

Novel evolutionary tools for studying human populations using the X chromosome

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Research in the Department of Genetics at University of Leicester is well-known for its human population studies with the Y chromosome, including the relationship between the male surname and the Y chromosome, as well as a better understanding of the Viking settlement in the Northwest England.

Now a new research project using the X chromosome (present in one copy in men but two in women) will be the first readily applicable non sex-specific evolutionary tool to provide a more sex-balanced view in human population studies.

Although the Y chromosome is a better established evolutionary tool and has been used in many evolutionary studies, apart from ease of usage, it has a lot of limitations preventing it becoming the most evolutionary informative DNA segments in the Human genome.

Now as part of her doctoral studies, Holly Leung is investigating the potential of the X chromosome as another evolutionary informative segment in the human genome.

Holly said: “This may be the real key to solving many existing mysteries of human population evolution, for example the ‘out of Africa’ theory and the Neolithic expansion in Europe.

“The Y chromosome is the most common evolutionary tool we use in population studies but it doesn’t mean that it is the most evolutionary

informative DNA segment in the human genome.

“There are many limitations with the use of the Y chromosome which make it non-applicable to every evolutionary study because of its male specific lineage. It provides sex-biased information to the male and as a single genetic marker restricts the diversity of information source.

“The aim of my research is to produce and assess the usefulness of the evolutionary information provided by the X chromosome. It shares some properties with the Y chromosome, but provides an expanded view of human evolution because of its presence in males and females and the many independent genetic markers it contains.”

Holly Leung is 24 years old, graduate from the BSc Medical Genetics in the University of Leicester in 2006. In the same year, she continues her study in the Department of Genetics doing PhD Genetics research as she discovered her interest in Evolutionary Genetics specifically in the study of evolutionary history of Human population.

The research is being presented to the public at the University of Leicester on Thursday 26th June. The Festival of Postgraduate Research introduces employers and the public to the next generation of innovators and cutting-edge researchers, and gives postgraduate researchers the opportunity to explain the real world implications of their research to a wide ranging audience.

Source: University of Leicester

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