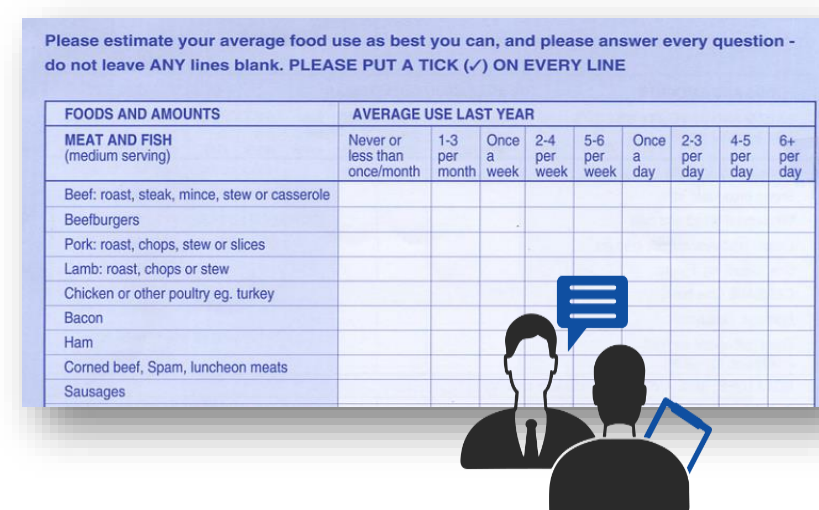


Molecules in blood samples can predict your red meat intake

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Introduction

- Understanding how much meat we eat is important to help us know its impacts on our health.
- Traditionally, we used questionnaires to assess food intake, which isn't always accurate and reliable, and can cause bias in research.
- The food we eat, like meat, leaves molecular clues in our body. By studying these molecules, we can have a clearer picture of what we eat and its implications to our health outcomes.



VS



Aims

1. To develop a novel approach to quantify how much red meat someone eats through blood molecules (metabolites).
2. To evaluate the role of meat consumption in disease development, such as type 2 diabetes (T2D).

Methods

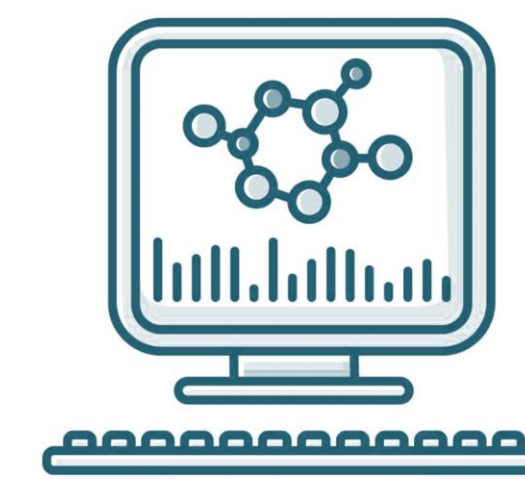
Step 1

Population and measurements

- EPIC-Norfolk study (n=11,432)
- 7-day diet diary
- 781 metabolites measured from blood

Select candidate meat metabolites

- Machine Learning techniques



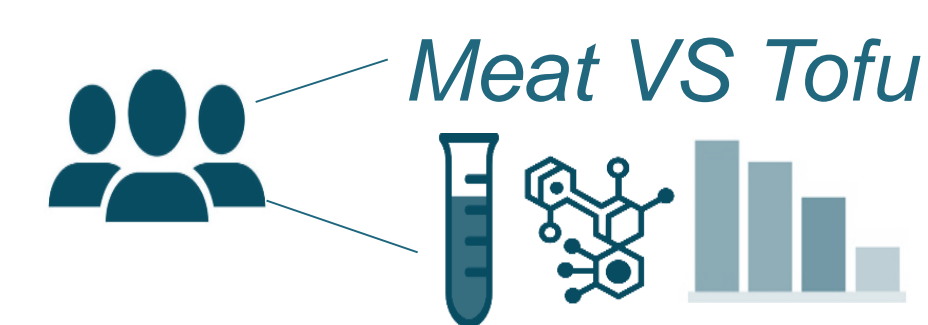
A metabolite score for meat intake

- A single score combining all candidate metabolites that can reflect the quantity of meat intake

Step 2

Test the score in the IARC meat trial

- In collaboration with colleagues in Lyon, France



Step 3

Test the association between the score and incident T2D in the EPIC-Norfolk study

