The criteria suggested by Hosain and Sam for a cisternographic radioisotope are: (i) physiologically governed by CSF flow, (ii) adequate half-life for desirable period of study, (iii) photons suitable for scanning, (iv) low radiation dose, (v) least probable chemical toxicity, and (vi) controlled pharmaceutical quality. Chelated \(^{111}\text{In}\) DTPA by Medi+Physics is a sterile, pyrogen-free radiopharmaceutical in isotonic aqueous solution for use in the study of cerebrospinal fluid pathways. It has a radioactive half-life of 2.81 days. Its principal gamma emissions are 170 keV(89\%) and 247 keV(94\%). \(^{111}\text{In}\) DTPA is a new drug limited by Federal law to investigational use. For information about clinical studies and licensure, call Medi+Physics toll free (800) 227-0483, or in California, (800) 772-2446. Or write: Medi+Physics 5855 Christie Ave, Emeryville, California 94608.

Hosain, F. and Sam, P., Chelated \(^{111}\text{In}\): An ideal radiopharmaceutical for cisternography, Brit. J. Radiol. 45, 677 (Sept. 1972).
In 1962, Myers and Anger stated: “Calculations indicate radiation exposures will be less than 5% as great when I-123 is substituted for I-131, in procedures where radioactive iodide ion is administered. This reduction stems chiefly from two properties: (1) I-123 emits no $\beta$-particles, per se, like I-131 does; (2) The $\approx$ 14-hour half-life of I-123 is only 7% that of I-131. However, this half-life is adequate for most diagnostic procedures.”

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<tr>
<th>MOLY</th>
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<tr>
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image processor to your
the most precise patient data

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MODULAR DESIGN PERMITS SYSTEM EXPANSION AT LOW COST.

Elscint's Image Processor is comprised of a camera interface, the videodisplay and one of three data processors. The lowest priced processor is designed for static or slow dynamic studies. The two more complex systems offer the added capability to perform fast dynamic studies plus several additional modes of operation. The most advanced of these two systems enables complete time function data analyses to be done. It includes a built-in mini-computer (8K, 16 bit; 32 bit optional) and a complete battery of clinical programs. Time function data are displayed on a scope and printed out on a teletype or optional line printer. Thus, with no programming knowledge you can study regional blood flow, cardiac output, mean pulmonary transit time, clearance rates, renography, and so forth. All systems are fully compatible with one another and each can be expanded with any of several available options to give you supplementary image processing capability as required.

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Up to 200 discrete (400 optional) images are received and stored on a magnetic disc at a rate of up to 10 frames per second. Average search and readout time for stored images is only 5 ms in forward or reverse — a real timesaving feature in multiple frame reviews. Dual disc memory cartridges speed data manipulation and leave original data untouched. Frame acquisition can be by preset limits or by physiological triggers which can also be used for time delay photographs.

SIMPLE PUSHBUTTON OPERATION FREES YOU FOR DATA ANALYSIS.

Use of the Elscint Image Processor may be learned easily in just a few hours by any of your technologists. Built-in safeguards prevent accidental loss of data and lighted buttons keep track of all processing underway. Image enhancement activities are noted with lighted indicators for each frame. Study and patient data for each image is easily entered and is thereafter displayed concurrently with the image.

SIX REGIONS OF INTEREST MAXIMIZE DATA EVALUATION.

Six fully-positionable overlapping areas which appear on the screen, plus output from two external scalers may be selected for further digital evaluation. Time function histograms for all regions are displayed simultaneously, each in a different color.

SYSTEM OPTIONS EXTEND APPLICATIONS.

A computer interface is available, an optional larger capacity magnetic disc extends the system's memory to 400 image frames, an optional twin memory is available for dual isotope studies, a telephone interface permits communication with similar remote processors and a camera facilitates obtaining permanent records of displays.

Note: Information given refers to several different Image Processor Systems. All models do not include all features described.

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This, one of the three top scintillation cameras, weighs 1300 lbs. less than the other two.

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Now why in the world would anyone ask you to focus your attention on gross weight (of all things!) when considering a piece of sophisticated instrumentation like a scintillation camera?

Because, as we hope you'll soon come to agree, low weight tells you something. As a matter of fact, it really tells you a great deal because technologic progress almost always leads to a diminution of both size and weight (e.g., from vacuum tubes to transistors to integrated circuits). Thus, the functionally equivalent instrument that weighs substantially less than others, bespeaks a newer design. And so it is with the Nuclear Data Radicamera.™ This quite remarkable camera weighs about 1300 lbs. less than the other two fine competitive instruments. (Mind you, only 1300 lbs. as compared to 2600 lbs.—a 50% weight reduction!)

Ah, but what did we leave out? Functionally, nothing. We simply designed out the older technology, both electronic and mechanical, that tends to weigh more and bulk larger. And the newer technology, with its lesser weight and size, is often more reliable. And that's a nice bonus.

What else does Radicamera offer? A full capability camera with resolution as good as the best (really), and operating ease that defies comparison. You can actually position it with one finger and, with the appropriate accessory, move it easily to the patient that can't be moved easily. The innovative design yields a more compact unit that occupies less of your ever-evaporating space. In toto, a superbly designed instrument that is easy to live with and yields diagnostic data second to none.

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So, if you're looking at cameras, consider this: we want you to speak to Radicamera users because you really ought to hear our story from someone else, too. Contact us for names and for Radicamera literature.

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May 1974, est, 384 pp., 295 illus. abt. $24.00
ISBN 0-8089-0827-8

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Edited by John H. Lawrence, M.D., D.Sc. (Hon.)

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Volume 15, Number 6
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Multi-Mat gives you:
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- More flexible programming
- More flexible configurations

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That's why there are more Intertechnique computerized counting systems in the field than those of all other manufacturers combined.

Write or call today for more facts:
- Multi-Mat brochure
- LEM Makes You the Boss booklet
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Here's one of the world's greatest reproducers.

The Wien Total T4-I125 R.I.A. Test Set
Coefficient of variation less than 10%.1

Rabbits are not alone in their renown for predictable, consistent reproduction.

Thyroxine determinations by radioimmunoassay can now be performed with a procedure that yields highly reproducible results assay after assay. The Wien T4-I125 Test Set utilizes this time-saving procedure to produce definitive assay results with less than a 10% coefficient of variation. The procedure is recognized as being "rapid, sensitive (only 25 µl of serum required), and reproducible."1

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All shipments made within 72 hours of receipt of order. For complete technical information, or to place orders, call: (201) 584-7019

Or write to:

Wien Laboratories, Inc.
P.O. Box 227, Succasunna, New Jersey 07876

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* based on run of 30 assay tubes; for each additional 10 tubes, add 15 minutes

** based on rates for standing orders

Other R.I.A. Test Sets available from Wien Laboratories:

- T3-I125
- Digoxin-3H
- Testosterone-3H
- Aldosterone-3H
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- Corticoids-3H
- Digitoxin-3H

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* a 2-hour direct serum determination* (including 1 hour incubation time at room temperature)
* a single-antibody technique
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* sensitive: 25 µl sample size
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MINITEC (Technetium 99m) GENERATOR makes sense: 99mTc in your lab when, where and how you want it.

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Conveniently. Small, light, complete high-potency generator. Weighs only 24½ pounds, measures less than 5” in diameter, under 8½” high. Occupies minimal laboratory bench space.

Highly concentrated—designed for safety. High shielding-to-activity ratio; 1½” of lead surrounds the column. Top access ports permit storage with constant shielding. Generator is prepared with fission product moly. Yields sterile, non-pyrogenic eluate. High-concentration eluates yield maximum flexibility. MINITEC GENERATOR is available in 50, 100, 200, or 300 mCi potencies, delivered Monday AM, precalibrated through Thursday. A compact, high-activity generator designed for user protection.

