

Crossover interference and the sex difference in recombination

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Learning about recombination

- MLH1 staining in spermatocytes or oocytes
- Genotype data on families / crosses
- Patterns of linkage disequilibrium

Crosses

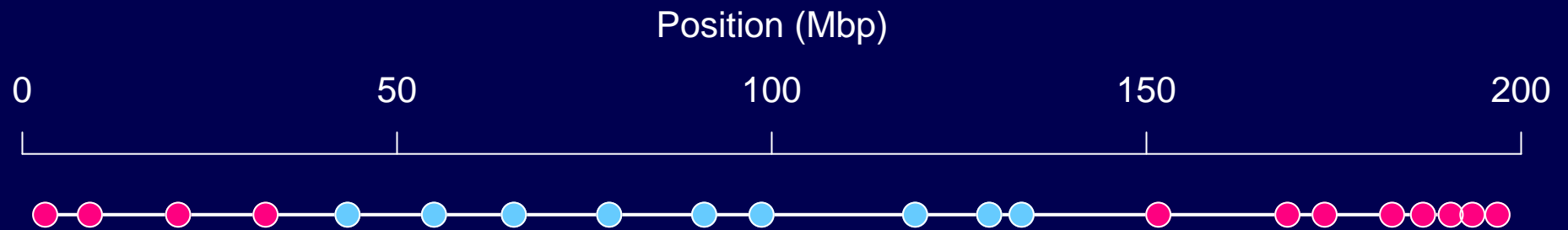
Cross	Sample size
$(B \times C) \times B$	1466
$(C \times B) \times B$	1528
$B \times (B \times C)$	1459
$B \times (C \times B)$	1533

B = C57BL/6J

C = CAST/EiJ

Genotyping

Chr 1 only (for now), by brute force



Counts

	No. crossovers					
	0	1	2	3	4	Ave.
female	25	50	23	1.6	0.1%	1.01
male	32	51	16	0.2	0.0%	0.84

