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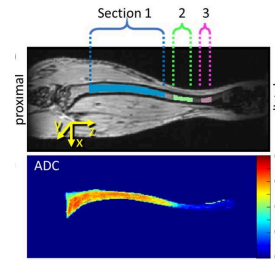
# Apparent Diffusion Coefficient Measurement of Myelofibrosis in Mouse Tibia

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**Protocol status:** Working

**We use this protocol and it's working**

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**Keywords:** mouse tibia, myelofibrosis model, apparent diffusion coefficient, preclinical imaging protocol, technical repeatability, apparent diffusion coefficient measurement of myelofibrosi, mri measurement of apparent diffusion coefficient, tibia bone marrow of myelofibrosis mouse model, tibia bone marrow composition in mf mouse model, image processing in mf mouse tibia, apparent diffusion coefficient measurement, myelofibrosis mouse model, mri measurement, measurement of myelofibrosi, mf mouse model tibia, tibia bone marrow composition, tibia bone marrow, mf mouse tibia, imaging, pip mri template, diffusion, myelofibrosi, adc measurement, profile details procedures for adc measurement, imaging protocol, tibia section, bone marrow, mf mouse model, mouse tibia the goal, tibia, mean adc, measured change in the mean adc

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## Disclaimer

**The ADC PIP claims hold when:**

- **Scanner hardware, diffusion weighted image (DWI) data acquisition method and parameters, image reconstruction, and data-reduction procedures are equivalent (or superior) to those detailed in section III.**
- **Use of the same animal model and interventions to induce myelofibrosis are performed as detailed in section V.**
- **ADC change is assessed on an individual animal basis where each animal undergoes identical procedures on the same MRI system over longitudinal timepoints.**

## Abstract

The goal of this Co-Clinical Imaging Research Program (CIRP) pre-clinical imaging protocol (PIP) is to provide detailed description of key steps used to achieve a stated level of technical repeatability (precision) embodied in "Claims", for MRI measurement of apparent diffusion coefficient (ADC) in tibia bone marrow of myelofibrosis mouse models. This pre-clinical imaging procedure document will be referred to as a "profile" and adheres to a PIP MRI template provided in: <https://www.protocols.io/workspaces/pre-clinical-imaging-protocols>. This profile details procedures for ADC measurement from diffusion weighted imaging (DWI) acquisition and image processing in MF mouse tibia to achieve stated performance claims. Tibia bone marrow composition in MF mouse models has gradation going from proximal to distal ends of the tibia, therefore separate claims are made for volume of interest (VOI) analysis of ADC maps for each of three distinct sections along the length of the tibia (see Figure 1):

Section 1 (proximal)° VOI ( $\sim 4\text{-}5\text{mm}^3$ ) within 9mm of proximal end of tibia

Section 2 (transition)° VOI ( $\sim 0.4\text{-}0.5\text{mm}^3$ ) from 10 to 12mm of proximal end of tibia

Section 3 (distal)° VOI ( $\sim 0.1\text{-}0.2\text{mm}^3$ ) from 13 to 14mm of proximal end of tibia

**Claim 1:** A measured change in the mean ADC in Section 1 VOI of MF mouse model tibia that exceeds  $\pm 0.037\mu\text{m}^2/\text{ms}$  indicates a true biological change has occurred in the tibia bone marrow with 95% confidence.

**Claim 2:** A measured change in the mean ADC in Section 2 VOI of MF mouse model tibia that exceeds  $\pm 0.087\mu\text{m}^2/\text{ms}$  indicates a true biological change has occurred in the tibia bone marrow with 95% confidence

**Claim 3:** A measured change in the mean ADC in Section 3 VOI of MF mouse model tibia that exceeds  $\pm 0.030\mu\text{m}^2/\text{ms}$  indicates a true biological change has occurred in the tibia bone marrow with 95% confidence

## Attachments



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