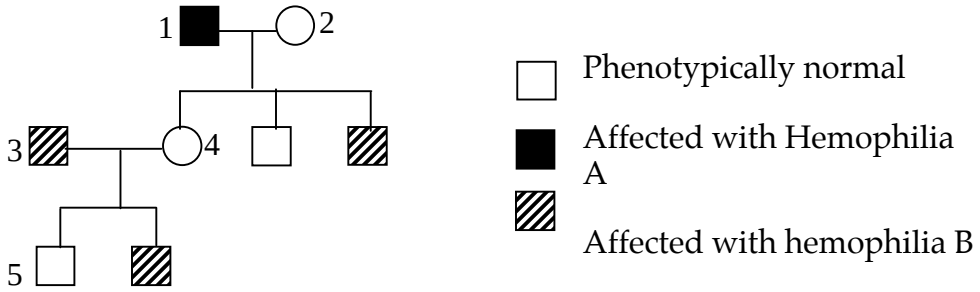
The key: 7.013 Recitation 5 – Spring 2018

1. Consider the pedigree below showing the inheritance of two X-linked diseases, hemophilia A and hemophilia B. Hemophilia A is due to a lack of one clotting factor, and hemophilia B is due to a lack of a different clotting factor. Each clotting factor is a protein that is encoded by a specific gene located on the X chromosome. **Note that no individual shown in this pedigree is affected with both hemophilia A and hemophilia B.**



Write the genotypes for individuals 1-4 at both the hemophilia A and hemophilia B disease loci. How do you account for individual 5 not being affected with either hemophilia A or hemophilia B?

Individual	Genotype
1	$X^{aB}Y$
2	$X^{AB}\ X^{Ab}$
3	$X^{Ab}Y$
4	$X^{aB}\ X^{Ab}$
5	$X^{AB}Y$

Individual 5 originated due to a crossing over event during meiosis –I between hemophilia A and hemophilia B genes on the X chromosomes of Individual #4.

7.013 Introductory Biology

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