


Innovative Solutions for Mitochondrial Disease Therapeutic Discovery and Development

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www.protheragen.us/mitochondrial-disease/ 



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About Protheragen

Protheragen excels in offering a comprehensive research service dedicated to mitochondrial disease drug research and development. Our expansive range of products and personalized services are meticulously crafted to support and propel the advancement of innovative therapeutic solutions specifically tailored to address the diverse spectrum of mitochondrial diseases.

Integrated

Excels in offering integrated solutions for mitochondrial disease drug research and development by blending a range of featured services.

Professional

Comprised of experienced professionals, our team focuses on advancing drug development for mitochondrial disease.

Experienced

Drawing from extensive experience in mitochondrial disease research, we can offer insightful and effective solutions.

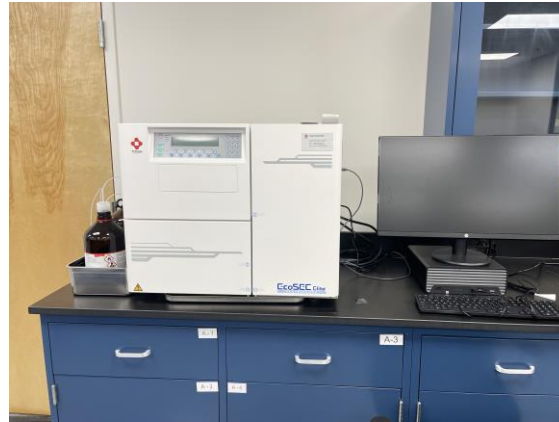
Efficient

Quickly respond to customer needs to deliver a streamlined and thorough experience for all clients, effectively meeting their distinct needs.



Our Laboratory

ABOUT US



The exceptional laboratories housed within **Protheragen** are at the forefront of mitochondrial disease drug discovery and development. These cutting-edge facilities are equipped with state-of-the-art technology and operated by a devoted team of seasoned scientists and researchers, collectively driving innovation and progress in the field.

One-stop Services

ABOUT US

Protheragen offers all-encompassing services in mitochondrial disease research. Additionally, we consistently enhance and broaden our range of services, fostering the creation of tailored solutions to address our clients' expanding requirements and driving the progress of mitochondrial disease research.

Pathology Analysis
Biochemical Analysis
Cell Analysis



Small Molecule Drug
Macromolecular Drug
Cell Therapy
Gene Therapy
Vaccine Development



Basic Research



Target Discovery



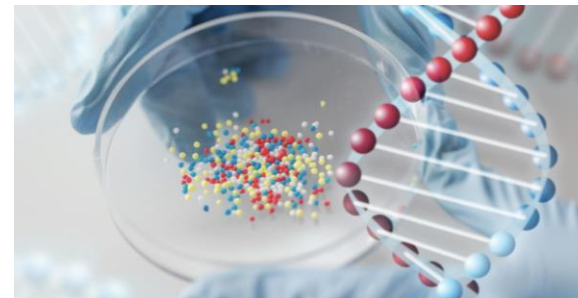
Therapy Development



Preclinical Research



Biomarker Analysis
Omics Analysis
Artificial Intelligence Analysis



Pharmacological Studies
Pharmacokinetics
Drug Safety Evaluation

Disease Areas of Focus

ABOUT US

Meet Research Needs of Multiple Mitochondrial Disease Drug Development

With our interdisciplinary approach and state-of-the-art facilities, **Protheragen** offers a comprehensive range of specialized services tailored to support researchers and institutions in their pursuit of unraveling the complexities surrounding multiple mitochondrial diseases.



Systemic Mitochondrial Diseases

The ubiquity of mitochondria renders any organ susceptible to mitochondrial disease, we offer specialized services for systemic disease drug research.



Eyes-specific Mitochondrial Diseases

Backed by vast experience and cutting-edge technology, we deliver research services tailored for eye-specific mitochondrial diseases.



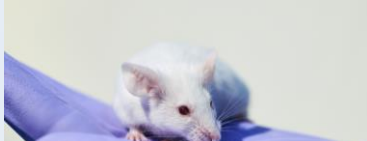




Muscles-specific Mitochondrial Diseases

Committed to offering thorough preclinical services for clients involved in the therapeutic research and development of muscle-specific mitochondrial diseases.

