

Novel Method Maximizing MSC-Therapies

Principal Investigator

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Project Outline

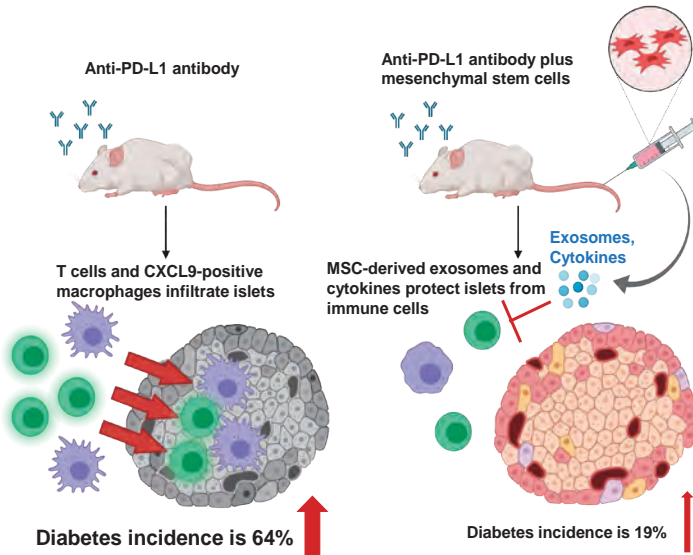
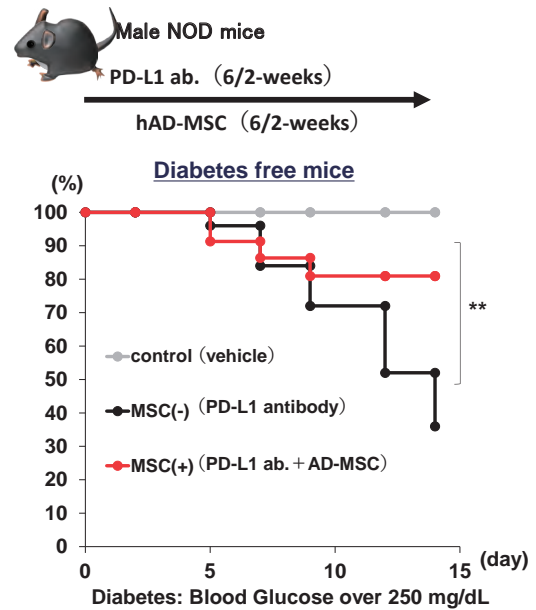
We have discovered that the adiponectin, adipose-derived secretory factor, promotes the production of extracellular vesicles (exosomes) via its receptor T-cadherin (Patent No. 6618079 "exosome production promoter" Kita et al., Osaka University).

We also found that most of the therapeutic effects of mesenchymal stem cell therapy in a heart failure model depended on exosomes, the concentration of adiponectin in blood. Combined with a drug increasing its concentration, exosome production and the therapeutic effect were augmented (Japanese Patent Application 2019-234288 "Stem cell treatment enhancement method" Kita et al., Osaka University).

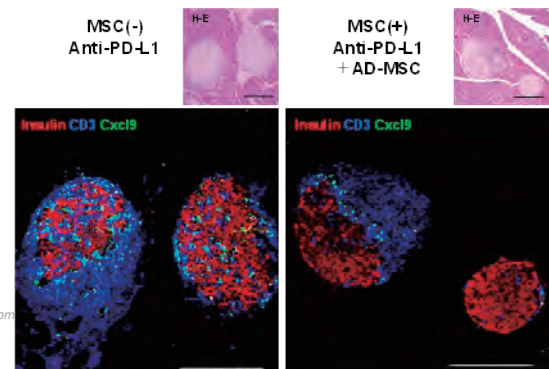
This time, we revealed that MSCs can prevent type 1 diabetes incidence induced by immune-checkpoint blockage in male NOD mice.

International application: PCT/JP2022/005125 "MSCs treatment for diabetes" Kita et al., Osaka University)

Diabetes Prevention by MSCs treatments



MSCs treatments reduced immune-cell invasion in the pancreatic islets.



Target disease: Type 1 diabetes associated with immune checkpoint inhibitor use. With the increase of cancer patients and enhanced applications of ICIs, about 52 thousand will newly develop type 1 diabetes in a year by 2040. Our adipose-derived mesenchymal stem cell therapy can be expected for other immune-related adverse events. We patented worldwide PCT/JP2022/005125 in collaboration with Roto Pharmaceutical Inc.