iNSiGHT

Fully Shielded DXA System

- Easty to use
- Low-Dose Radiation
- Fast Scans

- Non-invasive
- Quantitative
- Reproduceable

- Self-Shielded
- Reproduceable
- Cost Effective

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iNSiGHT DXA

The iNSiGHT is a fully shielded DXA (DEXA, dual-energy x-ray absorptiometry) system designed specifically for preclinical small animal models such as mice and rats. The DXA technology provides quantification of body composition, such as bone mineral density (BMD), and measures of lean and fat mass, with exceptional image quality.

Osteosys has provided clinical body composition analyzers for over 20 years, with around 20,000 systems installed worldwide. With a strong background in research and development, Osteosys took their experience with clinical DXA technology and created the iNSiGHT system. To provide researchers with a state-of-the-art tool to study body composition non-invasively, with low dose radiation, suitable for longitudinal studies.

X-Ray
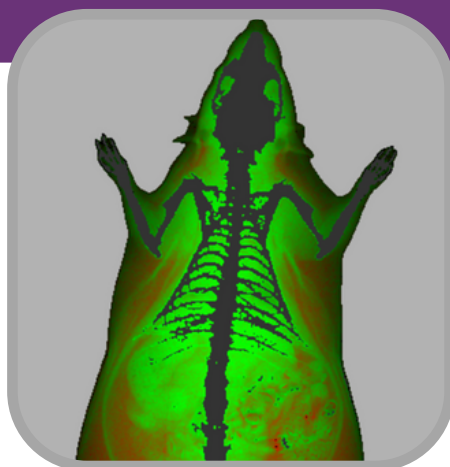

Lean vs Fat Mass

Bone Mineral density

Overview

Preclinical applications of DXA are diverse, ranging from metabolic bone diseases such as osteoporosis, arthritis, a wide variety of metabolic disorders including diabetes and obesity, and musculoskeletal pathologies such as bone regeneration and muscle wasting diseases.

Measurements of body composition are taken quickly, are non-invasive, and use very low-dose radiation; combined this makes the iNSiGHT system ideal for following the same animal over the course of a longitudinal study. DXA does not require any pre-treatment of the animal, contrast, or substrate injection, to acquire the data. It is also non-destructive and provides highly accurate and reproducible measures.

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iNSiGHT Measurements

- Bone mineral density (BMD) in g/cm2
- Bone mineral content (BMC) in g
- Bone are in cm2
- Fat tissue as percentage and weight in % and g
- Lean tissue as percentage and weight % and g
- Total weight in
- Monitoring of body temperature, respiratory rate, ECG, and heart rate
- ECG and respiratory signals may be exported

Additionally, specific bone length measurements can be drawn on the 2D x-ray image. The quantitative results may be tracked over time on the same animal, and/or exported into a comma separated value format for data compilation and comparison.