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Cleon Corporation's new Whole-Body Imager, now in clinical operation, makes whole-body and organ imaging more informative for the clinician, more productive for the hospital, more comfortable for the patient, and simpler for the technician. Here's how:

Unique opto-electronic design eliminates the cross-body movement of a scanner head. The whole-body image is produced by a one-time, slow, noiseless sweep of the 24-inch wide crystal array from head to foot of the patient. Time to scan this 24-inch by 76-inch area is reduced to as little as five minutes (adjustable to 40 minutes, maximum). The patient spends less time on the couch and is relieved of the anxiety caused by a rapidly moving scanner head.

Large crystal area (109 square inches) gives high information density and reproducible results for selected scan times. Display and recording options include: video screen; 8" x 10" x-ray film; Polaroid film; magnetic disk record with playback; keyboard entry of patient data; continuous digital readout of
A Quiet Revolution in Whole-Body Imaging

count density; video magnification of selected image areas. Controls are few and simple; set-up time is minimal; technicians can learn to use the equipment on the day it's installed.

For technical specifications, clinical data, price and delivery information, call or write:

cleon CORPORATION 15 Tech Circle, Natick, Massachusetts 01760/ Telephone 617/235-7708
Roche Diagnostics announces an in vitro test to aid in the management and diagnosis of cancer

CEA-ROCHE
Carcinoembryonic Antigen assay

CEA-ROCHE: a diagnostic test of major clinical significance

Roche has long had a serious commitment to cancer research which has resulted in several important chemotherapeutic agents. Now, working in conjunction with the original researchers and with investigators at over 100 leading medical centers throughout the United States, England and Canada, Roche Research has adapted, refined and evaluated CEA-ROCHE, an in vitro test for the carcinoembryonic antigen (CEA) found in a variety of malignant and nonmalignant conditions. An extensive collaborative study, under way for almost three years, has tested CEA-ROCHE in over 35,000 assays in more than 10,000 patients using identical protocols, procedures and reporting methods. Because of the importance of this assay, one of the most thorough and well controlled research programs conducted for a diagnostic product was undertaken. The following data were derived from these studies.

Decreases in CEA titers were reported to be associated with effective therapy. Serial determinations of CEA proved to be of value in assessing the condition of the patient during therapy. Persistent increases in titer were associated with a lack of response to therapy or a recurrence of disease; in some cases, the titer rise preceded clinical signs by as much as three months. Except for primary pancreatic and colorectal carcinoma, titers above 20 ng/ml were, with very rare exceptions, associated with the presence of metastatic disease. However, metastatic disease may also occur when the CEA titer is below 20 ng/ml.

Nonmalignant inflammatory diseases in their active state may give rise to CEA titers above 2.5 ng/ml. These titers usually drop below 2.5 ng/ml when these diseases are in remission.

In a special study of 883 patients, cigarette smoking with titer elevations was associated with atypical sputum cytology. Decreases in CEA titer often occurred within 30 to 60 days after cessation of smoking.

It must be stressed that test results and data arrived at using the CEA-ROCHE assay cannot be compared with results obtained by any other method or where other reagents are used.

CEA-ROCHE: limitations

CEA-ROCHE is not recommended as a screen to detect cancer. CEA titers are not an absolute test for malignancy, nor for a specific type of malignancy. In the management and diagnosis of the patient suspected or known to have cancer, all other tests and procedures must continue to be given emphasis. CEA titers less than 2.5 ng/ml are not proof of the absence of malignant disease.
CEA-ROCHE: nature of assay

CEA-ROCHE uses the Hansen Z-gel method and combines the specificity of an immunological procedure and the sensitivity of radiochemistry. It provides results at nanogram (billionth of a gram) levels and detects CEA levels as low as 0.5 ng/ml. Briefly, the principle of CEA-ROCHE is as follows: CEA is extracted from the plasma specimen and allowed to react with specific CEA antiserum. $^{125}$I-CEA is then added and allowed to react with the remaining CEA antiserum. The $^{125}$I-CEA bound to antibody is separated from excess free $^{125}$I-CEA with zirconyl phosphate gel and the bound $^{125}$I-CEA determined by counting in a gamma scintillation spectrometer. The partition of $^{125}$I-CEA between bound and free fractions is a function of the amount of CEA present in the plasma. The amount of CEA present in the plasma sample is determined from a standard inhibition curve.

**CEA-ROCHE: the test kit**

Each kit contains CEA antiserum, CEA standard, $^{125}$I-CEA, EDTA buffer stock solution and zirconyl phosphate gel (Z-gel). All components are supplied in excess to assure sufficient material for at least 100 tubes (or for approximately 40 patient plasma samples assayed in duplicate with the necessary controls). Because of the stringent quality control procedures used in the production of CEA-ROCHE, you are assured of consistency from lot to lot. The CEA-ROCHE™ kit has a 17-day shelf-life and should be stored at 4° to 8° C. Store EDTA buffer and Z-Gel at 15° to 30° C.

**Materials available**

Control specimens in four titer ranges (0-2.5 ng/ml, 2.6-5.0 ng/ml, 5.1-10.0 ng/ml, greater than 10.0 ng/ml); 2.5-ml dispensers for Z-gel bottles; presealed dialysis bags and $^{125}$I-CEA to refurbish kits which may have expired are all available separately from Roche Diagnostics.

**Equipment needed**

The laboratory must have the following equipment to perform CEA-ROCHE: micropipettes; vortex-type mixer; horizontal-head centrifuge; gamma scintillation spectrometer and access to approximately 150 liters/100 tubes of distilled or deionized water.

- **AEC license required**

Because CEA-ROCHE contains radioactive material, an AEC or agreement State license is required. A copy of your license or completed License Declaration Form available from Roche Diagnostics is required before shipment can be made.

**ROCHE DIAGNOSTICS: provides these special services to laboratories using CEA-ROCHE**

Because of the clinical significance of the CEA-ROCHE assay and the critical area of medicine involved, Roche Diagnostics will provide laboratories wishing to run this test with advice and technical assistance in setting up the necessary facilities. Should any questions arise during testing, Roche Diagnostics will be pleased to provide further advice and assistance. A plasma evaluation service and consultation on volume processing are also available.

In addition, two in-depth brochures have been prepared:
1. CEA-ROCHE Clinical Monograph — providing complete clinical information.
2. CEA-ROCHE Procedure Manual — providing complete technical information.

Either or both may be obtained by completing and returning the reply coupon below.

Finally, Roche Diagnostics will be sponsoring an extensive educational program to physicians, including audio, visual and print material.

**References:**

1. Third Conference, Carcinoembryonic Antigen (CEA) Test Collaborative Study, Hoffmann-La Roche Inc. 1973
10. Data available on request from Hoffmann-La Roche Inc., New Jersey

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E-6

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CEA-ROCHE Carcinoembryonic Antigen assay

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New
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– NOT BLURRED
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- It provides for a variable dose-to-scan time
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- It is stable both in-vitro and in-vivo

Excerpts from recent literature on stannous pyrophosphate:

"With the rectilinear scanner, \(^{18}\)F appeared to be the best bone scanning agent. Technetium-99m-phosphate compounds were favorable for clinical use because of availability and usefulness in studies with the gamma camera. Quality of scan with polyphosphate was most variable. Sometimes phosphate compounds and \(^{87}\)Sr showed considerable interference with bone scan due to soft-tissue radioactivity. Diphosphonate might be regarded as the agent of choice because of its low concentration in the soft tissue. Pyrophosphate appeared to be most favorable agent considering ease of preparation, reproducibility, and quality of scan." (1) (Italics added.)

