CLARITY OF
Vision

HOLOGIC®

Discovery™

Advanced Point-of-Care Bone Health Assessment

HOLOGIC®
CLARITY OF VISION

Identify
Patients at Risk

Imagine the possibilities...

Discovery (di-skuv'e-re) n.—

The act of gaining insight or knowledge into something previously unseen or unknown.

The Hologic Discovery™—the newest generation QDR® Series bone densitometer—combines the proven clinical value of bone mineral density (BMD) measurement and vertebral assessment with Express BMD™— the most rapid means of acquiring accurate BMD results. Express BMD and Instant Vertebral Assessment™ (IVA)—both powered by our exclusive OnePass™ fan-beam technology—represent two of many features that improve the accuracy, speed and convenience of assessing osteoporosis.

Hologic pioneered the integration of BMD measurement with Instant Vertebral Assessment allowing point-of-care assessment of the two most definitive factors associated with osteoporotic fracture risk: low bone mineral density and the presence of vertebral fracture. IVA enables physicians to perform a rapid, low-dose evaluation of the spine in combination with a routine bone density exam, yielding a more accurate determination of fracture risk than just BMD alone.

OnePass™ Technology

One Pass technology's single sweep scanning enables superior image quality and unparalleled precision in just 10 seconds. Developed from a proven technology platform, Discovery's high performance is made possible through several proprietary technologies.

True Fan-beam Geometry

Discovery's exclusive design, similar to that found on state-of-the-art CT scanners, utilizes a high-resolution detector array paired with true fan-beam acquisition geometry. The true fan-beam design enables rapid, high-resolution single-energy imaging as well as superior dual energy bone density measurements.

Internal Reference System

Hologic's patented Internal Reference System provides automatic pixel-by-pixel calibration assuring precise BMD results, test after test, year after year.

Hologic Anthropomorphic QC Phantom

Hologic's Anthropomorphic Spine QC Phantom confirms system stability with a life-like standard.

See specifications data sheet for availability of features on specific Discovery models.

Expand your capabilities…

Utilizing OnePass technology, Discovery raises both the clinical and technological standards of bone densitometry with features that include:

True Fan-beam

Scan Direction
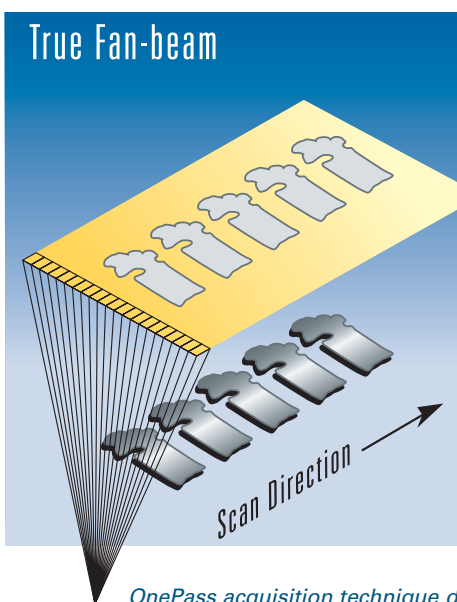
OnePass acquisition technique delivers BMD results or IVA images in a single, 10-second sweep.

Express BMD™
Spine and hip BMD results in just 10 seconds with better than 1% precision.

Express Exam™
Enables the operator to establish routine scan protocols with automated scanning and analysis workflow.

Instant Vertebral Assessment™
10-second, single-energy imaging of the spine (L4 – T4) with image quality comparable to lateral radiographs for vertebral assessment.

Image Pro™
Advanced digital imaging processing sharpens your view of vertebral fractures.

CAD*f*x™
Computer-aided fracture assessment tool quantifies degree of vertebral compression and simplifies IVA interpretation.

Electronic Reporting
The most advanced remote interpretation and reporting software available, including speech recognition compatibility. IRIS™ Connectivity Suite provides seamless integration with existing healthcare information systems.

HOLOGIC OSTEOPOROSIS ASSESSMENT

Instant
Vertebral Assessment™ (IVA)

If you knew they had fractures...

"IVA would benefit the subset of women who have osteopenia, but whose fracture history is unknown. If you knew they had fractures, you would certainly be more aggressive in your treatment."