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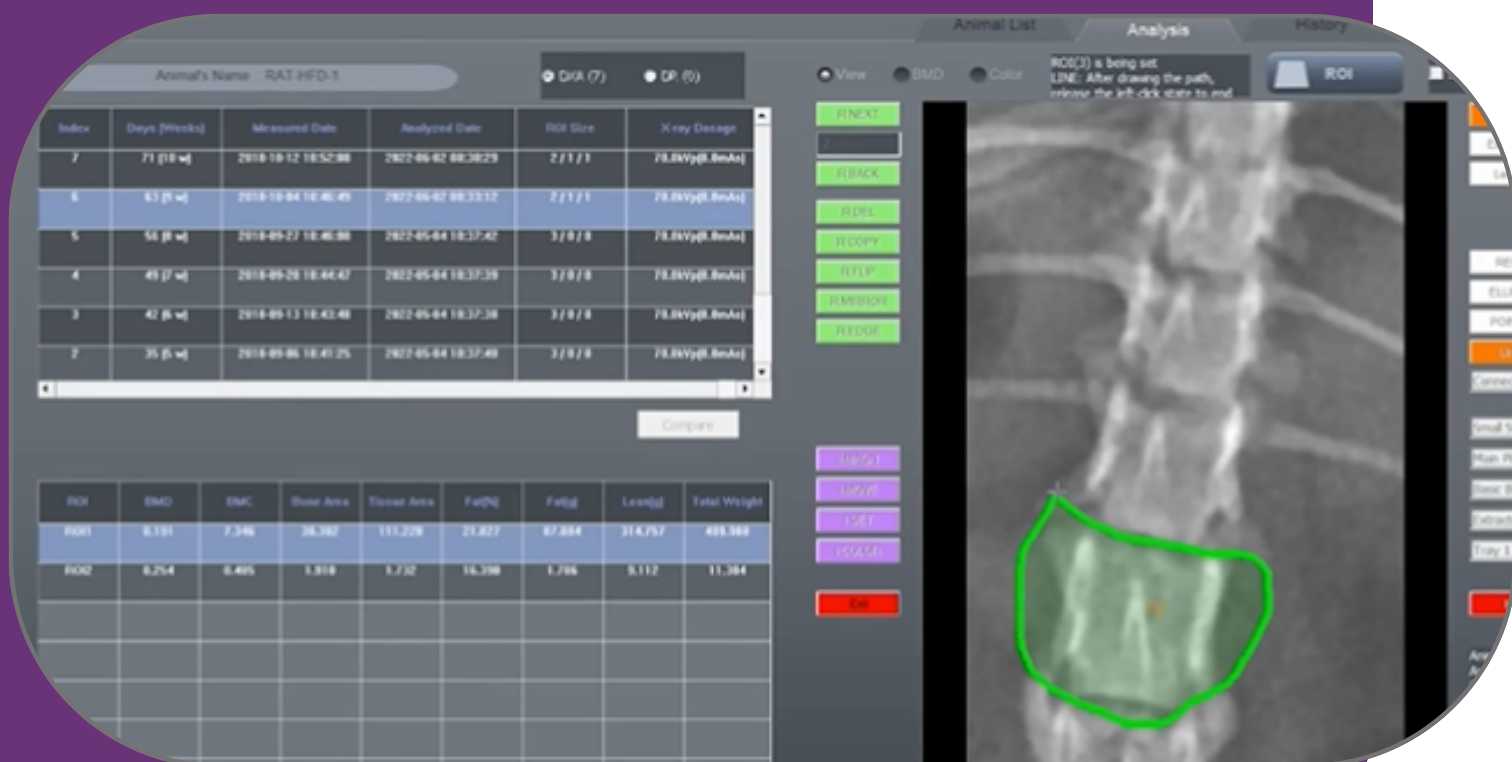
Applications

Metabolic Bone Diseases

The iNSiGHT system can be used to assess the progression or regression of disease in response to a therapeutic regime by measuring bone mineral density and content, measuring bone length, and a 2D x-ray image is provided to visualize any imperfections or changes which may be occurring within the bone structures