"While the physical properties of \(^{18}\)F are poor, the biological properties are still superior for bone imaging. The biological properties of polyphosphate made from this kit are significantly worse than the pyrophosphate or EHDP prepared from kits. The latter two are more similar to \(^{18}\)F in blood clearance and soft-tissue uptake." (2)

"In summary, \(^{18}\)F seems to be the best radiopharmaceutical for bone scanning. Technetium-labeled pyrophosphate gives better results than polyphosphate of higher molecular weight, and the availability of these two compounds makes bone scanning easier." (3)
BEFORE USING, PLEASE CONSULT COMPLETE PRODUCT INFORMATION, A SUMMARY OF WHICH FOLLOWS:

DESCRIPTION
The Technescan PYP reaction vial contains all of the non-radioactive reagents required to prepare a sterile, non-pyrogenic solution of Technetium Tc 99m Stannous Pyrophosphate (Technescan PYP Tc 99m) for intravenous injection.

Each 10-milliliter reaction vial contains a total of 15.4 milligrams of stannous pyrophosphate in the lyophilized state in a nitrogen gas atmosphere. The pH of the solution is adjusted with hydrochloric acid prior to lyophilization.

ACTION
When injected intravenously, Technescan PYP Tc 99m has a specific affinity for areas of altered osteogenesis.

One to two hours after intravenous injection of Technescan PYP Tc 99m, an estimated 40-50% of the injected dose has been taken up by the skeleton. Within a period of one hour, 10 to 11% remains in the vascular system, declining to approximately 2 to 3% twenty-four hours post injection. The average urinary excretion was observed to be about 40% of the administered dose after 24 hours.

INDICATIONS
Technescan PYP Tc 99m is a skeletal imaging agent used to demonstrate areas of altered osteogenesis.

CONTRAINDICATIONS
None.

WARNINGS
This radiopharmaceutical should not be administered to patients who are pregnant or lactating unless the information to be gained outweighs the potential hazards.

Ideally, examinations using radiopharmaceuticals, especially those elective in nature, of a woman of childbearing capability should be performed during the first few (approximately 10) days following the onset of menses.

Radiopharmaceuticals should be used only by physicians who are qualified by specific training in the safe use and handling of radionuclides produced by nuclear reactor or particle accelerator and whose experience and training have been approved by the appropriate government agency authorized to license the use of radionuclides.

The Technescan PYP Kit must be maintained at refrigerator temperature until use.

The contents of the Technescan PYP reaction vial are intended only for use in the preparation of Technetium Tc 99m Stannous Pyrophosphate and are not to be directly administered to the patient.

Sodium pertechnetate Tc-99m solutions containing an oxidizing agent are not suitable for use with the Technescan PYP Kit. The contents of the kit are not radioactive. However, after the sodium pertechnetate Tc-99m is added, adequate shielding of the final preparation must be maintained.

The Technescan PYP Tc 99m should not be used more than six hours after preparation.

PRECAUTIONS
Both prior to and following Technescan PYP Tc 99m administration, patients should be encouraged to drink fluids. Patients should void as often as possible after the Technescan PYP Tc 99m injection to minimize background interference from accumulation in the bladder and unnecessary exposure to radiation.

As in the use of any other radioactive material, care should be taken to ensure minimum radiation exposure to the patient, consistent with proper patient management, and to ensure minimum radiation exposure to occupational workers.

ADVERSE REACTIONS
None.

DOSEAGE AND ADMINISTRATION
The recommended adult dose of Technescan PYP Tc 99m is 5 to 15 millicuries (1 to 14 milligrams of stannous pyrophosphate).

Technescan PYP Tc 99m is injected intravenously over a 10- to 20-second period. For optimal results, bone imaging should be done 1 to 6 hours following administration. The patient dose should be measured by a suitable radioactivity calibration system immediately prior to administration.

DIRECTIONS FOR PREPARATION

Procedural Precautions
All transfer and vial stopper entries must be done using aseptic techniques.

Procedure:
1. A reaction vial is removed from the refrigerator and approximately five (5) minutes are allowed for the contents to come to room temperature.
2. Affix "Caution—Radioactive Material" label to boxed area of reaction vial label.
3. Sodium pertechnetate Tc-99m solution (1 to 10 milliliters) is added to the Technescan PYP reaction vial. In choosing the amount of technetium-99m radioactivity to be used in the preparation of the Technescan PYP Tc 99m (Technetium Tc 99m Stannous Pyrophosphate), the labeling efficiency, number of patients, administered radioactive dose, and radioactive decay must be taken into account. The recommended maximum amount of technetium-99m to be added to the Technescan PYP reaction vial is 100 millicuries.
4. Shake the reaction vial sufficiently to bring the lyophilized material into solution. Allow to stand for five (5) minutes at room temperature.
5. Using proper shielding, the reaction vial should be visually inspected. The resulting solution should be clear and free of particulate matter. If not, the reaction vial should not be used.
6. Calculate the radioactivity concentration of the Technescan PYP Tc 99m and fill in the appropriate information on the string tag.

HOW SUPPLIED
Catalog Number — 094 Technescan PYP Kit

Kit Contains:
5—Stannous Pyrophosphate Reaction Vials (Lyophilized) for the preparation of Technetium Tc 99m Stannous Pyrophosphate.
5—Pressure-sensitive "Caution—Radioactive Material" labels.
5—Radioassay Information String Tags.

Reaction Vial Contains:
— 15.4 mg Sterile Stannous Pyrophosphate (Lyophilized). Hydrochloric acid is added for pH adjustment prior to lyophilization.

Technescan PYP™ KIT
(STANNOUS PYROPHOSPHATE)
1974
Classic Simplicity in RIA Digoxin from Corning
A classic of simplicity in concept and execution. RIA without fine print. IMMO PHASE™ Digoxin from Corning. It's done with glass.

This is the solid-phase RIA for digoxin that you start with just a snap of the cap. Yes, you can do it with one hand. How come? Because we've done most of the preparation for you. The key is a minute glass bead so small you could put more than two and one-half million of them on the head of a common pin!

More about the bead. Each glass bead is both chemically and topographically suited to solid-phase RIA. Each is porous, and has an unusually high surface area. Using these characteristics, we covalently bond high-quality antibodies to the glass surface. The antibody is distributed throughout the bead in a fashion similar to water filling the pores of a sponge. What you get is an antibody-glass composite that is extremely stable. In fact, it's so stable that our digoxin antibody has minimum shelf life of 120 days. Additionally, the glass has a useful, high relative density. It becomes an integral separator. No additional reagents are required to effect separation of bound from free antigens. All this makes it possible for Corning to dilute the immobilized antibody in buffer, pre-measure it into unit reaction tubes and ship to your laboratory ready to use! It's truly a snap-cap start!

“Start with the ready-to-use antibody. Snap the cap. Add 0.20 ml of serum sample.”

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Everything is ready. Each IMMO PHASE™ test system also includes standards, reference controls and tracer materials. Prepared standards are provided for each point on the standard curve, and reference controls have assayed values for both normal and elevated patient ranges. They are plasma-based and lyophilized for extended shelf life. You reconstitute only once—using distilled water. The tracer comes to you ready to use. What it all adds up to is this: With the Corning package you have all the reagents you need to run digoxins. We even give you fold-up trays to use as work stations. Everything can be easily disposed of after you’ve completed your assays.

Seven steps and 30 minutes later. The procedure is simple and involves a mere seven steps. That’s fewer than traditional RIA methods. And fewer steps mean fewer chances for error! Time required to get the results into your hands is kept to a minimum. The stat RIA digoxin is a reality. And, the results you get are reproducible.