Preclinical Services

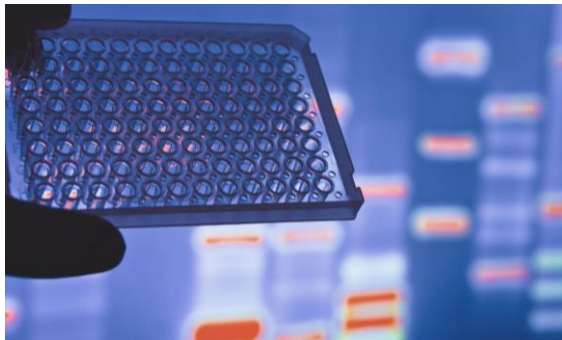
Specializing in mitochondrial disease research services, **Protheragen** offers a spectrum of comprehensive solutions that weave through the preclinical research phase of mitochondrial disease drug development. Through our services, we empower our partners to delve deep into disease mechanisms, unearth novel insights, and spearhead the development of new therapies.

 <p>Diagnostic Development Service</p> <p>A range of methodologies are developed to evaluate mitochondrial diseases, providing thorough preclinical support for precise diagnosis and personalized therapeutic pathways.</p>	 <p>Target Identification Service</p> <p>Present a comprehensive platform for target identification and validation, aiding clients in expediting the discovery and development of new drugs targeting mitochondrial diseases.</p>	 <p>Therapeutic Development Service</p> <p>Tailored to provide holistic support for developing mitochondrial disease drugs, our services encompass in-depth molecular-level research and thorough assessments during the preclinical phase.</p>	 <p>Disease Model Development Service</p> <p>Dedicated to enhancing the understanding and therapeutic research of mitochondrial diseases, our company creates and utilizes cutting-edge cellular and animal models to drive progress in this field.</p>	 <p><i>In Vitro</i> Mitochondrial Analysis Service</p> <p>Through the provision of specialized assays and techniques like morphological analysis, protein purification, and functional assessments, we aid in developing targeted interventions.</p>	 <p><i>In Vivo</i> Mitochondrial Analysis Service</p> <p>Advanced techniques and expertise are offered for investigating the complex processes of <i>in vivo</i> mitochondrial fission and fusion, to offer insights into the mitochondrial dynamic mechanisms.</p>
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Therapeutic Development Service

OUR SERVICES

At **Protheragen**, we provide a comprehensive all-in-one service covering the full preclinical development journey for drugs to treat mitochondrial diseases. Through this end-to-end solution, we enable our partners to successfully navigate the complexities of drug development, fostering innovation and advancement in the realm of mitochondrial disease therapies.



● Target Identification

Utilizes advanced technologies and methodologies to identify and validate targets linked to mitochondrial diseases.



● Drug Discovery

Using AI alongside virtual and high-throughput screening to speed up drug candidate discovery and optimization.



● *In Vitro* Experiments

In vitro experiments are designed to assess the efficacy, safety, and mechanism of action for potential drugs.



● *In Vivo* Evaluation

Through *in vivo* studies to evaluate the pharmacokinetics, pharmacodynamics, and safety of drug candidates.

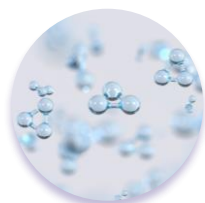
Diverse Platforms

OUR SERVICES

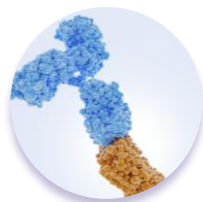
Protheragen's therapy development services cover a variety of drug types, including small molecule, large molecule, cell therapy, gene therapy, and vaccines, providing a wide range of solutions for the preclinical drug development of mitochondrial diseases.

- ✓ Broad expertise across diverse drug modalities.
- ✓ Extensive experience in therapy development.
- ✓ Tailored advanced technology for diverse needs.

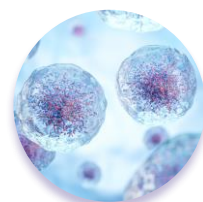
01 | Small Molecule Drug Development



02 | Macromolecular Drug Development



03 | Cell Therapy Development



04 | Gene Therapy Development




05 | Vaccine Development



Diverse
Platforms

Disease Model Development Service

OUR SERVICES



Developing accurate cell and animal models that recapitulate the characteristics of these diseases is essential for advancing research in this field. Protheragen offers customizable modeling services tailored to meet the specific needs of our customers.

01

Cell-Based Model Development Service

Cell-based model development service establishes *in vitro* models that simulate the mitochondrial disease environment, aiding in the comprehension of mechanisms of mitochondrial dysfunction and the screening of potential therapeutic agents.

- Immortalized Lymphoblastoid Cells
- Fibroblasts
- Cytoplasmic Hybrid Cells
- iPSCs and Differentiation Cells

02

Animal Model Development Service

Animal model development service furnishes *in vivo* models that mirror the phenotypes of mitochondrial diseases, enabling to study of disease progression and evaluation of new therapeutic effectiveness within a physiological setting.

