

Electronic Supplementary Material (ESM)

ESM Table 1. Donor information for human islets used in this study.

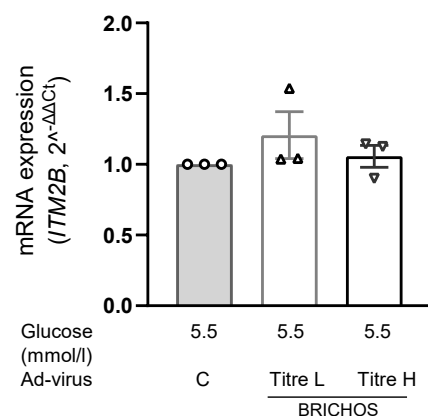
Donor number	Age (year)	Gender	BMI (kg/m ²)	HbA1c (mmol/mol)
1	72	Male	24.5	39.0 (5.7 %)
2	58	Male	21.8	35.0 (5.4 %)
3	67	Female	25.8	35.0 (5.4 %)
4	65	Female	23.8	47.0 (6.5 %)
5	59	Female	35.2	37.0 (5.5 %)
6	62	Female	25.5	42.0 (6.0 %)
7	42	Male	30.0	39.0 (5.7 %)
8	69	Male	27.1	N/A
9	69	Male	31.1	40.0 (5.8 %)
10	64	Female	24.6	45.0 (6.3 %)

N/A: Not available

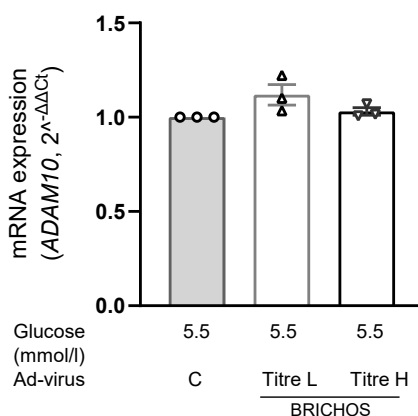
ESM Table 2. Primers for qRT-PCR experiments.

Gene name	MIM	Forward primer (5'-3')	Reverse primer (5'-3')
<i>ADAM10</i>	602192	GAGGAGTGTACGTGTGCCAG	GTTTCGACCACTGAAGTGCCT
<i>IAPP</i>	147940	AGCGGAAATGCAACACTGCCAC	CGTTGGTAGATGAGAGAATGGCA
<i>INS</i>	176730	ACGAGGCTTCTTCTACACACCC	TCCACAATGCCACGCTTCTGCA
<i>ITM2B</i>	603904	AGAAGAGCCTGGTGTGTTGGTGCA	CCACAGTAGTACACGTCATCTGG
<i>GCG</i>	138030	CGTTCCCTTCAAGACACAGAGG	ACGCCTGGAGTCCAGATACTTG
<i>ACTB</i>	102630	CACCATTGGCAATGAGCGGTTC	AGGTCTTTGCGGATGTCCACGT
<i>GUSB</i>	611499	ATGCCATCGTGTGGGTGAAT	TGGCGATAGTGATTCGGAGC
<i>RPS7</i>	603658	GAAGTTGGTGGTGGTCGGAA	TGCACAGCTGTCAGAGTACG