Corning is ready now. We’re ready first with the results from recently completed field trials. They indicate that both within-day and day-to-day precision in terms of coefficient of variation is less than 10%. We will be glad to share details with you.

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“Men trust their ears less than their eyes.”

(Herodotus)
**Coming Solid Phase Separation System Materials for RIA**

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   Item #474001 (112 tubes) $115.00

30-day evaluation. I’ll accept your no-risk offer to try an
IMMO PHASE digoxin test system. Attached is my purchase
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within 30 days. If I do so I understand no invoice will be sent.
☐ For evaluation send Gamma (125I).*
☐ For evaluation send Beta (3H).

☐ Consultation. I’d like a chance to talk with a field consultant.
   Have one call me for an appointment.
☐ Literature. I need more facts. Send me detailed literature.
☐ Yes, I’d like details from your clinical field tests.

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Affiliation ___________________________________________________

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*Please send us a copy of your license to receive (125I) materials. Recent AEC
regulation changes make it mandatory for us to have this information on
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"Knowledge must come through action;
you can have no test which is not fanciful, save by trial."

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No matter whose radiopharmaceutical you use -- To be sure of dose accuracy you need an **EON CRA-1 CALIBRATED RADIOACTIVITY ASSAYER**

Measures dosages, concentrations and large volume activity for more than 40 medically approved radiopharmaceuticals.

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Your confidence in detecting bone lesions depends on the ability of the imaging agent you use to deliver consistently excellent scans. Three hours post injection, 40-50% of $^{99m}$Tc-labeled OSTEOSCAN has been taken up in the skeleton. Only 6% remains in the blood. The remainder is excreted in the urine. Together with the agent's low soft tissue uptake, the high target to non-target ratio and rapid blood clearance result in clear delineation of skeletal lesions.

OSTEOSCAN consistently provides high labeling efficiency (greater than 95% *). Because of its stable P-C-P bond, OSTEOSCAN resists in vitro hydrolysis and in vivo dissociation. This helps to minimize soft tissue uptake that can impair diagnoses.

**Result:** Consistently excellent scans—and confidence that detectable bone lesions will be imaged.

For product and ordering information, call Mr. Arnold P. Austin at (513) 977-8547 or write: Procter & Gamble, Professional Services Division, P.O. Box 171, Cincinnati, Ohio 45201.

* Thin Layer Chromatography (Cellulose acetate/85% methanol)

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**A.** 15 mCi $^{99m}$Tc-OSTEOSCAN
Scanned 3.5 hr post injection
Low-Energy, All-Purpose Collimator
Speed: 32 cm/min, Length: 173 cm, Width: 60 cm
Anterior: 634,518 counts/1070 sec (17.8 min)
Comments: Metastatic meningioma

**B.** 15 mCi $^{99m}$Tc-OSTEOSCAN
Scanned 4 hr post injection
High Sensitivity Collimator
Speed: 32 cm/min, Length: 170 cm, Width: 60 cm
Posterior: 961,752 counts/1054.3 sec (17.6 min)
Comments: Cancer of breast. Polaroid image; posterior view taken with detector under table

**C.** 15 mCi $^{99m}$Tc-OSTEOSCAN
Scanned 4 hr post injection
Low-Energy, All-Purpose Collimator
Speed: 48 cm/min, Length: 175 cm, Width: 60 cm
Anterior: 927,833 counts/737.4 sec (12.3 min)
Comments: Patient being treated for a lymphoma

(Above scans made with Searle Radiographics Pho/Gamma Scintiscan*)
PROCTER & GAMBLE

OSTEOSCAN®
(5.9 MG DISODIUM ETIDRONATE
0.16 MG STANNOUS CHLORIDE)
SKELETAL IMAGING AGENT

See following page for brief summary of package insert.
OSTEOSCAN
(5.9 MG DISODIUM ETIDRONATE
0.16 MG STANNOUS CHLORIDE)
SKELETAL IMAGING AGENT

Brief summary of Package Insert. Before using, please consult the full Package Insert included in each kit.

DESCRIPTION
Each vial of OSTEOSCAN contains 5.9 mg disodium etidronate and 0.16 mg stannous chloride as active ingredients. Upon addition of ADDITIVE-FREE 99mTc-perstechenate, these ingredients combine with 99mTc to form a stable soluble complex.

INDICATIONS
OSTEOSCAN is a skeletal imaging agent used to demonstrate areas of altered osteogenesis.

CONTRAINDICATIONS
None.

WARNINGS
This radiopharmaceutical should not be administered to patients who are pregnant or lactating unless the information to be gained outweighs the potential hazards.

RADIOPHARMACEUTICALS

OSTEOSCAN, an estimated 40-50% of the injected dose has been taken up by the skeleton. At this time approximately 50% has been excreted in the urine and 6% remains in the blood. A small amount is retained by the soft tissue. The level of 99mTc-labeled OSTEOSCAN excreted in the feces is below the level detectable by routine laboratory techniques.

PRECAUTIONS
Both prior to and following 99mTc-labeled OSTEOSCAN administration, patients should be encouraged to drink fluids. Patients should void as often as possible after the 99mTc-labeled OSTEOSCAN injection to minimize background interference from accumulation in the bladder and unnecessary exposure to radiation. As in the use of any other radioactive material, care should be taken to ensure minimum radiation exposure to the patient, consistent with proper patient management, and to insinre minimum radiation exposure to occupational workers.

ADVERSE REACTIONS
None.

DOSEAGE AND ADMINISTRATION
The recommended adult dose of 99mTc-labeled OSTEOSCAN is 1 ml with a total activity range of 10-15 mCi. 99mTc-labeled OSTEOSCAN should be given intravenously by slow injection over a period of 30 seconds within three (3) hours after its preparation. Optimum scanning time is 3-4 hours postinjection.

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NUCLEAR SPECTROMETER.

A coordinated manual system that produces like a giant. A completely reliable giant, that even provides automatic background subtract (It's also readily adaptable to an automatic system.)

The spectrometer, itself, contains all major electronic sub-assemblies, will identify all isotopes in a sample, and will determine and display the concentration of each isotope. Automatic baseline advance — all decades presetable, even an analog version — it's all there.

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September 30—December 20
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If you want to continually take advantage of latest equipment developments and part with your old love—the equipment that was your choice three or four years ago—then choose leasing as a method of financing those useful years, not ownership.

Acquire what you need when you need it, determine how long you will be compatible, and through a Lepeska Rental Plan, pay for equipment usage only. This way you can avoid the tie that binds. This way you can avoid ownership and trade for a newer model with no long term strings attached.

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LOW ENERGY DIVERGING COLLIMATOR FOR THE DYNAcamera WITH GOOD RESOLUTION, HIGH SENSITIVITY AND ... REVERSIBLE!

Filling another need, N.I.S.E., INC. has introduced a low energy, dual purpose, diverging collimator for the Picker Dynacamera.

Its sensitivity, good resolution and wide field of view will make this collimator a valuable addition to the most needed collimators for your Dynacamera.

With six safe, but easy to remove thumb-screws (see picture above) the insert can be removed and if you prefer, reversed to a converging mode. And since we are specialists in design and manufacture of all kinds of collimators, we plan to keep the design of the outside ring, to enable you to order different inserts in the future to your or our specifications.