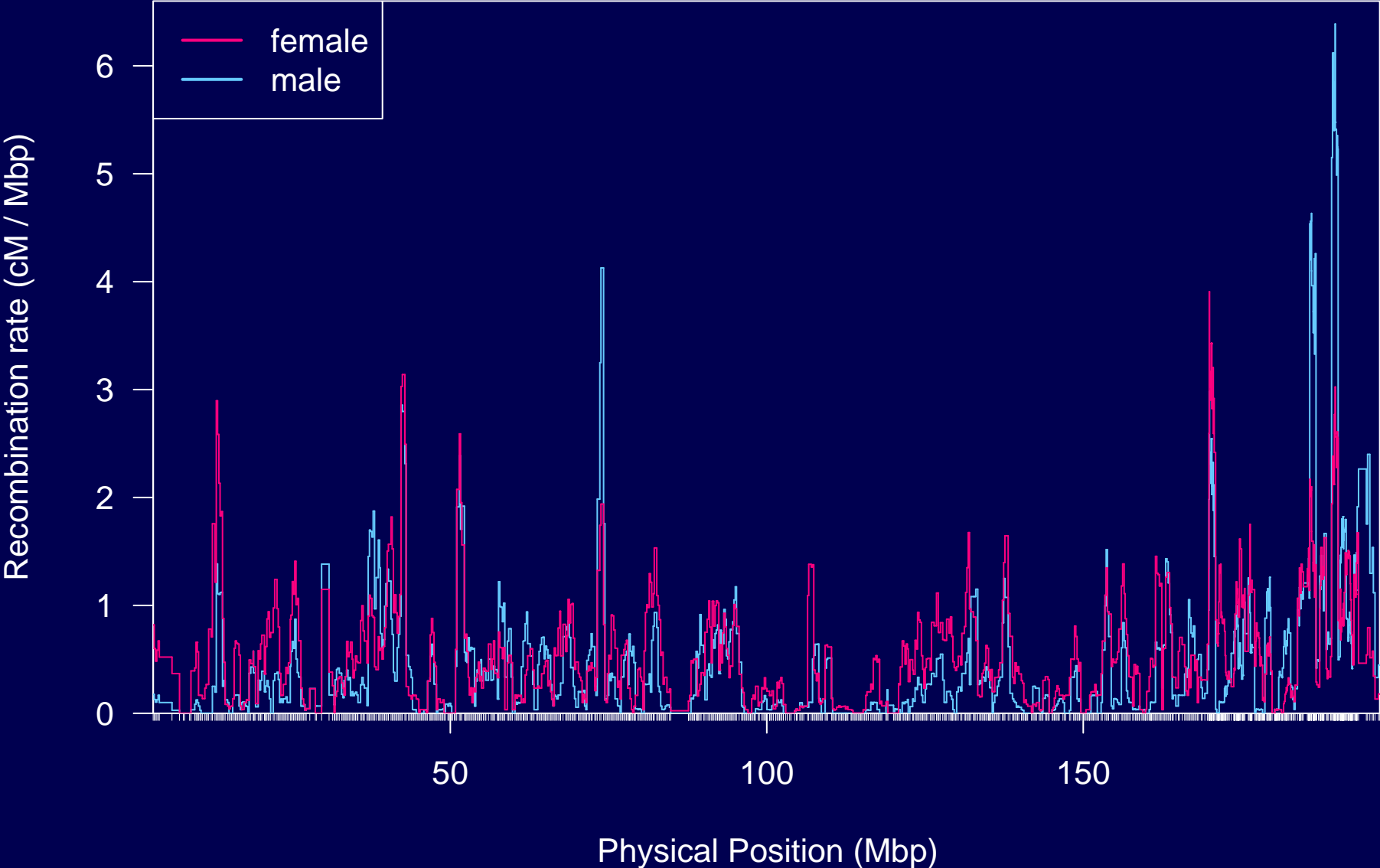
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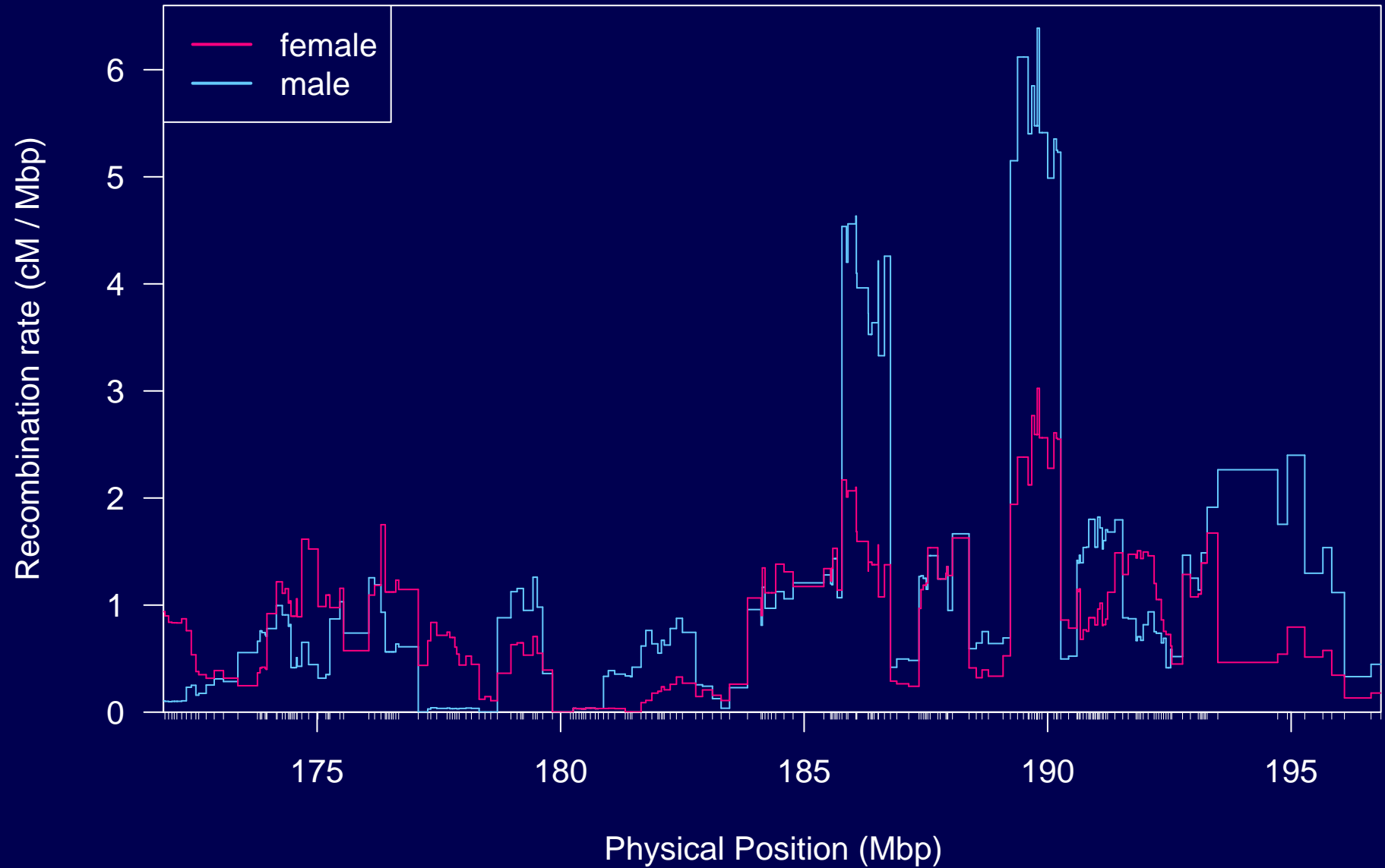
	No. chiasmata					Ave.
	0	1	2	3	4	
female	0	10	78	10	1%	2.02
male	0	33	65	1	0%	1.69

(Assuming no chromatid interference.)

