Protheragen
Gastrointestinal Diseases

Customized Solutions for Rare Gastrointestinal Disease Therapeutic Development

Contact Us

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www.protheragen.us/gastrointestinal-disease/

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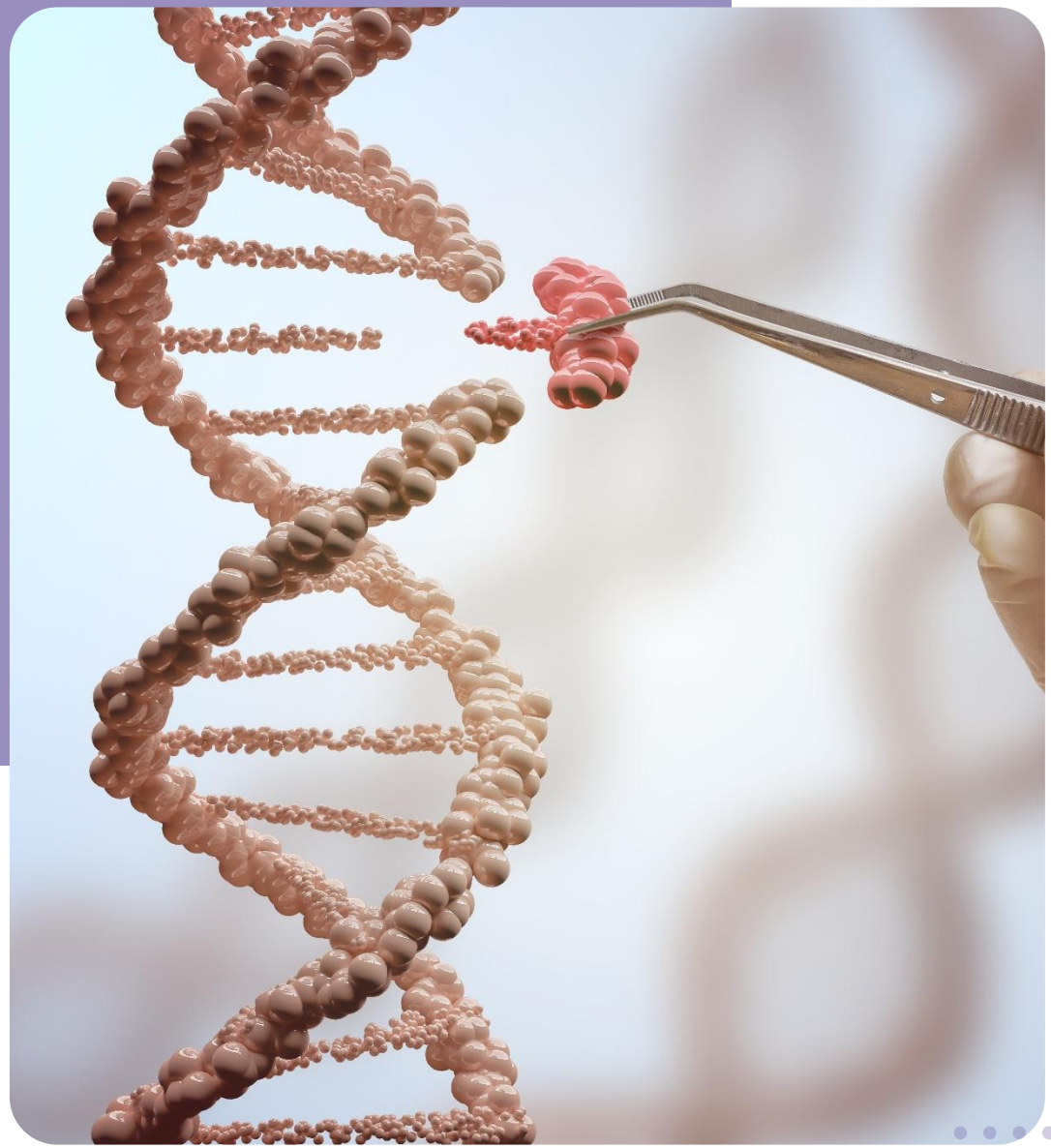
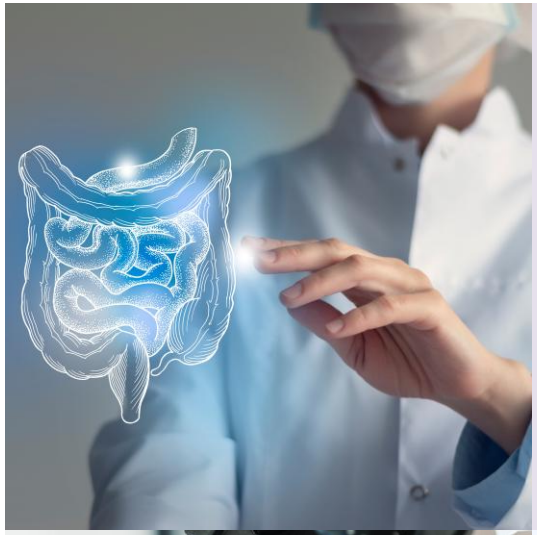


