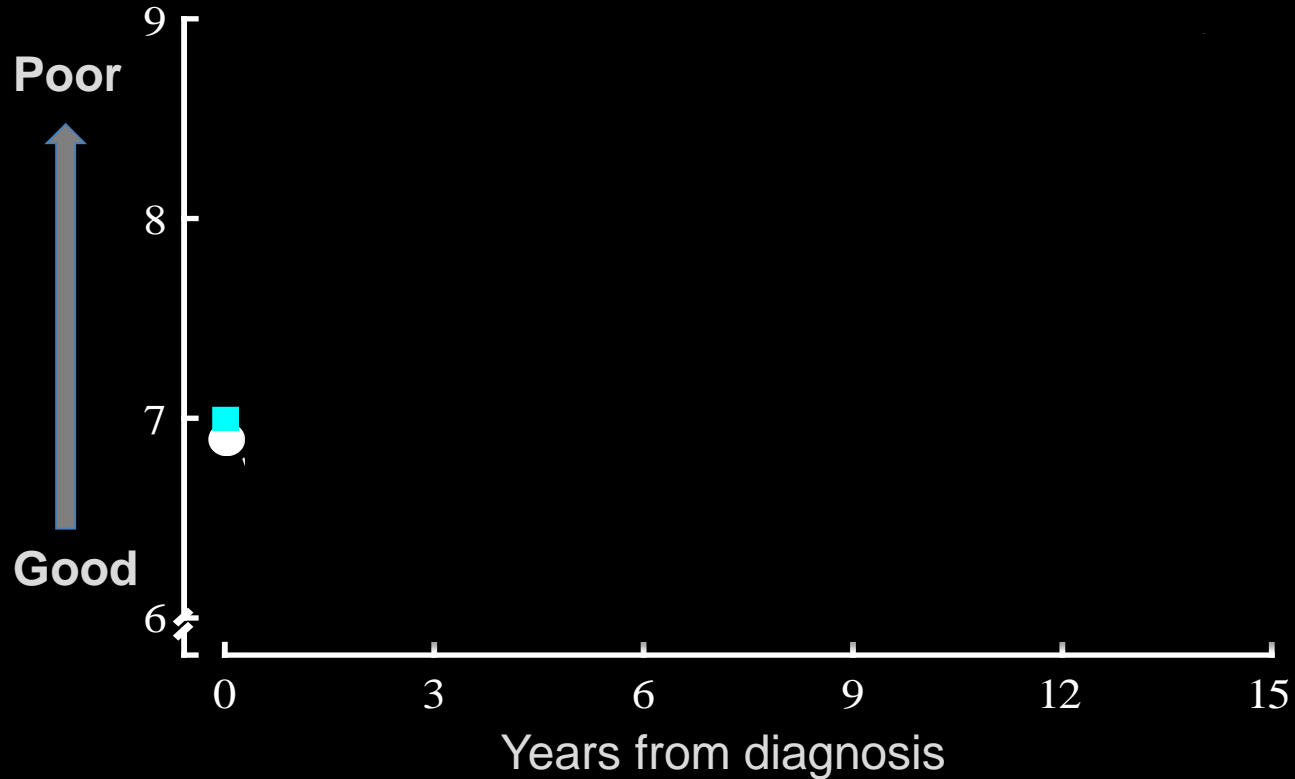


**Rumours of my death are much exaggerated,
says the beta cell**

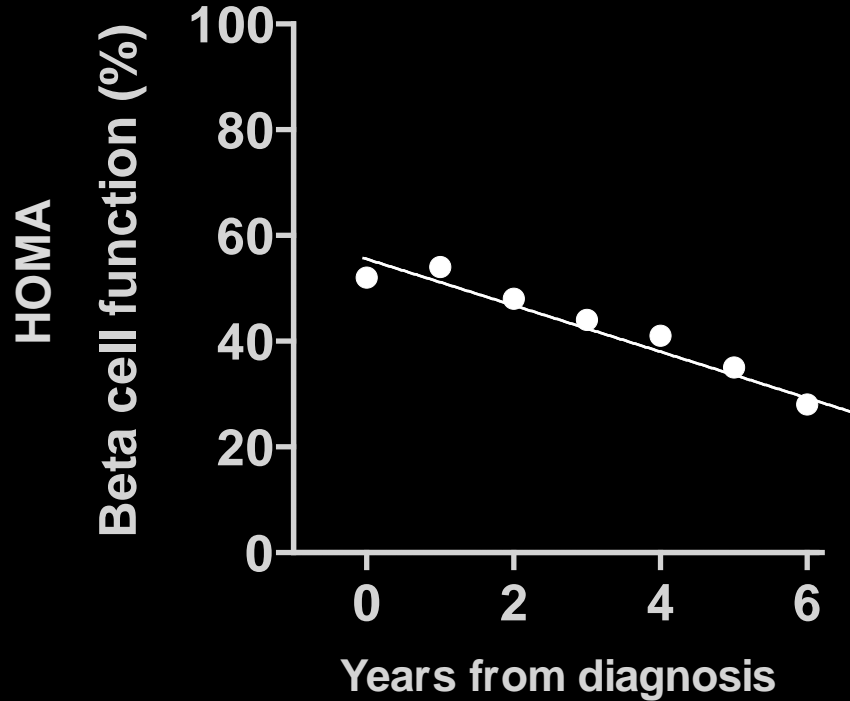
**Calorie restriction for long term remission of type 2
diabetes**

