Diversity and evolution of palindromic sequences of the human Y chromosomes

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It has been recently discovered that both the X and the Y chromosome of mammals are enriched in large palindromic sequences that contain genes with a testis-predominant expression. These palindromic structures are characterized by a high arm-to-arm sequence identity (often > 99.9%) due to the homogenising effect of recurrent ectopic gene conversion.

Despite their functional relevance, the sequence evolution of sex chromosome palindromes has not been investigated in detail.

The aim of the present PhD project is to investigate the interplay between mutation and gene conversion in determining the peculiar features of the palindromes of the human Y chromosome. To this aim, advanced techniques of genotyping and DNA sequencing will be used to characterize a large number of males representative of widely divergent Y chromosome haplogroups already available in our lab.

Publications (2010-2016) - Publications # 1, 7, 14 and 16 are particularly relevant for the present project