There have been long questions about the origin of farming, source of Indo-European languages in South, Central Asia and genetic affinities of Indus Valley Civilisation (IVC) people.

These were sought to be answered when an international team of geneticists, archaeologists and anthropologists from North America, Europe, Central Asia, and South Asia, including Centre for Cellular and Molecular Biology (CCMB) here, have analysed genomes of 524 ancient individuals.

The team also conducted the largest ever study of ancient human DNA, along with the first genome of an individual from the IVC with both studies revealing unprecedented details of genetic ancestry of these regions. Findings were published in two reputed scientific journals - *Science* and *Cell* on Thursday.

“We compared ancient genomes to one another and to previously sequenced genomes, and put the information into context alongside archaeological, linguistic and historical records. It helped fill key details about people who lived in this vast region from Mesolithic Era (about 12,000 years ago) to Iron Age (around 2,000 years ago). We could study how these ancient humans (whose skeletons were found) relate to people who live there today,” said Dr. Kumarasamy Thangaraj, Chief Scientist at CCMB and one of the senior authors.

These studies speak of transition from hunting and gathering to farming and the spread of Indo-European languages, which are spoken today from the British Isles to South Asia, along with movement of people. For decades, experts have debated if Indo-European languages made their way to distant parts of the world via herders from Eurasian Steppe - the ‘Steppe Hypothesis’ or with farmers moving west and east from Anatolia (present-day Turkey) - the ‘Anatolian Hypothesis’.

“We can rule out a large-scale spread of farmers with Anatolian roots into South Asia, the centrepiece of the ‘Anatolian Hypothesis’ that movement of people from the west brought farming into the region and with it Indo-European languages,” said Prof. David Reich, co-senior author from Harvard Medical School, the USA.

This study also identifies two new powerful lines of evidence in favour of ‘Steppe Hypothesis’ - that Anatolia-related ancestry and farming arrived in Iran and Turan (southern Central Asia) around the same time. This confirms that the spread of agriculture entailed not only a westward route from Anatolia to Europe but also an eastward route from Anatolia into regions of Asia previously only inhabited by hunter-gatherer groups.

It then spread northward through the mountains of Inner Asia thousands of years after taking hold in Iran and Turan. Of the 140 present-day South Asian populations analysed in the study, a handful has a remarkable similarity with the Steppe. All but one of these Steppe-enriched populations is historically priestly groups, including Brahmins.

The finding that Brahmins often have more Steppe ancestry than other groups in South Asia, controlling for other factors, provides a fascinating new argument in favour of a Steppe origin for Indo-European languages.