



Aim 2: Islet Health Index (IHI)

- Islet Source:
 - Rat or Mouse
 - Human
- Analysis of outlet stream solutions
- Imaging
- Oxygen consumption rate
- RT-PCR
- Immunohistochemistry

Assay	Collection	Temporal/Terminal
Insulin	Outlet stream	Temporal
C-Peptide 2	Outlet stream	Temporal
Glucagon	Outlet stream	Temporal
Calcium Imaging	Fluo doping and in situ imaging	Temporal
Zinc Imaging	Fluo doping and in situ imaging	Temporal
Oxygen Consumption Rate	In situ imaging or inlet/outlet sensors*	Terminal or Temporal*
RT-PCR	Gene analysis	Terminal
Vascular Sprouting	Imaging and Quantification	Terminal
IHC	Fixing, label, imaging	Terminal



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- Analysis of outlet stream solutions
 - Multiplex analysis
 - MagPix
 - Multiple analytes in single assay

Mouse/Rat Analyte	Min Detectable Concentration (pg/mL)	Min DC + 2 StndDev (pg/mL)	Intra-Assay CV%	Inter-Assay CV%
Insulin	14	30	5	7
C-Peptide 2	20	39	4	8
GLP-1	23	41	5	12
Amylin	25	27	2	10
Glucagon	2	4	8	28
GIP (Glucose-dependent insulinotropic polypeptide)	1	1	2	13
PP (pancreatic polypeptide)	1	2	2	10
MCP-1	13	26	5	5
TNF-alpha	8	16	6	5



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➤ Insulin Measurements

Kit	Min Detectable Concentration (pg/mL)	Intra-Assay CV%	Inter-Assay CV%
Rat/Mouse ELISA	200	5	10
Rat/mouse multiplex	14	5	7
Human ELISA	105	5	4
Human Ultrasensitive ELISA	5.2	5	5
Human multiplex	3.8	3	11