Roy Taylor

The nature of type 2 diabetes: UKPDS- Loss of control over time



Beta cell function in type 2 diabetes - UKPDS

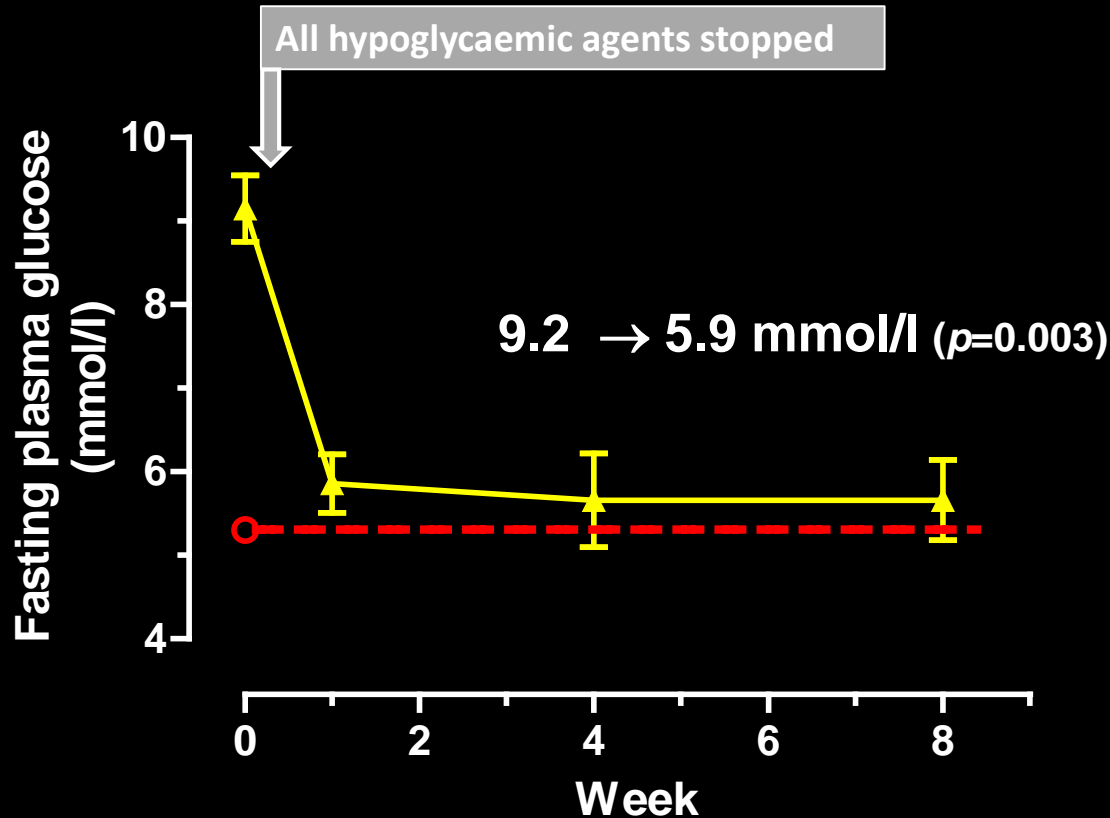


Aetiology of Type 2 diabetes: Twin Cycle Hypothesis

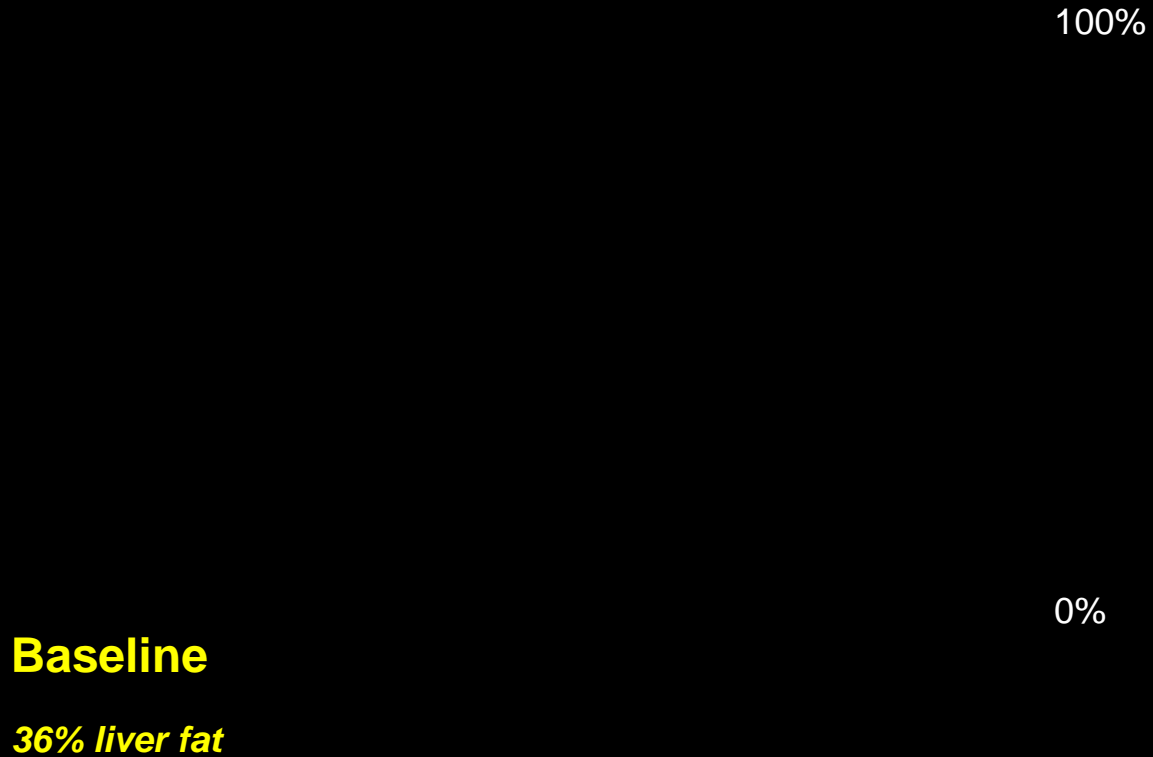
Excess calorie consumption over years
Accumulation of excess liver fat
Liver insulin resistance
Vicious cycle → increasing liver fat

Excess VLDL-TG export to pancreas
Loss of acute insulin secretion – in susceptible people

