# *In vitro* differentiation of mouse stem cells into insulin-secreting cells for diabetes therapy

A thesis submitted for the degree of Ph.D. of science in zoology (Embryology)

By

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# LIST OF ABBREVIATIONS

| | |
|---|---|
| AC | Acinus |
| ADMSCs | Adipose mesenchymal stem cells |
| BV | Blood vessel |
| CAT | Catalase |
| CD | Cluster of differentiation |
| CV | Central vein |
| DC | Dark cell |
| DM | Diabetes mellitus |
| DMEM | Dulbecco's modified eagle media |
| DTZ | Dithizone |
| EDTA | Ethylenediaminetetraacetic acid |
| EN | Endothelial cell |
| ESCs | Embryonic stem cells |
| | |

| | |
|---|---|
| FBS | Fetal bovine serum |
| GA | Golgi apparatus |
| GAPDH | Glyceraldehyde 3-phosphate dehydrogenase |
| Glut-4 | Glucose transporter-4 |
| GSH | Glutathione |
| H | Hepatocyte |
| H-DMEM | High glucose Dulbecco's modified eagle media |
| HFMSCs | Human fetal mesenchymal stem cells |
| HPSCs | Human pluripotent stem cells |
| HX-E | Hematoxylin-Eosin |
| IDDM | Insulin dependent diabetes mellitus |
| IL | Islet of Langerhans |
| IPCs | Insulin producing cells |
| IPSCs | Induced pluripotent stem cells |
| KC | Kupffer cell |

| | |
|---|---|
| LC | Light cell |
| LD | Lipid droplet |
| L-DMEM | Low glucose Dulbecco's modified eagle media |
| Ly | Lysosome |
| M | Mitochondrion |
| MEFs | Mouse embryonic fibroblasts |
| MDA | Malondialdehyde |
| MSC | Mesenchymal stem cell |
| MTC | Masson’s Trichrome |
| N | Nucleus |
| NIDDM | Non-insulin dependent diabetes mellitus |
| OD | Optical density |
| PAS | periodic acid-Schiff |
| PAX-4 | Paired box gene 4 |
| PBS | Phosphate buffer saline |
| PDX-1 | Pancreatic and duodenal homeobox 1 |

| | |
|---|---|
| RER | Rough endoplasmic reticulum |
| SER | Smooth endoplasmic reticulum |
| SC | Sinusoidal capillary |
| SG | Secretory granule |
| SOD | Super oxide dismutase |
| STZ | Streptozotocin |
| T1DM | Type 1 diabetes mellitus |
| T2DM | Type 2 diabetes mellitus |
| TEM | Transmission electron microscope |
| V | Vacuole |
| WJMSCs | Wharton's jelly mesenchymal stem cells |

# LIST OF FIGURES