Ulcerative colitis and Crohn's disease are a set of chronic, idiopathic, immunological and relapsing inflammatory disorders of the gastrointestinal tract referred to as inflammatory bowel disease (IBD). Various chemical-induced colitis models are widely used on laboratory scale, and these models closely mimic morphological, histopathological and symptomatical features of human IBD. Among the chemical-induced colitis models, trinitrobenzene sulfonic acid (TNBS)-induced colitis, oxazolone induced-colitis and dextran sulphate sodium (DSS)-induced colitis models are most widely used. TNBS elicits Th-1 driven immune response, whereas oxazolone predominantly exhibits immune response of Th-2 phenotype. However, the DSS-induced colitis model induces changes in both Th-1 and Th-2 cytokine profile.

The presented validation data are from the efficacy studies in DSS induced IBD mouse/rat.

Models Available:

- DSS-Induced IBD in Mice
- DSS-Induced IBD in Rat
Validation Data: DSS-induced Intestinal Bowel Disease (IBD) in Mice

Study Protocol

1) Male C57bl mice, 6-wk at arrival, are acclimated for 7 days.
2) Randomized 1 day prior to experiment initiation.

- Vehicle, or 6-TG, or CSA PO dosing for 8 days
- Body weight daily
- Disease activity index daily
- Diarrhoea
- Stool hemocult test
- Bleeding

Groups (10 mice/group):
Gr1 Vehicle (water + 0.5% MC, PO)
Gr2 DSS (3% DSS in water + Vehicle, PO)
Gr3 6-TG (3% DSS + 6-Thioguanine 2mpk, PO)
Gr4 CSA (3% DSS + Cyclosporine A 50mpk, PO)

1) Mice will be sacrificed via CO2 inhalation, Blood will be collected via cardiac puncture.
2) Measurements:
   (i) Colon length
   (ii) Serum Amyloid A (SAA)
   (iii) MPO activity

Results

i. Changes in body weight

Two-way ANOVA, Bonferron’s posttests,
*** p < 0.001 vs. DSS
ii. Disease activity index

Disease activity index

![Graph showing disease activity index over days with different treatments]

Two-way ANOVA, Bonferroni's posttests,
* p < 0.05, *** p < 0.001 vs. DSS

iii. Colon length

Colon length

![Bar chart showing colon length with different treatments]

One-way ANOVA, Dunnett's multiple comparison test,
* p < 0.05, *** p < 0.001 vs. DSS
iv. Serum SAA levels

![SAA Bar Graph](image)

One-way ANOVA, Dunnett's multiple comparison test,
*** p < 0.001 vs. DSS

v. MPO activity

![MPO Activity Bar Graph](image)

One-way ANOVA, Dunnett's multiple comparison test,
* p < 0.05, ** p < 0.01, *** p < 0.001 vs. DSS
vi. Distal colon histology HE staining

vii. Histologic grading in DSS-induced IBD in Mice
Validation Data: DSS-induced Intestinal Bowel Disease (IBD) in Rats

Study Protocol

1) Male SD rat, 6-wk at arrival, were acclimated for 7 days.
2) Randomized 1 day prior to experiment initiation.

- Vehicle, or CSA, or Sulfasalazine PO dosing for 8 days
- Body weight daily
- Disease activity index daily
- Diarrhea
- Stool hemocult test
- Bleeding

- 5% DSS in water drinking for 10 days

Groups (10 Rats/group):
Gr1 Vehicle (water + 0.5% MC, PO)
Gr2 DSS (5%DSS in water + Vehicle, PO)
Gr3 Sulfasal (5%DSS + Sulfasalazine 300mpk, PO)

1) Rats were sacrificed via CO2 inhalation, blood was collected via cardiac puncture.
2) Measurements:
   (i) Colon length
   (ii) Serum Amyloid A (SAA)
   (iii) MPO activity
3) Histology:
   (i) Colon HE staining

Statistics:
- Data are Mean ± SE
- *p<0.05, **p<0.01, ***p<0.001 vs. DSS

Results

i. Changes in body weight

One-way ANOVA, #p<0.05, ##p<0.01, ###p<0.001 Veh vs. DSS
ii. Disease activity index

![Graph showing disease activity index over time. The graph compares Veh, DSS, and Sulfasal treatments.](image)

iii. Colon length

![Bar chart showing colon length.](image)
iv. Serum amyloid A (SAA) levels

![SAA Graph]

v. MPO activity

![MPO Activity Graph]
vi. Proximal colon histology HE staining

vii. Distal colon histology HE staining
BioDuro Pharmacology

The BioDuro Advantage

BioDuro's pharmacology team has extensive drug discovery and development experience in the pharmaceutical industry enabling us to support fully integrated programs, including study design and data interpretation. Special expertise in metabolic and inflammatory diseases is coupled with a commitment to working with clients to develop customized models for rare diseases.

Our team has successfully collaborated with 9 of the top 20 large pharmaceutical companies and numerous small companies. The success of these collaborations is highlighted by the quality data provided that have informed key project decisions and regulatory filings. Beyond providing analysis, our senior team's expertise allows for the development of a consulting relationship with client partners.

The Pharmacology Team

- Dr. Yong Qi, Director of Pharmacology, has over 16 years of experience in leading and advancing drug discovery projects in metabolic and other disease areas at several pharmaceutical companies, including GlaxoSmithKline
- Group leader-level scientists with strong background and training in metabolic diseases
- A team of 20 well-trained bench scientists focused on in vitro and in vivo metabolic disease drug discovery services. They are skilled in different animal models/assays and excel in problem-solving and trouble-shooting

Services

- Translational research
- Biomarker discovery & development
- Compound efficacy evaluation
- Consultation

Therapeutic Focus

- CNS
- Inflammation and Immunology Disease
- Metabolic Disease

DSS Induced IBD Animal Model