Overview

About Protheragen



Pioneering Solutions for Rare Gastrointestinal Disease Research

Specializing in customized research services to advance therapeutics for rare gastrointestinal diseases, **Protheragen** provides reliable, state-of-the-art technology, products, and comprehensive services tailored to meet the specific needs of researchers. Our dedicated team focuses on driving innovation and progress in understanding and treating these complex conditions.

OUR ADVANTAGES

Leading Research Service Provider Empowering Researchers Worldwide

- Integrated
- Professional
- Experienced
- Efficient

Disease Areas of Focus

About Us

Customized Services for Various Disease Therapeutic Development

Rare gastrointestinal diseases encompass a range of intricate disorders impacting the digestive system. These conditions can affect different segments of the gastrointestinal tract such as the esophagus, stomach, small intestine, large intestine, liver, gallbladder, and pancreas. Centered on precision science and advanced research, **Protheragen** is committed to delivering therapeutic development services for various rare gastrointestinal disorders.

Esophageal Diseases

Gastric Diseases

Intestinal Diseases

Accessory Digestive Gland Diseases

Other Gastrointestinal Disorders

Here are some examples of rare gastrointestinal disorders for our focus:

- Familial Adenomatous Polyposis (FAP)
- Pouchitis
- Gastrointestinal Stromal Tumor (GIST)
- Celiac Disease
- Primary Sclerosing Cholangitis (PSC)
- Crohn's Disease
- Gastroesophageal Reflux Disease (GERD)
- Others

One-stop Solutions

Specializing in rare gastrointestinal diseases, **Protheragen** provides a wide range of services covering the entire drug development journey, starting from initial drug discovery research through development. Our comprehensive offerings extend to the whole preclinical research phase, encompassing diagnostics, therapeutics, and the development of disease models.

Diagnostic Development

- Biomarker Development Services
- *In Vitro* Diagnostic (IVD) Kit Development Service

Therapeutic Development

- Small Molecule Drug
- Cell Therapy
- Gene Therapy
- Therapeutic Antibody
- Therapeutic Peptide
- Therapeutic Protein
- Microbiome Therapeutic

Disease Model Development

- Cell-based Model Development
- Organoid Model Development
- Animal Model Development

Preclinical Research

- Pharmacodynamics
- Pharmacokinetics
- Drug Safety Evaluation

Clinical Trial Services

- Investigator Initiated Trial (IIT) Services
- IND/NDA/BLA Application
- Patient Recruitment
- Biostatistics and Programming
- Other Services

Therapeutic Development

Our Services

Focusing on the advancement of therapeutics for uncommon gastrointestinal disorders, **Protheragen** delivers a full spectrum of services across the drug development journey. Committed to addressing the complexities of rare gastrointestinal diseases, we prioritize delivering high-quality and customized services that play a vital role in the successful creation of therapies for gastrointestinal diseases.

01

Target Identification

Conducting extensive research to unravel the mechanisms of rare gastrointestinal diseases and identify potential therapeutic targets through molecular and genetic studies.