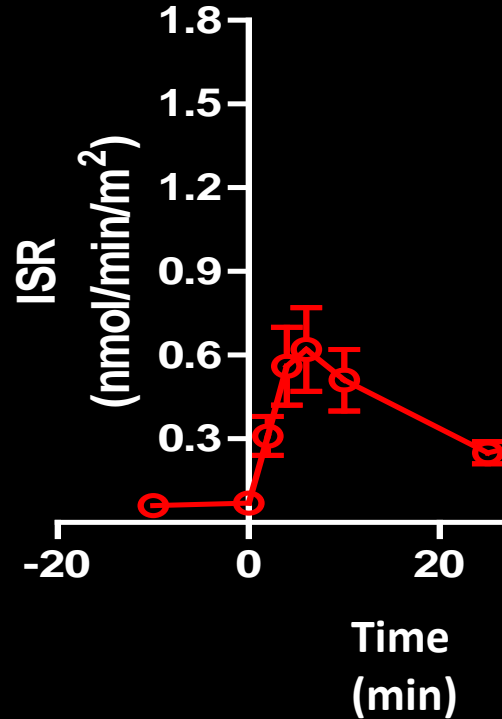
Counterpoint study: Plasma glucose



Change in liver fat content

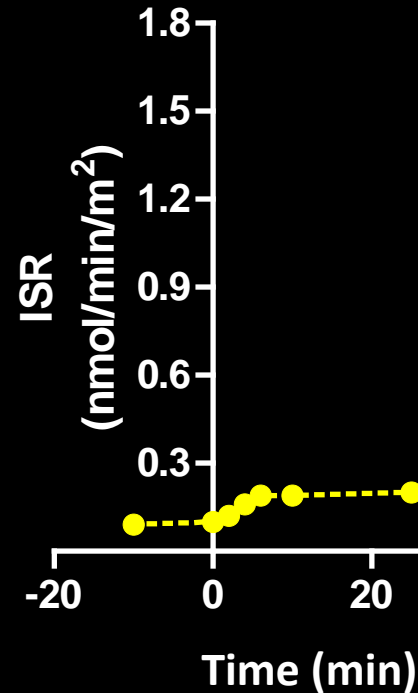


Non-diabetic control subjects: Acute insulin secretion with 2.8mM increase in plasma glucose



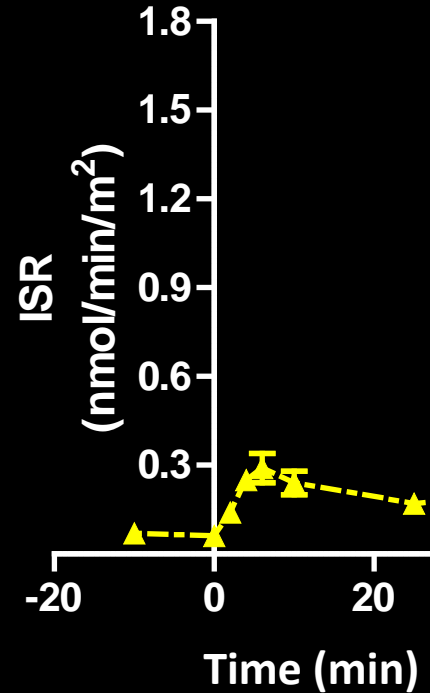
Recovery of first phase insulin response

Baseline



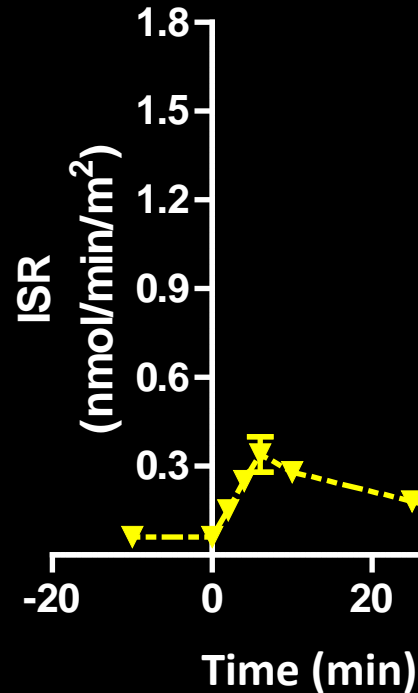
Recovery of first phase insulin response

