# The twin cycle hypothesis

Substantial weight loss in people with type 2 diabetes will:

#### Liver

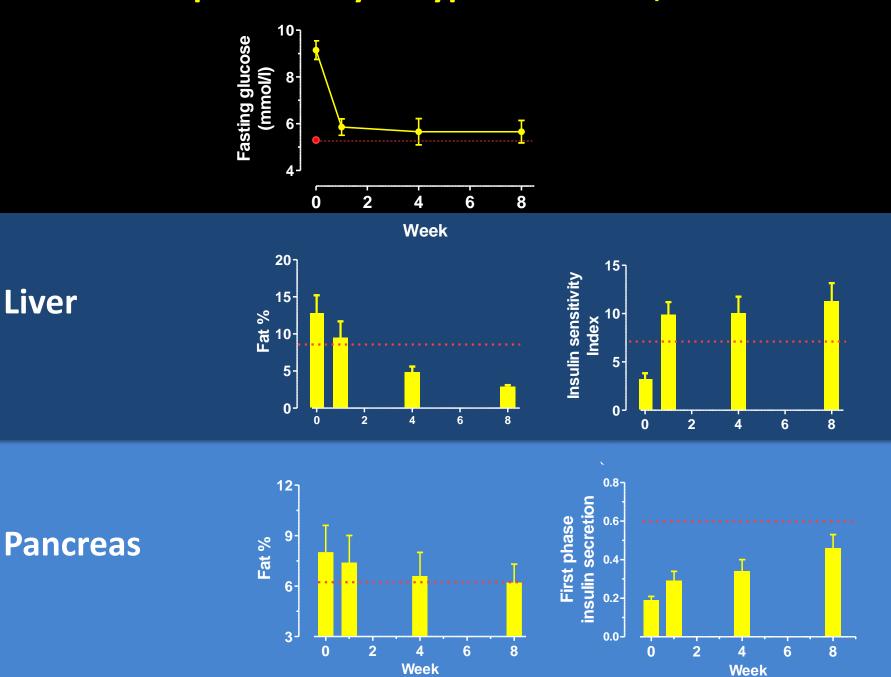
Decrease fat –
improve insulin action
and
normalise overnight
blood sugar

and

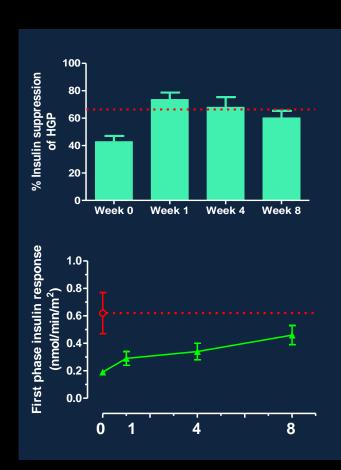
**Pancreas** 

Decrease fat –
normalise the insulin
response to eating

### The Counterpoint study - Type 2 diabetes, 800kcal diet



## Reversibility of type 2 diabetes



The pathophysiological defects in the liver and pancreas are reversible – if diabetes duration <4yr

Can long duration type 2 diabetes also be reversed?

# The Counterbalance Study -

## Counteracting BetA cell failure by Long term

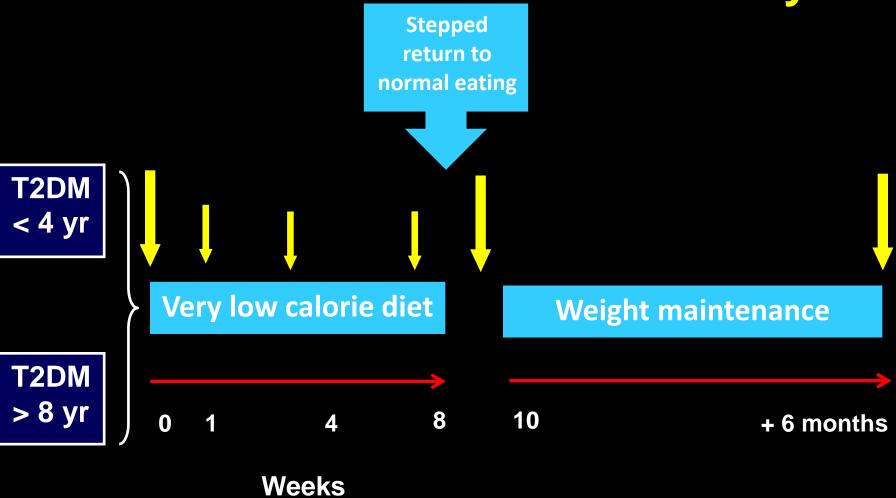
Action to Normalize Calorie intakE

#### **Questions:**

Can people with longer duration type 2 diabetes reverse to normal?

