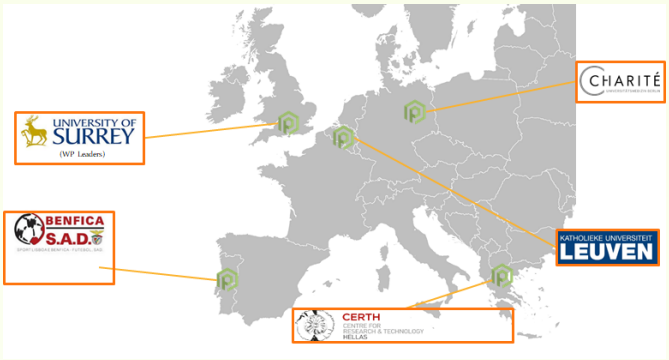
PROTEIN

PERSONALISED NUTRITION FOR HEALTHY LIVING

WP3 Experts knowledge models

Protein is...

- System 'rules' (nutrition & physiological)
- Ontology
- User profile
- 'State of the art' genetics & microbiome



Task 3.1: Modelling of expert's knowledge

Development of evidence-based, **expert approved conceptual 'rules'** to produce a database of user-group specific nutrition/ physical activity recommendations, presented below.

Diet

Total Energy Intake (kcal)
Carbohydrate (% EI)
Protein (g/kg/BW)
Fat (% EI)
Saturated Fat (g)
N-3 Fatty Acid (g)
Sugar (% EI)
Salt (g)
Fibre (g)
Vegetables (portion)
Fruit (portion)
Iron (mg)
Calcium (mg)
Vitamin D(µg)
Vitamin C (mg)
Alcohol (g/wk)

Anthropometrics

BMI (kg/m2)
Waist Circumference (cm)
Hip Circumference (cm)
Waist: Hip Ratio

Physiological

Blood glucose *(mmol/L)*
LDL-C *(mmol/L)*
HDL-C *(mmol/L)*
TAG *(mmol/L)*
Resting heart rate *(bpm)*
Sleep *(hr/ night)*

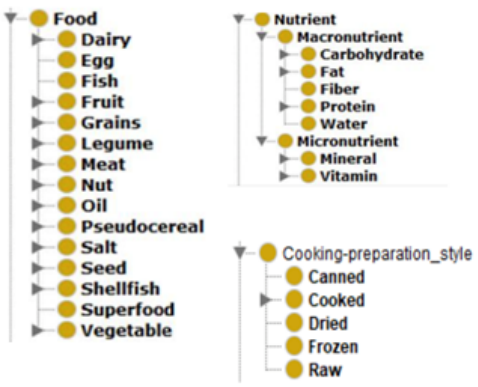
Physical activity

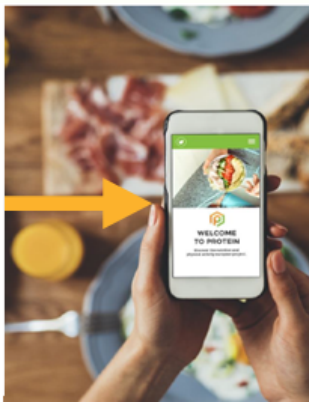
Frequency (d/week)
Duration (min)
Intensity (light/ moderate/ vigorous)

Notes:
BW: body weight; EI: energy intake; n-3: omega-3; wk: week; BMI: body mass index; LDL-C: low-density lipoprotein cholesterol;
HDL-C: high-density lipoprotein cholesterol; TAG: triacylglycerol; bpm: beats per minute.