*SPECIFICATIONS:

<table>
<thead>
<tr>
<th>Energy Range</th>
<th>43 to 210 Kev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holes (Hex)</td>
<td>5600</td>
</tr>
</tbody>
</table>

FIELD SIZE:

- 12.0” At Collimator Face... 5.08 mm (0.20")
- 12.9” 2” Away.............. 8.89 mm (0.35")
- 13.7” 4” Away............. 11.43 mm (0.45")
- 14.6” 6” Away............. 15.24 mm (0.60")

MODEL NBR: MCP-7302

*We reserve the right to modify specifications and/or design without notice.

Yes, I’m interested in receiving more information on your “DI-CO”. Please send me the following:

- PRODUCT DATA SHEET
- QUOTATION

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NEW...

Multi-Purpose Adjustable Collimator

IN ADDITION TO THE WIDELY APPLIED 7202 SERIES MULTI-PURPOSE ADJUSTABLE COLLIMATORS WITH ITS 5” FOCUS, N.I.S.E., INC. PROUDLY ADDS TO ITS LINE THE 7400 SERIES ADJUSTABLE COLLIMATORS.

Model: 7401
Energy Range: up to 160 Kev.
Focal Point: 4”
Number of Holes: 127 Holes
F.W.H.M.: 1/4” to 5/8”
Number of Adjustments: 8

Catalog Numbers for Standard Five Inch Rectilinear Scanners:

Model: MCA-7401, MCB-7401, MCG-7401
Energy Range: up to 160 Kev.
Focal Point: 4”
Number of Holes: 127 Holes
F.W.H.M.: 1/4” to 5/8”
Number of Adjustments: 8

NOTE: Also available are the regular versions of the 7202 and 7401 (Non-adjustable)

PRICES:
Adjustable version (most models) $1,250.00
Non-adjustable (most models) $750.00

THE “CHAR-COL”

- Solves serious problem of 133-Xenon disposal.
- Efficient containment of 133-Xenon gas from a stream of air.
- Each of six chambers may be used for 30 minutes of continuous collection.
- Complete system is shielded with lead.
- Totally self-contained, compact and portable.

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PRICE: $595.00

THE XENON GAS DISPENSER

- A proven and economical way to dispense individual doses of Xenon gas from a one Curie ampoule.

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PRICE: $175.00

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All prices F.O.B. Cerritos, California. Terms: Net 30 days.
Prices and specifications subject to change without notice.

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the proven clinical counting system

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The XYZ-101 Imaging Table

Simplicity  Versatility  Economy

The XYZ-101 Imaging table combines vertical motion with X & Y movement of the table top for maximum versatility with all cameras and scanners. And since it is entirely manually operated, it requires no heavy, complicated hydraulic systems, motors, or electrical connections. As a result it is surprisingly low priced at $1,295.00.

Other tables for Nuclear Medical Applications

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>XY-101</td>
<td>Permits 10&quot; of table top travel in both X and Y directions with graduated calibration scales for accurate re-positioning.</td>
<td>$995.00</td>
</tr>
<tr>
<td>EZ-101</td>
<td>Can be raised or lowered to exact height desired for patient transfer and gamma imaging.</td>
<td>$825.00</td>
</tr>
<tr>
<td>SC-101</td>
<td>Provides general purpose utilization.</td>
<td>$425.00</td>
</tr>
</tbody>
</table>

All prices F.O.B. Plainview, N.Y.
The following $[^{3}\text{H}]$ kits are immediately available:

- **Aldosterone** (no chromatography)
- **Digoxin**  
- **c AMP**  
- **Digitoxin**  
- **c GMP**

Because we have specialized in tritiated kits, we have developed the finest liquid scintillation cocktail available. We would like to share it with you at competitive prices. We call it **BETA-COMPLETE™**

**Diagnostic Products Corporation**  
9325 Venice Blvd.  
Culver City, CA 90230  
(213) 837-1219 – 837-2331

VISIT US IN BOOTH #29 IN SAN DIEGO
**Programmed, Instantaneous plus daylight film processing**

**RADX has the system**

Here's the system that meets the exacting standards of scintiphotography. Streamline your nuclear medicine department economically with the 70mm scintiphotography camera and film processor from RADX. The system that maximizes information output of your gamma camera, adds convenience and speeds patient diagnosis.

The RADX Scinti-Cam 750 programmable 70mm camera installs in minutes on the CRT of any existing gamma camera. After daylight loading of up to 174 feet of 70mm film (or an average of 730 exposures per roll), the rest is a fast, simple, pushbutton operation which carries through to even automatic film cutting. The result is your exposed film contained in a "light-tight" cassette that is ready to be processed. That's when the RADX M-3 Roll-A-Matic Processor takes over.
After the technician selects the processing rate and locks the Scinti-Cam film take-up cassette into place, the M-3 automatically extracts the exposed film. And in as little as 42 seconds, the processed film appears—dry and ready for viewing.

Don't delay the total coordination of your clinical procedures any longer. Call or write RADX for further information about the Scinti-Cam 750 and M-3 Roll-A-Matic system.

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M-3 Roll-A-Matic Film Processor
Daylight film loading processor, designed primarily for 35mm and 70mm roll film, Compact, totally self-contained, no external plumbing or drains required, Castor mounted console (illustrated) optional.
NEW LIGHT

on the subject of
ULTIMATE FATE

The controversy over long-term retention and biologic fate of Iron Hydroxide Macroaggregates for lung imaging has been put into realistic perspective in a recently published paper. Glearly, the ultimate fate of FHMA has been more thoroughly studied than that of any other lung imaging agent. The findings shed new light on the predictable fate of FHMA.

We believe our FHMA makes the light brighter. Our FHMA is freeze dried. Its keeping qualities are far superior to those of other agents and tagging is comparable to MAA. It's safer and simpler to use than other FHMA agents. Preparation is quick, with less manipulation making it ideal for emergency situations.

Write for our descriptive literature and a copy of the Davis paper.


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Bedford, MA 01803
Telephone: (617) 275-7120

Kit contains vial and two syringes:
1 - 3 6-packs $50.00 ea.
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7 - 12 6-packs $44.00 ea.
12 or more 6-packs $40.00 ea.
Now You Have a Choice of Moves

GRAPHIC™
the portable scanner
Move it anywhere—for use or storage. The GRAPHIC scanner is compact, yet capable of performing thyroid uptake and other scanning duties... in any room. The GRAPHIC Rectilinear Scanner is your scanning lab on wheels.

Abbott Laboratories
Diagnostics Division
North Chicago, IL 60064

Yes, I'm interested in having a choice of moves!

Please send me more information on the GRAPHIC™ Rectilinear Scanner and its applications in the ICU, Emergency Room, Isotope Laboratory and as a mobile unit.

Name

Institution

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State

Zip
No Extra Space Needed
Use the space you have—present facilities become nuclear scanning facilities. No need for a special diagnostic room or department. Simply move the GRAPHIC into the room where it’s needed … GRAPHIC has room-to-room mobility. Turn a corridor into a temporary nuclear scanning lab … GRAPHIC will go with you, anywhere. Then push it into a nearby closet—even a corner—when you’re finished.

No Need For Additional Staff
Our professional representatives will show your technician how to get high-quality scans easily with GRAPHIC. And GRAPHIC is simple to operate … little technical skill is required. A minimum of training will teach your technician to get excellent scans from your GRAPHIC time after time.

Nuclear Medicine In Your Intensive Care Unit
Bring the advantages of nuclear medicine anywhere you want: intensive care unit, operating room, emergency room … now the scanner will come to the patient — allowing further diagnostic aid to those not-to-be-moved patients. With GRAPHIC, you now have a choice of moves.

Move Your GRAPHIC By Van
The superior performance of a GRAPHIC scanner can go anywhere — even by van. Because GRAPHIC has:
- low physical profile
- lower center of gravity
- compact-size dimensions
GRAPHIC fits easily into small vans—with no counterbalancing necessary.

