterreichischen Akademie Wissenschaften, Wien, pp. 155-176.
- 1994 Beall, C.M. Aging and Adaptation to the Environment. In: *Biological Anthropology and Aging: Interdisciplinary, cross-cultural and comparative approaches*. R.M. Garruto and D.J. Crews (eds). Oxford University Press, pp. 339-372.
- 1994 Beall, C.M. High altitude human biology. In: N. Allen (ed). *Illustrated Library of the Earth: Mountains*, Weldon Owen Pubs, Sydney, pp. 62-63.
- 1993 C.M. Beall and M.C. Goldstein. The Changing world of Mongolia's nomads. *National Geographic* 183(5):127-138.
- 1993 Beall, C.M. Genetic Bases of oxygen transport at high altitude, traditional and new approaches. In *Hipoxia: investigaciones basicas y clinicas. Homenaje a Carlos Monge Cassinell*. Leon-Velarde, F. and Arregui, A. (eds.). IFEA, Lima, pp. 111-124.
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- 1990 Beall, C.M. and M.C. Goldstein. Hemoglobin Concentration, % oxygen saturation and arterial oxygen content of Tibetan nomads at 4,850 m- 5450m. pp 59-65 in: *Hypoxia. The Adaptations*, J.R. Sutton, G. Coates and J.E. Remmers (eds). B.C. Decker Inc., Toronto.
- 1989 Goldstein, M.C. and C.M. Beall. The secluded world of Tibet's nomads. *National Geographic* 175(6): 752-781.
- 1989 Beall, C.M. and C.A. Weitz. The Human Population Biology of Aging. pp.189-202 in: *Human Population Biology: a Transdisciplinary Science*, M.A. Little and J.D. Haas (editors), Oxford University Press.
- 1989 Weitz, C.A, L.P. Greksa, R.B. Thomas, and C.M. Beall. An Anthropological Perspective on the Study of Work Capacity. pp 132-151 in: *Human Population Biology: a Transdisciplinary Science*, M.A. Little and J.D. Haas (editors), Oxford University Press.
- 1989 Greksa, L.P. and C.M. Beall. Development of Chest size and Lung Function at High Altitude. pp. 222-238 in: *Human Population Biology: a Transdisciplinary Science*, M.A. Little and J.D. Haas (editors), Oxford University Press.
- 1987 Beall, C.M. Studies of Longevity. pp. 73-93 in *Modern Pioneers: an Interdisciplinary View of the Aged*, P. Silverman (editor), Indiana University Press.
- 1988 Beall, C.M. and M.C. Goldstein. Socio-cultural influences on the working capacity of elderly Nepali men. pp. 215-226 in *Capacity for work in the Tropics*. K.J. Collins and D.F. Roberts

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- 1987 Beall, C.M. Nutrition and Variation in Biological Aging. pp.197-221 in *Nutrition in Anthropology*, F.E. Johnston (editor), Alan R. Liss, Inc. N.Y.
- 1986 Beall, C.M. and J.K. Eckert. Measuring Functional Status Cross-Culturally. pp. 21-56 in *New Methods for Old Age Research*, second edition, C. Fry and J. Keith (editors), Bergin and Garvey, Pubs., Inc., MA
- 1984 Beall, C.M. Theoretical Dimensions of a Focus on Age in Physical Anthropology. pp. 82-95 in *Age and Anthropological Theory*. D. Kertzer and J. Keith (editors). Cornell University Press.
- 1984 Beall, C.M. Aging and Growth at High Altitudes in the Himalayas. pp. 365-385 in *The People of South Asia* J. Lukacs (editor), Plenum Press.
- 1982 Baker, P.T. and C.M. Beall. The Biology and Health of Andean Migrants: A Case Study in South Coastal Peru. *Mountain Research and Development* 2(1):81-95, Special issue. Human Population and Biosphere Interactions in the Central Andes, P.T. Baker (editor).
- 1982 Escobar, G. and C.M. Beall. Contemporary patterns of Migration in the Central Andes. *Mountain Research and Development* 2(1):63-80, Special issue: Human Population and Biosphere Interactions in the Central Andes, P.T. Baker (editor).
- 1982 Beall, C.M. A Historical and Analytical Review of the Study of Human Growth and Development in Extreme Environment in Extreme by American Physical Anthropologists. Pp. 447-465 in *A History of American Physical Anthropology 1930-1980*. F. Spencer (editor) Academic Press, pp. 447-465.
- 1981 Beall, C.M. Some Aspects of the Study of Physical Growth at High Altitude in Asia. pp. 49-54 in *Environmental and human Population Problems at High Altitude*. Editions du Centre National de Recherche Scientifique, Paris.
- 1980 Eckert, J.K. and C.M. Beall. Approaches to Measuring Functional Capacity Cross-Culturally. Pp. 27-56 in *New Methods for Old Age Research*. C. Fry and J. Keith (editors). Loyola University Press.

