

Case study 1

- You have identified a new probiotics strain that harbors a gene encoding for a key enzyme that could provide beneficial effects on digestion. You plan to study if the probiotic could indeed be beneficial in order to propose it as a treatment for this digestive disorder.
- How can you evaluate if the bacterial strain could be an efficient probiotic? How can you evaluate if this strain is safe ? What analytical strategy and study design can you propose to address these questions?

Case study 2

- You would like to characterize as completely as possible the genome, transcriptome and proteome of a new model organism (mammalian) which has tremendous advantages for the study of metabolic disorders.
- How would you proceed steps by steps?
- Which approach could you envisage to create a population of this organism with genetic diversity to identify genes involved in metabolic disorders?

Case study 3

- You are collaborating with your colleagues from Case Study 2! You are highly interested to benefit from their new model organism to evaluate how it could help you in assessing a library of 100 natural compounds for muscle fitness.
- What type of experiment could you propose to identify active compounds, and to identify the mechanism of action of the compound?

Case study 4

- Proteomics is more challenging than genomics, for which reasons?
- In particular what are the challenges of proteomics in analyzing complex protein mixtures?
- Could you give an example of how you would discover/develop a proteomics-based biomarker?

Case study 5

- How would you evaluate the potential of a library of short peptides on cell ageing?
- Once you identified candidates, how would you test them on animal models ?