

Human diversity and ancestry in India*

A discussion meeting on 'Human Diversity and Ancestry in India' brought together scholars from archaeology, history, linguistics, anthropology, sociology and genetics at various institutions. The meeting discussed Indian ancestry and migration trails to reconcile the inconsistencies, differences and chronologies inferred from analyses of relevant data from these domains. This report covers key excerpts from the lectures delivered by various discussion leaders from each of the domains.

The session on archaeology and pre-history began with a talk by Shanti Pappu (Sharma Centre for Heritage Education, Chennai) titled 'where we have come from – perspectives from pre-history'. Pappu tackled the question from the point of view of human origins and prehistory. She emphasized that it is also essential to understand the taphonomy or the way in which sites are formed or the way in which landscapes are interpreted, before interpreting their behaviour or migration or timing. Highlighting recent developments in palaeo-anthropology, genetics and archaeology, she went on to discuss how South Asia fitted into the global changes that are on-going and recent findings that are pushing back the date of occupation of Eurasia to much earlier than previously thought.

Shereen Ratnagar's (Jawaharlal Nehru University, Delhi) talk on 'Glimpses of movements and connections in the midst of uncertain interpretations of archaeological data in social terms', discussed the movements of Hittites of Anatolia, the earliest known Indo-European group, and the Mitannians (contemporaries of the Hittites) who showed clear Vedic connections. Citing E. E. Kuzmina, Ratnagar drew archaeological references to the Indo-Iranian homeland culture that included Kurgans, horses, chariots and

weaponry. She then discussed the archaeological evidences along the Kanda-har–Bolan pass pre- and post-Harappa and Mohenjo-Daro. Moving to southern India, she talked about the Palghat camp, an Iron Age and late Iron Age site. Her talk ended with a linguistic perspective, concluding that the introduction of Sanskrit was not solely owing to immigration.

Pranay Lal (International Union against Tuberculosis and Lung Disease, Paris), in his talk 'Ancestry of people of India – confounding the legacy', highlighted the push and pull in dates owing to recent studies in archaeology, anthropology and genetics. However, he felt that the singular challenge is to reconcile the different archaeological and genetic fossils, climatic and logical evidence that shape our ancestry. Another problem in the origins and diversity of modern humans is the definition of endogamy in early groups, which requires an understanding both in terms of genetics and archaeology. Since Lal's particular interests lie in the impact of climate and ecology on population size, he provided suggestions for further studies in that area.

A talk by Michael Witzel (Harvard University, USA) titled 'Beyond the flight of the falcon: early "Aryans" within and outside India', provided evidences from studies in multiple disciplines to show that Vedic rituals and Vedic civilization fitted the date of around 1200 BCE and not 3000 BCE. He indicated that text from the Mitanni realm referencing Vedic deities must be older than the Rigveda and after 1400 BCE. He also referred to recent climate change studies of the pre/late Indus civilization, early Vedic period, etc., which aligns with what is known from the texts. He then discussed geological studies that showed that Sarasvati was not a Himalayan river as it did not have any Himalayan sediment. Stating that phalanges (bones at the back of the hooves) need to be evaluated to identify a horse skeleton, he concluded that horses were imported into India around 1800 BCE. He cited archaeological evidence going back to 2000 BCE in the Sintashta civilization of Ural Mountains, where the chariot was developed.

He also cited recent studies (yet to be published) that have established a Steppe DNA in the Swat valley, which indicates a central Asian movement into South Asia around 1250 BCE.

The next session dealt with history and language. In the talk 'Ancient India: what do we know and how?', Rajesh Kochhar (Panjab University, Chandigarh) interpreted historical and geographical content of the *Vedas* and *Puranas* by drawing evidences to South Asia. He indicated that Indic speakers from the North West, who arrived only after the decline of the Harappan civilization (urban or mature Harappan phase lasted from 2600 to 1900 BC), were responsible for coming up with the *Rigveda*. From the evidences of the swastika symbol in Namazga VI, Kochhar concluded that the Indo-Aryans were in south Turkmenistan in 2100 BC on the way to Afghanistan, Iran and India. He suggests the soma cult, common to *Rigvedic* and Avestan, originated in the Indo-Iranian period and that River Sarasvati could be the Haraivati, a tributary of River Helmand in Afghanistan. If it is proved that the *Rigvedic* Sarasvati was located outside India, it would conclusively prove that the Vedic people came to India from outside. Kochhar suggested an archaeological exploration of south Afghanistan to look for more evidence on ancient Indian history.

Sonal Kulkarni-Joshi (Deccan College Post-Graduate and Research Institute, Pune) in her talk 'Linguistic history and language diversity in India: views and counter-views' provided an overview on how linguistic evidence is being used to reconstruct the linguistic prehistory of India. The major part of her talk focused on early linguistic observations that led to the Aryan migration hypothesis (the Aryan language speakers were related to European language speakers, and the ancestral language of this entire group must have come from outside India), and the Dravidian substratum or substratum hypothesis (the speakers of Dravidian gradually shifted to an Indo-Aryan language, and in the process carried features of Dravidian language to the Aryan language, which explains the features of non-Aryan origin). In her talk she also

*A report of a discussion meeting on 'Human Diversity and Ancestry in India' held at Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bengaluru from 19 to 21 September 2018. The meeting was jointly organized by National Institute of Biomedical Genomics, Kalyani and JNCASR and supported by the Indian Academy of Sciences, Bengaluru.

cited evidence which has become available for the out-of-India hypothesis.