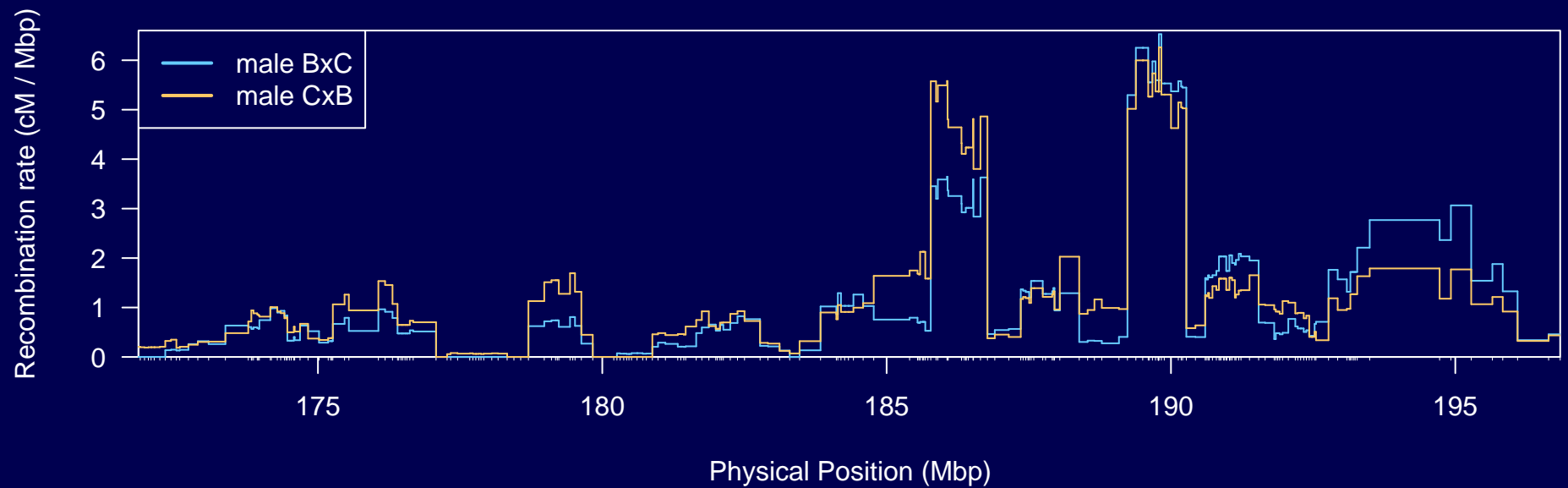
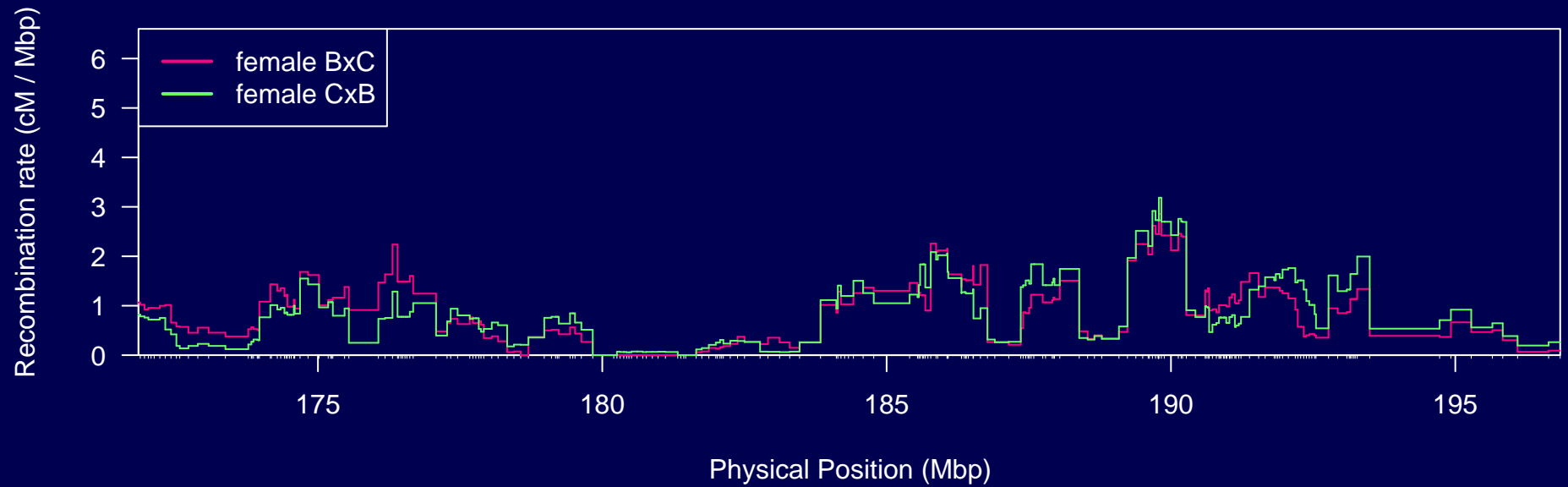
Recombination rate