Week 1



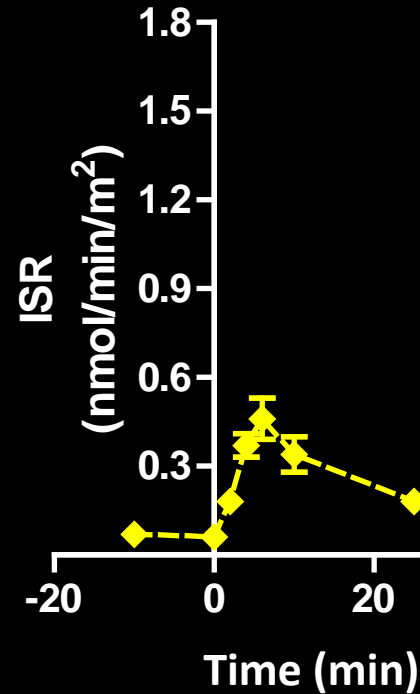
Recovery of first phase insulin response

Week 4

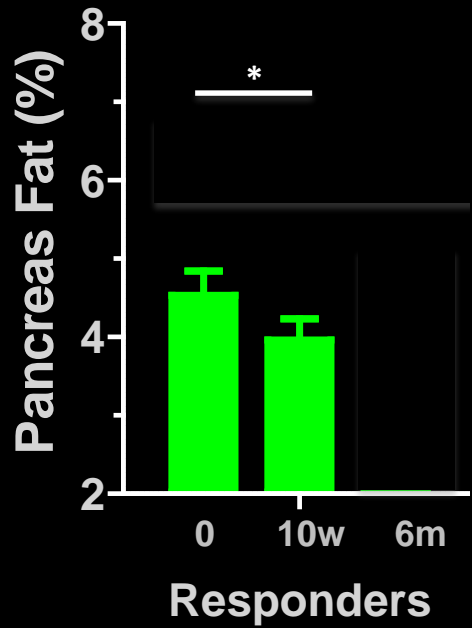


Recovery of first phase insulin response

Week 8



Change in pancreas fat after weight loss and 6 months follow up





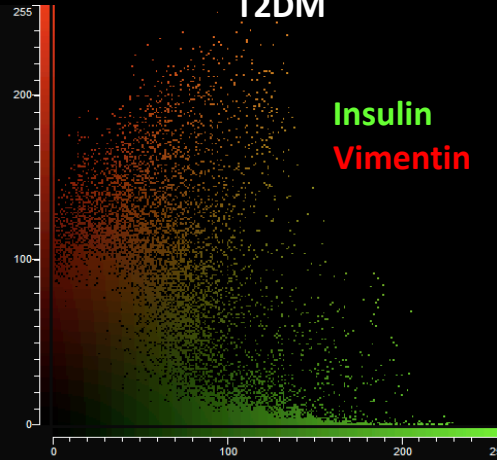
Pancreatic β Cell Dedifferentiation as a Mechanism of Diabetic β Cell Failure

Chutima Talchai,^{1,3} Shouhong Xuan,² Hua V. Lin,⁴ Lori Susse,² and Domenico Accili^{1,*}