02

Drug Discovery

Employing high-throughput screening to identify promising lead compounds for therapy and leveraging computational tools to optimize drug candidates.

03

In Vitro Experiments

Thoroughly assess the pharmacological characteristics and mechanisms of action of potential therapies by leveraging advanced cell-based models.

04

In Vivo Evaluation

Utilizing relevant animal models to comprehensively evaluate the efficacy and safety of drug candidates within a complex physiological context.

Disease Model Development

Our Services

Tailored Disease Model Development Services

Rare gastrointestinal disease models are meticulously crafted to mirror precise facets of human gastrointestinal disorders within carefully controlled experimental environments. **Protheragen** provides a wide range of tailored rare gastrointestinal disease model development services, designed to address the distinct requirements of researchers and institutions dedicated to investigating gastrointestinal ailments.

Cell-based Model Development

- Cell Line Development
- Primary Cell Development
- iPSC Development

Organoid Model Development

- ASC-derived Organoid
- ESC-derived Organoid
- iPSC-derived Organoid
- Patient-derived Organoid

Animal Model Development

- Genetically Engineering Model
- Humanized Animal Model
- Induced Disease Model
- Surgery Model
- Syngeneic Model
- Xenograft Model

Disease Model Development

Our Services

Customized Animal Model Development Services

Animal models provide researchers with a valuable tool to mimic disease conditions, assess potential therapeutics, and analyze their impacts in a regulated setting before progressing to human trials. At **Protheragen**, we excel in crafting customized animal models designed to meet precise research requirements within the realm of rare gastrointestinal diseases.

Model Names	Gastrointestinal Diseases	Model Types
Acetic Acid-induced Model	Irritable Bowel Syndrome (IBS)	Induced Model
DSS-induced Model	Inflammatory Bowel Disease (IBD)	Induced Model
$CD4^+$ T Cell Transfer	Crohn's Disease	Induced Model
GIST-PDX Model	Gastrointestinal Stromal Tumor (GIST)	Xenograft Model
BE Surgical Model	Barrett's Esophagus	Surgery Model
Fah KO	Tyrosinemia, Type I (TYRSN1)	Genetically Engineering Model
Apc KO	Familial Adenomatous Polyposis (FAP)	Genetically Engineering Model
IL-10 KO	Inflammatory Bowel Disease (IBD)	Genetically Engineering Model

For more information about our animal model development services for gastrointestinal diseases, please contact us.

Advantages of Our Services

- **Scientific Expertise**: Utilizing our scientific knowledge, we develop models that are scientifically robust and pertinent to rare gastrointestinal disease research.
- **High-Quality Standards**: Adhering to the highest quality standards in model development ensures the dependability and reproducibility of our work.
- **Comprehensive Support**: Thorough support is provided at every stage of the model development process, from the initial consultation to the final delivery.

Case Study of Animal Model Development

Our Services

01 DSS-induced Inflammatory Bowel Disease (IBD) Model

The dextran sulfate sodium salt (DSS)-induced colitis model is the most commonly used chemical model for IBD. Acute ulcerative colitis, or chronic colitis, is induced in mice by dissolving DSS in drinking water which destroys the intestinal epithelial cells. Non-specific immune cells are activated to release cytokines, which will ultimately lead to the disruption of the mucosal barrier. Animals exhibit emaciated, diarrhea, bloody stool, and eosinophilia, which remarkably parallel pathological features of human IBD.

Mice were administered DSS via drinking water for a period of 7 consecutive days, with continuous monitoring of their weight fluctuations during the duration of the experiment.

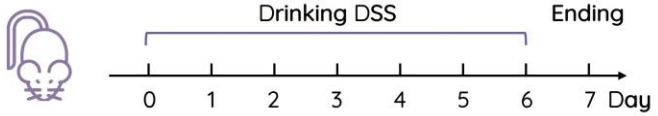


Fig.1 DSS-induced model development.

