show that postnatally the basicranium is primarily characterized by expansion in the mediolateral direction. This is most evident in the posterior part of the cranial base. The landmarks of the more anterior cranial base display notably less change throughout development. This pattern of greater posterior than anterior growth also occurs prenatally. However, before birth there is more growth in the anteroposterior direction in the basicranium than there is postnatally. In the face, the greatest changes during the fetal period occur in the lateral part of the orbit, and are oriented along the anteroposterior axis. The palate exhibits some mediolateral growth prenatally. After birth, changes in the height of the face predominate, particularly in the malar region.

The findings of this study agree with previous analyses of the postnatal growth of the human skull. The specific magnitudes and directions of change local to any landmark, however, can be identified more accurately using three-dimensional registration-free techniques than conventional radiographic methods. Finally, the patterns of change in the prenatal development of the face are different from those seen postnatally, while growth in the basicranium is similar pre- and postnatally.

Skulls were kindly lent by the Armed Forces Institute of Pathology Museum of Medicine and The University of Maryland, Department of Anatomy.

Neandertal craniofacial growth. M. GREEN and F. H. SMITH, Department of Anthropology. University of Tennessee, Knoxville, TN 37996-0720.

This research is an attempt to reconstruct Neandertal craniofacial morphogenesis paying particular attention to the growing cranial base (CB). A cross-sectional sample of prepared 10-40 week old fetuses was utilized. The relative growth of the CB was analyzed allometrically and evaluated heterochronically (i.e. onset, offset, rate, and pattern of activity in the 3 CB synchondroses). The in utero development of the CB as an important structural and developmental determinant of human craniofacial shape is well known. As studies of Neandertal infants have demonstrated, many Neandertal autapomorphies are established early in ontogeny. In this study therefore, primary emphasis has been placed on prenatal modern CB growth as it would relate to later browridge formation and midfacial prognathism in Neandertals. Patterns of CB/facial developmental integration were deduced from studies of mechanical growth alteration and sutural/synchondrosal inactivation. It is concluded that Neandertal/modern differences are proximately caused by rate and pattern changes in the CB growth centers. Also, the authors speculate on the relationship between these local regulatory shifts and those occurring at the 'global' organismic level.

A comparison of secular change in four racial/cultural groups. T.M. GREINER, US Army Natick RD&E Center, Natick, MA 01760-5020 and State University of New York, Binghamton, NY 13901 and C.C. GORDON, US Army Natick RD&E Center, Natick, MA 01760-5020.

The US Army Anthropometric Survey of 1988 provides a data base that describes the body dimensions of over 5500 men. These data are combined with data on over 4000 men from the 1966 Anthropometric Survey to study rates of secular change of 22 dimensions in four racial/cultural groups: Whites, Blacks, Hispanics and Asians/Pacific Islanders.

Individuals are grouped by birth year into 12 five year cohorts, which spans the years 1911 to 1970. Rates of secular change are calculated by (least squares) regressing age adjusted values with respect to cohort.

The dimensions of White men show the greatest number of statistically significant ($p<.05$) changes. Progressively lesser number of significant changes are seen in Hispanics, Blacks, and Asian/Pacific Islanders. Rates are not statistically different ($p>.05$) among groups for 9 anthropometric dimensions.

A discriminant analysis between surveys identifies dimensions that have undergone the most relative change. Generally, measurements related to soft tissue development, such as bideltoid breadth, are more highly correlated with discrimination than are skeletal measurements, such as head breadth. This pattern is consistent with the recent cultural emphasis on health and physical fitness.

Asian/Pacific Islanders stand out as the sole exception to this pattern. Skeletal dimensions are most correlated with discrimination in this group. Asian/Pacific Islanders also show the slowest rates of secular change. Demographic data from the surveys indicates that the number of native born Americans in this group has changed from 76% in 1966 to 21% in 1988. Therefore, this different pattern of secular change is probably the result of immigration from underdeveloped nations.

Effect of tooth loss and denture wearing on the dietary patterns and dietary adequacy of older adults. **L.P. GREKSA, Department of Anthropology, C.A. CLARK, School of Dentistry, and I.M. PARRAGA, Department of Nutrition, Case Western Reserve University, Cleveland, Ohio, 44106.**

Tooth loss, even with denture replacement, results in substantial decreases in masticatory capacity. It has been hypothesized that this results in significant modifications of dietary patterns, through the preferential selection of softer foods, which in turn results in a decrease in dietary adequacy, and ultimately in a decrease in health and nutritional status.

The results of a preliminary study designed to test this hypothesis are described in the present report. The sample consists of 102 adults (41 males, 61 females; 50 to 84 years of age). Basic social and