Primary Focus: Mitochondria

Targeting mitochondrial function as an innovative new way of addressing diseases with high unmet needs

Our Mission

Our mission for Primary Focus Mitochondria is to become the global leader in discovering, developing and bringing to market mitochondria biology-based medicine that provides clear value for patients, clinicians and healthcare systems.

Background

Mitochondria are specialized structures in cells that have their own maternally inherited DNA (mtDNA). They are present in almost all human cell types and play essential roles in energy production and in processes such as metabolism and cell signaling. Mitochondrial dysfunction is associated with diseases of the kidneys, liver, muscles, central nervous system, eyes and ears. Many of these diseases have significant unmet medical needs and few treatment options. By targeting mitochondria, we have the potential to create an entirely new way of treating diseases associated with mitochondrial dysfunction.

Strategic Approach

We are allocating significant, sustained investment to mitochondria biology-based therapy development:

**FOCUS**

- Focusing on mitochondrial biology, our top-notch capability, and diseases impacted by mitochondrial dysfunction.

**ENRICH**

- Leveraging our deep understanding of mitochondrial biology, disease pathophysiology and our phenotypic screening platform to identify new leads and innovative target molecules, accelerating selection of scientifically relevant indications.

**EXPAND**

- Expanding into commercially viable indications based on Proof of Concept results and the addition of mitochondrial cell therapy approaches.

Our early stage assets include candidates for:

- Mitochondrial stress response
  - A key factor in cell damage, inflammation and recovery

- Metabolism (NAD+)
  - Enhancement and increased mitochondrial membrane potential
  - Many clinical manifestations of mitochondrial diseases stem from the central role of bioenergetics in the cell

- Gene regulation and mitochondrial biogenesis
  - Essential for mitochondrial function, playing a key role in cellular energy metabolism

- Mitochondrial dynamics, e.g. fission, fusion and mitophagy
  - Play central roles in maintaining normal mitochondrial function, especially in cells under stress

NAD+: Nicotinamide adenine dinucleotide

DNA: Deoxyribonucleic acid
Pipeline

Each asset has the potential to be developed in multiple diseases and indications due to the broad impact of mitochondrial dysfunction in the human body.

Spotlight: Minovia Therapeutics, Ltd.

Minovia Therapeutics, Ltd. is a leading clinical stage company in the field of mitochondrial cell therapy, utilizing their proprietary Mitochondrial Augmentation Therapy (MAT) technology platform to bring life-changing therapies to patients living with mitochondrial diseases.

The unique platform addresses the root cause of mitochondrial disease through the transfer of healthy mitochondria. A patient’s cells are isolated, enriched with healthy mitochondria from a healthy donor and re-infused back into the patient to restore diseased tissues.

Astellas and Minovia have entered into a strategic collaboration to accelerate the development of differentiated, off-the-shelf allogeneic mitochondrial cell therapy programs.

The partnership further enhances Astellas’ cell therapy expertise and mitochondrial biology capabilities, expanding our pipeline of potential treatment options for patients with mitochondrial-related disease.

Image courtesy of Minovia Therapeutics, Ltd.

Current Status†

Our most advanced assets are PPARδ modulators acquired through Mitobridge (an output from their collaboration with the Salk Institute).

<table>
<thead>
<tr>
<th>Compound</th>
<th>Modality</th>
<th>Mechanism</th>
<th>Target indication</th>
<th>Current phase</th>
<th>Origin</th>
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</thead>
<tbody>
<tr>
<td>ASP0367</td>
<td>Small molecule (oral formulation)</td>
<td>PPARδ modulator</td>
<td>Primary mitochondrial myopathy</td>
<td>Phase 2</td>
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<td>ASP0371</td>
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<td>BACH1 inhibitor</td>
<td>Duchenne muscular dystrophy</td>
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† Accurate as of Aug 2022. * Acquired (current programs classified as ‘in-house’).