**OTHER PUBLICATIONS: UNREFEREED JOURNALS, NEWSLETTERS, BOOK REVIEWS, COMPILATIONS:**

- 2006 Beall, C.M. Book Review of An Ecology of High Altitude Infancy. By Andrea S. Wiley, New York: Cambridge University Press. 2004. 245 pp. *American Journal of Physical Anthropology* 130: 276-277.
- 2002 Beall, C. M. Book Review of High Altitude: An Exploration of Human Adaptation. Edited by Thomas F. Hornbein and Robert B. Schoene. xxii + 982 pp. New York: Marcel Dekker, Inc. 2001. \$235.00 (cloth). *American Journal of Human Biology* 14: 786-787.
- 2001 Little, M., Badgley, C. Beall, C., Balick, M., Munstermann, L. E., Weiss, K. M., Bert, Th. M, and Chernoff, B. A Framework for a Program in the Human Dimensions of Biodiversity. *Biology International* 42: 3-15.
- 2001 Beall, C.M. Turkana Herders of the Dry Savana: Ecology and Biobehavioral Response of Nomads to an Uncertain Environment. M. A. Little and P. W. Leslie (eds.), Oxford University



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- 1996 Beall, C. M. (compiler) Human Biology Association Guide to Graduate Programs and Graduate Training in Human Biology. *American Journal of Human Biology* 8: 1-20.
- 1993 Beall, C.M. Book review of Flocks and Food by M.J. Casimir. *Ecology of Food and Nutrition* 30: 323-4.
- 1993 Beall, C. M. Book review of Growth, Maturation and Physical Activity by R. M. Malina and C. Bouchard. *American Journal of Physical Anthropology* 91(1): 134-135.
- 1992 Beall, C.M. Book review of Longevity, Senescence and the Genome by C.E. Finch., *Annals of Human Biology* 19(6): 618-620.
- 1990 Beall, C.M. Book review of Hypoxia: The Tolerable Limits by J.R. Sutton, C.S. Houston and G. Coates (eds), *American Journal of Human Biology* 2(1): 91-92.
- 1989 Beall, C.M. Book Review of Patterns of Human Growth by B. Bogin. *Annals of Human Biology* 16(5): 476-477.
- 1986 Goldstein, M.C. and C.M. Beall. Studying Nomads on the Tibetan Plateau. *China Exchange News* 14(4):2-7.
- 1986 Beall, C.M. Book Review of Human Adaptation edited by A. Basu and K.C. Malhotra. *American Journal of Physical Anthropology* 69(3):416-418.
- 1984 Beall, C.M. Book Review of Origins of the Study of Human Growth by Edith Boyd, edited by B.S. Savara and J.F. Schilke. *American Journal of Physical Anthropology* 64(1):93-94.
- 1983 Beall, C.M. Book Review of Social and Biological Predictors of Nutritional Status, Physical Growth and Neurological Development edited by L.S. Green and F.E. Johnston. *Human Biology* 54(4):843-844.
- 1982 Beall, C.M. Ages at menopause and menarche in a High Altitude Himalayan Population. *Contributions to Nepalese Studies* 9(1-2):49-54.
- 1982 Beall, C.M. Himalayan-Andean differences in hemoglobin levels among high altitude natives: implications of a study in upper Chumik, Mustang District, Nepal. *Journal of the Institute of Medicine, Kathmandu, Nepal* 4(1):31-39.
- 1982 Goldstein, M.C. and C.M. Beall. Brief Note on Demographic Aspects of Aging in the Lesser Developed Countries. *Newsletter of the Association for Anthropology and Gerontology* 3(3):2-3.
- 1981 Beall, C.M. A Review of Morphological aspects of Growth at High Altitudes in Asia. *Journal of the Institute of Medicine, Kathmandu, Nepal* 3(1):71-84.
- 1980 Goldstein, M.C. and C.M. Beall. Growing old in Helambu: Aging, Migration and Family Structures among Sherpas. *Contributions to Nepalese Studies* 8(1):41-56.

