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Department of Biology
University of Jordan
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Education:

1993. B.Sc. in Biology. Yarmouk University, Irbid, Jordan.
1997. M.S. in Zoology. Texas Tech University, Lubbock, Texas.
Title of thesis: Evolution of allometric growth patterns in the genus *Danio* (Cypriniformes: Cyprinidae).
2006. Ph.D. in Ecology and Evolution. State University of New York. Stony Brook, New York.
Title of thesis: The paternal origins of the Arab pastoral nomads.

Honors and Awards:

- 1989-1993. The Dean's List (5 times), Faculty of Sciences, Yarmouk University.
1994-1995. General University Scholarship, Texas Tech University.
1996. Initiated into Phi-Kappa-Phi Honor Society for academic excellence.
1996. Dept. of Biological Sciences, TTU, Summer Grant.
1999-2000. R.R. Sokal Travel Award, Dept. of Ecology & Evolution, SUNY at Stony Brook.

Research Experience:

- Sep. 1994-May 1996. Research assistant with Dr. Richard E. Strauss, Dept. of Biological Sciences, Texas Tech University. The phylogenetics, evolution and morphometrics of the genus *Danio*.
Summer 1997. Volunteer with Dr. Jerome Rose. University of Arkansas. Archaeological excavation at the Byzantine necropolis of Sa'aad, Jordan.
Sep. 1998-May 2004. Research assistant with Dr. F. James Rohlf, Dept. of Ecology and Evolution, SUNY at Stony Brook. Morphometric theory, evolutionary theory, multivariate statistics, human cephalometrics and neuromorphology, stickleback (*Gasterosteus*) evolution and morphometrics.
Summer 2003. DNA extraction and Y-chromosomes genotyping with Dr. Michael Hammer, Director of the Genomic Analysis and Technology Core (GATC), University of Arizona.

Employment:

- Fall 2007-Spring 2009. Assistant professor. Jordan University of Science and Technology.
Fall 2009-current. Assistant professor. University of Jordan.

Research Program:

My research program concerns the population genetics of the peoples of the Eastern Mediterranean and Arabia. In particular, I am interested in studying diversity of the local human populations within the framework of the historical development of various modes of subsistence economy in the region.

Similar to culture, craniofaciometrics and other important biological aspects of the modern Middle Eastern human populations are reported to be correlated with a continuum of traditional subsistence economies (fully nomadic camel pastoralism, semi-nomadic ovicaprid pastoralism, settled farming and town dwelling). Reconstructing the genetic relationships among the human populations in the region is the requisite first step towards establishing the comparative context within which these correlations can be analyzed and determined if causal in nature or due to historical coincidence.

I have already sketched a broad model for the demographic processes that accompanied the development of semi-nomadic ovicaprid pastoralism and fully nomadic camel pastoralism in Syro-Mesopotamia and Arabia using a variety of binary polymorphisms and microsatellite loci carried on the non-recombining region of the Y-chromosome (NRY) in nearly 350 paternally unrelated male subjects. The pattern of NRY genotypic diversity and the time to the most recent common ancestor (TMRCA) estimates for the settled, semi-nomadic and fully nomadic groups in the southern Levant are consistent with the appearance of Levantine settled agriculturalists over 10 millennia ago, followed by ovicaprid semi-nomadic pastoralism as an offshoot of settled agricultural animal husbandry between the late 7th and the late 4th millennia BCE, followed by the appearance of fully nomadic camel nomadism as an offshoot of southern Levantine ovicaprid semi-nomadism by the end of the 2nd millennium BCE. These results are consistent with the recent archaeological evidence, but contradict the classical view which assumes pastoral nomadism to be the primal mode of subsistence, with nomads episodically pouring out of the Syrian/Arabian Desert and inundating the Fertile Crescent, where they undergo a steady, inexorable sedentarization process. Furthermore, the NRY-haplotype analysis is consistent with the notion that the transition among settled, semi-settled and semi-nomadic modes of subsistence has been a historically recurrent and fluid process, but suggests a single major founding event for camel nomadism. As a practical application, these insights into the land-use history of the region could contribute to placing the study of anthropogenic effects on the diversity of local animal and plant species within a historical framework.

On a parallel track, I have developed a mathematical correction that allows the utilization of mildly non-standard 2-d images in geometric morphometric studies. This correction allows a rapid and easy acquirement of craniofaciometric data from live subjects as well as photographic archives.

Building on this groundwork, I intend to pursue the following major lines of research:

- Increase the resolution and dependability of the model for genetic inter-relationships by adding more subjects and genotyping more NRY, mtDNA, and nuclear markers.
- Analyze cultural, craniofaciometric, disease, and other biological data within the framework provided by the genetic model above.
- Develop the supporting statistical, morphometric and computer tools.

Publications:

Gharaibeh W. et al. 2000. A Geometric morphometric assessment of change in midline brain structural shape following a first episode of schizophrenia. *Biological Psychiatry* 48:398-405.

Gharaibeh W. 2005. Correcting for the effect of orientation in geometric morphometric studies of side-view images of human heads. *In Modern Morphometrics in Physical Anthropology*. Dennis E. Slice (ed). Kluwer Academic/Plenum Publishers.

Geeta R and Gharaibeh W. 2007. Historical evidence for a pre-Columbian presence of *Datura* in the Old World and implications for a first millennium transfer from the New World. *Journal of Biosciences* 32: 1227-44.

Teaching Experience:

Fall 1996-Spring 1997. Teaching assistant. Undergraduate introductory biology labs at Texas Tech University.

Fall 1997-Spring 1998. Teaching assistant. Undergraduate introductory biology labs in SUNY at Stony Brook.

Fall 2004. Teaching assistant. Evolution and Society (undergraduate level class).

Spring 2005. Teaching assistant. Introduction to Biometry (graduate level class).

Fall 2007. Instructor. Conceptual Issues in Organismal and Quantitative Biology (Special topics class). Jordan U. of Science and Technology.

Fall 2007-Fall 2008. Instructor. Introductory Biology for undergraduates. Jordan U. of Science and Technology.

Fall 2008. Coordinator. Introductory biology for undergraduates. Jordan U. of Science and Technology.

Fall 2009-current. Instructor. Introductory biology for undergraduates (lecture and lab). University of Jordan.

Fall 2009. Instructor. Environmental management for graduate students. University of Jordan.

Fall 2009 & Spring 2011. Peoples and Cultures of the Middle East (Anthropology 301; co-professor with Lucine Taminian). Amideast, Amman.

Spring 2010-current. Instructor. Evolutionary biology for undergraduates. University of Jordan.

Fall 2010 & Spring 2011. Instructor. Comparative vertebrate anatomy for undergraduates. University of Jordan.

Service and Activity:

1986-1993. Friends of the Institute for Archaeology and Anthropology, Yarmouk University, Society. Founding member.

1989-1993. The Jordan Cine Club. Member and founding member of the Irbid branch.

1991. International study team on health and welfare in Iraq after the Gulf crisis. Member.

1995. Royal Society for the Conservation of Nature, Jordan. Member.

2002. Translator for documentary film *Gaza Strip* by Academy Award nominee James Longley

2002-2005. Graduate Film Club, SUNY at Stony Brook. Founding officer.

2004-2005. Third World Matters Graduate Student Club, SUNY at Stony Brook. Founding officer.

2006-2010. Translation for U.S Labor Against the War (USLAW).