

# Dysregulated processes in NAFLD (BB103X)

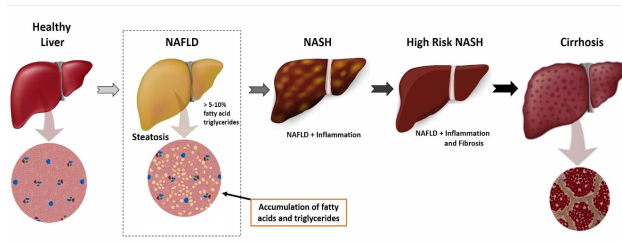
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## Background

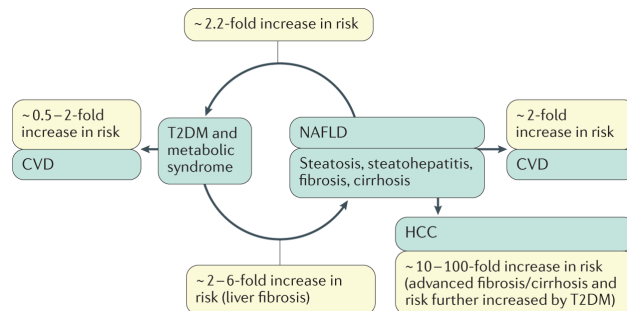
Non-alcoholic fatty liver disease (NAFLD)<sup>12</sup>:

- affects ~25% of the global adult population
- encompasses NAFL (fatty liver) and NASH (steatohepatitis)
- can progress to cirrhosis and hepatocellular carcinoma (HCC)
- is the fastest growing cause of HCC



## Relationships between NAFLD and other disease

- NAFLD is strongly associated with obesity, diabetes, CVD<sup>3</sup>
- Drastically increased in patient groups with these diseases



## Mechanisms of NAFLD development and therapeutic strategies

### Management strategies (lifestyle interventions)

- weight loss
- healthier life style habits (physical exercises, diet etc.)

### Molecular aspects (heterogeneous):

<sup>1</sup>Pharmacological Reports volume 72, pages1-12 (2020)

<sup>2</sup>Nature Reviews Gastroenterology & Hepatology volume 18, pages223-238 (2021)

<sup>3</sup>Nature Reviews Gastroenterology & Hepatology volume 18, pages24-39 (2021)

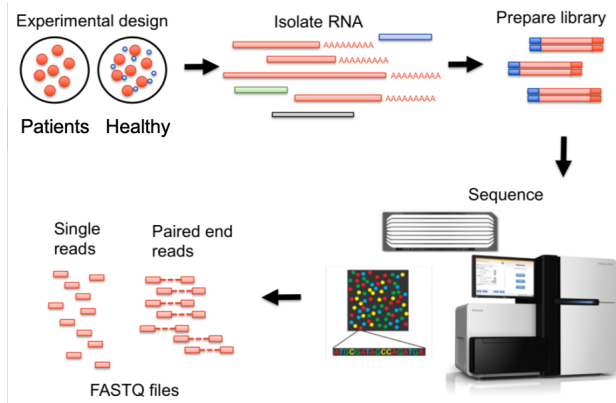
- many molecular pathways that contribute to the development of NAFLD
- pathogenic drivers are not likely to be identical among all patients

**There are still no approved pharmacological therapies for NAFLD!!<sup>4</sup>**

## Aim & Method

- investigate the molecular mechanisms underlying NAFLD progression

## RNA sequencing data<sup>5</sup>



## Basic analysis and advanced analysis

- Raw sequencing reads in fastq format
- Mapped to the genome using alignment software
- Summarise reads over genes to generate a count table
- Determine differentially expressed genes using R
- Exploratory analyses: pathway enrichment and disease association analysis

## Data

- Public datasets shared by other study<sup>6</sup> and metadata can be found from GEO

GSE135251

- fastq files can be found in ENA database based on its projectID

PRJNA558102

## Preparation

Software need to be installed on PC:

- R (<https://ftpmirror1.infania.net/mirror/CRAN/>)
- Rstudio (<https://www.rstudio.com/products/rstudio/>)
- Filezilla (<https://filezilla-project.org/>)
- putty (<https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html>) only if you are using windows

<sup>4</sup>Nature Medicine volume 24, pages908–922 (2018)

<sup>5</sup>Nature Reviews Genetics volume 20, pages631–656 (2019)

<sup>6</sup>Sci Transl Med 2020 Dec 2;12(572)