



**Insulin resistance:
Linking dietary modification microbiome to health claims
to tackle Obesity**

Stoffer Loman NutriClaim BV

Targeting the Microbiota, Paris, October 2016



MyNewGut

- EU FP7 program project
- Microbiome Influence on Energy balance and Brain Development-Function Put into Action to Tackle Diet-related Diseases and Behavior
- Collaborative Project (large-scale integrating project - 30 partners - 5 non-EU)

MyNewGut - Objectives

- What is the role of the microbiome in the absorption and metabolism of specific macronutrients and energy expenditure?
- What is the role of the dynamic interplay between the gut microbiome and the composite lifestyle and host factors leading to obesity and metabolic disorders during critical stages of life?
- How is it possible to modulate the influence of the gut microbiome in early stages of development to prevent brain-related and metabolic disorders in later stages of life?

MyNewGut - Objectives

- Is it possible to reduce the risk and consequences of metabolic and brain-related disorders via dietary intervention targeting the gut microbiome?
- **MyNewGut** aims to provide proof-of-concept of the possibility of reducing the risk and consequences of metabolic and brain-related disorders via intervention in the gut ecosystem with specific diets and innovative food ingredients and prototypes.

Objectives

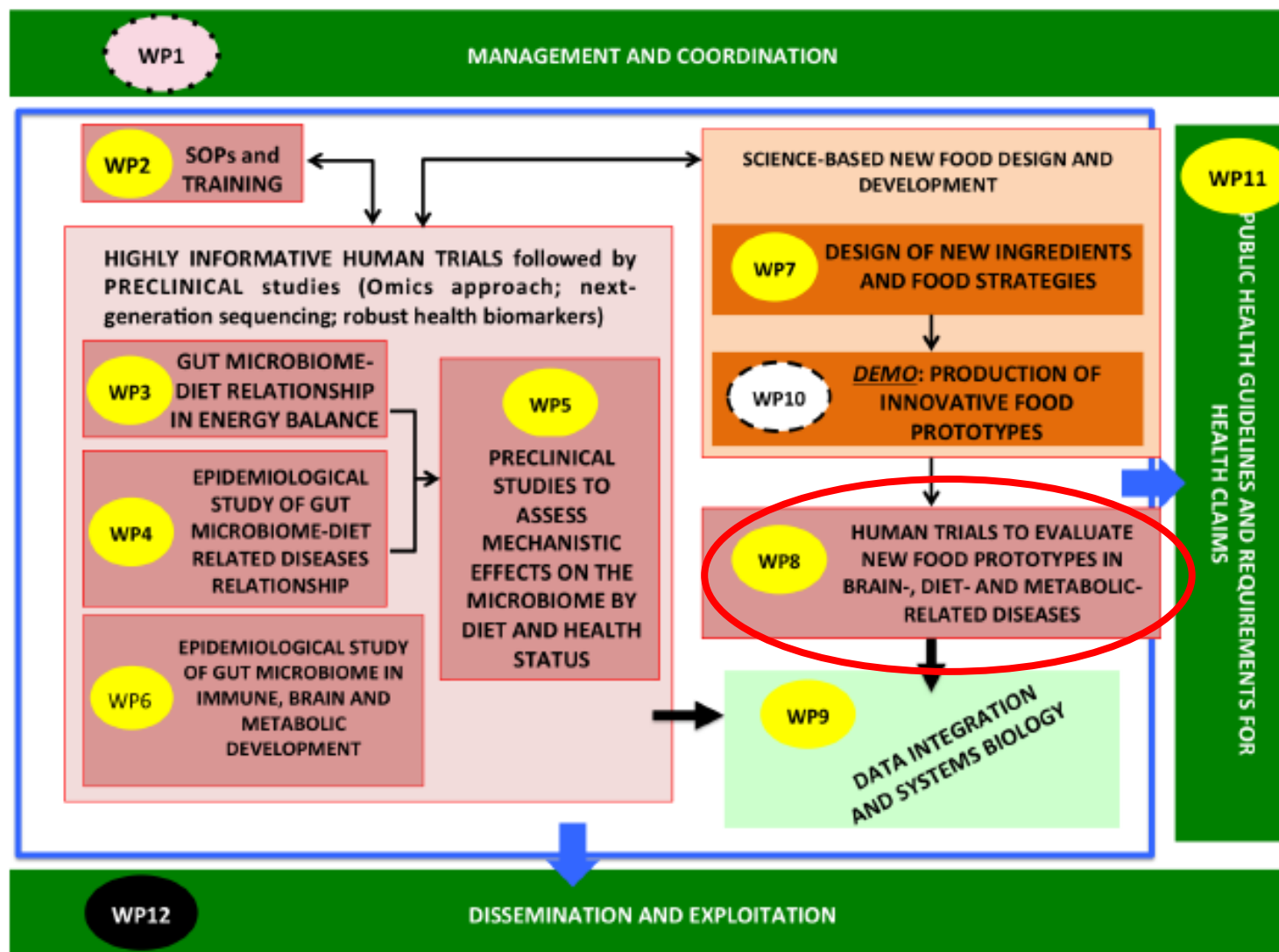
- Hypothesis:

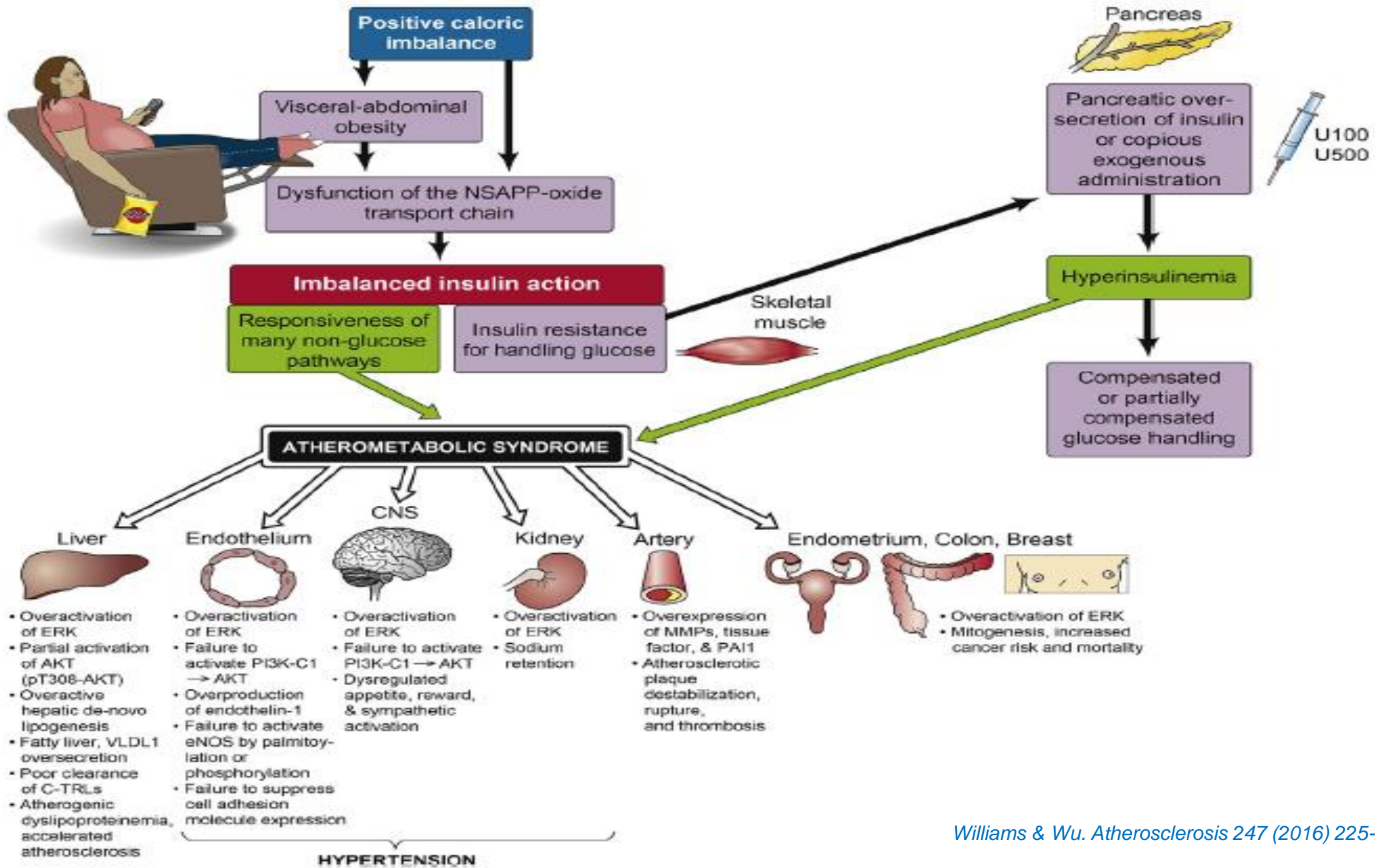
Developing microbiome-based dietary recommendations and interventions targeting the gut ecosystem can provide cost-effective measures to reduce the socioeconomic burden of diet-related diseases and, in particular, obesity and chronic-metabolic and behavioral disorders.

Human studies will be the focus of the project

- Translation of the accumulated knowledge into: guidance for microbiome related health claims
- recommendations and policies to improve the EU position in prevention of diet and brain-related disorders.

Organogram MyNewGut





Gut microbiota and its influence on obesity

Animal studies:

Perturbations in the composition of gut microbiota associated with genetic or **diet-induced obesity** seem to be reversible:

- by oral transfer of the gut microbiota from lean or obese mice to a **germ-free recipient** (Turnbaugh et al. (2008). Cell Host Microbe 17, 213–223; Turnbaugh et al. (2006) Nature 444, 1027–1031). **OR**
- by the administration of prebiotic fibres (e.g. inulin) to animal models **at least over short-term periods** (Cani et al. (2009) Current Pharmaceutical Design. 15: 1547-1559).

Gut microbiota and its influence on obesity

Human study:

Fecal Material transfer improves insulin sensitivity in adults with features of metabolic syndrome (Vrieze et al., 2012),

Application of FMT as a therapy for other conditions, including obesity, is still experimental.

Claims on (long-term) blood glucose control

Improved blood glucose control is a beneficial physiological effect for subjects with impaired blood glucose tolerance.

HbA1C - EFSA-acknowledged measure of insulin resistance

Claims on (long-term) blood glucose control

Appropriate outcomes for the scientific substantiation of such claims include glycated hemoglobin (HbA1c) measured in intervention studies of appropriate duration (e.g. at least three months).

Trends in Food Science & Technology

“Insulin resistance: Linking dietary modification of the microbiome to health claims to tackle Obesity”

Stoffer Loman, Jan-Willem van de Kamp (submitted)

Major issue

How can it be established that modulation of the microbiome by dietary intervention leads to improved insulin sensitivity?

Take home

Obesity-related, microbiota-targeted research wouldn't have existed if we, humans, would have complied to universally agreed dietary recommendations!!

Acknowledgements

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The EU is not liable for the content presented in this presentation.



Thank you!

www.mynewgut.eu