MAYO CLINIC LABORATORIES

Test Definition: BHISC

Bone Histomorphometry, Gross Microscopic Exam

Overview

Useful For

Undetermined metabolic bone disease in wet tissue specimens

Renal osteodystrophy

Osteomalacia

Osteoporosis

Paget disease

Assessing effects of therapy

Identification of some disorders of the hematopoietic system

Aluminum toxicity

Presence of iron in the bone

Reflex Tests

Test Id	Reporting Name	Available Separately	Always Performed
SS2PC	SpecStain, Grp II, other	No, (Bill Only)	No

Testing Algorithm

Hematoxylin and eosin-stained slides are sent to pathology for review. Iron staining or aluminum staining may be performed at an additional charge.

Special Instructions

- Bone Histomorphometry Specimen Preparation
- Bone Histomorphometry: Patient Information

Method Name

Histomorphometry

NY State Available

No

Specimen

Specimen Type
Varies

Shipping Instructions
It is preferred that the specimen is shipped in 70% ethanol because it preserves the tetracycline label in the bone.

Necessary Information
Bone Histomorphometry: Patient Information (T352) must be completed and sent with the specimen. The laboratory requires this information in order to perform testing.

Specimen Required
Supplies: Metal Free Specimen Vial (T173)
Specimen Type: Bone
Preferred: Anterior iliac crest
Container/Tube: Metal-free specimen vial
Specimen Volume: Entire specimen
Collection Instructions:
1. Fix specimen in 70% ethanol.
2. Quantitation of bone turnover requires 2 time-spaced tetracycline labels.
3. **The use of metal-free containers is required** to avoid aluminum or iron contamination.
4. For complete instructions see Bone Histomorphometry Specimen Preparation (T579).

Additional Information: Consultation with a Mayo Clinic Laboratories pathologist or endocrinologist/nephrologist is recommended for first-time users of this service. Written instructions are available upon request.

Forms
Bone Histomorphometry: Patient Information (T352)

Specimen Minimum Volume
5 mm bone

Reject Due To

Fixatives other than 70% alcohol Decalcified bone	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container

Varies	Ambient (preferred)		
	Refrigerated		

Clinical & Interpretive

Clinical Information

Bone histomorphometry is a very sophisticated procedure utilizing full-thickness bone biopsy.

Techniques such as 2-time interval labeling with tetracycline permit the direct measurement of the rate of bone formation. The information derived is useful in the diagnosis of metabolic bone diseases, including renal osteodystrophy, osteomalacia, and osteoporosis, and other disorders, such as aluminum toxicity and iron abnormalities.

Reference Values

A quantitative and interpretive report will be provided.

Interpretation

Computer-generated histomorphometric values are given for adequate specimens.

Normal histomorphometric values for iliac crest are provided.

An interpretive report will be provided.

Cautions

Mineralization or bone formation rates can be done only when tetracycline has been administered on a specific schedule prior to biopsy.

Biopsy site of preference is iliac crest.

Dairy products should not be ingested at the same time as the tetracycline because they interfere with tetracycline uptake.

Clinical Reference

1. Recker RR. Bone Histomorphometry: Techniques and Interpretation. CRC Press; 1983
2. Dempster DW, Compston JE, Drezner MK, et al. Standardized nomenclature, symbols, and units for bone histomorphometry: a 2012 update of the report of the ASBMR Histomorphometry Nomenclature Committee. J Bone Miner Res. 2013;28(1):2-17. doi:10.1002/jbmr.1805
3. Chavassieux P, Chapurlat R. Interest of bone histomorphometry in bone pathophysiology investigation: Foundation, present, and future. Front Endocrinol (Lausanne). 2022;13:907914. Published 2022 Jul 28. doi:10.3389/fendo.2022.907914

Performance

Method Description

Intact (nonfragmented) specimens of undecalcified bone are dehydrated in ethanol, embedded in methylmethacrylate, sectioned at 5-micron thickness, and individual sections are stained with Goldner Trichrome, toluidine blue, and hematoxylin and eosin. Special stains for acid phosphatase, aluminum, and iron are performed when indicated. Histomorphometry, by computerized technique, is then done on the stained sections using light microscopy and on unstained sections using fluorescence microscopy. Histomorphometric values and the histologic appearance of all sections are reviewed and interpreted by a clinician-histomorphometrist. A hematoxylin and eosin-stained section is reviewed for abnormalities by a pathologist. Telephone consultations with responsible physicians are carried out whenever possible.(Hodgson SF, Johnson KA, Muhs JM, Lufkin EG, McCarthy JT. Outpatient percutaneous biopsy of the iliac crest: methods, morbidity, and patient acceptance. Mayo Clin Proc. 1986;61[1]:28-33)

PDF Report

Supplemental

Day(s) Performed

Monday through Friday

Report Available

26 to 35 days

Specimen Retention Time

Not retained

Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Main Campus

Fees & Codes

Fees

- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact Customer Service.

Test Classification

This test was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. It has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information

88346
88307
88313

LOINC® Information

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Bone Histomorphometry, Gross Microscopic Exam

Test ID	Test Order Name	Order LOINC® Value
BHISC	Bone HistoMorph Gross Micro Exam	60570-9

Result ID	Test Result Name	Result LOINC® Value
71158	Interpretation	59465-5
71159	Bone Marrow Interpretation	51628-6
71160	Participated in the Interpretation	No LOINC Needed
71161	Report electronically signed by	19139-5
71162	Material Received	22633-2
71786	Case Number	80398-1
601908	Disclaimer	62364-5