Susan L Greenspan, M.D.
Director, Osteoporosis Prevention and Treatment Division of Endocrinology, Metabolism and Geriatrics Associate Director, General Clinical Research Center, University of Pittsburgh Medical Center Professor of Medicine, University of Pittsburgh School of Medicine

Clinical Relevance of IVA in Risk Assessment

Vertebral fractures, 75% of which are not clinically apparent, are far more common than one might imagine. Up to one quarter of Caucasian women over age 50 have at least one fracture. The presence of one or more vertebral fractures dramatically increases the risk of future fracture.

Published studies using IVA demonstrate that up to 30% of patients needing treatment are missed using BMD results alone. These patients, many of whom have moderately decreased BMD but have already suffered a fracture, are at particularly high risk.

## Impact on Therapeutic Decisions and Patient Compliance

In addition to improved risk stratification, IVA clearly enhances the clinician's ability to accurately target therapy to those who need it most, and determine the most effective therapy for individual patients. IVA also provides a means for improved patient counseling and compliance by demonstrating the presence or progression of meaningful consequences of osteoporosis.

Image Pro™ The New Standard of Vertebral Image Quality for Osteoporosis Assessment

The Image Pro image-processing software improves visualization of vertebral fractures without increased dose, allowing clinicians to more accurately assess fracture risk. Image Pro applies advanced, frequency dependent filtration to IVA images, enhancing visualization of vertebral end-plates.

Vertebral Fracture: An Important Risk Factor

The presence of vertebral fractures, combined with low BMD, increases risk of future fracture.

See specifications data sheet for availability of features on specific Discovery models.
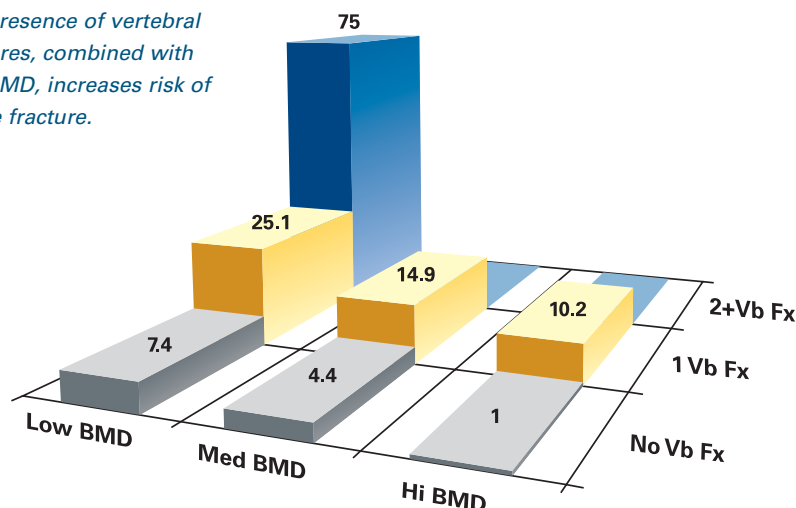
IVA has given us an important tool...

"Traditionally, BMD was used as the sole indicator of a patient's bone health and fracture risk, but now technology has advanced to incorporate vertebral fracture evaluation and BMD assessment on the same instrument. Using Instant Vertebral Assessment, we were able to obtain a low dose (just 1% of a conventional spine radiograph), 10-second scan of the spine during a routine bone density exam. Overall, incorporating IVA into our osteoporosis evaluation has given us an additional, important tool to identify those at risk of future fracture. We also are able to recommend intervention for those who will benefit most from the therapy—a step that's likely to reduce fracture rate and, consequently, help patients maintain independence and quality of life."

John Schousboe, M.D.
Director, Osteoporosis Center, Nicollet Clinic, St. Louis Park, MN

CAD*fx*™ Simplifies IVA Interpretation

CAD*f*x computer-aided fracture assessment tool—another Hologic exclusive—quantifies and displays the degree of vertebral compression to help confirm the existence and severity of vertebral deformities.

- Computer-aided fracture assessment tool
- Point-and-click grading of vertebral deformity
- Simplified IVA interpretation
- Quantitative measurement of vertebral deformities
- Displays degree of vertebral compression

Summary of IVA Benefits

- Clear, crisp images in just 10 seconds
- Superior prediction of fracture risk
- Very low radiation dose (<10μSv vs. 800 μSv for radiographs)
- Convenient, point-of-care availability eliminates need for additional referrals or subsequent radiographs
- AP view reveals vertebral deformities missed with lateral imaging alone
- True digital images with full image fidelity
- Remote interpretation and electronic reporting
- Additional reimbursable examination*

 * Insurers vary widely in the services they cover and reimburse.

