

RESEARCH ARTICLE

HUMAN GENETICS

A genetic probe into the ancient and medieval history of Southern Europe and West Asia

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Literary and archaeological sources have preserved a rich history of Southern Europe and West Asia since the Bronze Age that can be complemented by genetics. Mycenaean period elites in Greece did not differ from the general population and included both people with some steppe ancestry and others, like the Griffin Warrior, without it. Similarly, people in the central area of the Urartian Kingdom around Lake Van lacked the steppe ancestry characteristic of the kingdom's northern provinces. Anatolia exhibited extraordinary continuity down to the Roman and Byzantine periods, with its people serving as the demographic core of much of the Roman Empire, including the city of Rome itself. During medieval times, migrations associated with Slavic and Turkic speakers profoundly affected the region.

The works of ancient writers provide powerful insights into the ancient world, recording information on different groups, their political organizations, customs, relations, and military conflicts. The manuscript tradition has been augmented by the archaeological record, which also includes the discovery of texts of past Mediterranean and West Asian civilizations. In this work, we leverage the power of ancient DNA to provide a third source of information about the people inhabiting the states and empires of the past. Many of these aspects have been recorded, or hinted at, in ancient texts composed close to the time of the events they describe. However, no text is fully objective, and all texts are inevitably shaped by authors' biases and world views. Ancient DNA provides independent

evidence, with its own strengths and weaknesses, and cannot paint a picture of the past on its own. Nonetheless, it complements the ancient texts and evidence from archaeology. By using genetic data, we can hope to obtain a more nuanced impression of past processes—especially with regards to movements of people and biological phenotypes—than would be possible without such data.

This study is a part of a comprehensive archaeogenetic analysis of the genetic history of the populations of the Southern Arc, spanning a trio of papers. For a description of the full dataset and analysis framework and characterization of the population history of the Chalcolithic and Bronze Age periods, see (1). For analysis of the population history of the Neolithic, see (2). The present paper focuses on

peoples for which there is also information from written texts. A main theme is to test the extent to which textual insights are supported or not supported by the genetic data and furthermore to explore what complementary information genetics can provide. When we reference ancient literature, we use standard abbreviations for locating passages in online repositories of texts, such as the Perseus Digital Library (3). Our study begins at the end of the Bronze Age and traces the region's history through the first millennium BCE, through the Roman Empire and up to the present, a time span of >3000 years.

The Bronze Age Aegean world

Previous work has demonstrated that the Bronze Age civilizations of Greece of the

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Connecting genes and history

Stories about the peopling—and people—of Southern Europe and West Asia have been passed down for thousands of years, and these stories have contributed to our historical understanding of populations. Genomic data provide the opportunity to truly understand these patterns independently from written history. In a trio of papers, Lazaridis *et al.* examined more than 700 ancient genomes from across this region, the Southern Arc, spanning 11,000 years, from the earliest farming cultures to post-Medieval times (see the Perspective by Arbuckle and Schwandt). On the basis of these results, the authors suggest that earlier reliance on modern phenotypes and ancient writings and artistic depictions provided an inaccurate picture of early Indo-Europeans, and they provide a revised history of the complex migrations and population integrations that shaped these cultures. —SNV

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