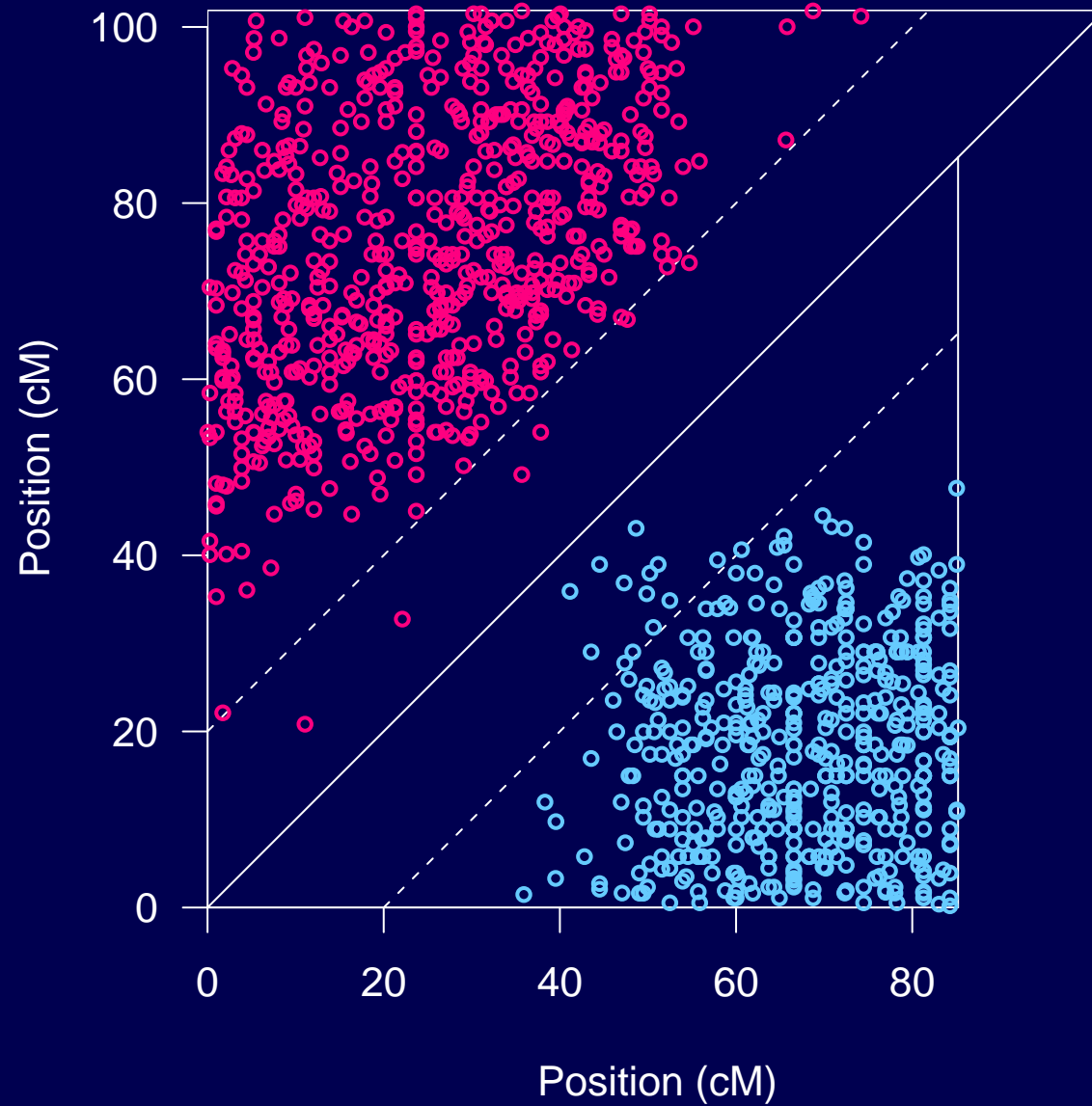
Distal 25 Mbp



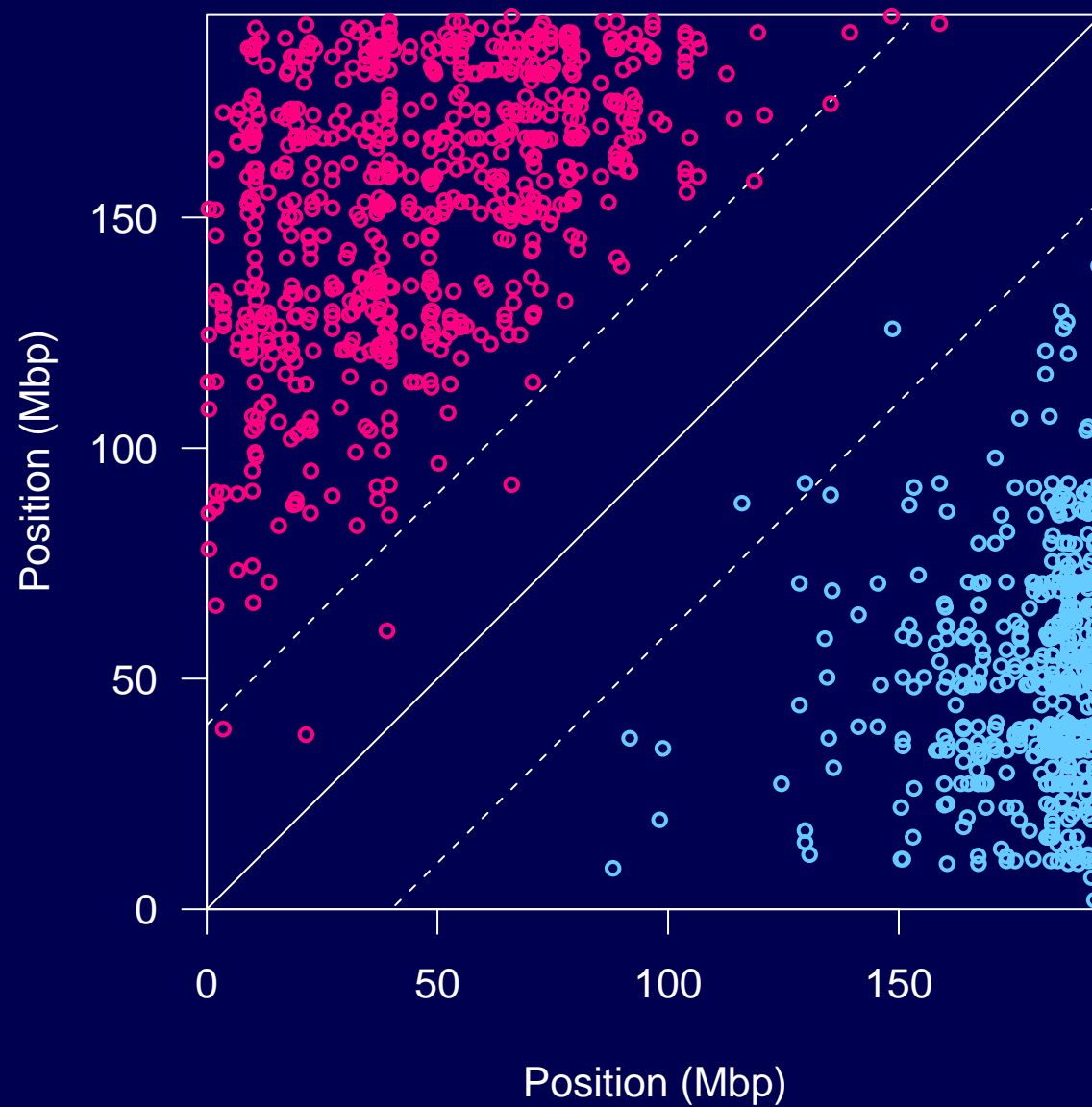
