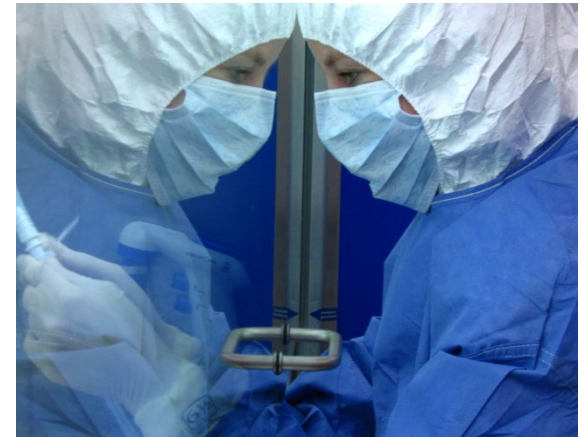
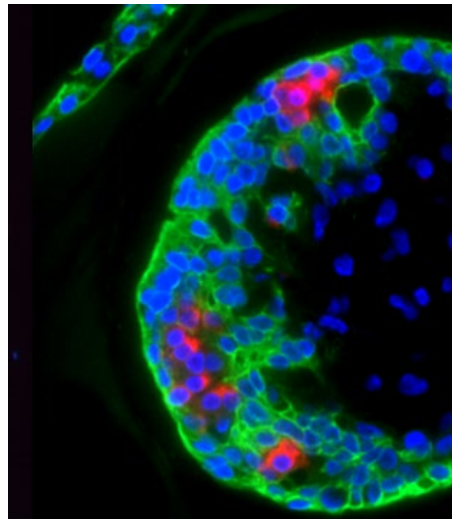
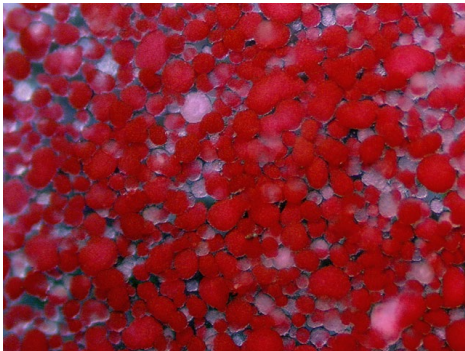


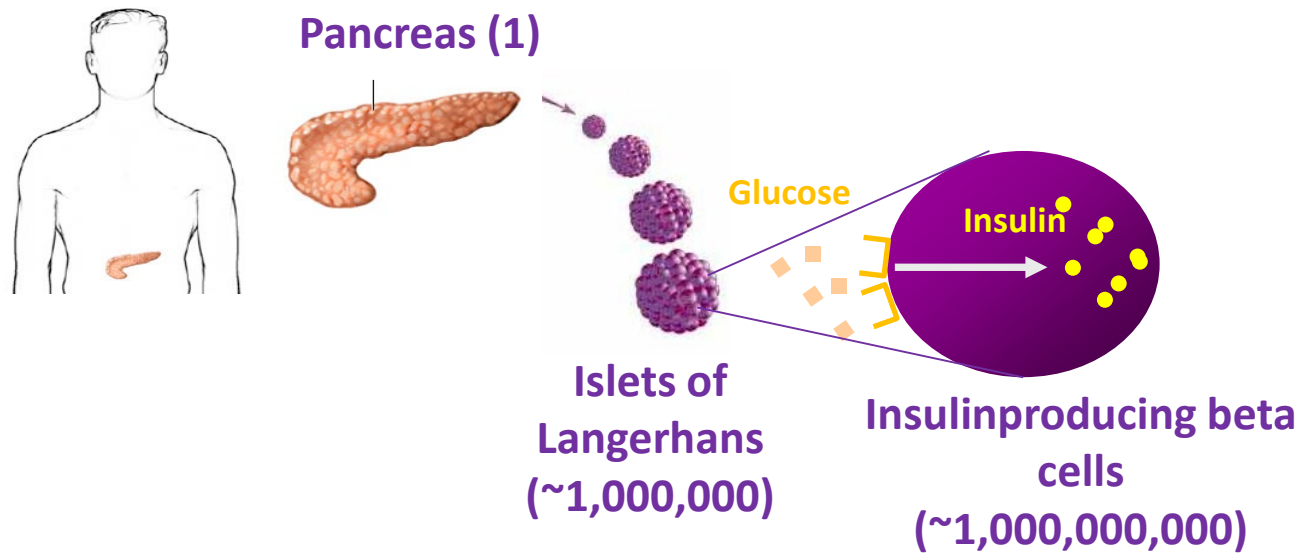
## Imagining the next 100 years of diabetes



