

RLAHA Departmental Seminars
&
Palaeolithic and Quaternary Seminars present:

Monday, February 9th



“Ancient DNA documents three ancestral populations for present-day Europeans”

Professor David Reich, Harvard Medical School



ABSTRACT:

This talk will present a genome-wide analysis showing that Europeans today largely derive from three highly differentiated ancestral populations: (1) West European Hunter-Gatherers, who derive from the Upper Paleolithic indigenous population of Europe and contributed ancestry to all Europeans but not to Near Easterners; (2) Ancient North Eurasians related to Upper Paleolithic Siberians, who contributed to both Europeans and Near Easterners; and (3) Early European Farmers, who were mainly of Near Eastern origin. However, our analysis of ancient genomes shows that the Ancient North Eurasian ancestry that is ubiquitous in Europe today was rare or absent at the time of the arrival of the Early European Farmers. To understand when the Ancient North Eurasian ancestry arrived, we generated genome-wide data from 69 Europeans who lived between 8,000-3,000 years ago by enriching ancient DNA libraries for a target set of almost four hundred thousand polymorphisms. This strategy decreases the sequencing required for genome-wide ancient DNA analysis by about 250-fold, allowing us to produce a dataset of genome-wide ancient DNA that is more than double the size of the entire preceding literature. We show that the populations of western and far eastern Europe followed opposite trajectories between 8,000-5,000 years ago. At the beginning of the Neolithic period in Europe, ~8,000-7,000 years ago, closely related groups of early farmers appeared in Germany, Hungary, and Spain, different from indigenous hunter-gatherers, whereas Russia was inhabited by a distinctive population of hunter-gatherers with high affinity to a ~24,000 year old Siberian. By ~6,000-5,000 years ago, a resurgence of hunter-gatherer ancestry had occurred throughout much of Europe, but in Russia, the Yamnaya steppe herders of this time were descended not only from the preceding eastern European hunter-gatherers, but also from a population of Near Eastern ancestry. Western and Eastern Europe came into contact ~4,500 years ago, as the Late Neolithic Corded Ware people from Germany traced ~3/4 of their ancestry to the Yamnaya, documenting a massive migration into the heartland of Europe from its eastern periphery. This steppe ancestry persisted in all sampled central Europeans until at least ~3,000 years ago, and comprises about half the ancestry of today’s northern Europeans. These results support the theory of a steppe origin of at least some of the Indo-European languages of Europe, and show the power of genome-wide ancient DNA studies to document human migrations.

Location: Ship Street Centre,
Jesus College

Time: 5pm
Wine reception to follow

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