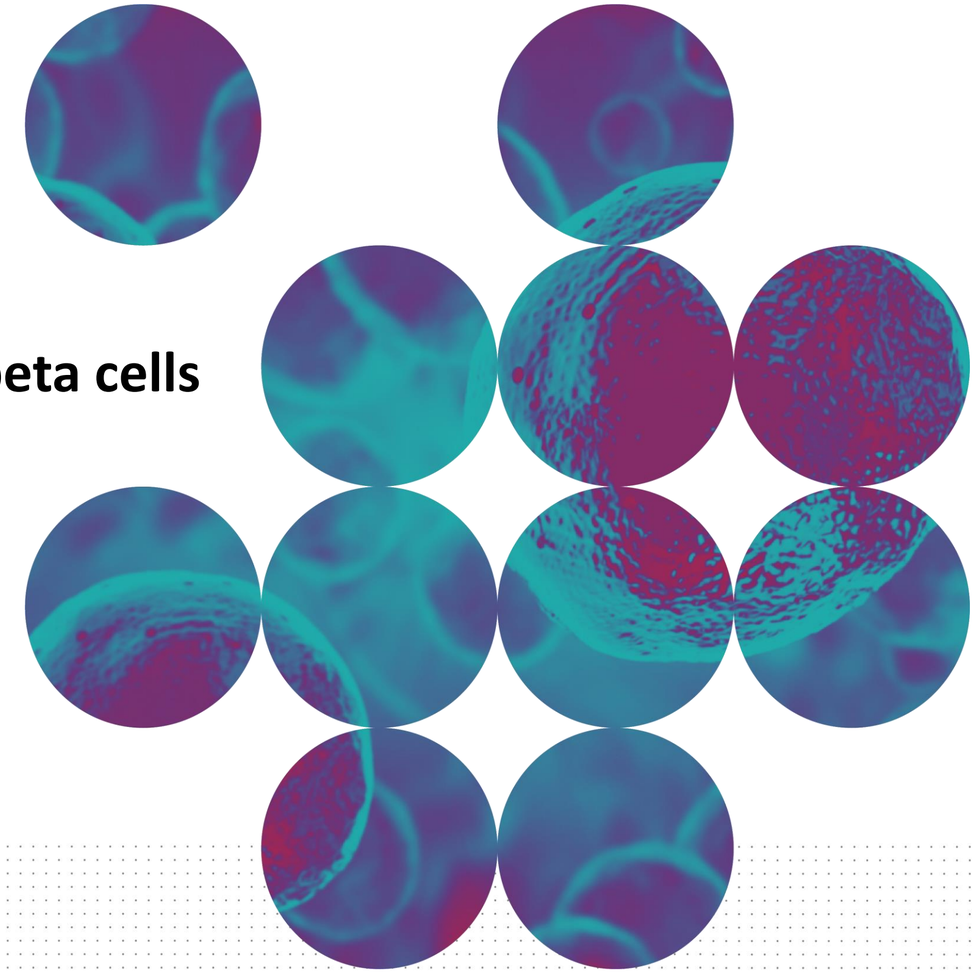
HUMAN CELL DESIGN
ACCELERATING DISCOVERY

EndoC-βH5

Unlimited quantity of ready-to-use functional human beta cells



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EndoC-βH5®

Glucose dose response similar to native beta cells

Glucose stimulated insulin secretion (GSIS) response :