Task 3.2: Knowledge based engineering

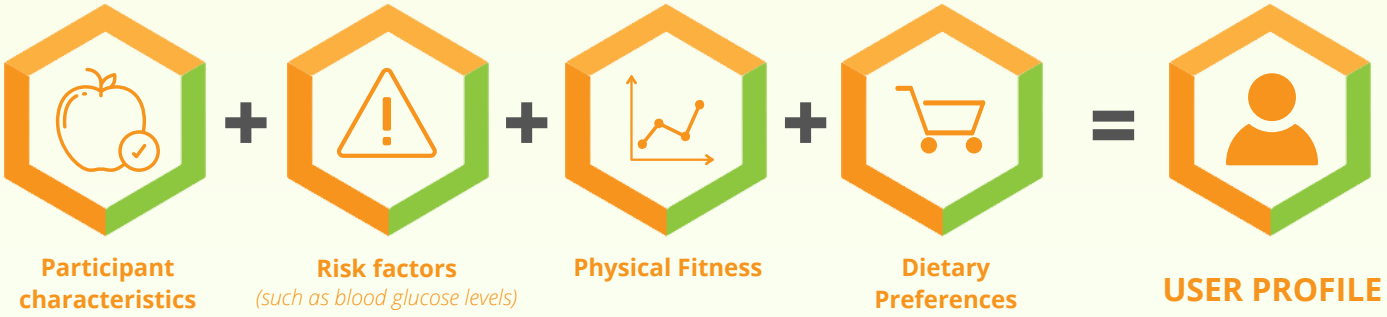
This focuses on transcoding the knowledge developed in Task 3.1 into a **machine-understandable formalization** as a nutrition & physical activity **ontology**.





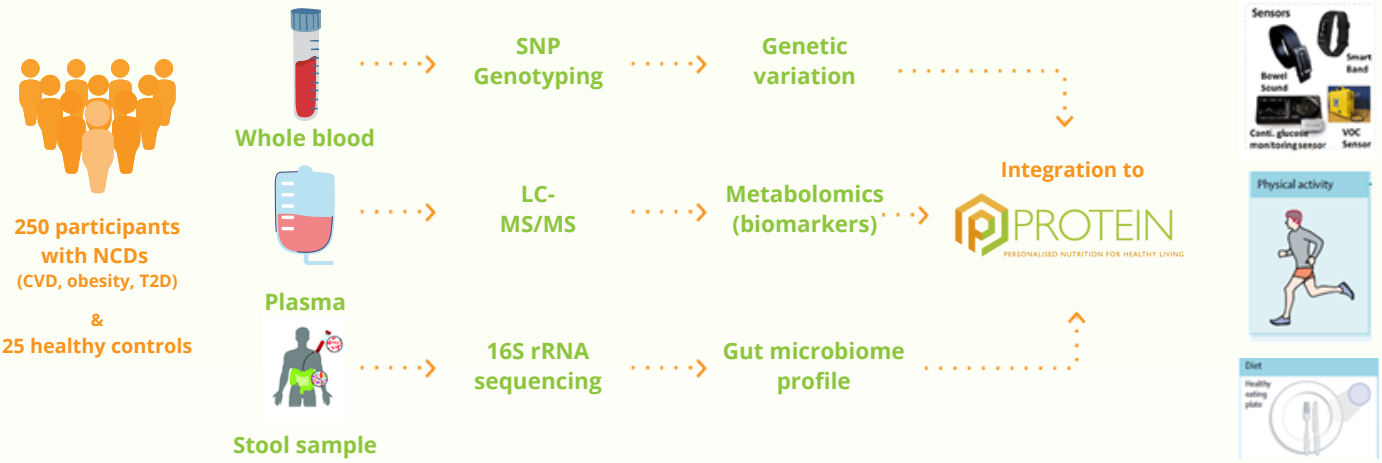
Task 3.3: User profile modelling

User profiles of all user groups for integration into the PROTEIN mobile application will be generated by experts based on:



Task 3.4: Genetic information (DNA) analysis

Task 3.5: Gut microbiome profiling



These tasks aim to investigate the potential for genetic, **blood-based biomarkers** and **gut microbiome data** to create individual nutritional recommendations, through the recruitment of a diverse sample of representative EU adults.