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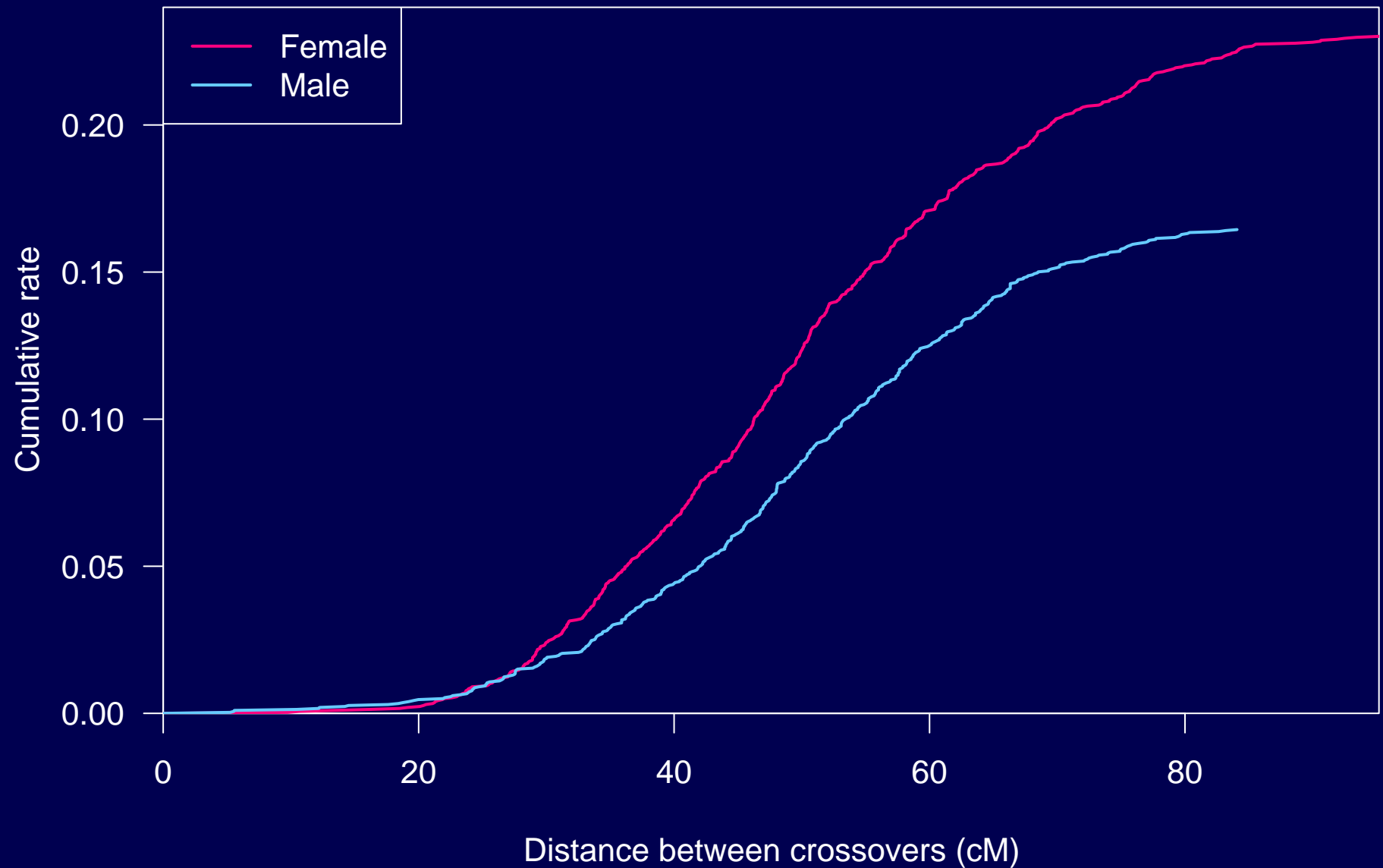
Double-XO locations



