

## **Exploiting public data - Bas Heijmans, 5 November 2019**

In this practical you will explore the use of public data in the paper entitled 'Age-related accrual of methylomic variability is linked to fundamental ageing mechanisms' by Roderick Slieker et al (Genome Biol 2016). Public data is used in all phases: discovery, validation and interpretation.

The open access (!) paper can be found here: <https://bit.ly/2CKqwZV>

You can upload your answers to the Blackboard as Turnitin assignment.

### **1. Discovery.**

Figure 1c and 1d display results from the discovery phase.

- a. What data type on how many samples was used to find age-related variably methylated positions (aVMPs)?
- b. Can other researchers re-use the data? Provide information on the name of the repository, accession number of the data and possibility to download the data.

### **2. Validation.**

Figures 2a and 2b show the results of the validation step.

- a. Describe the 2 data-sets that were used for validation (type of data, biological source and number of samples) and give references.
- b. Look-up the accession number and repository (e.g. in the methods). Can data be downloaded? Is it raw data or normalized (processed) data?
- c. What is the conclusion from Figure 2a and 2b?

### **3. Interpretation 1: understand type of genomic regions accruing aVMPs.**

Figures 3a uses external data to interpret findings, in particular the possible biological function of the genomic regions that accumulate aVMPs.

- a. Data from which reference project was used?
- b. Find out where data can be downloaded.
- c. What is the conclusion from Figure 3a?

### **4. Interpretation 2: potential relevance for disease.**

Figure 4f again displays a comparison with public data.

- a. What is the source of public data? Go to the website of the source and describe the available data.
- b. What is the conclusion from Figure 4f?

### **5. Interpretation 3: biological pathways.**

Figures 5a and b link genes whose expression is associated with aVMPs to biological pathways implicated in the ageing process.

- a. Which database was used?
- b. Are there alternatives?