

Preface

The primary purposes of this volume are: (1) to define the field of anthropological genetics in lieu of the recent developments in molecular genetics; (2) to update the materials presented in earlier volumes on anthropological genetics. This update is essential because the recent technological developments have provided tools that can now be utilized to answer controversial evolutionary and historically based questions. The earlier four volumes dealing with anthropological genetics (Crawford and Workman, 1973; Mielke and Crawford, 1980; Crawford and Mielke, 1982; Crawford, 1984) preceded the molecular genetics revolution and focused primarily on population structure and the beginnings of genetic epidemiology. A glimpse of some of the technological and methodological innovations and their applications to anthropological genetics was contained in the special issue of *Human Biology*, devoted to the arrival of the new millennium and the future of the field (Crawford, 2000).

I was approached by the Executive Committee of the American Association of Anthropological Genetics (AAAG) and asked to develop a volume that would define the field of anthropological genetics and could be used as a textbook for advanced undergraduate students and graduate students. After several meetings with committees to discuss the contents of such a volume, I proposed that the book be divided into an Introduction, Conclusion plus four topical categories: Theory, Methods, General Applications, and The Human Diaspora. Initially, 19 sets of authors agreed to write chapters covering what I considered the most significant topics in anthropological genetics. The Introduction was to trace the historical roots of the field and set the stage for what was to follow. The Theory section was to include the following chapters: (1) Theory of Evolution and how its measurement in humans was altered by the molecular genetic revolution; (2) Decomposition of genetic variation and its implications about race and its classification; (3) The use of genetic isolates in the measurement of gametic disequilibrium and gene mapping. The section on Methods would include: (1) field research methodology; (2) use of historical demography; (3) molecular markers; (4) use of quantitative genetic traits in the reconstruction of population structure; and (5) ancient DNA methodology. The section on General Applications would include: (1) use of DNA for forensic purposes; (2) emerging technology and its uses; (3) application of linkage analysis and molecular markers in mapping QTLs; (4) use of DNA in behavioural genetics of primates. The fourth section would focus on the Human Diaspora and would include the following chapters: (1) out of Africa; (2) peopling of Europe; (3) peopling of Oceania; (4) colonization of the Americas; and (5) peopling of Asia.

This volume was to have been completed by a combination Overview and Concluding chapter.

A few months before the deadline for the completion of the volume, I ran into the author of the Evolution chapter at a professional meeting and he assured me that he was making great progress and that it would be completed on time. However, as the deadline approached and passed, the chapter failed to appear. Similarly, another author had promised the completion of a chapter on molecular markers, but informed me one month prior to the final deadline that he could not complete this critical chapter. Given the loss of these two essential and informative chapters (Forces of Evolution and Molecular Markers) plus a uniform lack of enthusiasm by my colleagues in writing these chapters at such short notice, I decided to 'bite the bullet' and do it myself. Fortunately, two of my advanced graduate students and research assistants (Rohina Rubicz and Phillip Melton) were willing to set aside most of their duties and help research and write a chapter within a two-month timeframe. We decided to combine the chapter on molecular markers with the forces of evolution, resulting in Chapter 6, which covers the availability of molecular markers, the analytical methods and the changes in the measurement of the forces of evolution based on the recent technological breakthroughs.

As the final deadline approached, two unexpected lacunae developed. I had contracted an overview on the molecular, archaeological and linguistic evidence for the peopling of Asia. Unfortunately, the author who had agreed to prepare this chapter apparently 'dropped off the face of the earth' and would not answer emails, telephone calls or letters. As a result, this volume does not document the human diaspora into Asia. However, there is some discussion of genetic variation in Siberia and theories concerning movements of humans out of Asia into the Americas and Oceania. I was informed one month after the final deadline that the chapter on primate molecular genetics and its implications to the understanding of behaviour would not be submitted. After the dust settled, the volume consisted of 16 chapters with Asia and Behavioural Genetics being omitted.

This is the last volume on the developments in anthropological genetics that I plan to edit. Hopefully additional updates on the field will periodically be generated by the next generation of anthropological geneticists.

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