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[Mesenchymal cells-mediated control for function and aging of organs]

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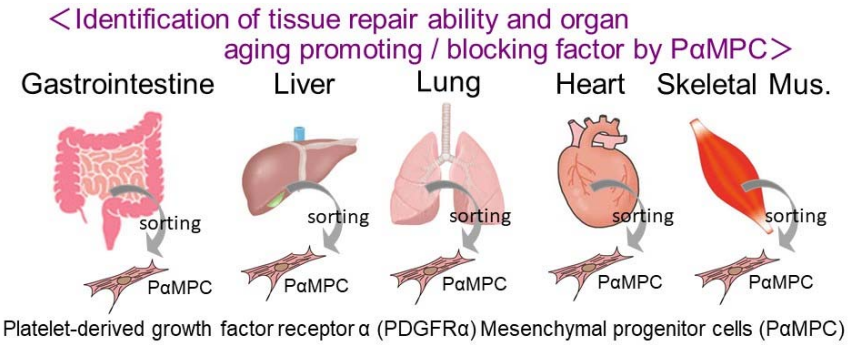
Apart from the “motor organs” by the musculoskeletal system, the living body has organs having motor functions such as the digestive tract, bladder, gallbladder, uterus, blood vessels, and ureters, and smooth muscle cells are responsible for these movements. Its functions are diverse, such as blood pressure regulation, gastrointestinal motility, labor, airway contraction, and urination. By solving the unknown mechanisms of skeletal and smooth muscle dysfunction and its regenerative repair function, we will create new treatments for various immunoinflammatory diseases including infectious diseases and fibrosis, in addition, we would like to clarify the molecular mechanism of "organ aging".

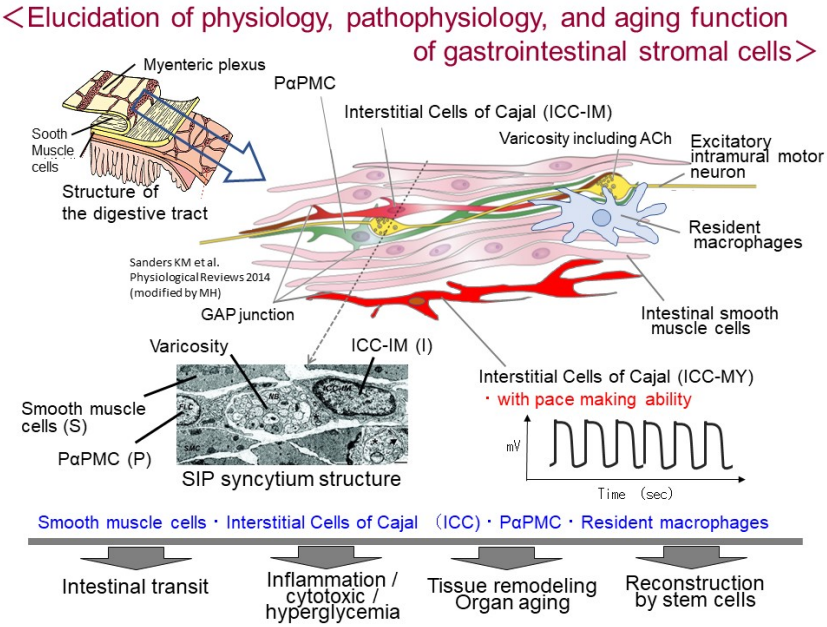
Elucidation of organ repair / organ aging mechanism by mesenchymal progenitor cells



Most organs, including adipose tissue and bone marrow, are engrafted with PDGFRα-positive mesenchymal progenitor cells (PαMPC).

We found that the differentiation potential of PαMPC in each internal organ is organ-specific. Aging of internal organs is closely related to the tissue repair mechanism of each organ, which involves fibrosis. PαMPC is also one of the executing cells for this organ fibrosis. That is, it is predicted that the tissue repair and aging of each organ will differ depending on each organ.

Solve the unknown mechanisms of luminal organ dysfunction and its reconstruction



We have created an organ fibrosis model for the gastrointestinal tract, liver, lungs, heart, and skeletal muscle, and are aiming to elucidate the functions of interstitial constituent cells such as PαMPC in the tissue repair mechanism.

The gastrointestinal tract is the most complex organ of the stromal tract, and the stromal cell group controls the functions of nerves and smooth muscle cells, which can be said to be parenchymal cells, and is responsible for gastrointestinal motility (peristalsis). Muscular immunity by resident macrophages and the like is involved here, and the intestinal mucosal immune response is also deeply involved.