

# Overview: Genomics and Disease

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- B.Sc. in Biotechnology (Honors) - UC Davis (2008)
- M.Sc. in Genetics - UC Davis (2010)
- Ph.D. in Bioinformatics and Molecular Evolution - Dublin City University (2015)
- Postdoctoral Fellow - Temple University (*to present*)

# My Interests

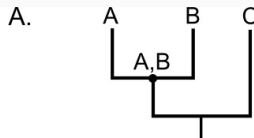
What makes us different?



# My Interests

And.. How can we use evolution and genomics to explain these differences?

8314	14352	46045	51950	76335	85327	113183	114368	114793	135976	140763	159579	162142	164119	164782
A	T	G	G	G	G	G	A	C	C	A	A	A	T	
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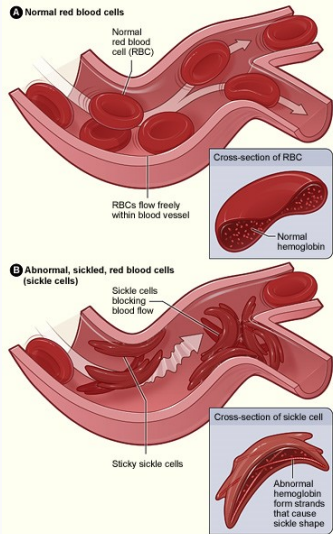
B.

		Branches			
		A	B	C	A,B
Genomic Region	Locus 1	0.05	0.04	0.08	0.02
	Locus 2	0.1	0.09	0.2	0.05
	Locus 3	0.07	0.05	0.04	0.008
	Locus 4	0.2	0.04	0.1	0.04

# What I'll be discussing: Genetic Disease and Genomics

## Central Questions:

- What is a genetic disease?
- What is the cause of genetic disease?
- What are the challenges posed by genetic disease?



# What I'll be discussing: Genetic Disease and Genomics

How do we connect students to these concepts

Available resources:

- Genetic diseases
- Classroom activities



# What I'll be discussing: Genetic Disease and Genomics

**Activity example:** Genome-wide association study (GWAS)

- How do we locate the gene(s) that may be associated with a genetic disease?

**Bioinformatics example:** Searching a database for the gene we identified

**Scripting example:** How our GWAS activity would be done by a bioinformatician

- Advantages of this approach

# What I'll be discussing: Genetic Disease and Genomics

## Perspective:

- How might the study of genetic diseases change in the near-future?