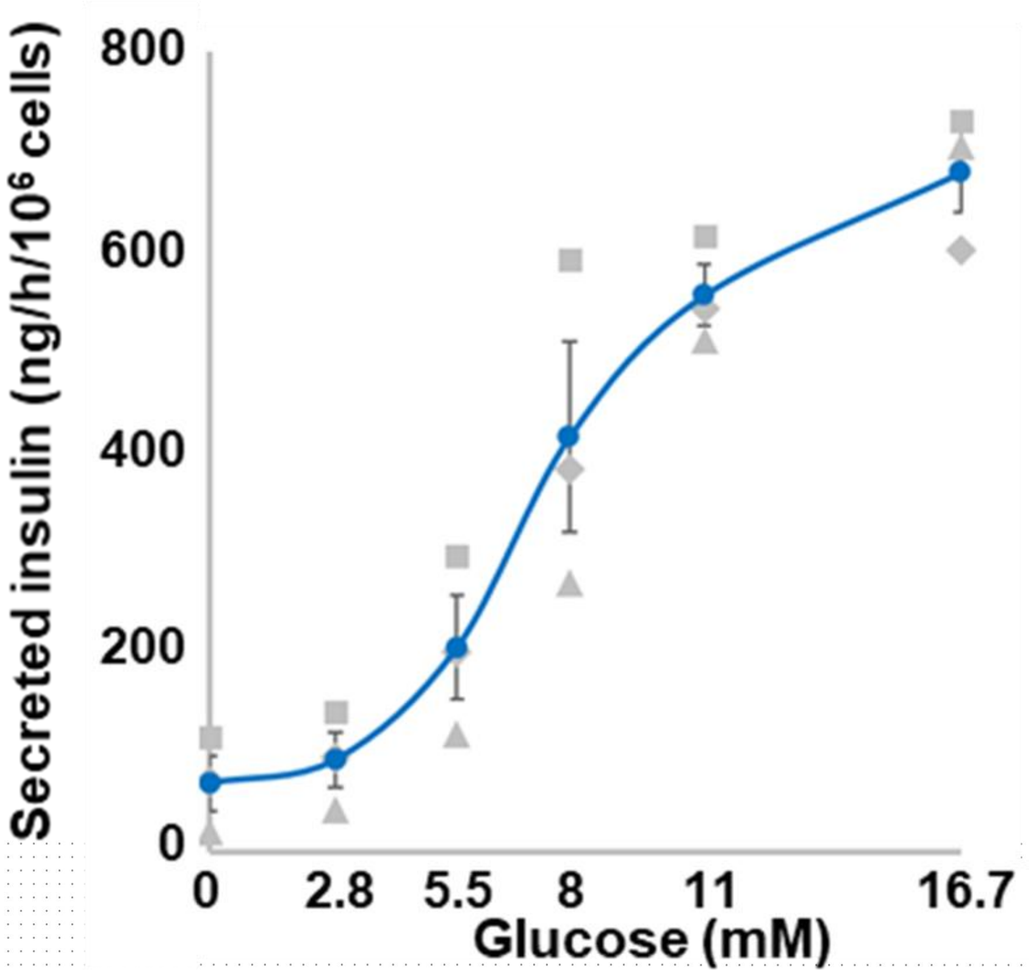
- **Dose dependent**

Highest potentiation between **5.5 and 8 mM** Glucose

- **Highly sensitive**

> 10 fold increase in insulin secretion

✔ **A real physiological human beta cell model**



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ENDOC-BH CELLS
Bruno BLANCHI, PhD
Hamza OLLEIK, PharmD, PhD

(Manuscript in preparation)