AP IVA   Lateral IVA

IVA images of a woman, 72, with BMD T-scores of -0.9, -0.4 and -1.0 at the femoral neck, total hip and lumbar spine, respectively. While her BMD results classify her as normal, a vertebral fracture puts her at increased risk for subsequent fractures and, therefore, in need of treatment for osteoporosis.
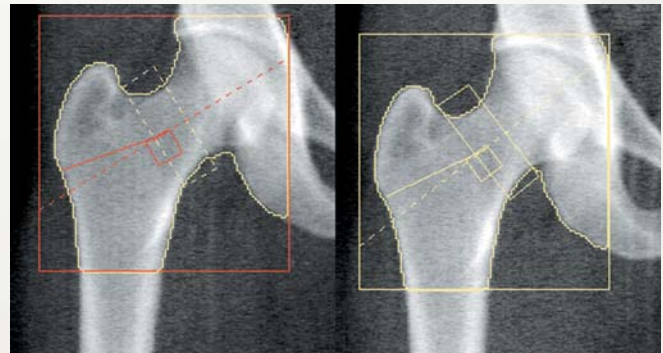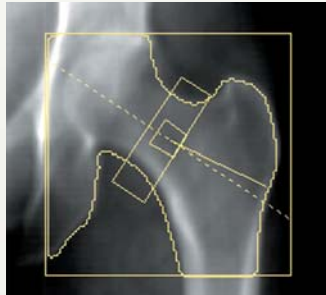
**HOLOGIC** OSTEOPOROSIS ASSESSMENT

Clinical Applications
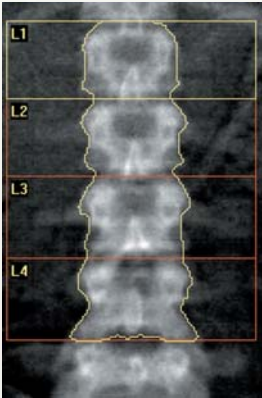
AP Spine and Proximal Femur

Discovery Express BMD provides unmatched precision for lumbar spine and proximal femur studies in just 10 seconds. In default mode, spine and proximal femur precision is better than 1.0% (CV at BMD=1.0g/cm^2).


Scan Comparison

Scan comparison automatically replicates regions of analysis, minimizing operator involvement and performance time. The above example shows a current hip exam displayed simultaneously with a previous baseline study for comparison. This feature can be used in all Discovery scan modes.
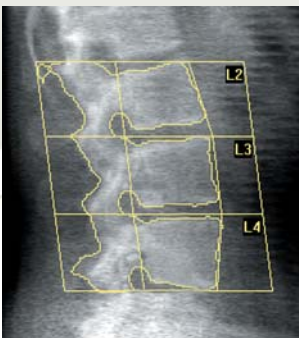
Supine Lateral BMD*

Supine lateral spine BMD enables clinicians to obtain reliable, quantitative measurements of trabecular-rich vertebral bodies in the supine position. Supine lateral measurements have demonstrated superior precision (1%) over quantitative measurements in the decubitus position.

*Requires Discovery SL or A models.
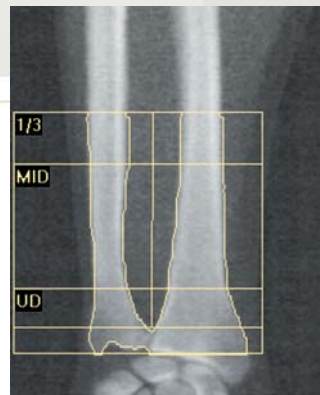
Forearm

Discovery produces simultaneous assessments of 1/3, mid-, and ultra-distal regions. Radius and ulna can be analyzed either separately or combined.
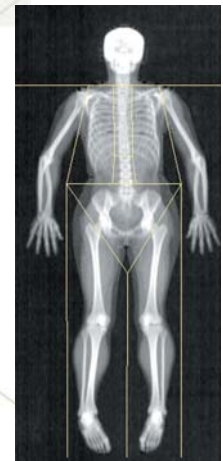
Whole Body/BMD Analysis*

Discovery can evaluate BMD of the entire skeleton and report on up to 10 adjustable regions of interest. Discovery performs whole body scans in as little as 3.5 minutes. Typical precision for whole body scans is 0.75% (total region CV at BMD = 1.0 g/cm^2).

Body Composition Analysis** software enables evaluation of fat mass, lean mass and total mass for the entire skeleton and for individual sub-regions. Both BMD and body composition can be derived from a single whole body scan. Hologic fan-beam technology is the technology of choice for major government-sponsored and pharmaceutical body composition studies.

