

**Editorial****PHYLOGENY; ESSENTIAL FOR THE UNDERSTANDING OF  
MODERN HUMAN ANATOMY AND PREDICTING FUTURE  
MORPHOLOGICAL TRENDS****Namita Alok Sharma***Department of Human Anatomy, Bharati Vidyapeeth University Dental College and Hospital,  
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The modern human, including the various ethnicities spread across the globe, are, by the scientific community, believed to have shared a common ancestor with the chimpanzee. Such an ancient creature existed 6-7 million years ago before undergoing speciation to produce the divergent genera; Homo and Pan. The cause of such speciation can, at best, be conjectured. It could possibly have been due to geographical isolation of a segment of his population resulting in an altered environmental exposure of such an insulated set. Surviving such environmental modifications would require shifting morphology which, in turn, would be dictated by desirable genetic 'mutations' ensuring survival of the fittest. Thus a gradual drift in the genotype and the

resultant phenotype would reproductively isolate genera Homo and Pan and set them on a distinct evolutionary paths.

The taxonomic term 'species' includes in its definition the sexual and reproductive compatibility of its members. Speciation of Homo and Pan could not have been an overnight affair and must have necessarily progressed over millions of years. In the initial period of such divergence, the possibility of inter breeding is a distinct and interesting possibility making Pan our closest extant relative with whom we share 99% of our genes!

Further down the evolutionary path of the genus 'homo', shifting locomotory trends from arboreal to terrestrial, from quadruple knuckle walkers to bipedalism and a habitually erect posture, the development of the opposable thumb for precision grip and the gradual dawn of tool production and utilization capabilities; all required a modifying and evolving anatomy.

Beyond the Pan- Homo divergence, various fossil species of the genus Homo existed, and in some cases co-existed on the planet for variable time periods. Though these cousin species of the genus Homo are not strictly rectilinear with our descent, they are clustered close enough to permit us to evaluate the chronological vagaries of 'homo' anatomical features. These, when collectively and/or individually considered, could help build an evolutionary trajectory which when traced in reverse, might, clear the mists as to the morphologies of the shared Pan-Homo ancestry of whom we have no fossil record.

Domesticating fire was the defining moment in accelerating Man's journey towards being the dominant primate. Habitual intake of extra orally processed food set forth a chain reaction requiring diminished blood flow to the digestive organs and leaving the surplus blood to be diverted to the brain. Cerebration was the result. Speech was the next giant leap which empowered the evolving Man to strategize and scheme as a community. This proved far more vital for survival than simple brute power and possibly resulted in the ethnic cleansing of the Neanderthals.

Today, anatomically modern *Homo sapiens* is the only subspecies of the genus 'homo' on the planet and his dominance in terms of numbers is incredible. Such prolific growth would obviously be a result of superior intellect and subsequent technological enhancement which would defy Darwin's theory of 'survival of the fittest' by providing adequate measures to protect even the weakest of the species! However, a misguided sense of vanity in our intellectual capacities blinds us to our many physical deficiencies and has resulted in an almost comical self-appraisal as the most evolved creature on this planet; which may not be wholly true! The human hand for instance, barring an efficiently opposable thumb, is thought to be more ancient in its architecture than the more evolved chimpanzee equivalent which developed much longer fingers for the purpose of swinging from trees!

The anatomy of the modern *Homo sapiens* thus, is not an isolated set of convenient morphologies. On the contrary, it reflects the ongoing process of evolution, which, in turn, is dictated by environmental challenges and genetic modifications.

Human anatomy, as it is largely taught and studied today, is a set of anatomical facts and their clinical relevance. Ontogeny is recognized as an important aspect as embryogenesis provides logical explanations to various aspects of gross anatomy. The proposal for encouraging a phylogenetic comprehension in anatomists is an effort to juxtapose their expert knowledge of human anatomy with the evolutionary events leading up to the current modern morphology.

Notwithstanding all 'modern humans' being included within the same sub species of *Homo sapiens*, the various human populations that inhabit the world today demonstrate morphological variations which are both apparent and documented. Though globalization is increasingly evident and is resulting in breaking phylogenetic barriers, it is of recent onset and was preceded by centuries of cultural, regional and religion wise gene pools. It would thus not be amiss to contemplate furthering *Homo* phylogeny by the introduction of population clusters for the human primate based on genomic or phenotypic variability, and check the existence of any significant correlation of such data to the distinct geographical, climatic, linguistic and dietary influences each cluster is exposed to.

Extensive research, data building for future reference and a comparative analysis of the evolutionary anatomy of modern man might help us build a prospective image of what 'modern man' and his future population clusters are likely to emerge as in the times to come. Moreover, the morphological variability between the extant species of *Pan*, *Homo* and more distally related primates, when geometrically projected as a linear distance would provide a clearer picture as to primate genetic and phenotypic proximity.