Is the reversal of type 2 diabetes durable if body weight remains stable?

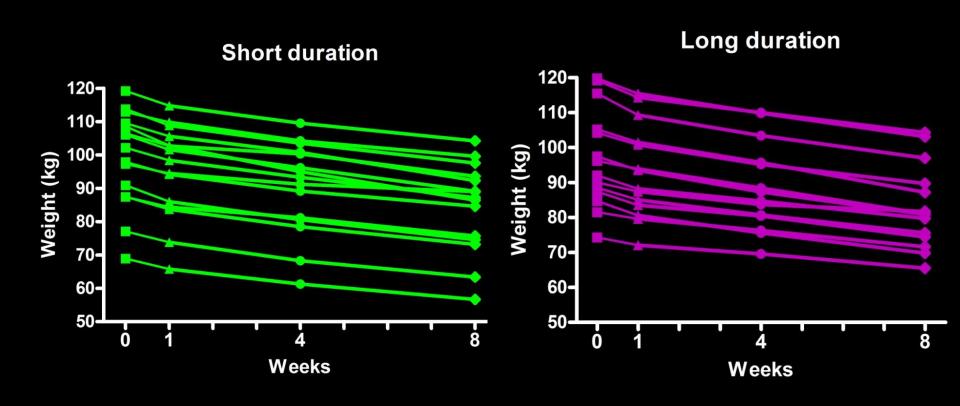
Protocol for CounterBalance study



# Counterbalance Subjects

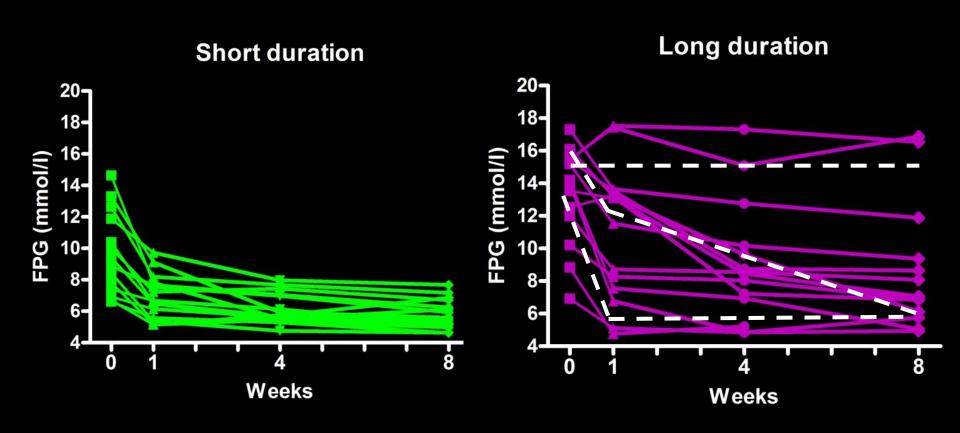
Diabetes duration	<b>0-4y</b>	8-23y
	(n=15)	(n=14)
Age (yr)	<b>52.1</b> ± 2.6	61.6 ± 2.0
Weight (kg)	99.0 ± 3.7	96.9 ± 3.8
BMI (kg/m²)	<b>34.6</b> (27.6-38.0)	33.0 (29.4-45.7)

## Results: weight loss during diet

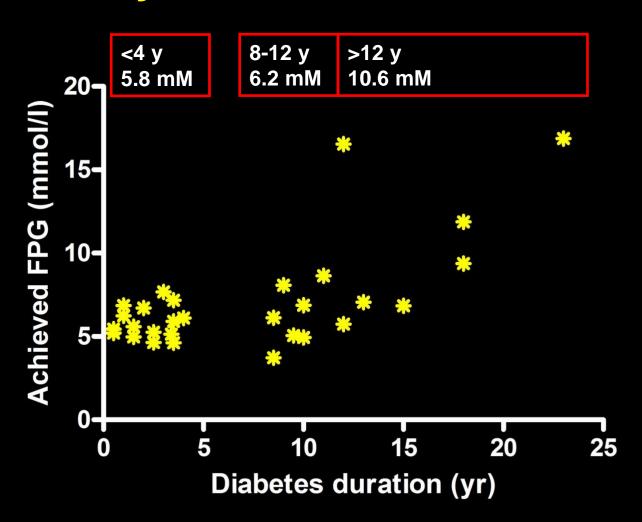


Weight loss:  $14.6 \pm 0.8 \% \text{ vs. } 14.5 \pm 0.7 \%$ 

## Fasting plasma glucose during diet



# By diabetes duration



Spearman 0.501; p=0.006