

Microbiome AND PHARMACOTHERAPY IN PATIENTS WITH GASTROINTESTINAL DISORDERS

Natálie Mlčúchová, Petra Bořilová Linhartová
RECETOX, Faculty of Science, Masaryk University, Kotlarska 2, Brno

BACKGROUND

Gastrointestinal diseases (GDs), including gastrointestinal malignities, represent a heterogeneous range of disorders with different etiologies, and overlapping, nonspecific symptomology. A complex network comprising the host microbiome, metagenome, metatranscriptome, human transcriptome, human epigenome and exome considerably impacts the etiopathogenesis of GDs.

AIMS

- **description of the microbiome** in the oral cavity, esophagus, stomach, duodenum and stool
- determination of **diagnostic markers** at the level of:
 - the host microbiome
 - host genes
- **individualisation of pharmacotherapy**

EXPERIMENTAL DESIGN

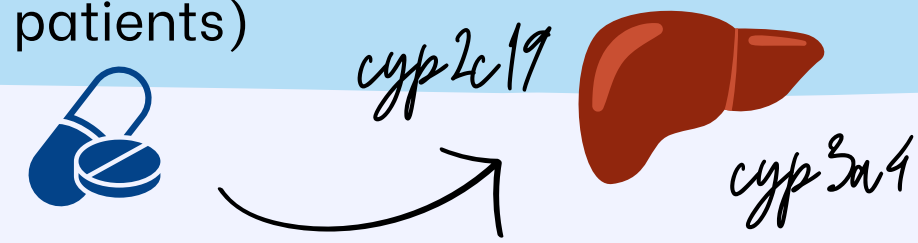
Projects

Gastroesophageal reflux disease (GERD)

- reverse flow of acidic stomach contents back into the esophagus
- might progress to **Barrett's esophagus (BE)** or **esophageal adenocarcinoma (EAC)**
- 1050 samples from 150 patients will be analysed

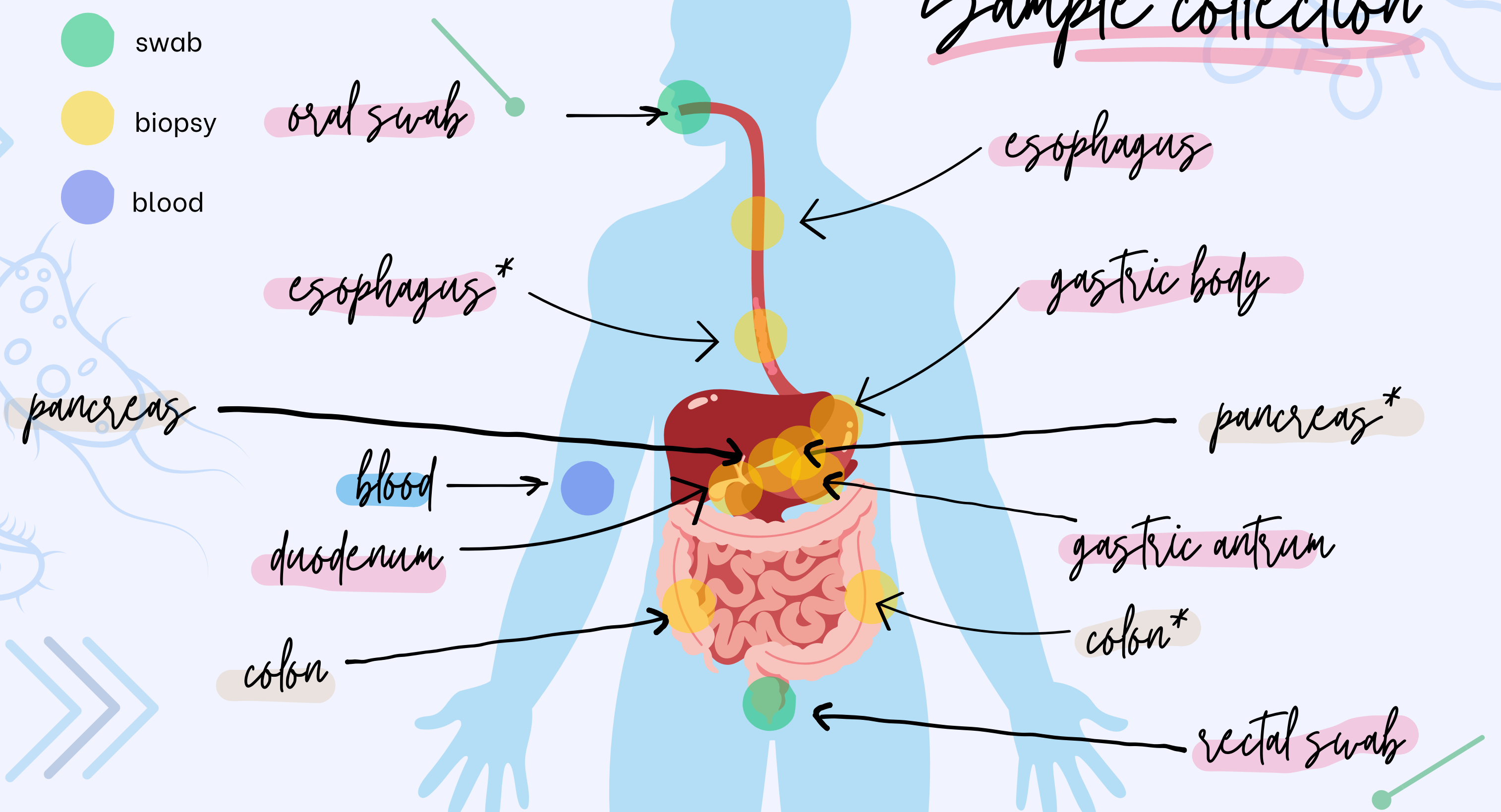
Proton pump inhibitors (PPIs)