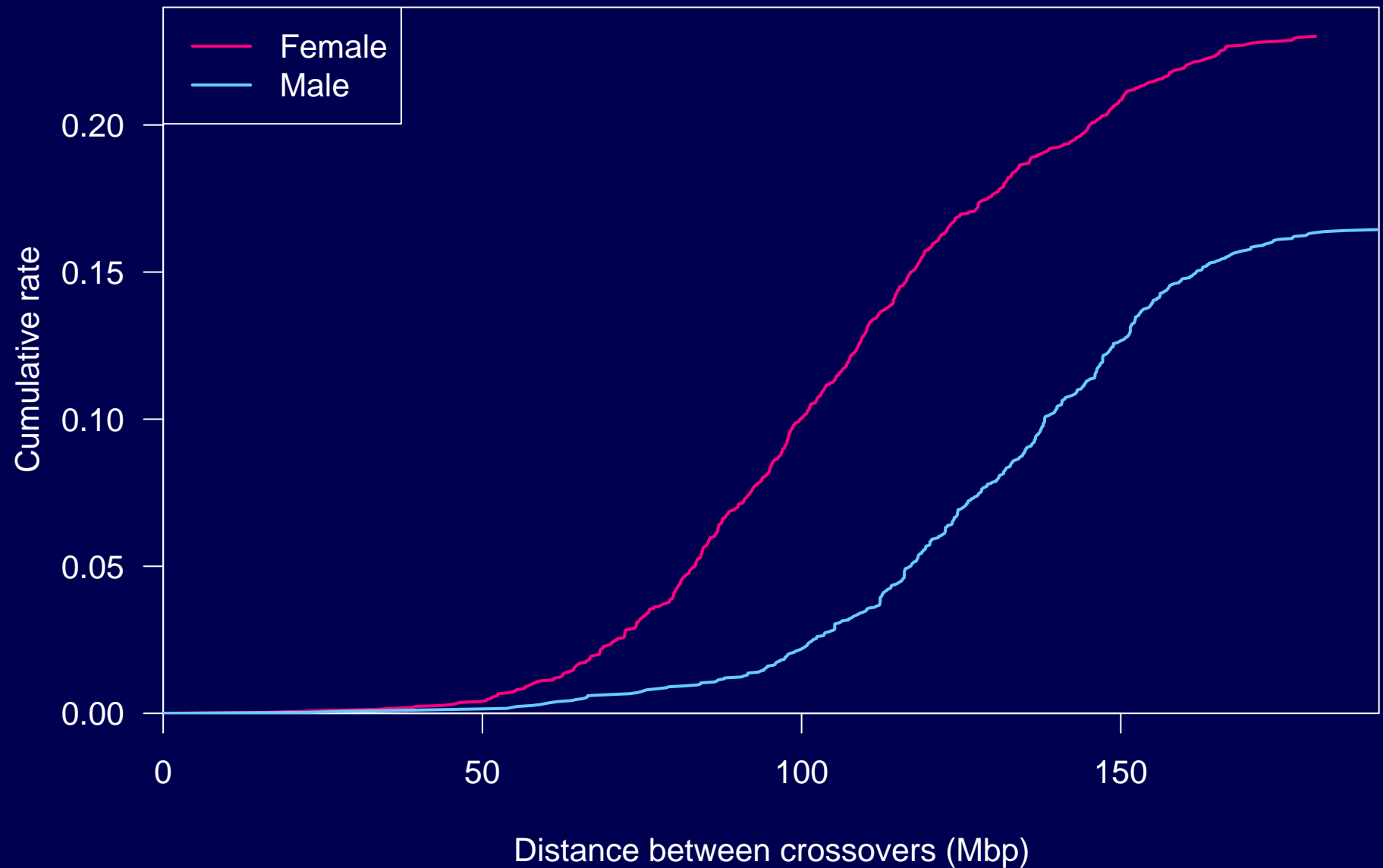
Double-XO locations



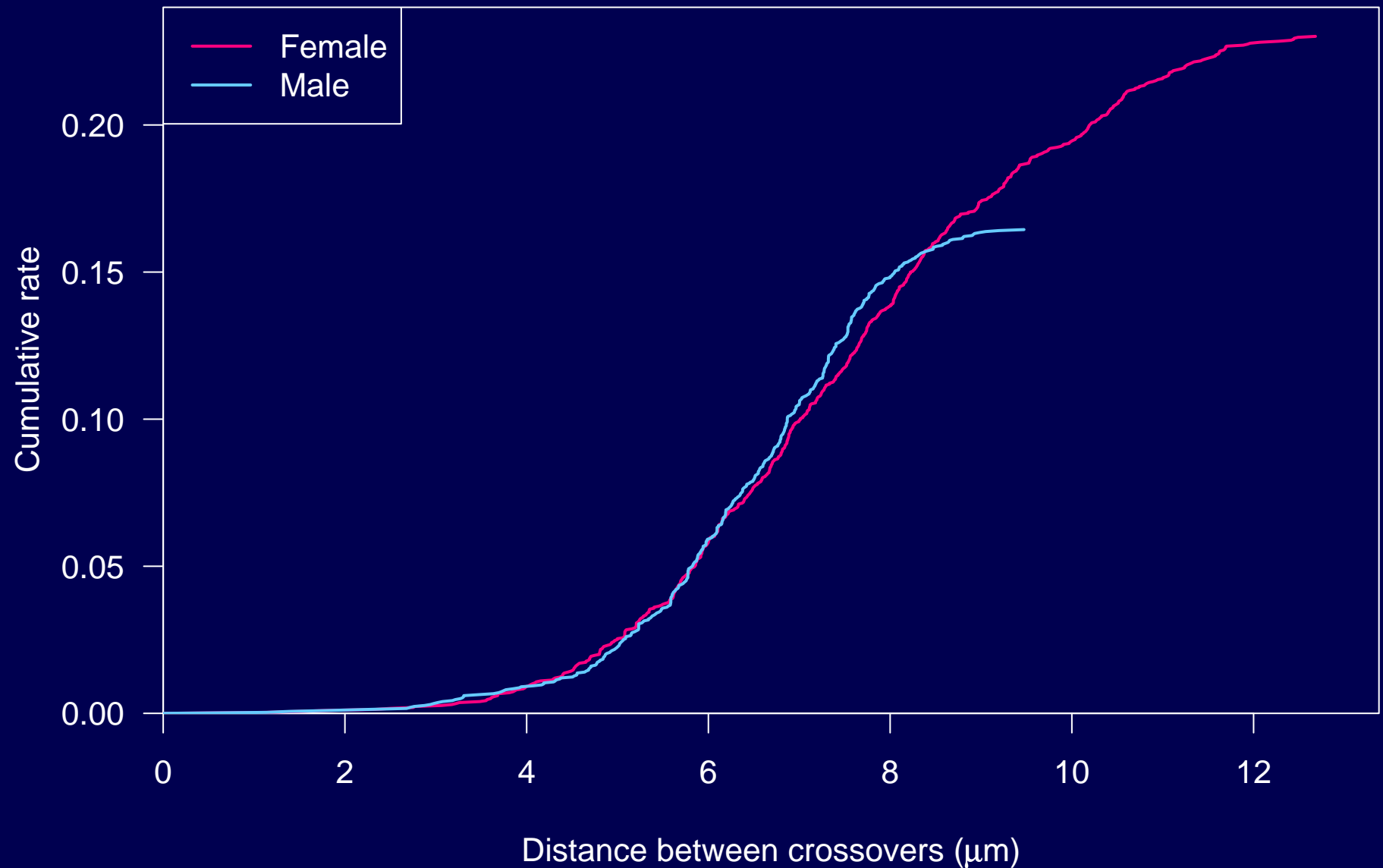
Distance between XOs



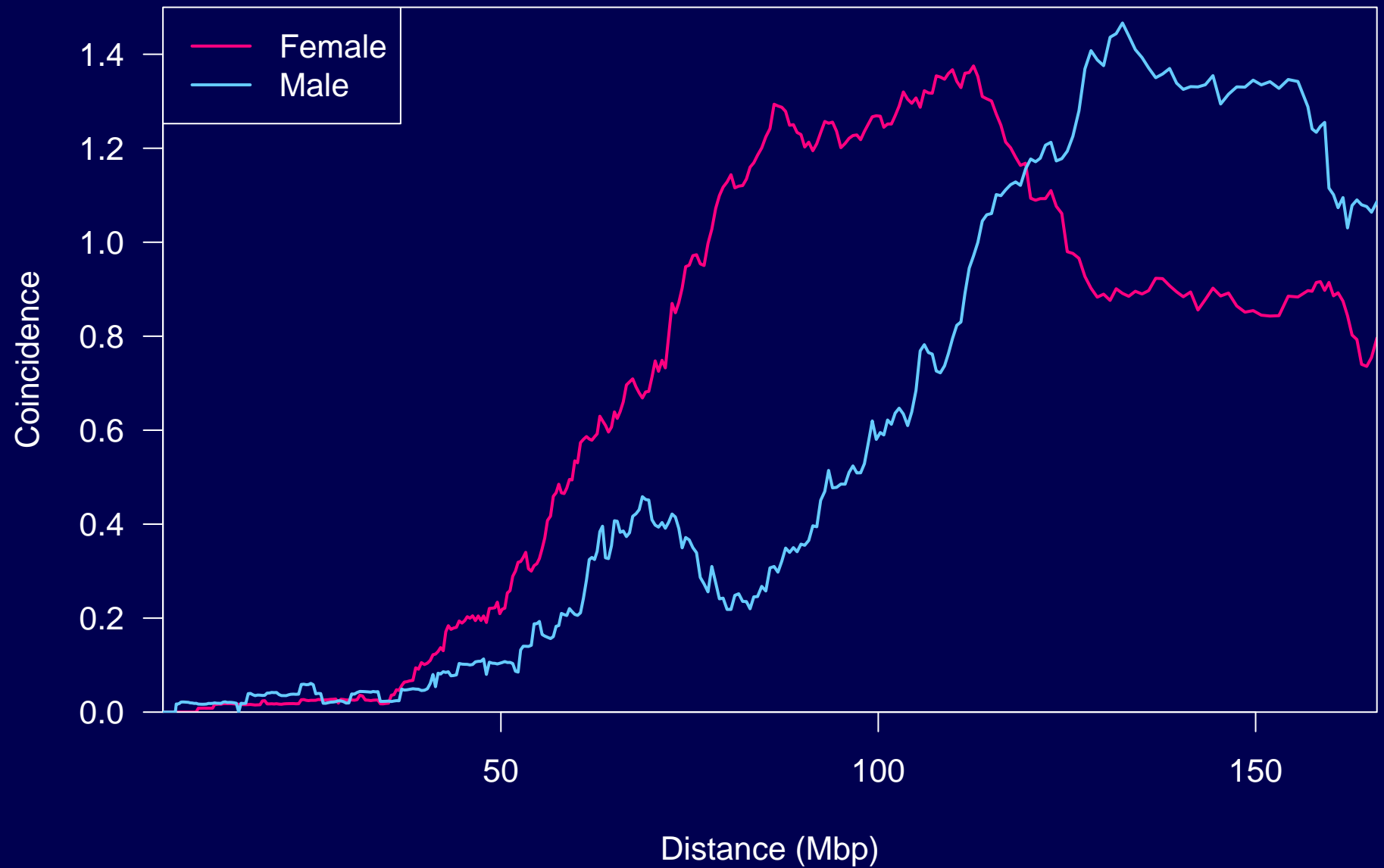
Distance between XOs