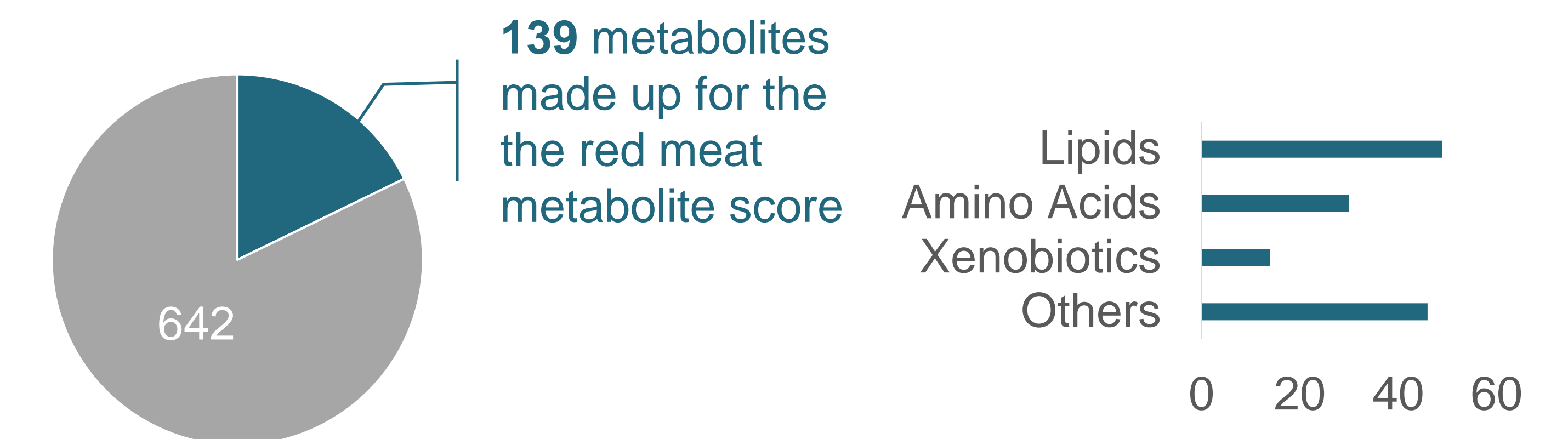
- n=1,478, n cases=659

Discussion

- The developed metabolite score for red meat intake is a valid tool to measure meat consumption.
- It can be applied in research to better understand our diet, to assess relationships of diet with diseases, and to improve public health.

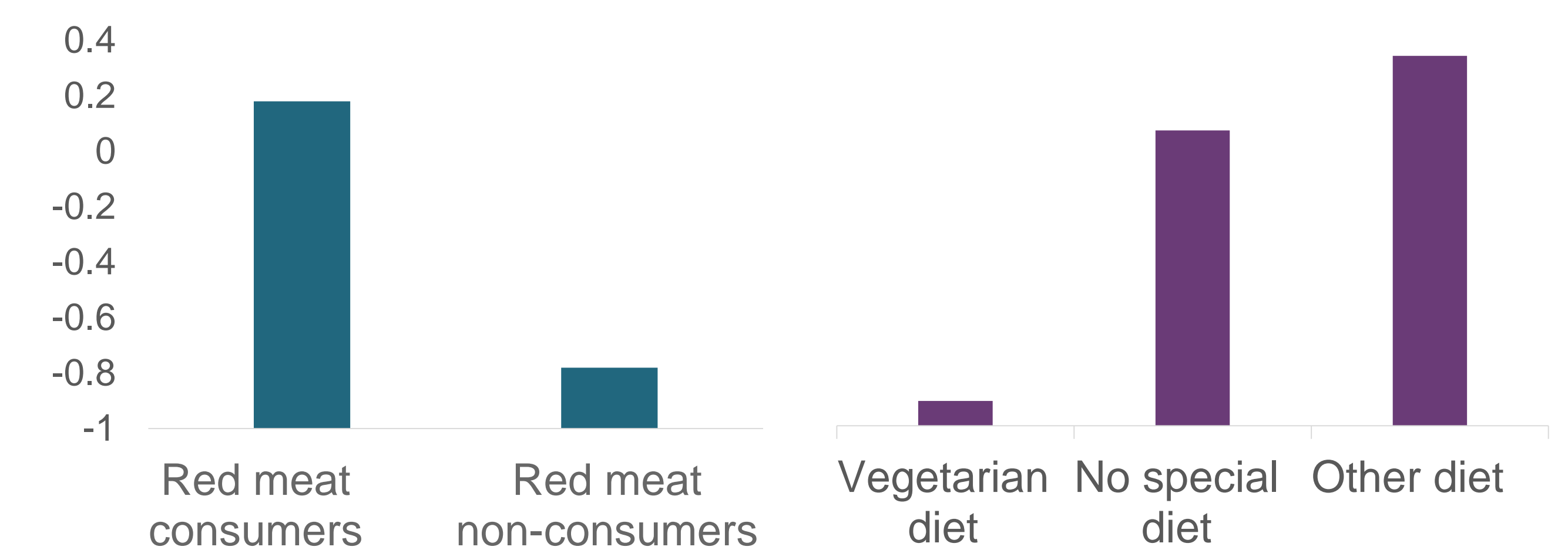
Results

- The composition of the metabolite score for red meat intake



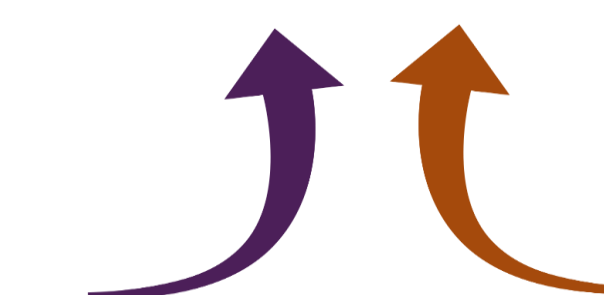
- The score we created can tell apart groups of people based on how much meat they eat. Using this score, we can understand and predict 17% of the variation of people's meat consumption.

Average meat metabolite scores in different groups



- In the trial, 11 top-ranked metabolites in score were validated, suggesting a causal link between red meat intake and change of these metabolites.
- A higher metabolite score for red intake is linked to a greater chance of developing T2D.

1 standard deviation higher of the score



T2D risk increased by 17%