

SAFETY ASSESSMENT

Services

- Metabolic bone diseases
 - Osteoporosis, including neutered animal models
 - Rickets/osteomalacia
 - Renal osteodystrophy
 - Thyroparathyroidectomy rat model
 - Diabetes
- Bone anabolic and anticatabolic drugs
- Toxicants targeting bones and joints
- Carcinogenicity testing
- Cartilage defects
- Osteoarthritis and rheumatoid arthritis models
- Fracture healing and bone defect repair
- Orthopedic devices
- Bone substitutes, grafts, and cements
- Sarcopenia

Musculoskeletal Pathology

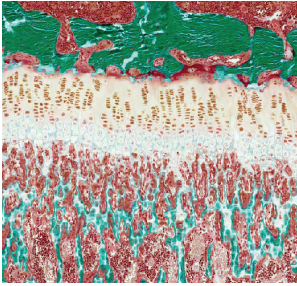
Pathology plays a crucial role in toxicology studies especially considering the potential for rare findings and unpredictable results. Choosing a provider with extensive scientific experience with musculoskeletal pathological evaluations is key to avoiding potential program setbacks such as compromised data analysis and failure to meeting regulatory guidelines.

For more than 20 years, Charles River Laboratories has provided comprehensive bone, muscle, cartilage, and hard tissue pathology-based services to support the evaluation of metabolic diseases, arthritis, and orthopedic devices. Our pathologists and scientists, together with a team of highly trained technicians, design and execute individual studies and complete programs for therapeutics that treat and prevent diseases such as osteoporosis, sarcopenia, arthritis, and those which target bone and cartilage healing. We follow current industry 'best practices' in the recording and interpretation of pathology endpoints, and have the knowledge and multidisciplinary scientific depth to successfully navigate rare findings and unpredictable results to meet rigorous timelines and regulatory requirements.

Qualitative Evaluation

Our team uses histological scoring methods to assess the effects of medical or surgical treatments on disease progression or development. Evaluation includes documentation of tissue responses to biomaterial and devices, as well as the healing of fractures and defect site in relevant animal models. We have also conducted carcinogenicity studies and evaluated findings involving known bone carcinogens in our laboratories.

EVERY STEP OF THE WAY



Histomorphometry

GLP-compliant image analysis systems permit the evaluation of standard and user-defined static and dynamic measurements for bone. Our staff has expertise in the preparation of high-quality ground and thin sections of plastic-embedded tissue for such measurements. Structural and dynamic changes in cortical and cancellous bone can be monitored through the application of computer-assisted histomorphometry, which measures parameters characterizing the bone matrix, cells, and the extent of fluorochrome labels. We've tested biopsies of ribs, ilium, and bones from various appendicular and axial sites from various laboratory animal species.

Measurements of myofiber density and diameter, as well as myofiber typing with immunohistochemistry, allow us to characterize the effects of treatments upon skeletal muscles.

Evaluation types

- Decalcified paraffin processing
 - Organ/tissue morphology
 - Cellular/molecular changes
 - Phenotyping
 - Special stains
 - Immunohistochemical stains
- Undecalcified bone embedding
 - *In vivo* bone labeling techniques
 - Special stains
- Bone histomorphometry
 - Structural/dynamic variables
 - Cancellous/cortical bone analysis
 - Defect or implant healing site
- Muscle histomorphometry
 - Myofiber density/number/typing

Radiology – Guided Evaluation

We offer both standard radiology and digital high-resolution radiology (Faxitron®) to detect occult skeletal changes and to guide the trimming of bone lesions and implant-tissue interface.