Mobility — Just One Of Many Advantages
The portable GRAPHIC Scanner has room-to-room mobility, plus it’s
- able to give more scans per day
- dependable
- built to last
- requires little care
- covered by full warranty
- backed with a full service commitment

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Diagnostics Division
North Chicago, IL 60064

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New! Low Cost $^{133}$Xenon Gas Monitor

Johnston Laboratories now has available a reliable, low cost, $^{133}$Xenon gas monitor. Especially designed for routine air monitoring in nuclear medicine laboratories performing Xenon studies.

Radiation hazards may result if multi-dose $^{133}$Xe source containers are used or if expired air and $^{133}$Xe from a patient will leak into the laboratory air.

A leakage of less than 10% of a 10 millicurie of Xenon administered to a patient in a single study can establish a hazardous concentration in the laboratory atmosphere.

The new Model 133B monitor reads 0.1 to 10 MPC of $^{133}$Xe. It features a large, easy-to-read panel meter; both audible and visual alarms; and a recorder output. This new, low-cost monitor provides reliable, unattended operation. It is shielded against gamma radiation to prevent false alarms.

For price and complete specifications, write to:

Johnston Laboratories, Inc.
3 Industry Lane, Cockeysville, Maryland 21030 USA
Phone: (301) 666-9500  Cable: "JOHNLAB"

See our products at Booth #250 at SNM Annual Meeting in San Diego.
Biokit® Aldosterone

no more hydrolysis!
no more extraction!
no more chromatography!
incubation time: only 2 hours!

Biolab introduces a new fast way to determine the aldosterone hormone. Much faster than traditional methods. Easy, suppresses all difficult manipulations. As precise as can be. A new improvement in R.I.A. technique. By Biolab.

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Please send me complete information about:

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- ESTRONE-ESTRADIOL (01-02) KIT
- ALDOSTERONE KIT
- HPL KIT
- TESTOSTERONE KIT
- H. C. G. KIT
- 11 DESOXYCORTISOL KIT
- DIGOXIN KIT
- DHEA KIT
- CORTISOL KIT
- LH KIT

- In preparation
- T3 T4 KIT
- 01 KIT, 02 KIT, 03 KIT
- CALCITONINE KIT
- FOLIC ACID KIT
- LH KIT (rapid)

Name

Address

Biolab s.a. Belgium proposes you its Laboratory-services. Contact us to receive the complete list of the realizable tests and analyses.
Biolab s.a. have also branches in other countries.
It seems that the best people gravitate to a special climate; or maybe they create it. When Medical Data Systems began searching for people to design and build a computer-based Nuclear Medicine information processing system, we had two criteria: experience and expertise.

The people we hired demanded only one thing from MDS: assurance that they could continue to develop their own ideas, particularly in relation to working with forward-thinking Nuclear Medicine practitioners.

We would like to tell you about the people who produce the State of the Art System. By telling you about our fundamental operating philosophy, and by recreating the special atmosphere in which the task force team works, we feel you will better appreciate the excellence of the Modumed System.


The best people produce the best system. We have the best people. Have you examined our system lately?
IMAGINATION, IMAGING AND THE IMPRESARIO

Bill O'Neill's constant project is enhancing static and dynamic imaging. Bill is the synthesizer of the art with the science of Nuclear Medicine information processing. He is a thinker and implementer of innovative concepts.

When you ask him how he feels about his work with the MDS Nuclear Medicine team, he becomes slightly embarrassed and laughs off his pride with a comment like, "I think we're like the Beatles."

But when you pursue it and ask him why he joined MDS, Bill says, "They are the only company who listens to the clients and the people. And I'm a people. And besides, they're the only company who has the guts to let me try out my own dream."

Well, why not? It was also MDS's dream to design and build the State of the Art Nuclear Medicine System.
SOFTWARE

SOPHISTICATION

Phil Miller thrives on your challenges. "Our Modumed System can acquire from two cameras and a scanner at the same time AND simultaneously process previously acquired data. You don't believe it? Look, I'll show you."

And he does. Every time. With the spontaneity and instinct of an artist and the methodology and discipline of a scientist.

But when you ask him how he develops such sophisticated concepts, he's apt to shrug his shoulders and say: "I guess computers like me."

Creative individuals like Phil and the other members of the M.D.S. Nuclear Medicine Group need maximum freedom to develop thoughts and theories in order to create functional solutions to clinical problems. Phil likes the assignments that no one else can handle and he thrives on accomplishing tasks that everyone else says can't be done.

AND CLINICAL

RELEVANCE

When you buy Modumed you get a little bit of all of us and a good deal of Don Strange. Because of Don's thorough knowledge of Nuclear Medicine, his chief concern is ensuring the clinical relevance of the system for each client. And because of his insistence on smooth operations he practically becomes part of your installation. When we asked Don about the company's customization policy, he chose to overlook his own personal involvement and replied, "Well, I suspect we're guilty of being too accommodating."

But the M.D.S. Nuclear Medicine Group knows that the philosophy won't change because forward-thinking Nuclear Medicine practitioners direct our progress. Don has been researching along with physicians since his graduate days and will continue to do so because he chose to work for the company that shared his vision of sharing your vision. He's a trouble-shooter. A link between what needs to be done and the means to do it.
THE ART OF MODULARITY

The Group members respect each other. Rank goes according to project rather than title, so whoever has the most urgent project gets priority. But respect transcends the boundaries of office space, particularly in a person like Art Shufelt who has been with the system since its inception. Art is the Sales Manager for Modumed, and when he walks in to talk with you, he discusses Nuclear Medicine before he discusses computers. But before he does that, he listens to you.

Our philosophy and our System are modular to ensure that each client gets the type of equipment that best suits his needs. Art realizes that the State of the Art System must be adaptable and flexible enough to change and grow with you.

Why not let him listen to you?
THE STATE
OF THE ART:
CURRENT
AND GROWING

The manufacturing group, under
the direction of John Bollas, main-
tains the product integrity through
the entire manufacturing process.
They subject the system to rigorous
testing before it leaves the plant to
ensure that it is up and running
within 24 hours after delivery.

Ken Bachman, Electrical Engineer,
is primarily concerned with main-
taining leadership status through
hardware sophistication. As the
Nuclear Medicine discipline ad-
ances with new equipment, or as
technology changes, we increase
our efforts by developing innova-
tive hardware.

Everyone involved in engineering
development takes pride in refining
the intricate internal operation of
the system. They share this philos-
ophy with the MDS service team.
Bob Guglielmo, Service Manager,
requires that his engineers be
equally trained in the service of
Nuclear Medicine instrumentation
as well as computers. The compre-
hensive training of the team
enables them to service not only
the Modumed System but also all
imaging devices with which it is
used.

Through the constant effort of
programmers like Mike Sledz and
Ross Singleton, along with the
many designers, software develop-
ments come so quickly that we now
post our updates monthly.

The entire company is dedicated to
maintaining Modumed as the State
of the Art System, so we continually
update our hardware and software
as part of our support effort.

Together, the Modumed Group
blends their achievements to keep
all dimensions of the State of the
Art System current and growing.
SYSTEM SYNERGISM

We have tried to examine how the M.D.S. Nuclear Medicine Group could advance so far in so little time. The answer, of course, lies with the individuals, but these individuals have certain things in common.

They are all perfectionists, for instance. And each person sets standards for himself that are higher than any group could set for him. They share a standard of excellence that precludes tolerance for mediocrity.

They are experts in their fields, be it designing, building, programming, selling, servicing or any variety of supporting functions. They are at MDS purely by choice.