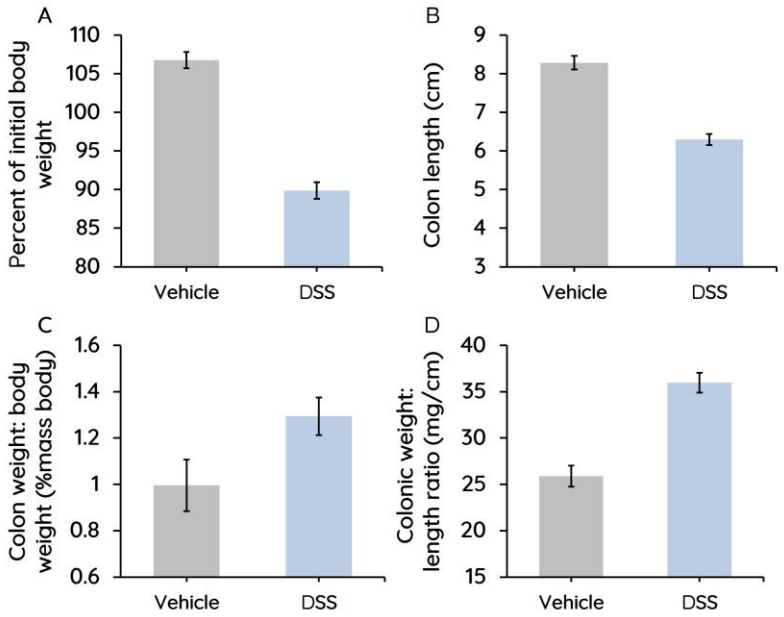


Fig.2 Along with notable weight reduction, there were also loose stools and bloody stools that were highly comparable to symptomatology and pathological features of human ulcerative colitis (Fig.2A). Regarding colon sampling and evaluation, it was noted that there was a significant reduction in the weight of the mouse colon after DSS treatment (Fig.2B), and the ratios of colon weight to body weight (Fig.2C) and colon weight to colon length (Fig.2D) both increased.

Case Study of Animal Model Development

Our Services

02

Apc KO Model for Familial Adenomatous Polyposis (FAP)

Either the deletion of the Apc gene or multiple intestinal neoplasia (Min) mutations that result in the production of truncated APC proteins leads to phenotypes in mice that are analogous to human familial adenomatous polyposis (FAP). Thus, Apc KO mice are suitable models in the study of FAP and colorectal cancer and other tumors.

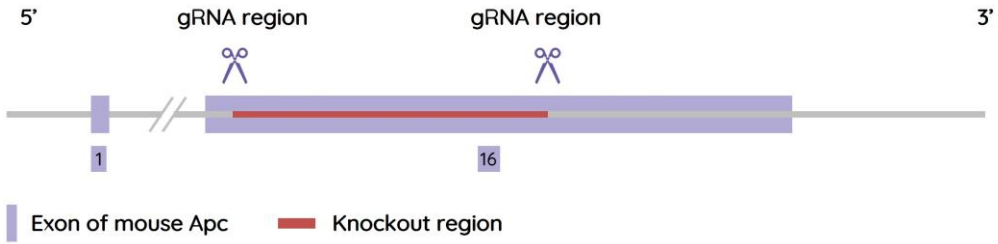


Fig.3 Strain strategy of the Apc KO model. The Apc gene is present on chromosome number 18 and has 16 exons. The editing process involved the knockout of part of the 16th exon of this gene. This exon was greater than seventy percent in the coding region of the Apc gene and contained the mutation cluster region (MCR) of highly frequent mutations in human ailments.