- **drugs** commonly administrated to patients with GERD and to those at risk of developing stress ulcers (e.g. cancer or burns patients)



Discovering the causes of three poorly understood cancers in Europe (DISCERN)

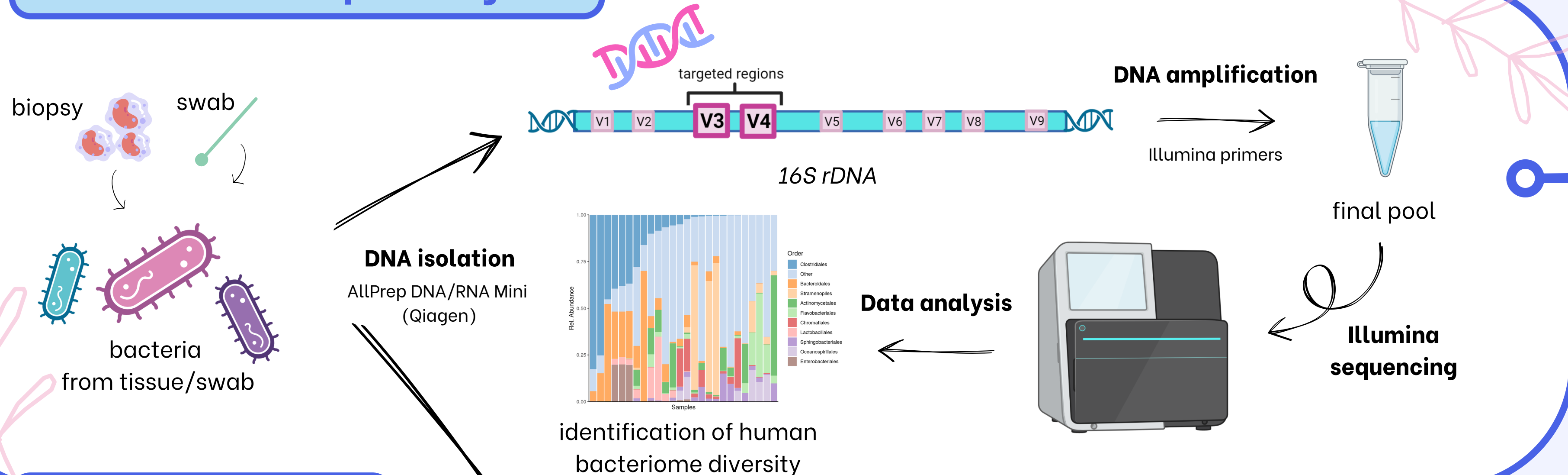
- focus on the third most common cancer - **colorectal cancer (CRC)**, along with **pancreatic cancer (PANC)**, which has the lowest survival rate



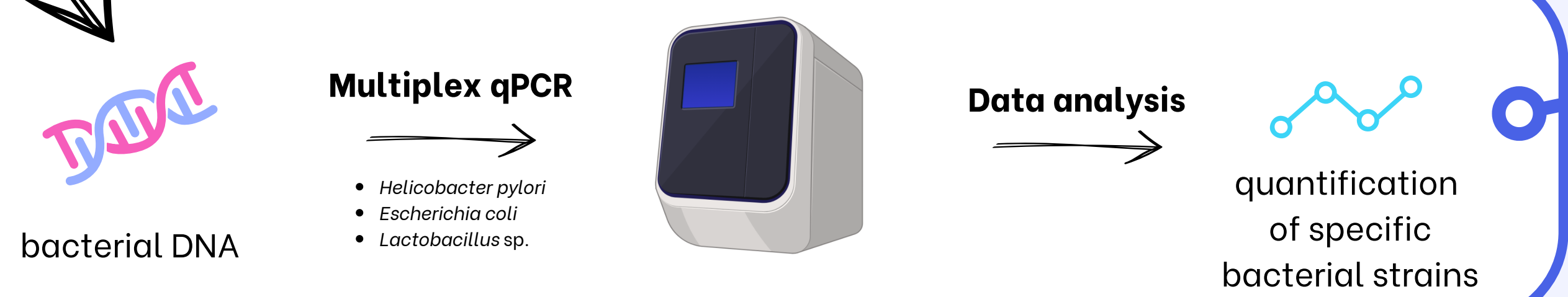
*biopsy from the site with the main pathology (reflux esophagitis (RE), Barrett's esophagus (BE), esophageal adenocarcinoma (EAC), colorectal cancer (CRC), pancreatic cancer (PANC))

