



LUCA Science Inc.

Science mitochondria

Our Purpose

We aim at the development of innovative treatments for mitochondrial and related diseases via science of mitochondria.

Luka Science Inc. is a bio-venture company founded from 7 SEAS PROJECT which is managed by KOINOBORI Associate Inc.

Origin of the name

LUCA, Last Universal Common Ancestor (the oldest common ancestor of living beings), was on the surface of the ocean where ultraviolet rays were exposed 4 billion years ago. Bacteria and archaea were born from LUCA, and eukaryotic cells branched from archaea fused with bacteria, acquired mitochondria, and evolved into humanity.

In LUCA, "16 genes that produce energy by respiration" are found. Therefore, it also can be said that it is the oldest ancestor of mitochondria.

Contact



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Science

We consider that the pathological condition of mitochondrial diseases is mainly due to immune abnormalities based on metabolic abnormalities resulting from decreased ATP production due to mitochondrial dysfunction and increased reactive oxygen species.

LUCA Science are conducting research to improve and stabilize the pathological condition by controlling mitochondrial activity.

Focus

- **Mitochondrial transplantation therapy**

High quality isolated mitochondria for mitochondrial transplantation.

- **Mitochondrial activation therapy**

Mitochondrial activation by the mitochondrial delivery system.

Strategy

Based on the research of 2 universities in Japan, we will build platform technology, and promote research and development on candidate diseases in a joint research system with multiple pharmaceutical companies.

History

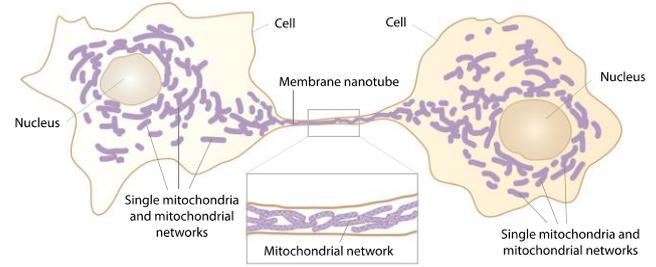
- Apr. 2009 Rare disease drug development support project "KOINOBORI" started
- Jan. 2013 "KOINOBORI" became a nonprofit general incorporated association
- Apr. 2016 Patient-centered drug project "7 SEAS PROJECT" started
- Apr. 2018 Concluded joint research agreement with 8 universities and a pharmaceutical company
- Nov. 2018 Apply for 3 provisional patents from US Patent Office
- Dec. 2018 Established LUCA Science Inc.

Mitochondria can move between cells

In our bodies, mitochondria move between cells as needed. Mitochondria of healthy cells move to weakened cells and give them energy.

Such mitochondrial migration occurs particularly in acute and severe conditions and contributes to the improvement of pathological conditions.

Mitochondrial transfer via membrane nanotube



Mitochondrial transplantation potential

At the Boston Children's Hospital in the United States, 11 children with severe heart disease transplanted mitochondria extracted from their own muscle cells, and the effect of improving heart function became apparent 24 hours later. Eight children survived and became well. Also in Israel, clinical research has begun to transplant normal mitochondria to the stem cells of patients with mitochondrial diseases.

Mitochondrial transplantation saved Avery's life

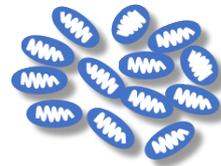


Injection of autologous mitochondria into the myocardium with an insulin syringe

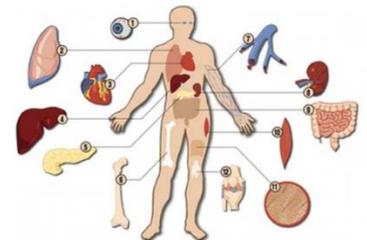
Novel mitochondrial transplantation by high quality isolated mitochondria

LUCA Science provides high quality and high transferability isolated mitochondria as a drug substance. By formulating this drug substance, not only local injection but also intravenous injection and allogeneic transplantation allow multiple doses. It will develop novel mitochondrial transplantation for mitochondrial and related diseases caused by mitochondrial dysfunction.

Mitochondria isolation



Transplantation



Integrate university research and promote research and development with multiple pharmaceutical companies

Based on the research of 2 universities in Japan, we manufacture high quality isolated mitochondria and provide it to pharmaceutical companies for sale. Furthermore, LUCA Science promotes research and development as a platform-type drug development company that is not a mere trustee company, by independently conducting research and development on mitochondrial diseases on behalf of pharmaceutical companies.