Musculoskeletal Diseases

The iNSiGHT system can be used to assess the progression or regression of disease in response to a therapeutic regime by measuring changes in bone mineral density and content, and/or by measuring changes in fat and lean mass over time.
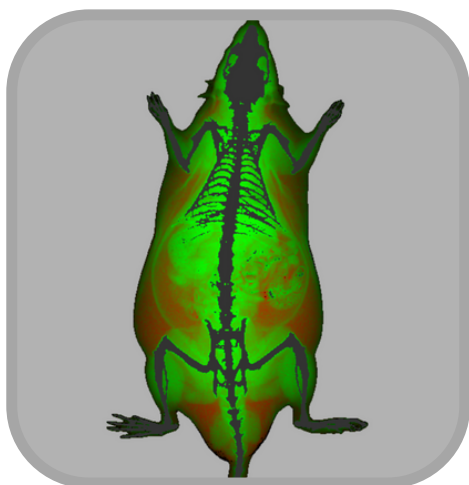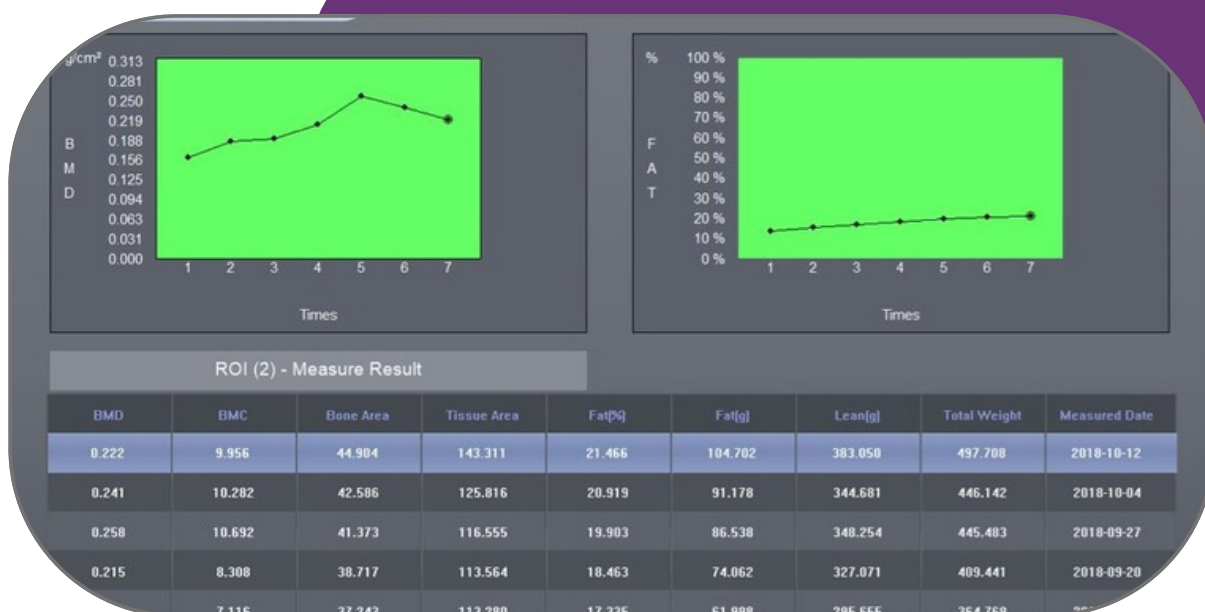
Arthritis

The iNSiGHT system can be used to assess the progression or regression of disease in response to a therapeutic regime by measuring changes in bone mineral density and content in the effected joints. Often these changes are seen earlier in the disease progression, while therapies may still be effective, prior to being visible on a traditional x-ray image.

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Applications

Drugs Safety & Toxicology

Drug safety and toxicology studies are key to the progression of target compounds progressing to clinical trials. In addition to efficacy of the target compound on their intended pathology, it is also very important to study their safety and potential toxic effects, some of these effects may be seen by studying changes in either the bones or fat and lean tissues. The iNSiGHT system can be used to assess changes in body composition in response to the administration of a target compound at an effective dose. This can be done by looking for changes in bone mineral density and content, and/or by measuring changes in fat and lean mass over time.

ROI (2) - Measure Result

BMD	BMC	Bone Area	Tissue Area	Fat[%]	Fat[g]	Lean[g]	Total Weight	Measured Date
0.222	9.956	44.904	143.311	21.466	104.702	383.050	497.708	2018-10-12
0.241	10.282	42.586	125.816	20.919	91.178	344.681	446.142	2018-10-04
0.258	10.692	41.373	116.555	19.903	86.538	348.254	445.483	2018-09-27
0.215	8.308	38.717	113.564	18.463	74.062	327.071	409.441	2018-09-20
7.116	37.243	113.280	17.335	61.998	295.555	354.769		

Metabolic Bone Diseases

The iNSiGHT system can be used to assess the progression or regression of disease and body composition measurements in response to a therapeutic regime by measuring changes in fat and lean mass over time. The colorimetric image allows for the differentiation, by way of regions of interest, of visceral and subcutaneous fat, which may play a key role in further understanding these pathologies.

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