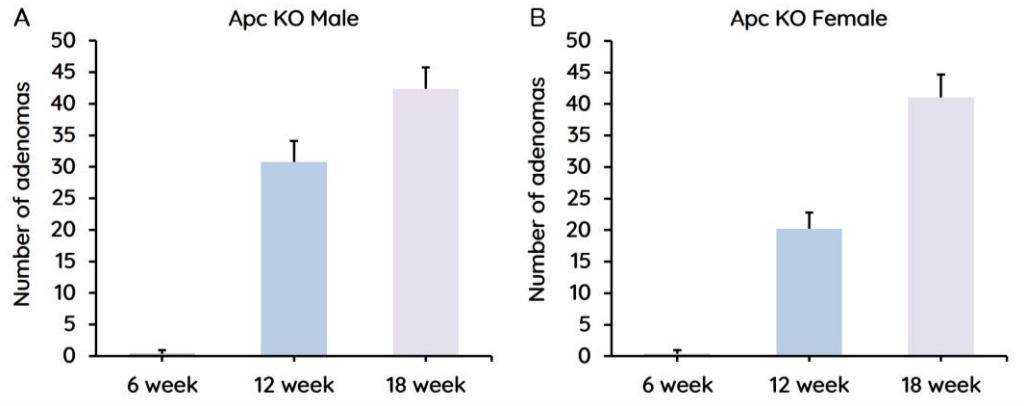
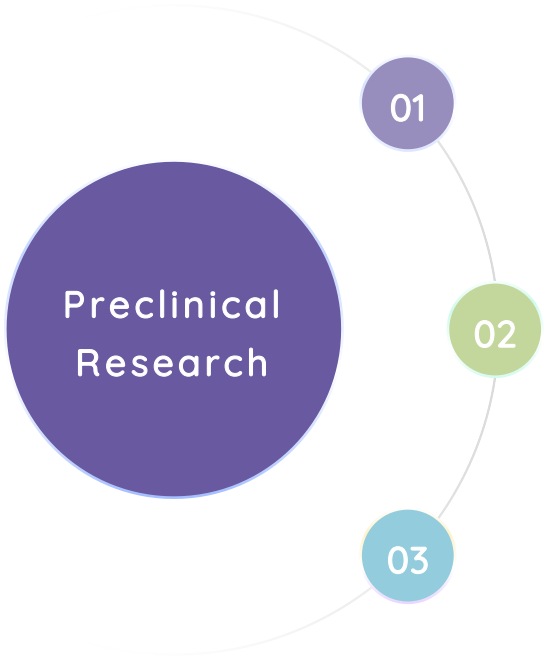


Fig.4 The number statistics of intestinal adenomas. Apc KO mice could spontaneously form intestinal adenomas at the age of 9 weeks, and the number of intestinal adenomas increased with time. There was significant variation in the number of adenomas developed among individual mice due to interindividual differences.

Preclinical Research

Our Services



Pharmacodynamics

Assessing the pharmacodynamic effects of a drug candidate aims to understand its mechanism of action, strength, and effectiveness in relevant disease models.

Pharmacokinetics

Exploring the absorption, distribution, metabolism, and excretion (ADME) properties of the drug candidate helps optimize dosing schedules and enhance the overall efficacy and safety of therapy.

Drug Safety Evaluation

During the preclinical stage, safety assessments of the drug are carried out to thoroughly evaluate potential risks and toxicities associated with the drug candidate.

Comprehensive Preclinical Research Services

- Extensive experience in pharmaceutical drug discovery and development encompassing small molecules, biologics, natural drugs, *etc.*
- Diverse disease models are available for thorough safety and efficacy evaluations.
- Tailored and all-encompassing drug development services.

Clinical Research Services

Our Services

Protheragen provides a full suite of services for clinical trials in the realm of gastrointestinal diseases. We stand out through our dedication to quality, compliance, and customer-centric approaches, ensuring successful outcomes for clinical trial projects with a focus on gastrointestinal disorders.

Compliance Approval

The initial phase involves securing regulatory approval to ensure ethical and legal compliance.

Recruitment and Screening

Implemented a rigorous screening process to ensure a relevant and representative study population.

Data Collection

Collaborate with hospitals and medical centers to gather clinical information for the study.

Quality Control

Conducts quality control checks throughout the trial, including regular audits and data verification.

Service Delivery

Ensure timely research outcomes through efficient and secure data transfer methods that maintain data integrity and confidentiality.