The Group shares a stretch philosophy. They are never satisfied. But after all, part of being the leader is the recognition that everything changes. The team, like the Nuclear Medicine discipline itself, advances steadily.

Everyone is working for a higher goal than just personal recognition. So they work together combining their individual expertise into group dynamics; group science; group achievement: The State of the Art.
WE GOT HERE
BY LISTENING TO YOU

Well, you might expect us to say all these things about ourselves, but the truly satisfying thing is that our clients say them too.

Besides these installations, we have more than a dozen Modumed Systems being installed.

Our clients form the nucleus of our efforts in maintaining the State of the Art System. And they also form NUCLEUS, the group of Modumed System owners who meet with us regularly to discuss new developments and share clinical insights and ideas. They ensure that MDS will continue to support you in the most medically meaningful way in the future.

Come visit us at the convention. You can make an appointment for a private demonstration by calling any member of the Medical Data Systems Nuclear Medicine Group at (313) 872-7373.

We're still listening.
Swiss precision and a long pharmaceutical tradition: 
SOLCO's contribution to the success of Nuclear Medicine
RAYBOL® DTPA $^{99mTc}$
Concentrates $^{99mTc}$ from any generator in a very small volume: up to hundreds of millicuries in a volume of 0.6 ml. For bolus injections.

SOLCOCITRAN® $^{99mTc}$
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SOLCOSCINT® DTPA
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SOLCOSCINT® DIPHOSPHATE
Superior images with a better impact because of its stability.

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Division of Solco Basle Ltd, Birsfelden-Basle (Switzerland)
A new Cyclic AMP Kit as reliable as our Radioimmunoassay Kits

Our latest radioassay kit—Cyclic AMP—is designed to measure cyclic AMP levels in the range 0.2-16 pmol per incubation tube. Each kit contains sufficient materials for the measurement of 65 unknowns—and is as reliable as you would expect a new kit from The Radiochemical Centre to be. Like our radioimmunoassay kits—Insulin, HPL and ACTH—Cyclic AMP can be depended upon to give consistently accurate and reproducible results.

Test our reliability

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The Radiochemical Centre Limited, Amersham, England.
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In W Germany: Amersham Buchler GmbH & Co, KG, Braunschweig
Over 25 years ago LKB was designing and building instruments for nuclear research. In fact, one of the earliest instruments developed for advanced work in the nuclear field was LKB's 200 million electron-volt synchrocyclotron, installed at Uppsala University in 1947. Since that time LKB has always been in the forefront with equipment for tracing and counting radioactive isotopes in the clinical field. Some of the LKB innovations of earlier years: whole-body scanners for radioactive tracing in human patients, beta-comparators, scalers, counters and automatic sample-changers; and radio-chromatogram scanners. This wealth of nuclear experience stands behind the current range of LKB-Wallac Gamma and Liquid Scintillation Counters.

LKB Instruments Inc.
12221 Parklawn Drive, Rockville MD 20852
11744 Wilshire Blvd, Los Angeles Calif. 90025
6600 West Irving Park Road, Chicago IL 60634
260 North Broadway, Hicksville N.Y. 11801

1947: LKB's 200MeV synchrocyclotron being installed at Uppsala University, Sweden.

The Only Gamma Systems
With A Full 2 YEAR WARRANTY!
This is the simplest way to computerize your scintillation camera

Nuclear Data's Med Stor™
Nuclear Data's new MED STORTM is a moderately priced computerized image storage and processing system that can be used with any scintillation camera. MED STOR provides computer controlled acquisition of static and dynamic function data, selection of up to four regions of interest, and simultaneous generation of up to four time/activity histograms. It also provides variable image framing rates, high speed list mode acquisition, file and display of patient and study data, static image display selections of 64x64, 128x128, or even 256x256 data points, and almost instant data storage and retrieval by high density magnetic computer tape. This latter capability permits playback of an image in seconds regardless of the real time required for the camera to produce the image.

Though MED STOR is a real computerized system, you don't have to be a programmer or computer expert to use it fully. MED STOR has complete built-in software and operates totally by simple understandable push-buttons. And, because MED STOR is a true computerized system, it represents only the beginning of your department's image processing and storage capability. MED STOR readily upgrades at any time to the advanced and programmable MED II image storage and processing system.

Important questions to consider before you computerize your scintillation camera.

(1) Which is the only company that actually makes its own scintillation cameras and medical computers? (Nuclear Data)

(2) Who is the most experienced producer of computerized image storage and processing systems in the world? (Nuclear Data)

(3) Which company has the most such systems in routine clinical use? (Nuclear Data)

(4) What one computerized image storage and processing system has done away with the typewriter keyboard and is operated totally by simple pushbuttons? (Med Stor)

(5) What company has the most experience in interfacing computers with cameras? (Nuclear Data)

(6) Which modestly-priced image storage and processing system is a real computer and not just a hard-wired multichannel analyzer? (Med Stor)

(7) Which company can be described in these words: "...The most sophisticated developer of software in this field and who has been doing it for a longer time than anyone else and who has more clinical software than anyone else in this field..."? (Nuclear Data)

(8) Which computerized image storage and processing system can actually be mastered in about two hours? (Med Stor)

(9) Which computerized image storage and processing system can be readily and most inexpensively upgraded to Nuclear Data's advanced MED II? (Med Stor)

(10) Who has an active user's group that exchanges and develops clinical software? (Nuclear Data)

(11) Which computerized image storage and processing system has been successfully interfaced with every major scintillation camera? (Med Stor)

(12) Which computerized image storage and processing system is accompanied by a Nuclear medical computer application specialist? (Med Stor)

These are some important reasons for computerizing your scintillation camera with MED STOR. There are more in store. To learn about them, write to the Nuclear Data office nearest you.
For more than three years, the Surprenant/Douglas Automated Ventilation Module (AVM-3) has been simplifying radioxenon ventilation studies of all kinds.

The AVM-3 allows you to perform Single Breath (tidal volume or vital capacity), Rebreathe and Washout studies — singly or in the combination of your choice — using just one operator. All without patient co-operation. All with consistently reproducible results. (Single breath studies may be made at any lung volume.)

In addition, since the geometric factors for AVM-3 controlled ventilation studies can be made nearly identical to perfusion studies, easy and meaningful regional V/Q comparisons are permitted.

The AVM-3 system is linked directly to your scintillation camera by remote control and automatically initiates all scintiphoto exposures at precise predetermined intervals. As a result, the only functions of the operator are to select the desired study sequence, push the start button and then collect camera data.

The AVM-3 system, with protective lead-shielding, is enclosed in a single case mounted on an overbed table for use on patients in either sitting or supine positions.

Also available is the RGD-700 Radiogas Dispenser. The RGD-700 crushes and stores curie ampules of Xenon-133 in its 35 ml. tank handle and allows you to withdraw single doses as needed. The savings which result from purchasing Xenon-133 in curie ampules as opposed to single doses at a volume of 20 studies per month, for example, are enough to pay for the RGD-700 after the first 10 procedures.

The super versatile AVM-3 and the money-saving RGD-700. Just two of the ways in which we're working to make your job a little easier.

For complete information just write Omnimedical, P.O. Box 1277, Paramount, California 90723.

Better yet, call us collect at (213) 633-6660.

Omnimedical
Toshiba's Jumbo Gammacamera, model GCA-202, has an effective field of view 350mm in diameter. Other features include:

- The ability to image a large organ alone or in combination with smaller organs.
- No divergent collimator is needed.
- Images with high resolution and sensitivity without distortion.

