Multiple sclerosis (MS), a demyelinating disease of the central nervous system (CNS), presents as a complex disease with variable clinical and pathological manifestations, involving different pathogenic pathways.

Since the first experimental autoimmune encephalomyelitis (EAE) model was introduced decades ago, multiple classic (induced), spontaneous, and humanized EAE models have been developed, each recapitulating particular aspects of MS pathogenesis.

Collectively, the numerous studies on the different EAE models contributed immensely to our basic understanding of cellular and molecular pathways in MS pathogenesis as well as to the development of therapeutic agents: several drugs available today as disease modifying treatments were developed from direct studies on EAE models, and many others were tested or validated in EAE.

Models Available:

- MBP-induced EAE in Lewis rats
- MOG35-55 Induced EAE Mice
- PLP-induced EAE in SJL/J mice
**Validation Data:** MBP-induced EAE in Lewis rats

### Study Protocol

- **Female Lewis rats**
  - 6-8 wk at arrival
  - Adaptation: 7 days

- 20 rats are randomly allocated to 2 groups

- **Dosing groups (10 rats/group):**
  - Gr1 Vehicle (saline) P.O, q.d
  - Gr2 FTY-720, 1 mpk P.O, q.d

- **Rats will be sacrificed by CO2 inhalation**

**Timeline:**

- Days: -7, -1, 0, 21

1. Dissolve MBP in saline (1mg/ml)
2. Complete Freund’s adjuvant (CFA) (4mg/ml)
3. Emulsify MBP solution in an equal volume of the CFA with Homogenizer (~50 min) *
4. Anesthetize the rats with Isoflurane
5. 50µL emulsion (S.C), left hind footpad, each rat

- **Body weight, Clinical Score, Incidence:**
  - All rats will be recorded daily from Day 0 to Day 21

*A stable emulsion should not disperse when a drop is placed on an aqueous surface.

### Results

**i. Disease Score**

![Graph showing Mean Disease Score of EAE](image-url)
ii. Incidence

![Incidence of EAE](image)

iii. Body Weight

![Mean Body Weight of The Rats](image)
Validation Data: MOG35-55 Induced EAE Mice

Study Protocol

1. Dissolve MOG in saline (2mg/ml)
2. Complete Freund’s adjuvant (CFA) (4mg/ml)
3. Emulsiify MOG solution in an equal volume of the CFA with Homogenizer (∼50 min)*
4. Anesthetize the mice with Isoflurane
5. 100μl emulsion (B.C), three sites (~0.033 ml per site): one along the midline of the back between the shoulders, and two on either side of the midline on the lower back at the base of the tail.

* A stable emulsion should not disperse when a drop is placed on an aqueous surface.

Results

i. Disease Score, Incidence and Body weight in Mice
Validation Data: PLP Induced EAE Mice

Study Protocol

Female SJL/J mice
6-8 wk at arrival
Adaptation: 7 days

20 mice are randomly allocated to 2 groups

Dosing groups (10 mice/group):
Gr1 Vehicle (saline) P.O. q.d
Gr2 FTY-720, 3 mpk P.O. q.d

Mice will be sacrificed by CO2 inhalation

Days -7 -1 0 46

1) Dissolve PLP in saline (4mg/ml)
2) Complete Freund’s adjuvant (CFA) (4mg/ml)
3) Emulsify MBP solution in an equal volume of the CFA with Homogenizer (~50 min)*
4) Anesthetize the mice with isoflurane
5) 100μL emulsion (S.C),
three sites (~0.033 ml per site): one along the midline of the back between the shoulders, and two on either side of the midline on the lower back at the base of the tail.

Body weight, Clinical Score, Incidence:
All mice will be recorded daily starting from Day 0 to Day 46

* A stable emulsion should not disperse when a drop is placed on an aqueous surface.

Results

i. Disease Score, Incidence and Body weight in Mice
ii. Incidence

![Incidence of EAE](image1)

iii. Body Weight

![Mean Body Weight of The Mice](image2)
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**, Directory 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