*Requires Discovery W or A models.
**Optional

See specifications data sheet for availability of features on specific Discovery models.

Subregion Whole Body*

Place up to seven user-defined, custom regions for BMD and body composition analysis.** Allows comparison to previous exams for patient monitoring.
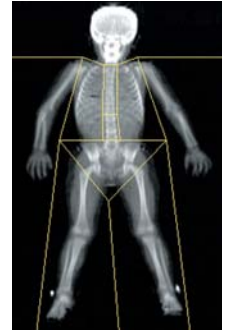
* Requires Discovery W or A models.
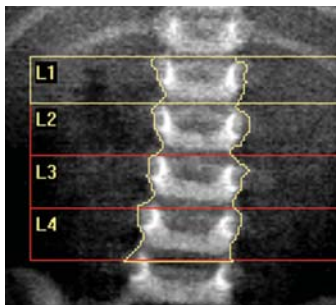** Body composition analysis optional.

Automatic Pediatric Whole Body*

Rapid scanning and enhancements to data analysis protocols make Discovery particularly well suited for pediatric studies. The analysis algorithms automatically detect and measure very low-density bone, making Discovery the instrument of choice for pediatric densitometry.

*Requires Discovery W or A models.

Research Applications

Pediatric Spine and Femur

Rapid scanning and enhancements to data analysis protocols make Discovery particularly well suited for pediatric studies. The analysis algorithms automatically detect and measure very low-density bone, making Discovery the instrument of choice for pediatric densitometry.
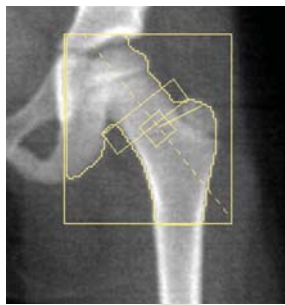
Prosthetic Hip*

Bone resorption around a hip prosthesis can eventually contribute to loosening of the implant device. Monitoring changes in the bone surrounding the prosthesis provides clinicians with pertinent information regarding bone status and the viability of the implant.

The QDR Prosthetic Hip software option automatically identifies and removes the influence of a metal prosthesis to produce precise BMD measurements.

*Optional
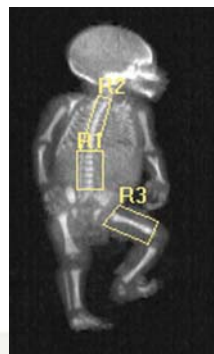
Small Animal*

Perform *In Vivo* scans of rat whole body with BMD and body composition measurements, including lean and fat tissue mass, total mass and % fat determinations. Unique, calibration phantom assures accuracy and repeatability of results.

*Requires Discovery A model. Optional software.

Infant Whole Body*

Provides bone mineral and body composition measurements for human infants ranging from 26 weeks gestational age to one year birth age, or approximately 1kg to 10 kg in weight. The measurement system uses the lowest x-ray tube currently available and exposes the patient to a very low dose (less than 2mrem).

*Requires Discovery A model. Optional software.
 For investigational use in the USA.

IRS™
Connectivity Solutions
Your gateway to true, paperless densitometry

Hologic leads the industry in providing connectivity solutions for bone densitometry systems, streamlining the workflow between and within facilities and workstations. Now physicians and other healthcare providers can transmit, receive, and review patient results virtually from anywhere in the world. With Hologic software, physicians can interpret bone density data or IVA images from a remote workstation. From entering patient data to physician interpretation, Hologic provides a comprehensive suite of tools to meet your connectivity needs.

DICOM Worklist

HIS/RIS

DICOM

Physician's Viewer with CAD*fx*

Physician's Viewer is a stand-alone software package for remote softcopy review of BMD results and IVA scans. CAD*fx* provides computer-aided fracture assessment that quantifies the degree of vertebral compression and simplifies IVA interpretation. The optional Physician's Report Writer generates electronic reports for paperless distribution.

- Remote soft-copy interpretation
- Maintains full image fidelity
- Optimizes image with interactive zoom, brightness, and contrast control
- Intuitive graphical interpretation aids
- On-screen labeling of vertebral levels and fracture status
- Quantitative confirmation of vertebral deformation
- Platform for e-reporting

Remote softcopy interpretation
(Physician's Viewer)

See specifications data sheet for availability of features on specific Discovery models.