SELECTED METHODS

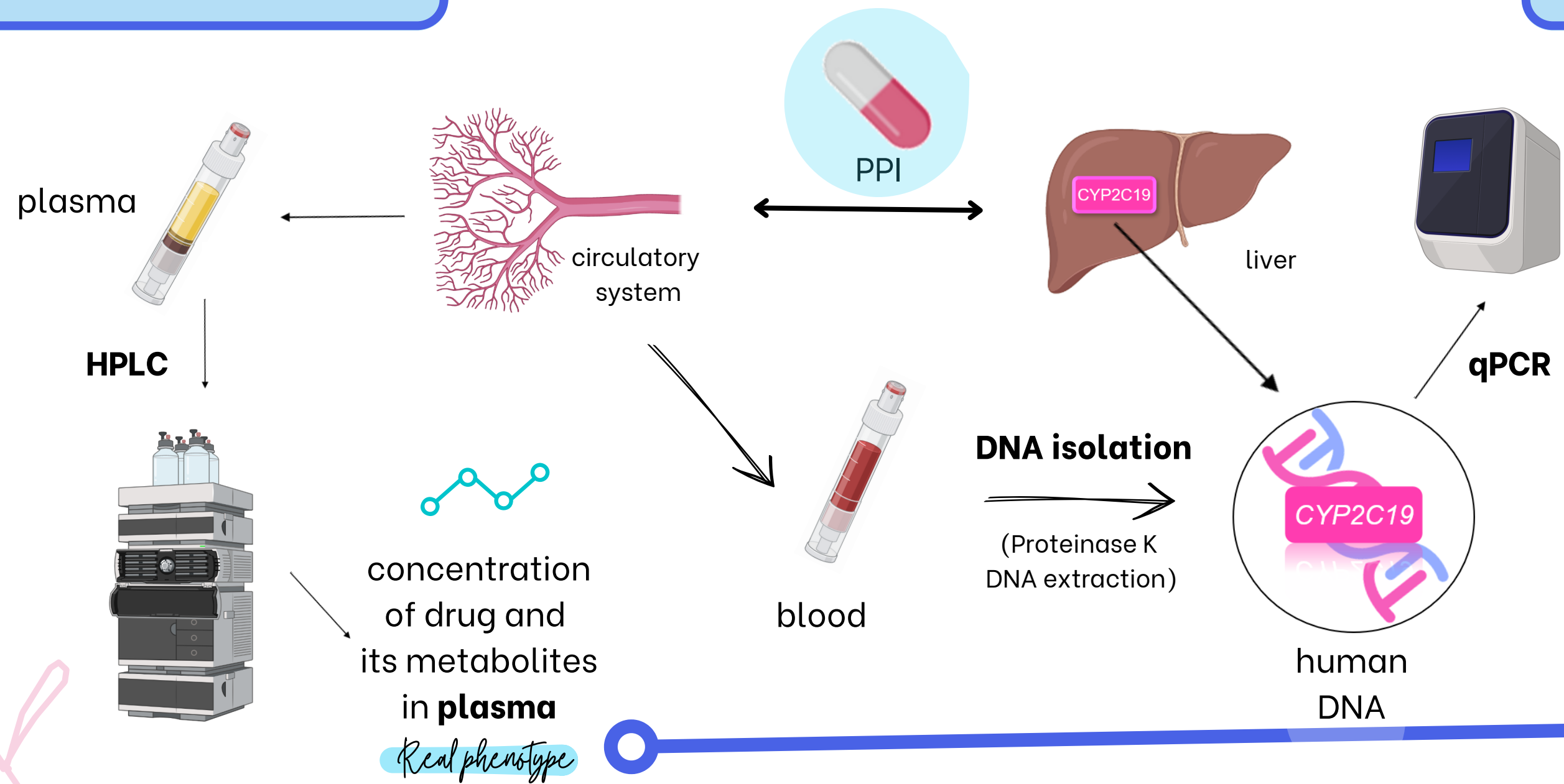
16S rRNA sequencing



Multiplex qPCR



HPLC



qPCR - genotyping

Human transcriptome

Host microbiome

Metatranscriptome

Host microbiome

Human epigenome

Whole exome

Pharmacogenetics

Therapeutic drug monitoring

OUTCOMES

- composition and relative abundance of microbiota in the gastrointestinal tract in patients with RE/BE/EAC
- potential prognostic and predictive tools to distinguish between healthy and pathological conditions and between pathological conditions themselves (BE/EAC)

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