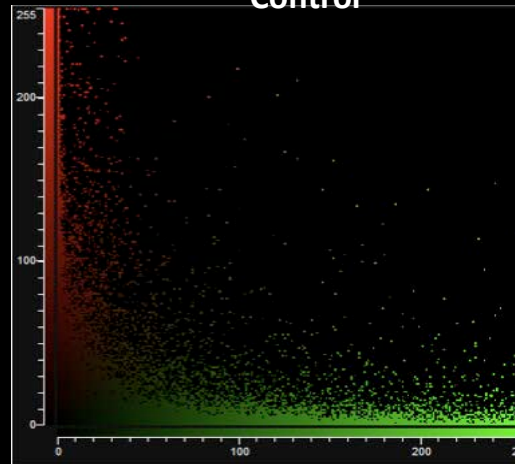
¹Department of Medicine

²Department of Genetics and Development

T2DM



Control



De-differentiation in
human beta cells

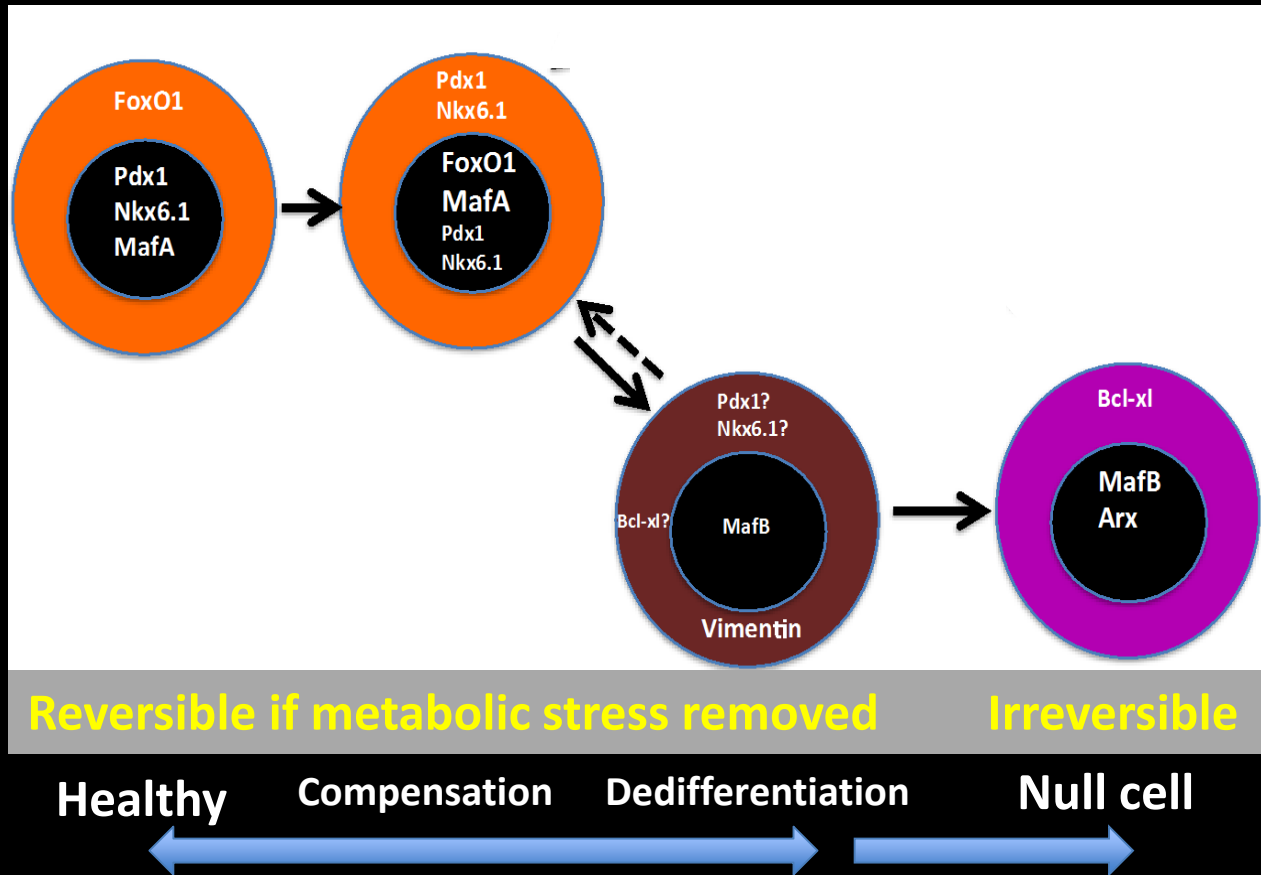
White et al Diabetes
Care 2013; 36:3818

