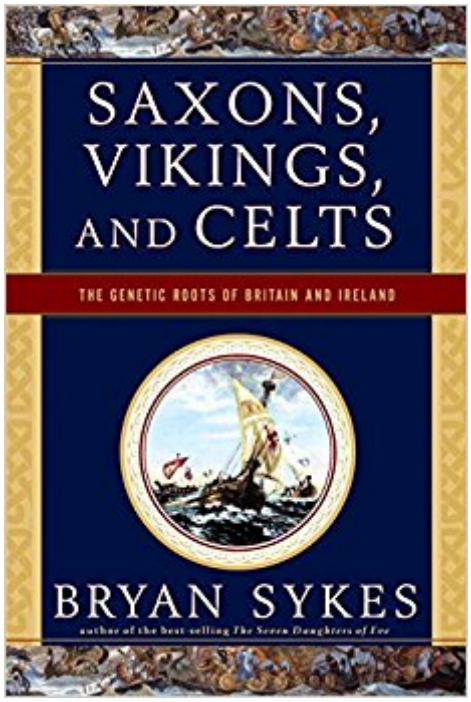
Saxons, Vikings, And Celts: The Genetic Roots Of Britain And Ireland



Synopsis

From the best-selling author of The Seven Daughters of Eve, a perfect book for anyone interested in the genetic history of Britain, Ireland, and America. One of the world's leading geneticists, Bryan Sykes has helped thousands find their ancestry in the British Isles. Saxons, Vikings, and Celts, which resulted from a systematic ten-year DNA survey of more than 10,000 volunteers, traces the true genetic makeup of the British Isles and its descendants, taking readers from the Pontnewydd cave in North Wales to the resting place of the Red Lady of Paviland and the tomb of King Arthur. This illuminating guide provides a much-needed introduction to the genetic history of the people of the British Isles and their descendants throughout the world.

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Customer Reviews

In Saxons, Vikings, and Celts, Bryan Sykes, professor of genetics at Oxford, describes his research and conclusions on the Genetic Atlas of Britain project. His goal was to develop a description of how the genetic background of the current populations of England, Scotland, Wales, and Ireland differ from each other and how these differences might be traced to the various ethnic groups that settled the Isles: Celts, Picts, Romans, Saxons-Angles-Jutes, Vikings, Danes, and Normans.Background: Because a person's nuclear DNA is derived from both parents in equal parts, trying to track one's genetic heritage backward is complicated by the doubling of the number of ancestors each generation. Even the most recent arrivals considered in Sykes' study, the Normans, ca. 1066, go back about 1000 years, or 40 generations. This gives us about 2-to-the-40th-power ancestors in that generation. That's a big number, roughly equal 10-to-the-12th-power, or about 100 times the

current population of the entire Earth. This apparent conundrum reflects the fact that there must have been a large number of intermarriages among cousins of various degrees in the course of the 40 generations, so that many of the names on our lists of 10-to-the-12th-power ancestors would likely be repeated several times over. The message here is that the genetic heritage of a specific individual (his nuclear DNA) really can't be tracked back far enough to reach any useful conclusions about the population of the Isles in 1066 or earlier. However, all is not lost.Methodology: To overcome this problem, Sykes uses two genetic markers that are passed on unchanged, except by rare genetic mutation. First, mitochondrial DNA (mDNA) is passed on to all offspring by their mother, unmodified by any contribution from the father. mDNA is not part of our genetic makeup that makes us individuals; it is located outside the cell nucleus and helps regulated metabolism in the cell. The rate of mDNA mutation very slow; about one mutation can be expected along each maternal line in 20,000 years. Second, the Y-chromosome is passed on from father to son, unmodified by any contribution from the mother. The rate of Y-chromosome mutation is about one change along each paternal line every 1500 years. Prior research by Sykes, and others, has shown that most people of northern European heritage belong to one of a small number of primary maternal lines and to one of an even smaller number of primary paternal lines. These lines are defined by the molecular patterns of their mDNA and Y-chromosomes. Furthermore, the mutation rates can be used to estimate the age of each primary line and the approximate times that subsequent mutations have occurred. Equipped with this knowledge, Sykes proceeded to collect DNA samples from a large number of current residents throughout the Isles, characterize the primary maternal and paternal lines, and examine any mutations to primary line patterns. He then compared the frequency with which primary lines occurred in different regions within the Isles and in locations which the migrating peoples came.Conclusions: Sykes reaches several interesting conclusions:1. Throughout the Isles, the basic and dominant genetic heritage is Celtic.2. The basic Celtic heritage is modified by contributions from the other ethnic groups. The contribution from these groups varies from essentially zero up to a maximum of about 30%.3. The Picts were closely related to the Celts, perhaps indistinguishable so.4. The largest non-Celtic contribution is found in the northern islands, the Orkneys and Shetlands, where the Viking contribution is about 30%.5. The Celtic settlers appear to have migrated from the northwest area of the Iberian peninsula.6. The maternal and paternal lines often differ. The maternal line is often more Celtic, suggesting that women were less mobile than men (e.g., Viking raiders). The paternal lines suggest a disproportionate genetic contribution by a relatively small number of men (presumably those in powerful positions - the "Genghis Khan effect").7. The maternal and paternal lines are fairly consistent in the Orkneys and Shetlands,