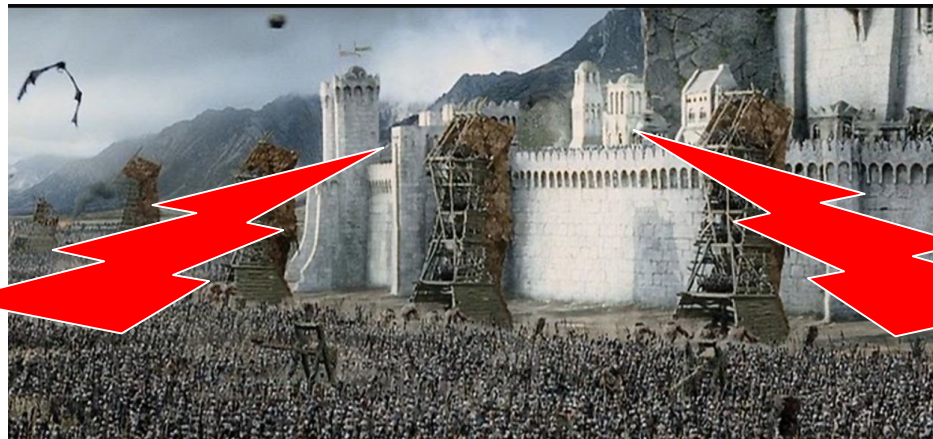
**Eelco de Koning M.D., Ph.D.**  
**Leiden University Medical Center, the Netherlands**  
**IDF Europe Webinar**  
**January 22, 2021**



# An attack on insulinproducing beta cells is central to all types of diabetes



Type 2 diabetes  
Metabolic factors  
Genetics  
Ageing



Type 1 diabetes:  
Autoimmunity  
Genetics

Dysfunction and slow  
reduction in cells

Rapid destruction of  
cells

## The three musketeers for beta cell health



Prevention

Protection

Regeneration or  
replacement



# What if most beta cells are already lost?

## Treatment of type 1 diabetes in the past 100 years....



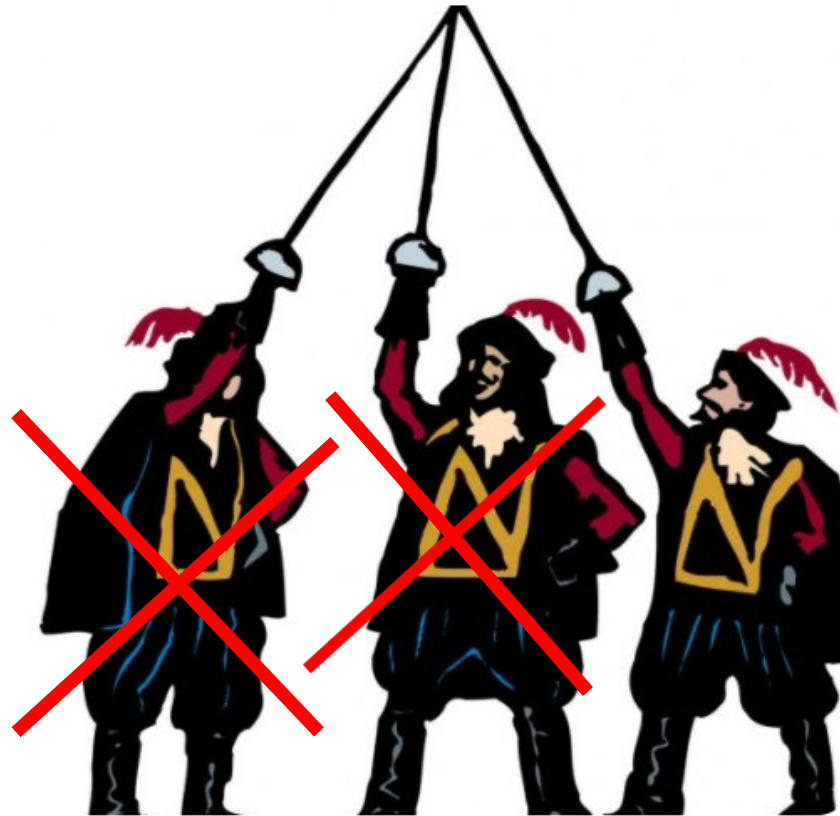
Boerhaave Museum of Medical History,  
Leiden, Netherlands