**PUBLISHED ABSTRACTS: 1 -3/YEAR SINCE 1975**

**RESEARCH GRANT AWARDS: (PRINCIPAL INVESTIGATOR UNLESS NOTED OTHERWISE.)**

- 2018 – 2021 National Science Foundation Grant No. BCS- 1831530 "Genes, physiology, and reproductive fitness in high altitude environments"
- 2012 – 2018 National Science Foundation Grant No. BCS-1153911 “Genes and fertility of Tibetan women at high altitude in Nepal”
- 2009 – 2011 National Science Foundation Grant No. BCS-0924726 “Nitric oxide and the microcirculation in the Tibet Autonomous Region”
- 2005-2007 National Science Foundation Grant No. BCS-0452326 “Ethiopian adaptation to high-altitude hypoxia”
- 2002-2005 National Science Foundation Grant No. BCS-021547 “Nitric oxide and oxygen delivery among Tibetans”
- 2000 National Science Foundation Grant No. SES-00074567 “POWRE: Pulmonary Nitric Oxide and adaptation to High Altitude Hypoxia”.
- 2000 National Science Foundation Grant No. BCS-00084355 “High Risk Exploratory Research: Exhaled Nitric Oxide of Andean and Tibetan High-Altitude Natives”, with Kingman P. Strohl.
- 1998 Wenner-Gren Foundation for Anthropological Research Grant No. 6322 “Mitochondrial DNA analyses of high-altitude Tibetan, Andean, and Simien Plateau samples”, with D. Andrew Merriwether (University of Michigan)
- 1997-2000 National Science Foundation Grant No. SBR-9706980, “Fitness and function of oxygen saturation genotypes in Tibet”, co-P. I. with Carol M. Worthman (Emory University) and John Blangero (Southwest Foundation for Biomedical Research)
- 1997-2000 The Henry Luce Foundation “Socioeconomic effects of China’s Socioeconomic reform policy in the Tibet Autonomous Region, co-P.I. Melvyn C. Goldstein (Case Western Reserve University)
- 1996-1997 Research Program Scholar, Committee on Scholarly Communication with China, "Ten Year Longitudinal field study of the pastoral nomads of Phala, TAR"
- 1996-1997 National Geographic Society Grant No. 5603-95, “Ten-year follow-up study of Tibetan Pastoral Nomads in Tibet”, co P. I. Melvyn C. Goldstein
- 1995 National Geographic Society Grant No. 5520-95 "Genetics of Ethiopian highlanders' hematologic adaptation to high altitude hypoxia"
- 1993 National Science Foundation Grant No. DBS 9221724 “Genetics of oxygen transport at high altitude”
- 1993 National Geographic Society Grant No. 4976-93 “Follow up field study of Tibetan Pastoral Nomadism” (Co-Principal Investigator Melvyn C. Goldstein)
- 1991 International Research and Exchange Board, "Field study of Mongolian Pastoral Nomadism".

- 1990 National Geographic Society, "High altitude hypoxia, testosterone levels and hemoglobin concentration of pastoral nomads in the Tibet Autonomous Region of China". (Co-Principal Investigator: Melvyn C. Goldstein).
- 1990 International Research and Exchange Board, "Field study of Mongolian Pastoral Nomadism".
- 1987 National Science Foundation Grant No. BNS-8704213, "Hypoxemia and Pastoral Nomads in the Tibetan Autonomous Region of China." (Co-Principal Investigator: Melvyn C. Goldstein).
- 1986-1987 Western Reserve College, Research Incentives Program grant award, "Hemoglobin Concentration and Iron Status in Pucarani, Bolivia."
- 1986-1987 American Federation for Aging Research (AFAR) grant award, "Aging and Adaptation to High Altitude Hypoxia in Bolivia".
- 1986-1987 National Geographic Society Grant No. 3322-86, "Pastoral Nomads in Western Tibet" (Co-Principal Investigator: Melvyn C. Goldstein).
- 1986-1987 National Academy of Sciences, National Program for Advanced Study and Research in China, "Tibetan Pastoral Nomadism: Cultural and Ecological Perspectives".
- 1986 Western Reserve College, Research Incentives Program grant award, "Hypoxemia of Bolivian High Altitude Natives".
- 1983 American Federation for Aging Research (AFAR) grant award, "Lifelong High Physical Activity Level and the Aging Process".
- 1983 National Geographic Society Grant No. 2641-83, "Lifelong High Physical Activity Levels and Biological Aging in Nepal".
- 1983 National Science Foundation Grant No. BNS82-19188, "The Effect of Lifelong High Levels of Physical Activity on the Aging Process" (Co-Principal Investigator: M.C. Goldstein).
- 1982 Case Western Reserve University, Office of Research Administration, Research Initiation Grant, "High Altitude Adaptation among Muslims of the Pakistani Karakorum Mountain Range".
- 1981 National Science Foundation Grant No. BNS-8014317, "Senescence and Growth at High Altitude".
- 1980 Case Western Reserve University, Office of Research Administration, Research Initiation Grant, "Physical Activity and Aging in Rugged Mountain Environments".
- 1980 Case Western Reserve University, Biomedical Research Award, "Physical Activity and Aging in Rugged Mountainous Environments: Differential Aging in Hindu Populations in Helambu, Nepal".
- 1979 Case Western Reserve University, Biomedical Research Award, "Biocultural Aspects of Aging among Sherpas". (Co-Principal Investigators: M.C. Goldstein, G.M. Brittenham).
- 1976 Case Western Reserve University, Biomedical Research Award, "Growth of Tamang Children at High Altitude in Nepal".