Type 2 Diabetes: The Pathologic
Basis of Reversible β -Cell
Dysfunction

Michael G. White, James A.M. Shaw, and
Roy Taylor

Diabetes Care 2016;39:2080–2088 | DOI: 10.2337/dc16-0619

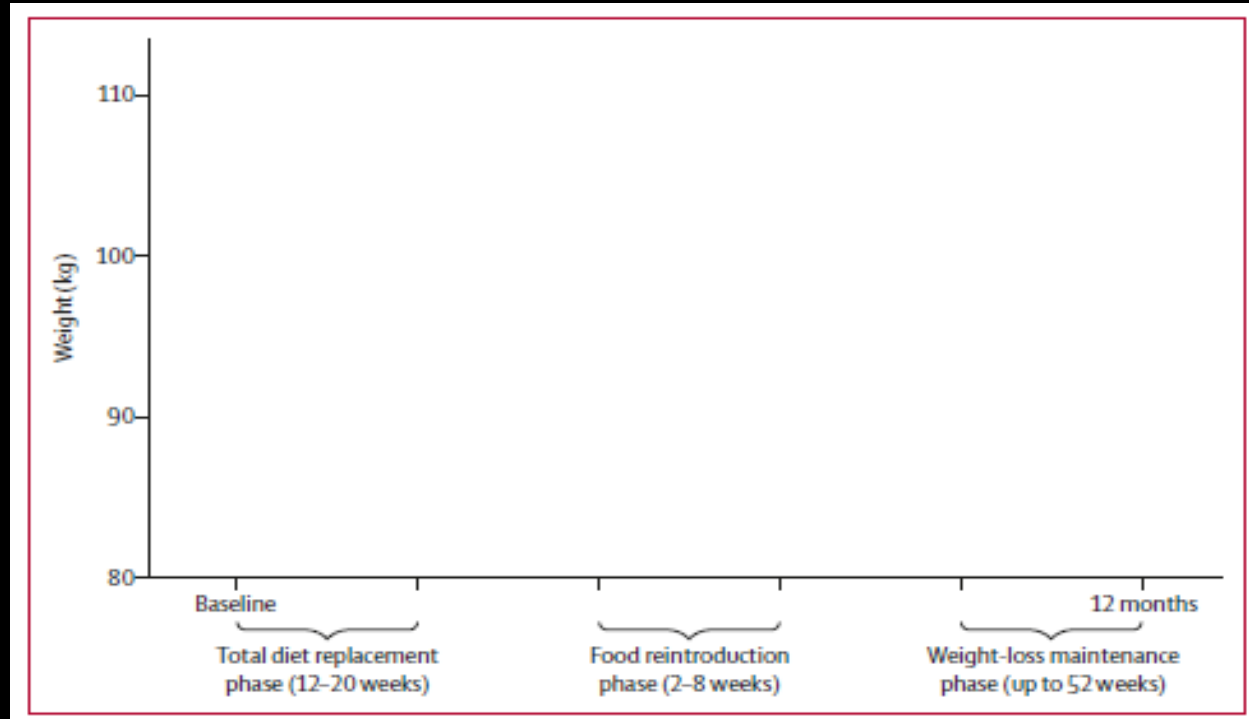
Dedifferentiation of the beta cell in type 2 diabetes