HL7 Report
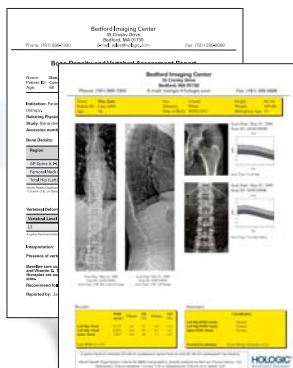
Report Writer with speech recognition compatibility

Physician's Viewer

PACS

Physician's Report Writer (Optional)

Produces a comprehensive electronic report in Microsoft® Word format for electronic distribution and printing.

OnePage Dx™ Report
*Combine multiple risk factors into a comprehensive, one-page report*

The OnePage Dx Report combines BMD and IVA results in a concise, single-page format for better assessment of fracture risk. This comprehensive summary of results displays both AP and lateral IVA images along with BMD results in our easy-to-read and interpret format.

Physician's Interpreting Report
Streamline report writing and workflow

The Physician's Interpreting Report automatically downloads and formats key information into a customizable electronic report that includes patient biographical information, BMD, T-/Z-scores, and IVA results. The physician can enter final comments via keyboard or speech recognition.
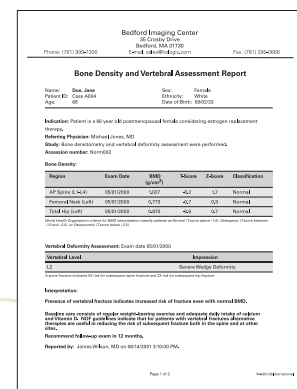
Health Level 7 (HL7) Report

The HL7 Report extracts bone density exam results and interpretation as text data from the Physician's Report and formats it for the HIS/RIS system.

Modality Worklist

The Hologic QDR® for Windows® operating system connects to HIS/RIS and HL7, simplifying the exchange of text data between QDR workstations and hospital information systems. The Modality Worklist facilitates workflow and reduces input errors. It allows QDR operators to draw text data—admissions information, the daily order of exams, etc.—from HIS/RIS and view it on the QDR workstation monitor.

Value-added
Features and Options

QDR One-Page Report
Combine image, scan analysis, and reference curves in a concise, easy-to-read, visually impressive, single-page report. The Discovery patient report also contains pertinent patient information and space for diagnosis and comments. Choose from several preformatted templates.
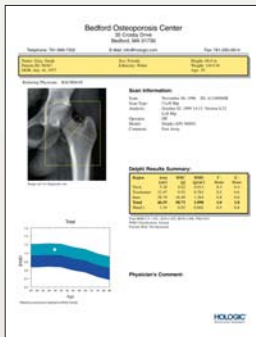
Standard Patient Report
The extensive online database of reference values included with Discovery simplifies interpretation of studies. It includes ethnic-matched reference data and utilities that allow customization of user reference values to the local patient population. Hip reference data are based on NHANES in compliance with standardization criteria.
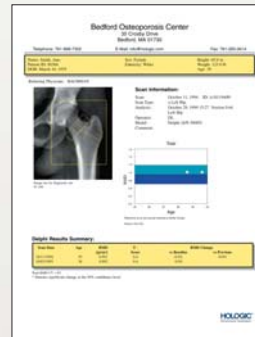
Trend Report
QDR for Windows facilitates serial follow-up of patients. Trend Reports provide an easy method to compare visit-to-visit rates of change. Significant changes in bone mineral status are automatically and clearly noted on the report to facilitate clinical management.
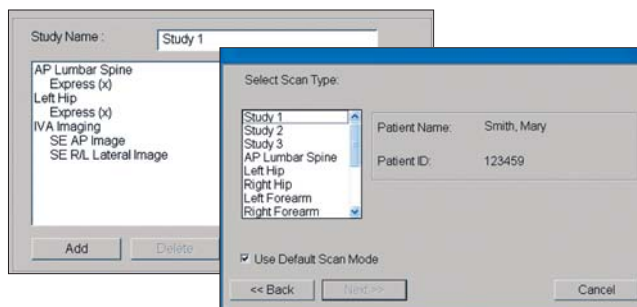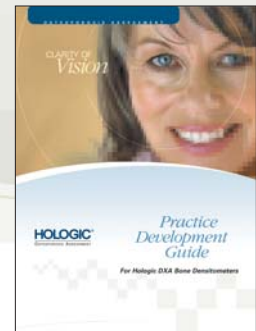
Loaded with new features, Discovery offers the most comprehensive package of advanced clinical tools, time-saving conveniences and practice-building aids.

