**Task 1. Search, find and finish an online R course.**

For example:

Audit [DataScienceSpecialization](https://www.coursera.org/specializations/jhu-data-science). Finish following courses:

1. [DataScientistToolbox](https://www.coursera.org/learn/data-scientists-tools?specialization=jhu-data-science)
2. [Rprogramming](https://www.coursera.org/learn/r-programming?specialization=jhu-data-science)
3. [GettingAndCleaningData](https://www.coursera.org/learn/data-cleaning?specialization=jhu-data-science)
4. [ExploratoryDataAnalysis](https://www.coursera.org/learn/exploratory-data-analysis?specialization=jhu-data-science)
5. [DevelopingDataProducts](https://www.coursera.org/learn/data-products) (later stage)

Did finish this course or you went for another one? Which one?

**Task 2. Audit genetic course:** [**UsefulGenetics**](https://www.youtube.com/user/UsefulGenetics)

**Task 6. Write one-two paragraphs for each of the following terms:**

In general, one should be able to explain his grandmother the following terms but keep scientific accuracy

* **GWAS studies & GWAS Catalog -** what is it? What info can be found in it? What results does GWAS Catalog report? Who is entering those results? Can you give an example of one GWAS Catalog entry and explain each category?
* **Genotyping & exome and full genome sequencing**

What are SNP chips? Can you briefly explain each technology? Can you mention some discovery that was identified based on the results of genotyping procedure, exome and full genome sequencing

* **Human Genome Project and versions of the human genome (hg19, hg38, GRCh37etc)**

1. What was the first genome sequenced?

2. Which genomes were sequenced before the human genome?

3.How many eukaryotic and prokaryotic species do we have sequenced today?

4. What is the ratio of price per nucleotide of sequencing in 2001 vs 2019?

5. How many times did the sequencing throughput increase from 2001 to 2011?

6. Search for and write a short story on how “the” human genome was sequenced in 2001?

7. Is the human genome one genome or collection? Elaborate. What is genome assembly?

* **Which companies provide bioinformatics analysis of your genome - can you compare them**

For example, check: [selfdecode](https://www.selfdecode.com/#!#analyze-my-genes)

* **Direct-to-consumer companies -**

What are they? Which exist? Compare them in one table: price, N of autosomal, chrY and mtDNA markers, data policy, data analysis, etc.

* **Risk scores**

What is a risk score? How is it calculated? What are polygenic risk scores?

* **What is genetic susceptibility? What is heritability? Can you mentioned differences in heritability for some traits? Genomic heritability? Controversions?**
* **Bioinformatics databases: Ensembl, Entrez**

What are bioinformatic databases? What info can you extract? Did you find some interesting links for talks or presentations or articles about this question? Share links.

* **“Open genome” databases”**

Such as: <https://opensnp.org/>. What is it? What are the alternatives? Controversions?

* **Where to search for knowledge: literature databases: PubMed, Google Scholar, alternatives: sci-hub**

[write a short post about how to search for genetic susceptibility to certain diseases/traits]

1. Google it
2. Google scholar it.
3. ….

* **What is an impact factor of a journal? Which are the “best” journals in the fields of biomedicine, biology, genomics and genetics?**
* **What is linkage disequilibrium? What are the differences in the population due to linkage disequilibrium? Why linkage disequilibrium is important for GWAS and what are the limitations of it?**
* **What is HapMap project? What is 1000 genomes project? What is gene imputation? Can people who have their genomes genotyped impute their data? [hint: yes, where and how?]**

**To write:**

Practical exercises**:**

Summary of literature to read:

**Task 3. Finish blog post:**

1. **enter details about blog post** [**here**](https://docs.google.com/spreadsheets/d/1curzYGa7as_8JyAjCrdRjfHtdCul8L5nPHOFZXd-_8w/edit?usp=sharing)
2. **Guidelines for blog post** [**here**](https://docs.google.com/document/d/13NH1l6D2YCno1_xtxG08wwZjdhwpCUvyL5SdaxJsg6U/edit?usp=sharing)

**Task 4. Recommendation letter for Julia and me**

**Task 5. Motivation letter for myDNA project**

**1 author, 2 reviewers**