suggesting that they were settled peacefully by Vikings who brought their wives with them.Reviewer's Comments: Sykes' methodology of following the unbroken paternal and maternal lines allows him to work around the problem presented by the mixing of nuclear DNA (other than the Y-chromosome) at each generation. This approach essentially extracts a sample of one male and one female ancestor from each generation. Keep in mind that the number of ancestors is 10-to-the-12th-power ancestors 40 generations back and even more as you go back farther, so two ancestors is an exceedingly small sample of an individual's genetic heritage. Statistically, this is a valid approach when used to characterize the overall population because Sykes draws large samples from the current population. However, I caution against drawing any strong conclusions about one's personal genetic heritage based on that sample of two ancestors out of such a huge number.The book is a nice, light read. Sykes spends the first part of the book on the pre-history of Britain, both the geological history and the stone age migrations which were shaped by the geological and climatic changes. After setting the stage, he focuses on the methodology and results of his research. The last third of the book focuses on the history and genetic characteristics of the four main regions: Ireland, Scotland, Wales, and England.

This is a popular account of the Oxford Genetic Atlas Project, an attempt to map the genetic composition of Britain and Ireland. Prof. Sykes is something of an academic star, best known as the author of 'The Seven Daughters of Eve'.The book is not heavy on technicalities but the necessary background is clearly explained. DNA is the instruction set for a living organism. Most of it gets mixed in sexual procreation, half coming from each parent. This does not happen, however, to two particular kinds: mitochondrial DNA (mDNA) which is copied from mother to children and is passed on only by daughters, and the DNA of the male Y-chromosome which is copied from father to sons. Because these come from only one parent, they remain stable over a great many generations. To cut to the chase, it is possible in principle to use mDNA to trace your matrilineal ancestry - mother, grandmother, great-grandmother - all the way back. Twenty thousand years ago there was just one living woman from whom you inherit your mDNA (maybe her mother was alive too - oh, all right, her granny as well).By studying and comparing mutations in the mDNA sequence (random unimportant copying errors which, once they occur, are passed on) it is possible to allocate all human beings to a few dozen groups or 'clans'. Within each clan the lines of matrilineal ancestry are inferred to converge to one woman whom the author calls 'clan mother'. For example, most people of west European origin are descended from one or other of seven clan mothers who lived between 10000 and 45000 years ago. Prof. Sykes believes he can determine where as well as when these clan

mothers lived: 'Helena' in the south of France, 'Jasmine' in Syria and so on. I am no geneticist and there are assumptions here that I am not qualified to comment on.Half the book is taken up with thumbnail sketches of the countries of the Isles - England, Ireland, Scotland, Wales - with the focus on early history and prehistory. Depending how much you know about the Isles and how much you want to know, you may find this interesting. In each case the author describes how he collected DNA samples. To tell the truth, some readers have been known to take against the Prof's style ('I did this, I did that') but it flows well and it grows on you. He sorts the data into clans and plots them on maps of the Isles by reference to the birthplace of the donor's maternal grandmother. What we have at this stage looks, to the untrained eye, like a set of maps called Helena, Jasmine etc. with measles.In a later chapter he summarizes his conclusions, which are briefly as follows. The genetic bedrock of the Isles was laid down by hunter-gatherers who moved in after the last Ice Age, followed by farming folk coming from Spain several millennia later. The most paradoxical not to say disappointing result for some readers will be that he finds no genetic affinity between the Celtic fringe (Wales, Ireland, Gaelic Scotland) and the Iron Age Celts of continental Europe. The 'Celts' of the Isles talked the talk, but that seems to have been as far as it went. He does find a significant Norse overlay in the Northern Isles of Scotland, and a less pronounced north German/Danish input in parts of England. Another genetic archaeologist recently claimed that the majority of English people - contrary to orthodoxy since the Second World War, for obvious reasons - are descended from incoming Anglo-Saxons. It all depends on interpretation, and I have a feeling that a lot remains to be thrashed out. Invasions might not come in waves but academic fashions do.Now let me mention a thought that gives me pause. Going back 500 years I have up to a million ancestors (fewer in fact because of inbreeding, but still a lot). Just one of them was a matrilineal ancestress from whom I get my mDNA, and one was a patrilineal ancestor from whom I get my Y-chromosomes. If you're a WASP, one or both of them could be yours too. Prof. Sykes likes to make up imaginary scenarios for his clansfolk, so here goes: my matrilineal ancestress was a runaway Spanish nun, and my patrilineal ancestor was the Genoese sailor Giacomo, a big-time bigamist. Reconstructing early Tudor England from those two would be quite a trick. Now go back twenty thousand years. I have one clan mother and one clan father. This does not mean that I had no other ancestors living then (still less, as one poor soul thinks, that it proves creationism), merely that I happen to get my mDNA and Y-chromosomes from those two out of many contemporary ancestors. This is a perilously small sample - two out of how many thousands? - but perhaps it can tell us something reliable about prehistory. Is that obvious? I don't know, and you won't find the question raised in this book.I don't believe the book is the last word; it could even be misleading if,

for example, people think they come from Syria because their clan mother is Jasmine; but it is well written, interesting and worth reading.

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