- Mouse
- Rat
- Zebrafish
- Fruit Fly
- *C. elegans*
- And More

Disease Model Development Service

OUR SERVICES

Model Names	Mitochondrial Diseases	Model Types
Surf1-KO	Leigh Syndrome	KO
Surf1-Flox	Leigh Syndrome	CKO
Eth1-KO	Ethylmalonic Encephalopathy	KO
Eth1-Flox	Ethylmalonic Encephalopathy	CKO
Mpv17-KO	Mitochondrial DNA Depletion Syndromes	KO
Mpv17-cre	Mitochondrial DNA Depletion Syndromes	Transgenic
Mpv17-Flox	Mitochondrial DNA Depletion Syndromes	CKO
Tymp-KO	Mitochondrial DNA Depletion Syndrome 1	KO
Tymp-Flox	Mitochondrial DNA Depletion Syndrome 1	CKO
Taz-KO	Barth Syndrome	KO
Taz-Flox	Barth Syndrome	CKO
Tfam-KO	Kearns-Sayre Syndrome	KO
Tfam-Flox	Kearns-Sayre Syndrome	CKO
Adck2-KO	Mitochondrial Myopathy	KO
Adck2-Flox	Mitochondrial Myopathy	CKO

Available Mitochondrial Disease Models

Protheragen provides a wide array of mitochondrial disease models that encompass various conditions.

- Systemic Mitochondrial Disease
- Organ-specific Mitochondrial Diseases

Specializing in creating models that precisely mirror the genetic and phenotypic traits of diverse mitochondrial diseases, we guarantee accuracy and applicability in research and drug development endeavors.

The table showcases a selection of the [mouse models](#) we offer, but it is not exhaustive. Collaborate with us to discover how our adaptable [mitochondrial disease models](#) can propel your research objectives forward.

Case Study of Animal Model Development

OUR SERVICES

01

Animal Model of Barth Syndrome

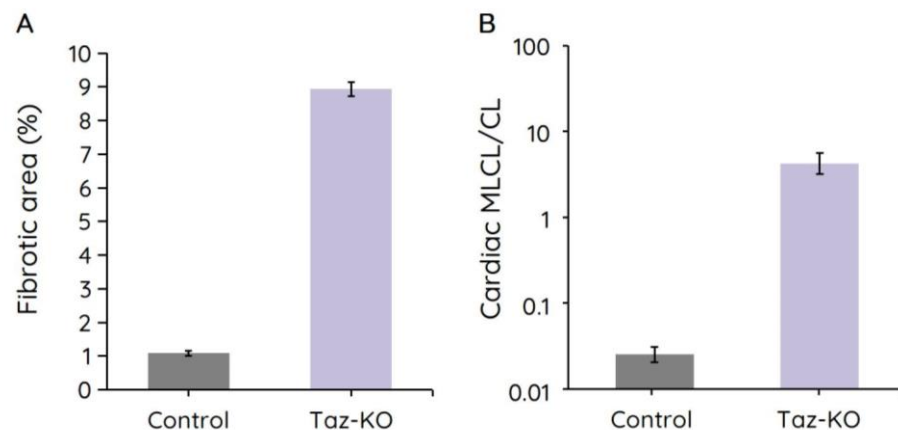


Fig.1 Characterization of Taz-KO mice. In contrast to the control group, Taz-KO mice showed pronounced cardiac dysfunction and fibrosis (Fig.1A), with a notably higher MLCL: CL ratio than the controls (Fig.1B).

02

Animal Model of Optic Atrophy

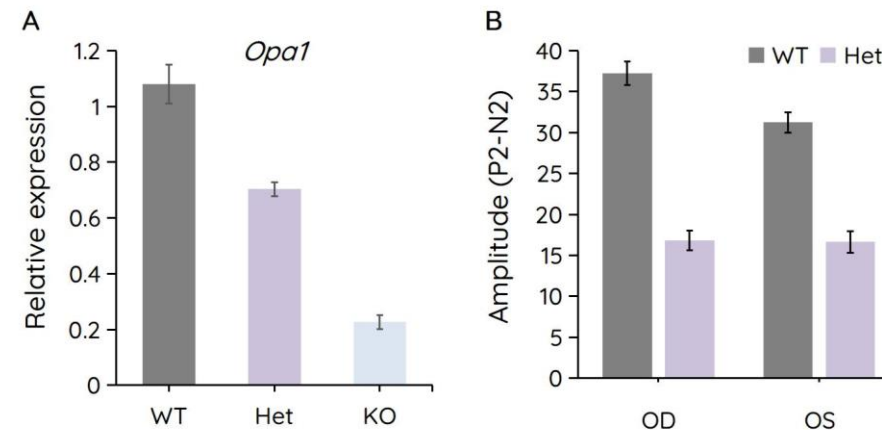


Fig.2 Mouse model of autosomal dominant optic atrophy. In this study, *Opa1* heterozygous mice demonstrated a reduction in *Opa1* mRNA expression levels (Fig.2A) and evident signs of optic nerve dysfunction (Fig.2B).

