Questions to prepare the oral exam

~~Genetic epidemiology~~

- ~~What is genetic epidemiology and what are the similarities / dissimilarities with epidemiology?~~
- ~~What are the different faces of genetic epidemiology? What are the associated key questions and main stream type of analysis techniques used to answer these questions?~~
- ~~Can you give some examples of appropriate designs for each of these faces? Motivate~~
- ~~How is heritability defined (broad sense / narrow sense)?~~

Population genetics

- What is Hardy-Weinberg equilibrium and which factors may generate deviations from Hardy-Weinberg equilibrium?
- What does selection mean? Can it come in different flavors?
- How can the extent of population substructure be quantified? Why is it studied in the context of genetic epidemiology?
- What is linkage disequilibrium and how can it be measured? Why is this concept important in the context of genetic epidemiology?

Genetic association studies with unrelated individuals

- What are typical quality control procedures for these types of studies?
- What is population stratification and how can it be dealt with in case-control genetic association studies?
- How does "coding" a SNP related to "mode of inheritance"? For case-control settings, which type of test can you use to associate SNPs to a trait of interest?
- What is the multiple testing burden? Does it only relate to genetic association tests or also to HWE tests? What are conventional stringent thresholds to compare p-values with?

~~Gene-gene interaction studies~~

- ~~What does epistasis mean? Do different definitions exist depending on the "context"?~~
- ~~What is the difference between biological and genetic epistasis?~~