NEW! Express BMD™
Reduces scan times by 66%. Captures regional spine and hip density measurements in only 10 seconds with better than 1% precision.

NEW! Express Exam™
Enables the operator to establish routine scan protocols with automated scanning and analysis workflow.

Practice Development Guide
Take full advantage of Discovery's practice-building potential. Contains two CDs with ready-to-print marketing and patient education materials and marketing tips to help you navigate the myriad of marketing and media options.

Patient Call-back List
Provides a list of patients for a given date and/or diagnostic range. Used to generate call-back letters for follow-up exams.

NEW! Tech Tips™
Graphical positioning aid demonstrates correct patient alignment, scan start position, and the correct scan, making it easier than ever for technologists to position patients correctly the first time and every time.

See specifications data sheet for availability of features on specific Discovery models.

Additional Discovery Features

- **Image Repositioning** makes obtaining the perfect scan easy. Operators can adjust the image onscreen without having to reposition patient on the table.

- **Scoliotic Spine Analysis** tailors vertebral BMD assessment to the unique curvature of patient with scoliosis.

- **Automatic Low Density Spine and Hip** improves bone detection in low-density AP spine and proximal femur images by decreasing operator manipulation of the bone map.

- **Automatic Locate** feature internally records and monitors the location of patient data saved to a storage media, eliminating the need to log patient data.

- **One Time™ Auto Analysis** delivers expertly analyzed hip and AP spine scans in seconds. Automatically identifies the region of interest, virtually eliminating operator intervention.

- **Dual Hip™** automatically moves the table and C-arm into position for a "mirror" image and measurement of the opposite hip and identifies lowest BMD site for improved clinical assessment. Significant differences in right and left hip BMD can result in a misleading assessment of fracture risk, especially if only one hip is measured.

- **Pediatric Reference Data*** for children aged 4-20. The database provides whole body, hip and AP spine reference data for North American, Caucasian boys and girls.
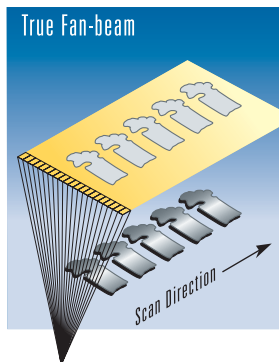 *Optional software. For investigational use in the U.S.

OnePass™

Advancing the Hologic Legacy in Fan-Beam Technology

Introduced in 1989, Hologic pioneered fan-beam technology for bone densitometry. It has since become the acquisition method of choice, due to dramatic improvements in image quality and scanning speed.

OnePass technology's single sweep scanning enables superior image quality and unparalleled precision in just 10 seconds. By doubling the number of detectors found on earlier model QDR fan-beam systems, OnePass technology enables finer collimation of the x-ray beam and doubles image resolution. Developed from a proven technology platform, Discovery's high performance is made possible through several proprietary technologies.

True Fan-beam Geometry

Discovery's exclusive design, similar to that found on state of the art CT scanners, utilizes a high-resolution detector array paired with true fan-beam acquisition geometry. The true fan-beam design enables rapid, high resolution single-energy imaging, as well as superior dual-energy bone density measurements.

True Fan-beam

Scan Direction

Automatic Internal Reference System

Hologic's patented Automatic Internal Reference System provides automatic pixel-by-pixel calibration ensuring precise BMD results, test afer test, year after year, without daily calibration or operator intervention. By constantly comparing the patient's bone to a known value contained in the internal reference cylinder, Hologic systems automatically calibrate each data pixel on every scan. The exceptional stability and precision of Hologic QDR systems have made them the choice for nearly every major government and pharmaceutical study.

Anthropomorphic Quality Control Spine Phantom

Hologic's Anthropomorphic QC Spine Phantom confirms system stability with a life-like standard that simulates in vivo conditions and has exceptional sensitivity for detecting data drift. Discovery's Auto QC automatically scans the spine phantom to confirm system stability and performance.

Hologic Inc. is a family of companies, sharing not just expertise but

a purpose — turning innovative ideas into superior imaging technologies

that enable physicians to make earlier and more accurate diagnoses.

To achieve this goal, Hologic has assembled some of the most

respected names in medical imaging — each contributing a wealth

of experience, dedication and a clarity of vision.

Osteoporosis Assessment ■ DirectRay® Digital Imaging
LORAD® **Breast Cancer Detection ■** FLUOROSCAN™ **C-arm Imaging**

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CLARITY OF VISION

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