Mitochondrial Analysis Service

OUR SERVICES

Protheragen offers cutting-edge mitochondrial analysis services to delve into disease mechanisms and assess potential therapeutic impacts. Leveraging cutting-edge methods and technologies, we comprehensively study mitochondrial dynamics and functionality in both animal models and *in vitro* models.

- ***In Vitro* Mitochondrial Analysis Service**

- Mitochondrial Morphology Analysis Service

- Mitochondrial Isolation Service

- Mitochondrial Protein Purification Service

- Mitochondrial Protein Analysis Service

- Mitochondrial Function Analysis Service

- Mitochondrial Damage Detection Service

- ***In Vivo* Mitochondrial Fission and Fusion Analysis Service**

Case Study

Mitochondrial Complex I Activity Assay

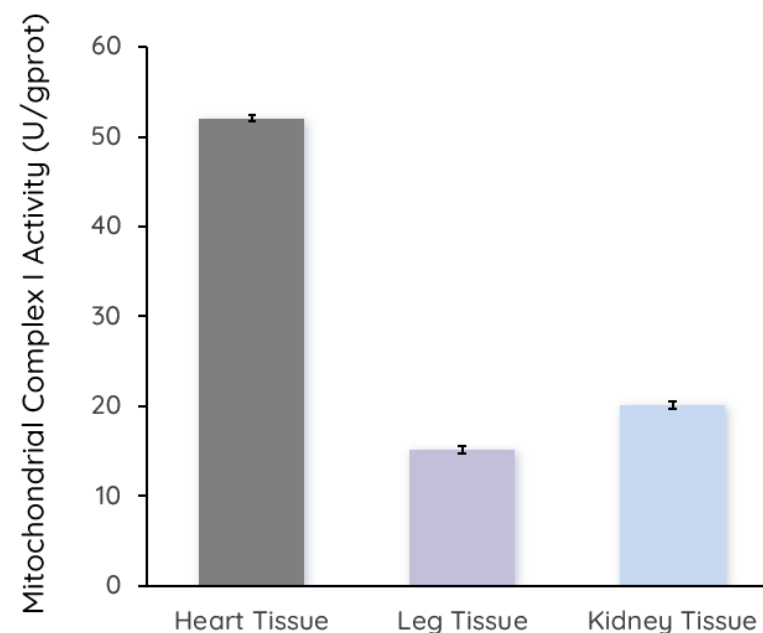


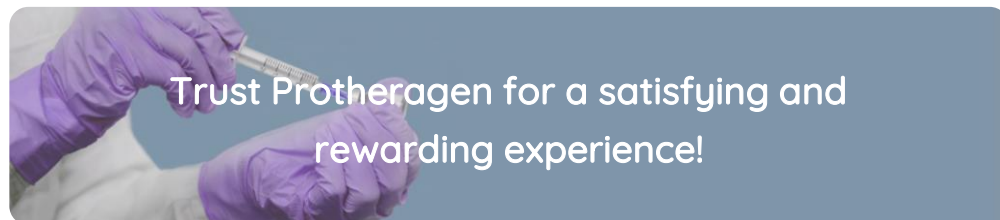
Fig.3 Mitochondrial complex I activity assay in different rat tissue samples.

IIT Services

Drawing upon our extensive collaborative network and premium resources, we expand our offerings to include investigator-initiated trials (IIT) services for professionals and researchers committed to progressing the therapeutic of mitochondrial conditions.

Protheragen's IIT service Advantages:

- Regulatory Compliance
- Extensive Experience and Expertise
- Tailored Solutions
- Comprehensive Process Support
- Widespread Industry Network



IIT Project Design Services

Closely collaborating with clients, we provide comprehensive and innovative study design services for mitochondrial disease drug development.



IND/NDA/BLA Application Services

Guiding clients through complex regulatory processes, our experienced team assists in preparing and submitting IND/NDA/BLA documents.



Patient Recruitment Services

Identify and recruit clinical trial participants with mitochondrial diseases, ensuring timely experiments and data collection, and accelerating IIT clinical research progress.



Biostatistics and Programming

Leverage our expertise in biostatistics and programming to efficiently analyze and interpret research data, assessing the safety and efficacy of potential therapies.

Featured Products

As a leading supplier of mitochondrial disease preclinical research products, **Protheragen** boasts an extensive product network, quick supply turnover, and the ability to accommodate various requirements, ensuring a wide range of options for researchers and scientists.



Mitochondrial Isolation
Reagents / Kits



Mitochondrial Staining
Reagents / Kits



Disease Diagnostic
Reagents / Kits



Biochemical Inhibitors /
Activators



Mitochondrial Specific
Antibodies





And More



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