## CONFERENCE GRANT AWARDS:

- 2008 National Center for Evolutionary Synthesis Catalysis Meeting Award, co-PI, “Human Evolution and adaptation to high-altitude hypoxia”
- 1993 Wenner-Gren Foundation for Anthropological Research. Grant No. 48-111 to aid conference on “Individual, Intra- and Inter-population variation in DNA” sponsored by Human Biology Council, in collaboration with Michael H. Crawford, University of Kansas

## FIELD RESEARCH SITES:

- 2019 May – August, physiological study of Tibetan women residing in Nepal
- 2014: May-June, demographic study of Sherpa women residing in Nepal
- 2012: April through August, demographic study of Tibetan women residing in Nepal
- 2011: August, follow-up demographic study of Tibetan nomads and villagers
- 2010: May through July, nitric oxide and the microcirculation among Sherpa’s in Nepal
- 2009: May – July, follow up study of Tibetan nomads and villagers
- 2007 & 2008: June-August, study of modernization and elderly Tibetan villagers
- 2007: December, Bale Mountains, Ethiopia: oxygen delivery of high-altitude Oromo
- 2005: June – August, Tibet Autonomous Region: follow-up study of Tibetan nomads and villagers.
- 2005: March – May, Semien Mountains, Ethiopia: oxygen delivery of high-altitude Amharas
- 2002 June-August, Tibet Autonomous Region: nitric oxide and oxygen delivery of high-altitude Tibetans
- 2000 June, Bolivia; July-August, Tibet Autonomous Region: exhaled nitric oxide of high-altitude natives
- 1997-1998 December-March, Pembo, Tibet Autonomous Region: biological fitness and function of Tibetan villagers
- 1997 May-August, Phala, Tibet Autonomous Region: 10 year follow-up study of Tibetan pastoral nomads
- 1995 December, Amba Ras, North Gondar, Ethiopia: hematological adaptation to high altitude
- 1994 May-August, Ventilla, Provincia Murillo, Bolivia: genetics of oxygen transport.
- 1993 May-November, Lhasa Municipality, Tibet Autonomous Region, Peoples Republic of China: genetics of oxygen transport.
- 1993 July-August, December, Ningor Xiang, Namring Zone, Tibet Autonomous Region, Peoples Republic of China: seasonal variation in basal metabolic rate.

- 1991 May-June, Moct Som, Hovd Aimak, Mongolian Peoples' Republic: ecology of Mongolian pastoral nomadism.
- 1990 September-November, Moct Som, Hovd Aimak, Mongolian People's Republic: ecology of Mongolian pastoral nomadism.
- 1990 June-August, Phala Xiang, Namring Zone, Tibet Autonomous Region, Peoples' Republic of China: high altitude hypoxia, testosterone and hemoglobin concentrations.
- 1987-88 June-June, Phala Xiang, Namring Zone, Tibet Autonomous Region, Peoples' Republic of China: ecology and high altitude adaptation, growth, health and nutritional status of Tibetan nomads.
- 1987 April, Pucarani, Bolivia: hematological survey of adults in a rural high altitude zone.
- 1987 January-March, La Paz, Bolivia: aging, sleep and hematological adaptation to high altitude.
- 1986 May-August, Phala Shan, Namring Zone, Tibetan Autonomous Region, Peoples' Republic of China: high altitude adaptation of Tibetan nomads.
- 1983 May-September, Lamjung District, Nepal: physical fitness of elderly Nepalis in rugged and flat terrains.
- 1982 July-August, Kathmandu, Nepal: epidemiology of menopause among Nepalis and Newaris.
- 1981 May-October, Upper Chumik, Nepal: high altitude Tibetan growth and senescence.
- 1980-81 December-January, Palchok, Nepal: differential aging in Nepalese and Sherpas.
- 1979 July-August, Helambu, Nepal: biological aging in Sherpas.
- 1977 May-August, Mugu, Nepal: high altitude Tibetan growth.
- 1973-74 May-May, Puno and Tacna, Peru: altitude effects on fetal growth, infant mortality.
- 1971 May-August, Tambo Valley, Peru: high altitude migrants, health, growth, and development.

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