The session on anthropology and sociology began with a talk by Kailash C. Malhotra (Indian Statistical Institute, Kolkata) on 'Development of typological classification and its relationship to microdifferentiation in ethnic India'. He covered details on studies conducted by Sir Herbert Risley, Giufrida-Ruggeri, A. C. Haddon, Fuherer von Eickstedt, B. S. Guha and S. S. Sarkar showing typological/racial elements of India. In all studies undertaken until Sarkar, populations have been identified using language, geography or biological characteristics of the Negroid, proto-Australoid, Caucasoid and Mongoloid races. Malhotra concluded that there are more than 1000 studies in the country using anthropometry. With the results of these studies, anthropologists conclude that there is enormous amount of biological diversity in the Indian population, with all populations having come from outside.

Shalina Mehta's (Panjab University, Chandigarh) talk was titled 'Contested domains of biological similarity and socio-cultural diversity'. She described India as the world's largest democracy and presented the world view of India and its diversity. She also touched upon languages, different dialects and several others in the race for recognition. Being a qualitative researcher, Mehta mentioned that she found it difficult to understand how diversity can be reduced to statistical models and quantifiable numbers. During the talk she also cited several genetic studies related to the peopling of India. As a social scientist she found these genetic studies problematic in aspects concerning complexities related to varnas, castes, tribes, endogamy, hierarchy, etc.

The session on genetics was divided into two – ancient DNA and modern DNA. In the talk 'Methodological issues in archaeogenetics studies of India protohistory', Michel Danino (Indian Institute of Technology, Gandhinagar) pointed to issues of the multiple interpretations of *Rigveda*, which is not a text of sociology or history. He also highlighted problems in archaeology, where different

scholars have chosen different post-Harappan cultures as a sign of advance or the arrival of the Aryans in India, especially with no accepted criteria for defining Aryans at the material level. Since archaeology never supported an aggressive Aryan invasion model, a peaceful and less military-type migration raises the problem of numbers. Danino also highlighted other methodological problems, such as reliability of the ancestral North India (ANI)/ancestral South Indian (ASI) definition, 1 : 1 mapping of race/ethnic group and language in several genetic studies, and the use of caste in population genetics. He concluded that there is a lot of scope for cleaning up methodologies, not just in genetics, but in archaeology and other disciplines.

A talk by K. Thangaraj (Centre for Cellular and Molecular Biology, Hyderabad) titled 'Peopling of India: ancient DNA perspectives', cited recent studies that argue that initial dispersal of modern humans from Africa to South Asia occurred before the volcanic eruption of Toba volcano (Sumatra, Indonesia) at 74,000 years BP, possible as early as 120,000 years BP. Other studies date the dispersal at 60–50,000 years BP. Thangaraj also discussed human genome studies which show three ancestral populations (indigenous hunter-gatherers, Middle Eastern farmers and North Eurasian population) for the Europeans. He also cited studies showing common lineage across Australian aboriginal populations, Andamanese and a tribal population called Kurumba in Kerala, which again indicates a migration. He also discussed findings from other studies that are in progress and yet to be published.

Gyaneshwar Chaubey (Banaras Hindu University, Varanasi) in his talk 'The genetics of historical migrants to and from South Asia', dealt with the migration of the Siddis, Parsis, Jews and Romas using various genetic studies. These studies concluded that the scheduled castes and scheduled tribes of northwest India are the ancestors of the Romas. The Middle Eastern specific ancestry is a minor component of the Indian Jewish population, whereas it is a major component of the Indian Parsi population. The Cochin

Jews are the oldest Jewish community that migrated in the 5th century BCE and the Parsis migrated to South Asia around 1200 years ago. The admixture in Parsis was strict compared to the Jews, with more males migrating in both cases.

Analabha Basu's (National Institute of Biomedical Genomics, Kalyani) talk 'Reconstructing the ancestral footfalls in South and South East Asia using genomic data' highlighted key conclusions from his 2003 study. According to this study, the earliest settlers in India are the Austro-Asiatic tribals. The Tibeto-Burman tribals share considerable genetic commonalities with Austro-Asiatic tribals, but the two groups are considered different in terms of their Y-chromosomal haplotypes. The study also concluded that there was a massive migration into India through the northeast. The Dravidian tribals who were probably widespread across India, moved to South India because of the arrival of Indo-European speaking nomads. Also, the tribal and caste populations are highly differentiated with upper castes showing closer genetic affinities to Central Asian populations. Moving to ancient DNA, Basu highlighted that Indian populations did not show any Neanderthal admixture. However, the tribal populations of India had significantly higher Denisovan admixture, while the Indo-European populations had slightly lower admixture.

The talks and theme-based sessions were followed by discussions to arrive at a consensus on the inconsistencies, differences and chronologies. It was hardly possible to arrive at any overall consensus, primarily because different sets of data are not of the same richness or diversity, because in certain relevant domains of science (such as archaeology), it is not possible to plan collection of samples and data. The concluding talks emphasized the need for several such meetings in future to further bridge the gaps among the disciplines involved.

S. Priya (S. Ramaseshan Fellow)
e-mail: priya@ias.ac.in