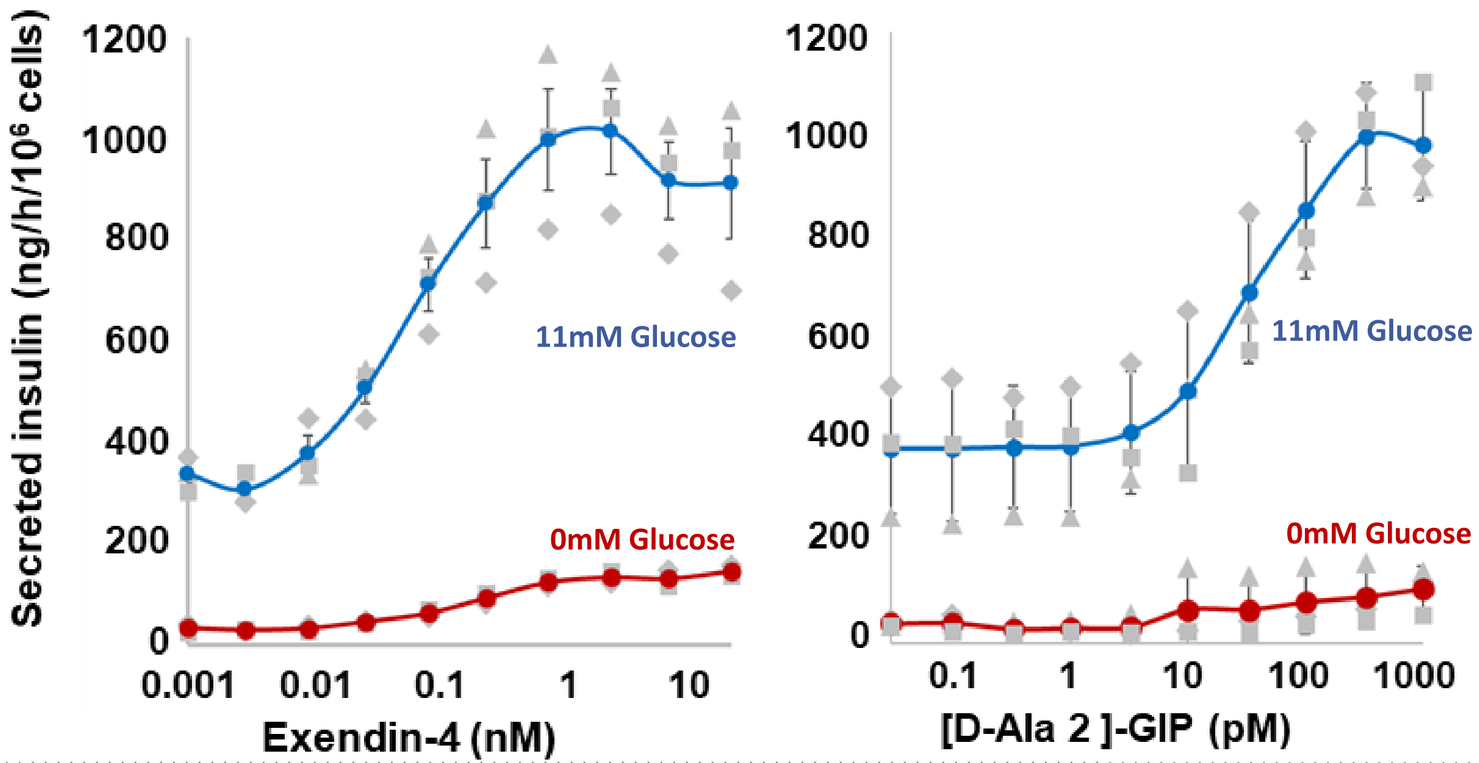
EndoC-βH5®

Reproducible dose dependent responses to GLP-1 and GIP receptor agonists

Exendin-4 and [D-Ala 2]-GIP dose responses :

- Reproducible responses
- Dose dependent
- Robust (> 3.5) fold increase
- Reproducible EC50

Robust pharmacological responses



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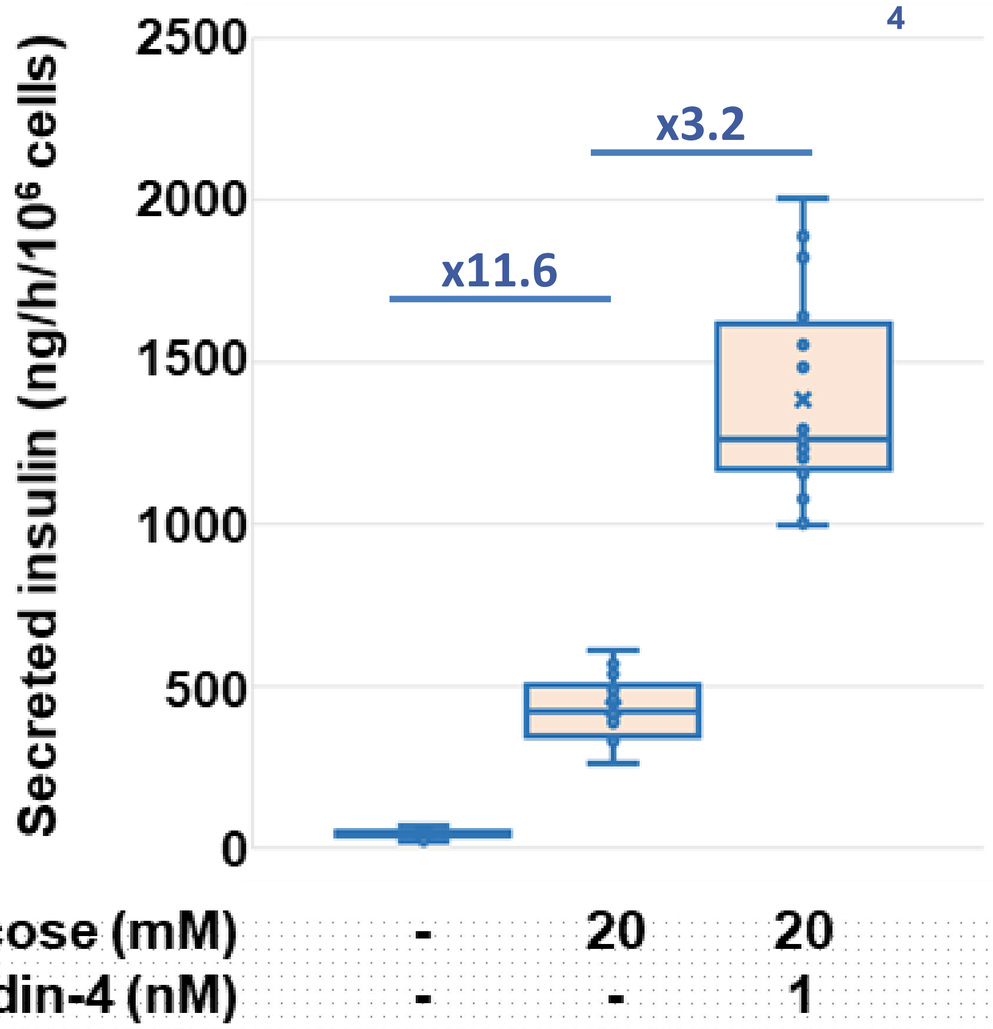
Robust batch to batch reproducibility compatible with large screening approaches

