

Review of *Genetic Control of Hotspots: PR domain containing 9 (PRDM9)*

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This week, we have 4 paper published at the same time on the same journal discussing the role of PRDM9 in controlling chromosomal recombination during meiosis at chromosomal hotspot. Baudat et al., Parvanov et al., and Myers et al. talked about how they identified human gene PRDM9 and its role in meiosis chromosomal recombination while Cheung et al. summarized their findings. Prior to these studies, meiosis and meiotic recombination process were poorly understood, although they are essential in human beings. PRDM9 is a zinc finger protein and is highly polymorphic. Its polymorphic forms enable it to recognize different DNA sequences and promote crossovers at different chromosomal sites. In particular, Parvanov et al. and Baudat et al. used biological experiments to narrow a region and identify that PRDM9 is the only candidate gene. Myers et al. instead used a computational approach to identify the role of human PRDM9. This is a very important discovery as the identification of PRDM9 help examining the role of chromatin in recombination.

I learnt a lot from these 4 papers as I do not have much background knowledge in this field. It is very interesting to see three paper have similar findings at the same time published on the same journal. One thing I found surprising is that other than biological experiments, we are able to use computational approaches like bootstrap and statistical tests to identify human PRDM9 in Myers et al. Nowadays, statistical methods are playing a more important role in biological research. As a biostatistician, usually we create a hypothesis with the help of the biology collaborators, and we determine a sample size that could test this hypothesis. Finally, we collect the data and do a thorough analysis that validate the hypothesis. There are a lot more to do statistically with the development of sequencing technologies, and current methods will improve and more will be available.

Question:

1. What's the latest development after discovering PRDM9?