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The Fortieth Anniversary of the Founding of the Laboratory of Biological Anthropology

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Introduction: 40th Anniversary of the Founding of the Laboratory of Biological Anthropology (LBA)

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In 1975, the Laboratory of Biological Anthropology (LBA) was established at the University of Kansas in Twente Hall, the first floor, north wing of the former student hospital. This building contained a blood chemistry laboratory, a computer room and former hospital rooms that served as offices. The need for the laboratories and office space was necessitated by the receipt of four NIH grants, an NSF grant, a Department of Education grant, plus a 5-year PHS Career Development Award to the director of the LBA. The funded projects included: (1) US Office of Education grant on environmental influences on learning in an African-American community; (2) National Institute of Dental Research grant on "Dental evolution of transplanted Mexican populations"; (3) National Science Foundation grant focused on genetic micro-differentiation of indigenous populations of Northeastern Siberia and northwestern Alaska; (4) National Institute of Aging (NIA) grant "Development of methods for the study of aging; (5) NIA 3-year grant "Aging among Mennonites of Kansas and Nebraska"; (6) National Cancer Institute contract "Genetic study of leukemia in baboons (*Papio hamadryas*) of the Institute of Experimental Pathology and Therapy of Sukhumi, USSR." This was the largest primate center in the world, housing a total of 7,000 monkeys of 20 different species. (7) PHS Career Development Award for a 5-year study of genetic analyses of dentition in Eskimo and Mexican populations. These grants and projects provided the foundation for an on-going research program spanning 40 years in Biological Anthropology and Anthropological Genetics at the University of Kansas (for more detail see Crawford, 2007).

The anniversary of the founding of the LBA was celebrated during the Spring of 2015 by a lecture series of the following former members of the laboratory plus one research collaborator:

(1) Phillip Melton, University of Western Australia,
(2) Lourdes Munoz, Polytechnical University, Mexico, D.F.,
(3) Norberto Baldi Salas, University of Costa Rica
(4) MJ Mosher, Western Washington University of Bellingham, and
(5) Francis McMahon, Genetics, NIMH, Bethesda

These visiting lecturers represented some of the regional and topical foci of research programs conducted by LBA faculty, graduate students and post-doctoral fellows during its 40 year history. The earliest research program began while I was at the University of Pittsburgh in 1969 and continued until 1976 at the LBA. This was a study of admixture and the genetic effects of population transplantation from the Valley of Tlaxcala in Central Mexico to Cuanalan in the Valley of Mexico and Saltillo in the north. The Tlaxcaltecan field teams from the LBA included

Paul Scuilli, Robert Halberstein, Francis Lees and Dennis O'Rourke—all went on to distinguished careers in biological anthropology (Crawford, 1973). Among the guest lecturers of this series, Lourdes Munoz and Norberto Baldi Salas, both report current collaborative research programs with the LBA in Central America---in Mexico and Costa Rica. Professor Munoz has examined origins and migration of ancient Maya based on mitochondrial DNA sequences extracted from human remains of six ceremonial centers. Dr. Baldi Salas reports on the genetic structure of Central American populations in Nicaragua and Costa Rica based on DNA analyses.

In 1979, a grant from National Institute of Aging funded a research program on the genetics of biological aging of Mennonite populations of Kansas and Nebraska. The original project morphed into a longitudinal study of aging and longevity but also examined the genetic structure of Mennonite congregations that split off the original founding population of Alexanderwohl (Crawford, 2000). This long-term Mennonite project involved several generations of doctoral students and post docs from the LBA including: M.J. Mosher, Janis Hutchinson, Ravindranath Duggirala, Rector Arya, Meredith Uttley, Tibor Koertvelyessy, Dario Demarchi, Eric Devor, Joan Stevenson, Laurine Rogers, Lisa Martin, Sobha Puppala and Phillip Melton. All of these researchers participated in this Mennonite program and published numerous articles and a book (Crawford, 2000). Phillip Melton, first as a graduate student and later as a visiting scientist to the LBA, applied molecular genetic markers to the deciphering of the genetic structure of Mennonite populations. His lecture in 2015 and article (co-authored with Kristine G. Beaty) in this special issue of *Human Biology* focused on the non-recombining Y chromosome markers. In 2004, M.J. Mosher conducted post-doctoral research at the LBA on nutrition and biological aging in the Mennonites of Kansas and Nebraska. She followed up the original research program by examining the actions of epigenetics on the leptin gene as a possible archive of past environmental influences.

In 2015, I was contacted by Dr. Francis McMahon, director of Genetics at NIMH to discuss collaboration on the Mennonites of Kansas and Nebraska. His research group was searching for genes associated with bipolar depression in populations with small numbers of founders. The Kansas and Nebraskan Mennonites, originated in the Molotschna region of the Ukraine from a single congregation, Alexanderwohl. This congregation was transplanted to the United States but split into two parts in 1874 with one portion relocating in Goessel, Kansas, while the second half bought land and settled in Henderson, Nebraska. These congregations underwent further fission along familial lines while based on doctrinal disagreements. This collaboration has resulted in whole genomic sequences of de-identified Mennonite DNA samples.

The future looks bright for the research programs at the LBA with the addition of two new researchers: Dennis, O'Rourke and Jennifer Raff. They bring unique expertise in ancient DNA and contemporary DNA variation with a strong emphasis on the peopling of the Americas and Arctic populations of Alaska. These research emphases coalesce with the Siberian and Aleut foci of the current director of the LBA.

LITERATURE CITED

Crawford, M. H. (ed.) 1973 *The Tlaxcaltecans: Prehistory, Demography, Morphology and Genetics.* University of Kansas Publications in Anthropology, 7. Lawrence, KS.

Crawford, M. H. (ed.) 2000 *Different Seasons: Biological Aging among the Mennonites of the Midwestern United States.* Publications in Anthropology 21, University of Kansas.

Crawford, M. H. 2007 The importance of field research in anthropological genetics: Methods, experiences and results. In: *Anthropological Genetics: Theory, Methods and Applications.* Cambridge University Press, pp. 79-111.