GSIS reproduciblity between batches :

- Reproducible response to glucose
- Reproducible response to GLP-1 receptor agonist (Exendin-4)
- High absolute values of insulin secretion

- Batch to batch reproducibility
- Systematic QC validation



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EndoC-βH5®

Take Home Messages: Added Values

EndoC-βH5

- Batch to Batch Reproducibility
- Flexibility: Thaw cells when needed
- Availability: Unlimited
- HTS: 96 and 384 well plate compatibility
- Chronic Treatment: >4 weeks
- Time saving: Thaw-and-go - Results in few days

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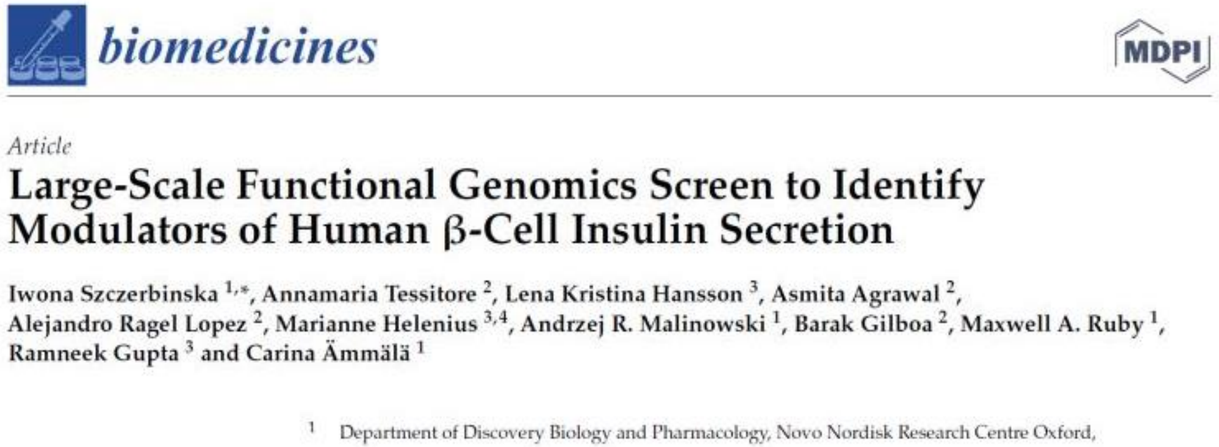
EndoC-βH5®
Independant Validation



biomedicines

MDPI

Article

Large-Scale Functional Genomics Screen to Identify Modulators of Human β-Cell Insulin Secretion

Iwona Szczerbinska [1,*], Annamaria Tessitore [2], Lena Kristina Hansson [3], Asmita Agrawal [2], Alejandro Ragel Lopez [2], Marianne Helenius [3,4], Andrzej R. Malinowski [1], Barak Gilboa [2], Maxwell A. Ruby [1], Ramneek Gupta [3] and Carina Ämmälä [1]

[1] Department of Discovery Biology and Pharmacology, Novo Nordisk Research Centre Oxford,

Using the EndoC-βH5® model, a new publication was published validating novel genes regulating human β-cell insulin secretion.

1. Established a **384-well** functional screen
2. Used **disease-relevant** insulin secretion **endpoints**
3. Successfully applied **siRNA**-mediated loss-of-function
4. Identified potential **T2D drug targets**

Cell Comparison To Native β Cells

		ENDOC-βH1	ENDOC-βH5	NATIVE β CELLS
Functionality	Physiological glucose dose response	+	+++	+++
	GLP-1/GIP response	No	Yes	Yes
	Insulin content (µg/M ₵)	0.5 – 1	Up to 10	Up to 10
Characteristics	Proliferation	Yes	No	No
	Fully mature	No	Yes	Yes
	Amplification	> 100 passage	Single use	Single use
	Purity	100% β cells	100% β cells	α / β / δ cells
Experimental	Time for doing your first GSIS	8 weeks	7 days	Islet preparation
	Chronic Treatment	Yes	> 4 weeks	Few days
	Handling	Culture and Preparation	Thaw-and-go / Ready to use	Preparation
	Reproducibility and Robustness	+	+++	+
Logistics	Flexibility	+	+++	-
	Availability	Unlimited	Unlimited	Rare
Screening	96 well plate	No	Yes	Hard due to availability
	HTS	Conditional	Yes	Hard due to availability

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Acknowledgement

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Pictures from Adélie Balguerie Photographie®

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