Clinical Research Services

- Investigator Initiated Trial (IIT) Services
- Medical Writing Services
- IND/NDA/BLA Application Strategy
- Patient Recruitment
- Biostatistics and Programming
- Quality Management Services
- Medical Monitoring Services
- Safety and Pharmacovigilance Services
- Data Management Services
- Project Management Services

Featured Products

Protheragen offers an extensive worldwide range of products, encompassing biofluid samples, tissue samples, gastrointestinal system cells, and molecular products. We are dedicated to delivering top-tier, ethically sourced, and expertly crafted research materials, aiming to cater to the ever-changing requirements of the gastrointestinal disease research community.

Digestive System Cells

By utilizing various biospecimen collection sites and animal models, we can offer a range of animal and human-derived cells.

- Human Primary Cells
- Animal Primary Cells
- Digestive System Cell Lines

Multiple Biological Samples

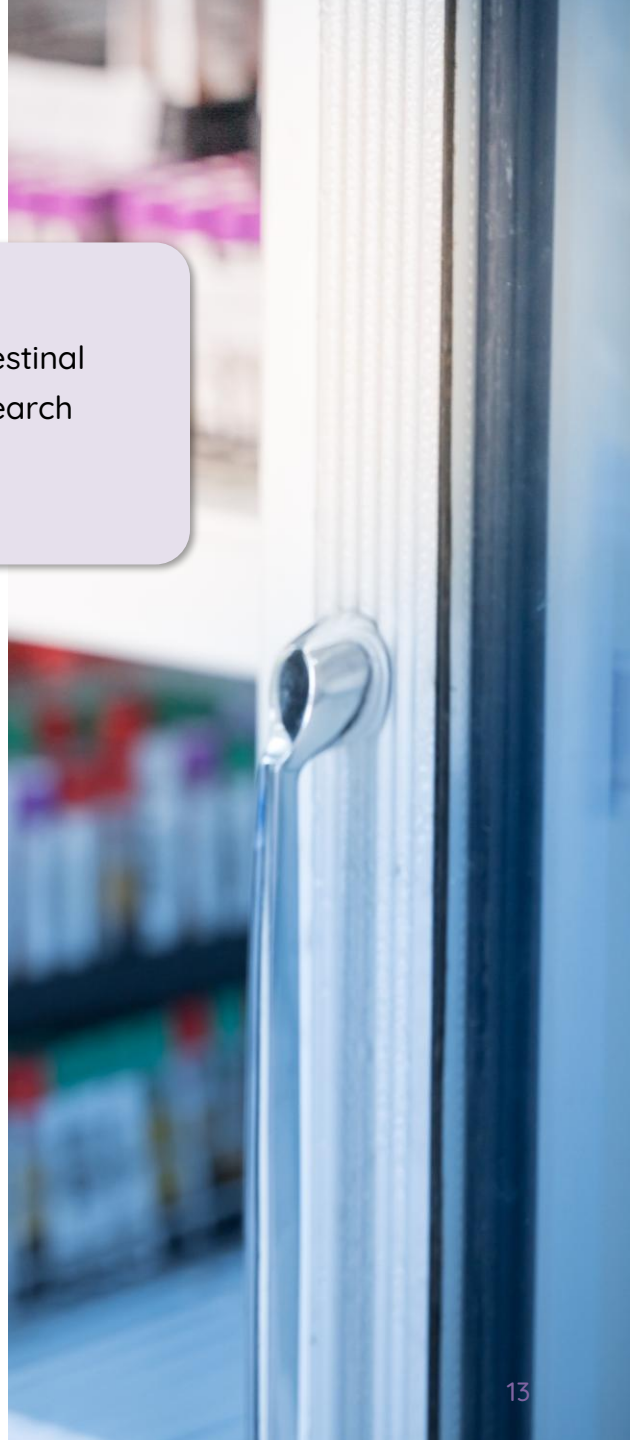
Biological samples comprising patient samples and those from healthy donors for control.

- Tissue Samples
- Blood Samples
- Mucosal Samples
- Stool Samples
- Urine Samples

Molecular Detection Products

Focusing on providing molecular detection products for gastrointestinal conditions, we lead the way in providing a varied array of solutions for molecular testing.

- Biomarker Detection Products
- Pathogen Detection Products



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