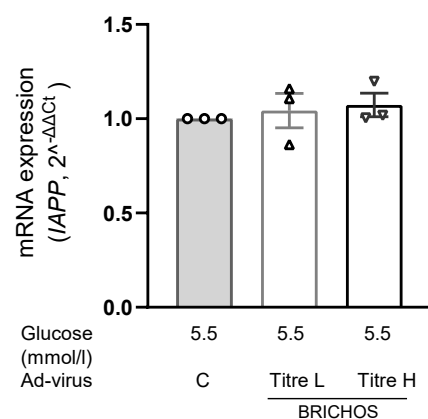
a



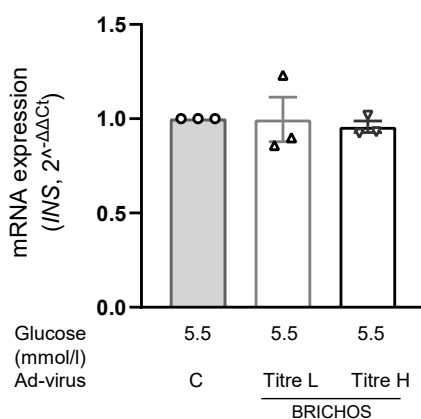
b



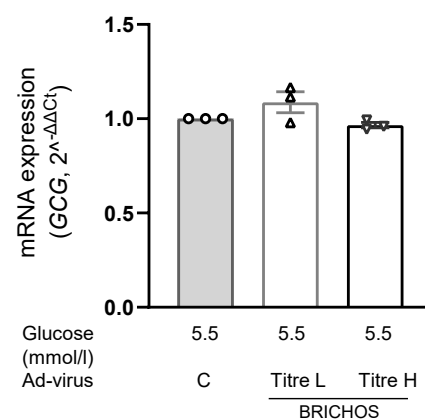
c



d



e



ESM Figure 1. Gene expression in stem cell-derived islets (SC-islets) with Bri2 BRICHOS domain overexpression at 5.5 mmol/l glucose.

SC-islets were transduced with the control virus (Ad-virus C) or Ad-BRICHOS virus with low or high titre (Ad-virus BRICHOS titre L and titre H, respectively) for 30 hours followed by culturing under normal glucose (G5.5 mmol/l) for 7 days. After treatment, the gene expression of *ITM2B* (a), *ADAM10* (b), *IAPP* (c), *INS* (d) and *GCG* (e) was performed by qRT-PCR. Data were normalised by using the geometric average C_t value of two endogenous controls *RPS7* and *ACTB*, respectively, and expressed as $2^{-\Delta\Delta C_t}$. Results are expressed as mean $\pm$ SEM of 3 batches of SC-islet differentiations.

Estimated purity (%)								
Estimated viability (%)								
Total culture time (h) ^d								
Glucose-stimulated insulin secretion or other functional measurement ^e								
Handpicked to purity? Please select yes/no from drop down list								
Additional notes								

^aIf you have used more than eight islet preparations, please complete additional forms as necessary

^bFor example, IIDP, ECIT, Alberta IsletCore

^cPlease specify the therapy/therapies

^dTime of islet culture at the isolation centre, during shipment and at the receiving laboratory

^ePlease specify the test and the results

Checklist for reporting human islet preparations used in research

Adapted from Hart NJ, Powers AC (2018) Progress, challenges, and suggestions for using human islets to understand islet biology and human diabetes. Diabetologia <https://doi.org/10.1007/s00125-018-4772-2>

Islet preparation	9	10						
MANDATORY INFORMATION								
Unique identifier	H2603	H2545						
Donor age (years)	69	64						
Donor sex (M/F)	M	F						
Donor BMI (kg/m ²)	31.1	24.6						
Donor HbA _{1c} or other measure of blood glucose control	40	45						
Origin/source of islets ^b	NNCIT	NNCIT						
Islet isolation centre	Uppsala	Uppsala						
Donor history of diabetes? Please select yes/no from drop down list	No	No						
If Yes, complete the next two lines if this information is available								
Diabetes duration (years)								
Glucose-lowering therapy at time of death ^c								
RECOMMENDED INFORMATION								
Donor cause of death								
Warm ischaemia time (h)								
Cold ischaemia time (h)								

Estimated purity (%)								
Estimated viability (%)								
Total culture time (h) ^d								
Glucose-stimulated insulin secretion or other functional measurement ^e								
Handpicked to purity? Please select yes/no from drop down list								
Additional notes								

^aIf you have used more than eight islet preparations, please complete additional forms as necessary

^bFor example, IIDP, ECIT, Alberta IsletCore

^cPlease specify the therapy/therapies

^dTime of islet culture at the isolation centre, during shipment and at the receiving laboratory

^ePlease specify the test and the results