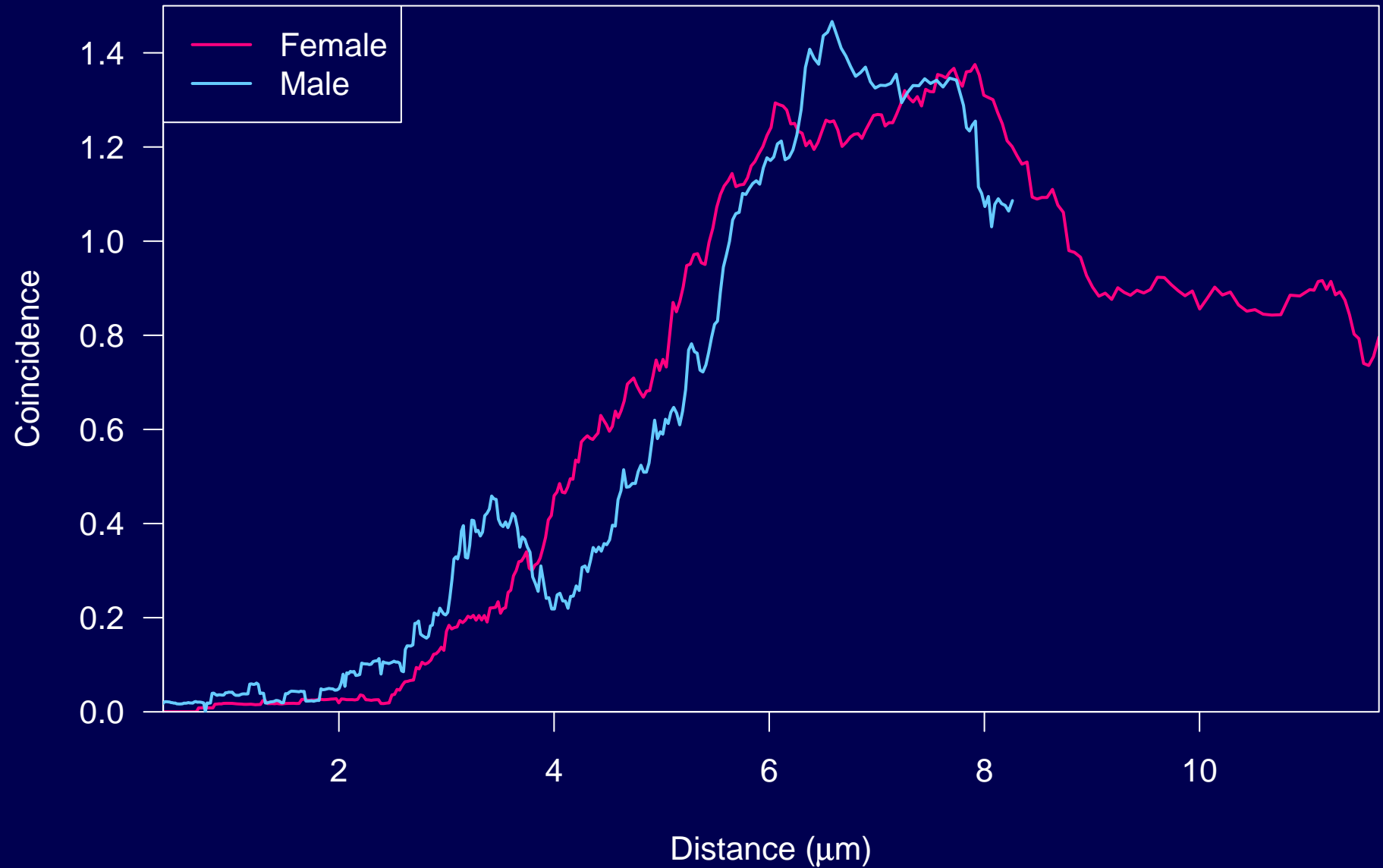
Distance between XOs



Coincidence



Coincidence



Summary

- Clear sex differences in overall recombination rate
- Differences in compaction + interference
—→ difference in recombination rate?
- Nature of local differences?
- Imprinting effects?
- There are a number of tricky statistical problems

Acknowledgments

Petko Petkov, Ken Paigen, and Jin Szatkiewicz

The Jackson Laboratory