2021: Still insulin

# If most beta cells are already lost (type 1 diabetes)...

## The future of treatment in severe beta cell failure (type 1 diabetes)

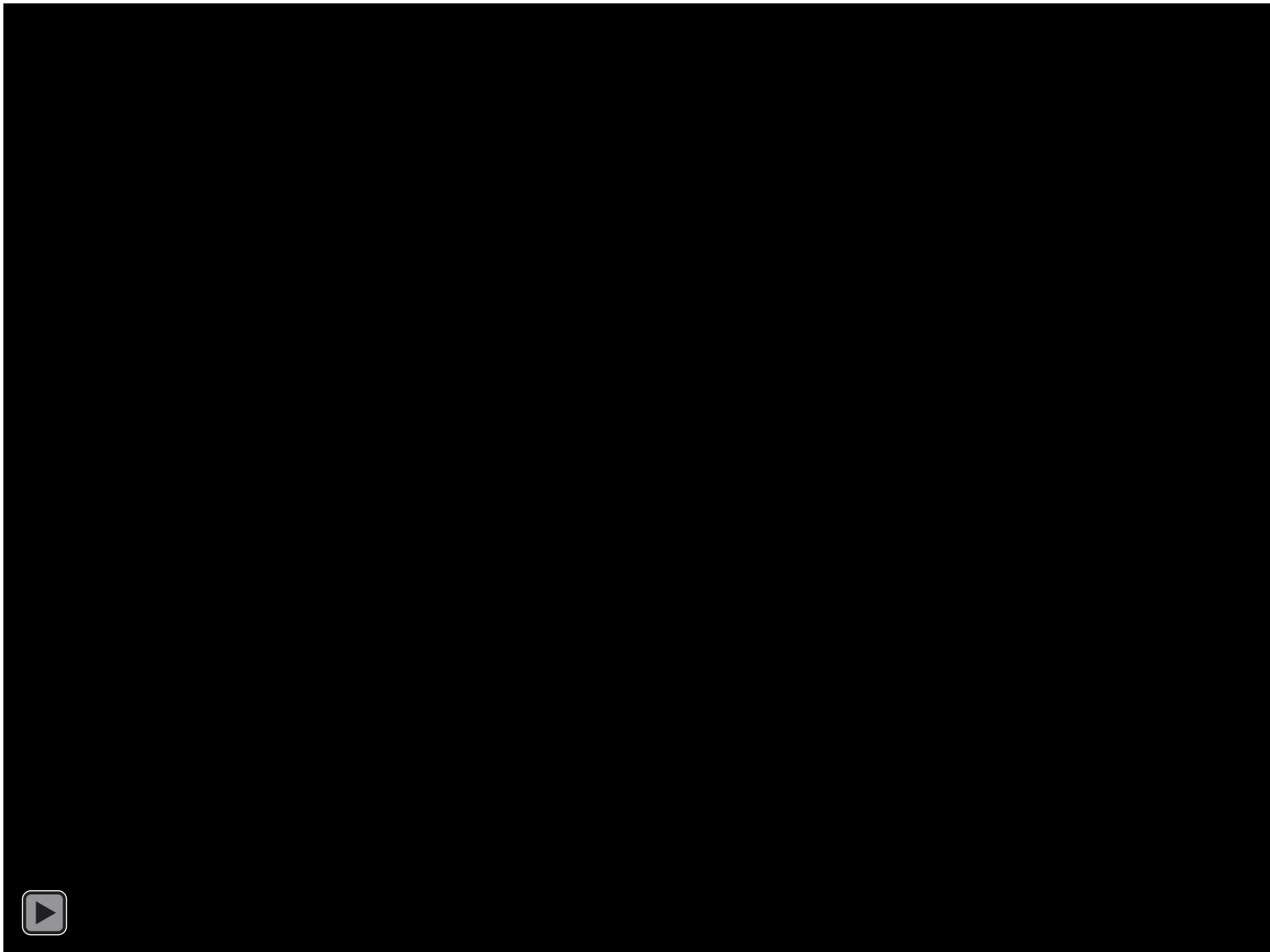


Prevention

Protection

Regeneration or  
replacement

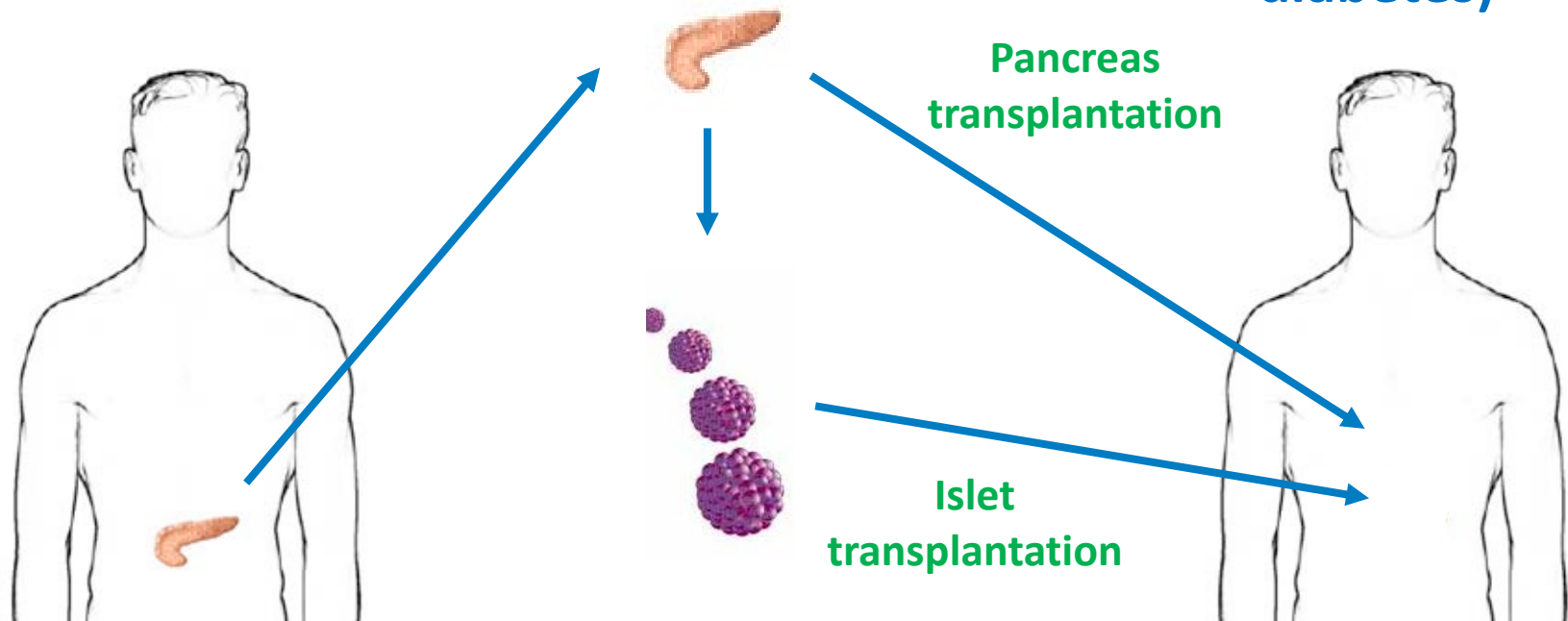
# Growing human mini-pancreas in a dish – more insight into regeneration



# Replacement of insulin producing cells: the only treatment to normalize glucose levels without risk of hypoglycemia

Patient with  
severe beta cell  
failure (type 1  
diabetes)

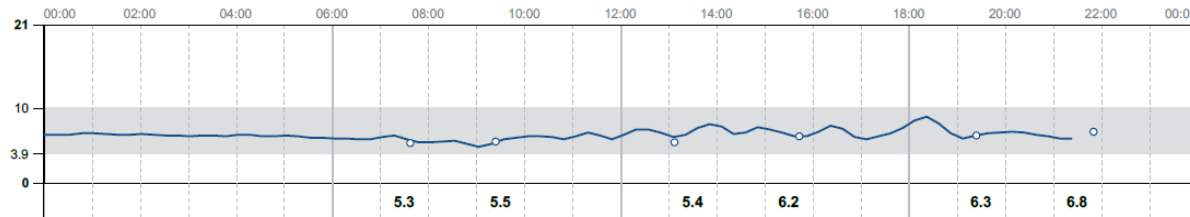
Organ donor



< 0.01 % of  
patients

# The impact of not having type 1 diabetes anymore

- Female patient, late 50s
- Islet transplantation 3 months earlier
- Approximately 800,000 islets
- Uncomplicated
- Result: No more insulin after >50 years of having diabetes, enormous improvement in well-being



**But: Life-long treatment with drugs suppressing the immune system**



**Shortage of organ donors (so for very few patients)**



# Towards beta cell replacement therapy for many patients with severe beta cell failure (Type 1 diabetes)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 874839 ISLET



First  
generation  
cell-therapy



Communication  
and  
collaboration



Next  
generation  
cell-therapy



Pipeline to  
patients



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