

# JAX<sup>®</sup> *In Vivo* Services Collagen Antibody-Induced Arthritis Sample Study

JAX<sup>®</sup> *In Vivo* Services can perform a variety of flexible and customizable studies to help researchers evaluate experimental therapies. This sample study describes a protocol designed to assess the efficacy of novel agents in the context of collagen antibody-induced arthritis in mice, an experimental model for rheumatoid arthritis (RA) in humans. Advantages of this model are the rapid induction of arthritis (within the first five days of study) and the ability to utilize strains that are resistant to collagen-induced arthritis. This model is ideal to rapidly screen anti-inflammatory therapeutic agents.

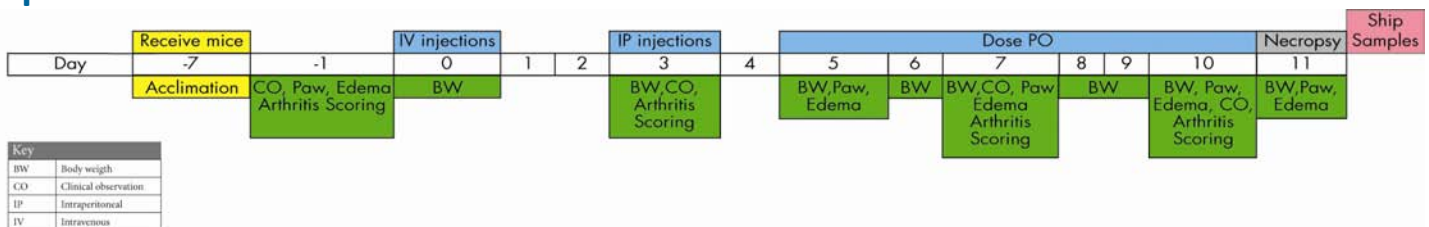
## Study Design

- To begin the study, female BALB/cJ mice (Stock Number 000651) are transferred to The Jackson Laboratory *In Vivo* Services. The animals are housed at a density of three to four per cage and allowed to acclimate for one week. A combination of four different monoclonal antibodies to the well-defined epitopes of Collagen II (mAbs: C11b, J1, D3, and U1) are administered IV (on Day 0).
- Three days later (Day 3), mice are challenged with lipopolysaccharide administered IP (LPS, 25 µg/mouse). Test compound, Dexamethasone, and vehicle are administered according to study design beginning one hour post-LPS challenge on Day 3.
- Paw edema is measured on Days -1, 4, 7, 10 and 11. For each animal, increase in volume of both hind paws is measured using digital calipers five times during the study.
- Arthritis Scores in mice are visually examined for signs of joint inflammation on Days -1, 3, 5, 7, and 10. Body weights are determined on all days when arthritis scores are obtained. Blood is drawn at necropsy and processed to serum or plasma.
- Mice are euthanized after obtaining final caliper measurements on Day 11. Hind legs are taken and fixed for histopathology analysis.

## Table 1: Visual Arthritis Scores

- 0 Normal
- 1 Erythema and mild swelling confined to the ankle joint or midfoot
- 2 Erythema and mild swelling extending from the ankle to the midfoot
- 3 Erythema and moderate swelling extending from the ankle to the metatarsal joints
- 4 Erythema and severe swelling extending from the ankle to the digits

## Experimental Timeline



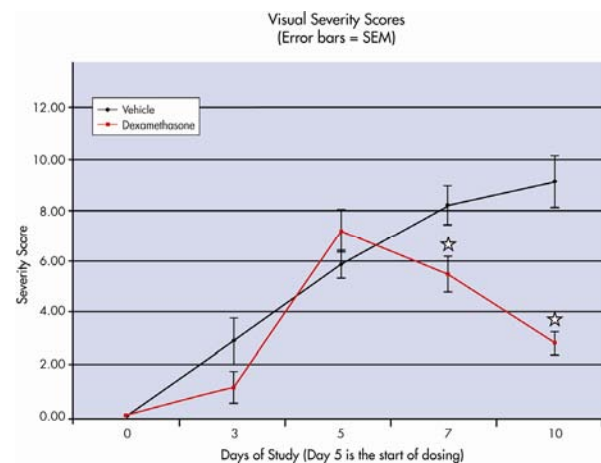
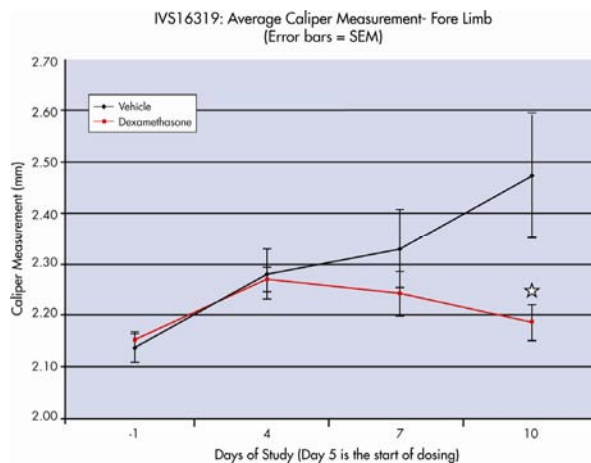
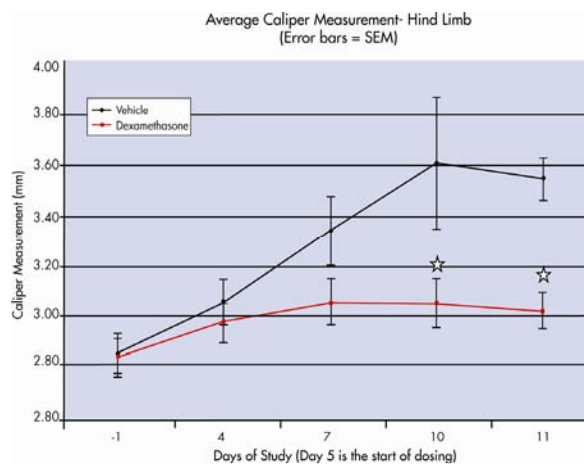
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▶ Phone: 1-800-422-6423 or 1-207-288-5845  
 Email: [jaxservices@jax.org](mailto:jaxservices@jax.org)  
 Web: [www.jax.org/jaxservices/invivo](http://www.jax.org/jaxservices/invivo)

## Deliverables

- Histology blocks and slides
- Written report providing the following information
  - Body weight changes
  - Caliper measurements
  - Visual scoring of arthritis
  - Histopathological scoring of arthritis

## Representative Data



Paw edema, reflected by increase in volume of hind paws and front paws, is measured using digital calipers. Error bars represent standard error of the mean (SEM). Dexamethasone (QD) demonstrates significantly reduced hind and front limb caliper measurements compared to vehicle control group. ☆,  $p < 0.05$ .

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 Email: [jaxservices@jax.org](mailto:jaxservices@jax.org)  
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