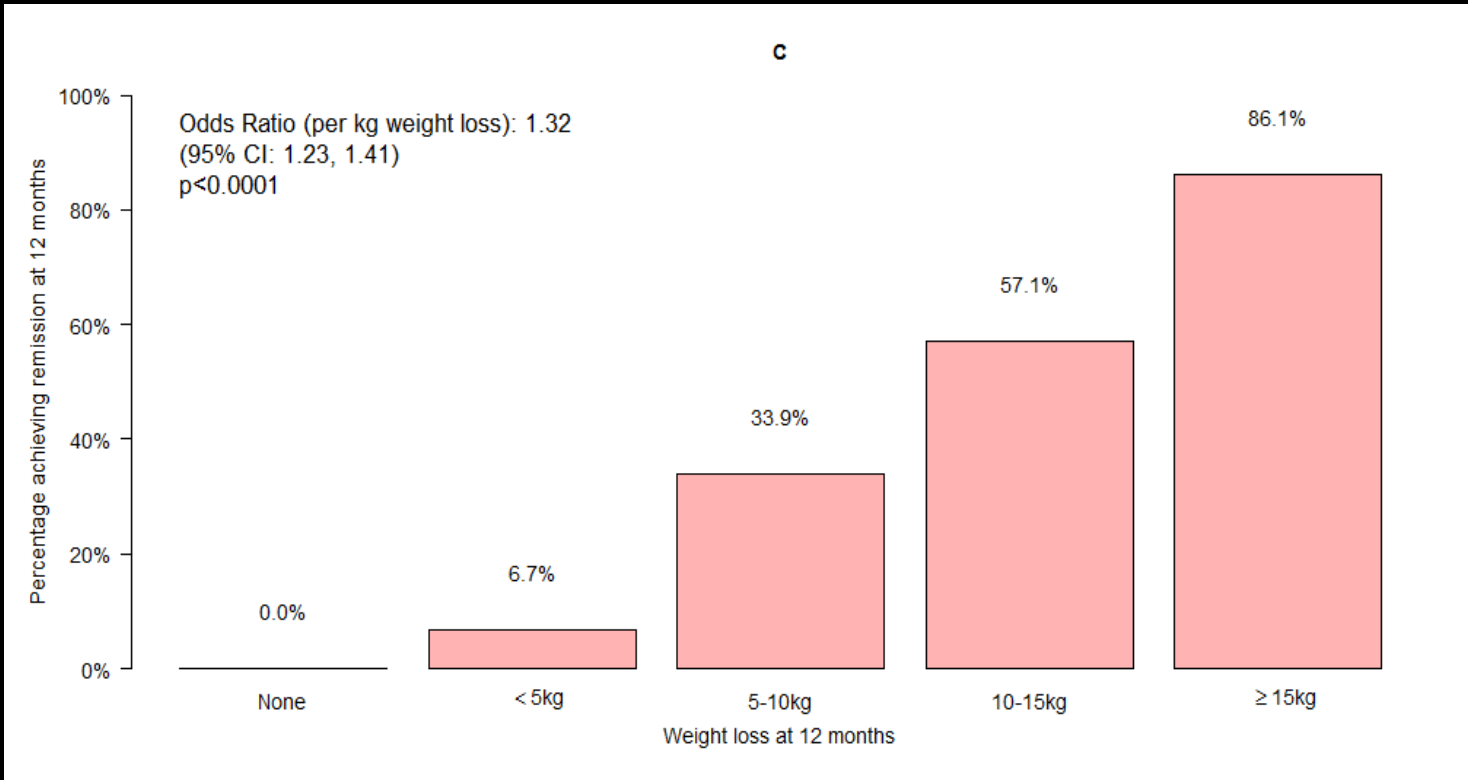
In routine Primary Care:

- Can substantial and sustained weight loss be achieved in T2DM?
- Will this lead to long term remission?

Results: weight changes over 12 months



Remissions by weight-loss category at 12 months



2013

Weight 126kg

HbA1c 9.2%

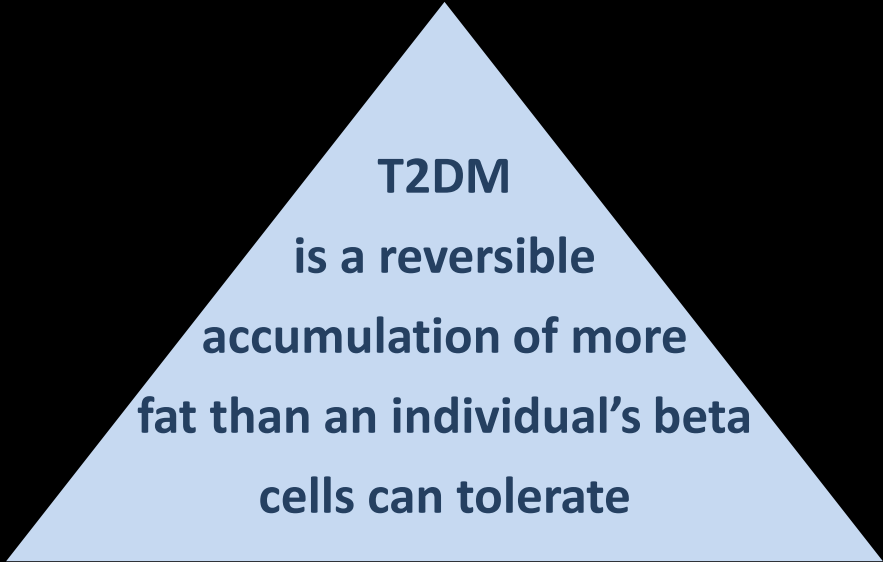
2014:

Weight 94kg

HbA1c 6.2%

All information available at:

go.ncl.ac.uk/diabetes-reversal



T2DM
is a reversible
accumulation of more
fat than an individual's beta
cells can tolerate

**Effect of incubating insulin producing cells
with palmitate (0.33 mmol/l) for 72 hours**