The Jumbo Gammacamera and its Whole Body Adaptor make whole-body-imaging possible in only ten minutes. Other advantages:

- You get more time for other tests and diagnosis.
- More accurate diagnosis.
- Patients don't have to go through time-consuming examinations.

SORRY U.S.A.—GCA-202 is not available in your country.
When you want bone images use Bone Scintigraphin™ Reagent (A Diphosphonate) from Medi+Physics.

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The Sixth Annual Seminar in Nuclear Medicine will be held at Colby College in Waterville, Maine from August 19-23, 1974. Twenty hours of lectures, panel discussions and illustrative cases will be presented by Dr. H. N. Wagner, Jr., W. B. Nelp, T. G. Mitchell, S. M. Larson, H. W. Strauss, and L. Goodof. The course is approved for Category I credit by the American Medical Association.

For further information contact Dr. Robert Kany, Director of Special Programs, Colby College, Waterville, Maine 04901.
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JOURNAL OF NUCLEAR MEDICINE
NORTHERN AND SOUTHERN CALIFORNIA CHAPTERS
THE SOCIETY OF NUCLEAR MEDICINE
6th Annual Meeting
Downtown Hilton Hotel
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October 25–26, 1974

ANNOUNCEMENT AND CALL FOR ABSTRACTS

Original Nuclear Medicine contributions are welcomed by the Scientific Program Committee. The subject is open to the disciplines of Nuclear Medicine and allied physical and biological sciences. The sessions are primarily scientific and will include several workshop sessions.

The abstract should include:
1. Statements of purpose, techniques, results with supporting data and conclusions;
2. 250 words maximum;
3. The title and authors should be stated exactly as you wish them to appear on the program. Presenting author's name should be underlined.

Send abstracts on standard nuclear abstract form to:

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Standard nuclear abstract forms may be obtained by writing to Dr. Budinger at the above address.

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- Interpretative sessions

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- **February 17–21, 1975**
- **March 17–21, 1975**
- **April 14–18, 1975**
- **May 12–16, 1975**

Sessions will be five days each, Monday thru Friday. Subject materials will be intermixed and cumulative.

For further information, contact:

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  Each Albumin Microsphere is a single homogeneous sphere of albumin — they won't disintegrate in the vial or syringe. Yet, microspheres readily clear from the lung. Pulmonary clearance half-times are long enough for multiple view imaging but are still short enough to allow daily imaging, if required. Microscopic analysis of lung tissue in the mouse showed 99 percent of the administered microspheres were gone after 29 hours.¹

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  "Free" isotope need no longer interfere with the scan. The unique filter construction of the Microsphere Labeling Vial allows the free isotope to be removed, leaving just labeled microspheres for suspension.

- Stable Kit
  Currently the expiration date of each kit is 6 months after the date of manufacture. You can stock the kit and have it available for immediate use. Even a department doing a moderate amount of lung imaging can take advantage of quantity discounts.

- Each Lot FDA Approved
  Thoroughly tested by 3M, each lot is checked by the Bureau of Biologics, FDA, and approved for shipment. This provides a double-check of sterility, lack of pyrogens, and all the important performance parameters of the kit.

INDICATIONS Scintillation imaging of the lungs with 99mTc-Labeled Albumin Microspheres is indicated as an adjunct to other diagnostic procedures whenever information about pulmonary circulation is desired.

CONTRAINDICATIONS The safety of Albumin Microspheres in patients with a known right-to-left cardiac shunt has not been established and its use in such patients is contraindicated.

SIDE EFFECTS Although no anaphylactoid reactions have been reported in patients following the administration of Albumin Microspheres, the possibility should be considered that hypersensitivity reactions may occur rarely in patients who receive additional doses of the Microspheres.

HOW SUPPLIED Each kit contains five labeling units. Each labeling unit contains one day's supply of Albumin Microspheres (5mg — enough for 5 to 7 patients) plus all the reagents necessary to attach technetium to the microspheres.

For detailed information about Microspheres and the 3M Brand Albumin Microsphere 99mTc-Labeling Kit, write: Nuclear Products for Medicine, 3M Company, 3M Center, St. Paul, Minnesota 55101, or phone TOLL FREE (800) 328-1671.

¹ Data on file at the 3M Company and the Bureau of Biologics.
The safe use of up to 30 mCi of Xenon-133 in pulmonary function studies is well-established.*

Cutaway view of shipping container showing how the glass ampule of Xenon-133 is shielded by lead and insulation to assure safe handling without radiation hazard.


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If you do ten or more lung studies per month using Xenon-133, consider the convenience and economy of purchasing Curie quantities of the radioisotope for use in a transfer vessel:

- No minimum annual Xenon usage required.
- No waiting for unit dose deliveries.
- Reduces patient isotope cost.

Please send more information on the Xenon Transfer Vessel and the purchase of Xenon-133 in Curie quantities:

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The **XENON Transfer Vessel**

keeps radioisotope XENON-133 dissolved in saline safely and economically for convenient in-lab use.

SAFETY A Curie of Xenon-133 in the Xenon Transfer Vessel assures negligible radiation hazard to personnel and provides a safe, convenient means for storage. Less than 2 mR/hr exposure at six inches from the vessel. Personnel involved in transfer and administration of Xenon receive low exposure, less than 0.1 of maximum permissible dose.*

CONVENIENCE Laboratory conversion of Xenon-133 into saline is accomplished in a few simple operational steps, releasing a Curie (or more) of Xenon-133 from a specially-designed-and-sealed glass ampule into saline solution. Dosages are easily drawn off through a 0.45 µ Millipore filter. Xenon-133 is also easily converted from saline to syringe air. Problems of patient scheduling to coincide with unit dose deliveries are eliminated.

ECONOMY The transfer vessel method results in a substantially reduced isotope cost. There is no lease obligation, no capital investment, no minimum annual usage required, no maintenance concern. The vessel is replaced every ten months (sooner if needed) at no expense to the user. Vessel fee is charged only in months when Xenon is ordered.

CONCENTRATION Initially, approx. 20 mCi of Xenon-133 per cc of saline. Greater concentrations possible using a multiple Curie ampule. Concentration in the 50 cc chamber decreases with use and decay.

Send coupon on facing page for more information and literature on the Xenon Transfer Vessel.

**“HANDLING, USES, AND RADIATION DOSIMETRY OF XENON-133” by Marla K. Loken, M.D., Ph.D., and George S. Kush, M.S. Reprint from Atomic Energy Commission Symposium Series #20 on Medical Radionuclides: Radiation Dose and Effects. For free copy, send coupon on facing page.**

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In 1974 the estimated incidence of new internal cancer cases in the United States will reach approximately 655,000 persons. Moreover, within this year 355,000 Americans will die of malignancy, a large portion of which is potentially curable.\textsuperscript{1} Survival trends are inversely related to the extent of the disease—the less involvement, the better the chances of therapeutic success.\textsuperscript{1,2}

This problem of detecting cancer has long absorbed researchers. Now, ten years after the basic investigations were begun, the blending of the sciences of immunology and radiochemistry has resulted in...

**CEA-ROCHE**

*Carcinoembryonic Antigen assay*

A new \textit{in vitro} test to aid in the management and diagnosis of cancer

---

**the discovery of carcinoembryonic antigen**

The term carcinoembryonic antigen (CEA) was first used in 1965 by Gold and Freedman of the Montreal General Hospital to describe a glycoprotein which is a constituent of the glycocalyx of embryonic entodermal epithelium; it is also present in extracts of carcinoma cells.\textsuperscript{3,4} The embryonic gene responsible for CEA synthesis is expressed by many carcinoma cells; however, preliminary experiments suggest that the amount of CEA in different carcinomas varies, indicating gene expression is not an all-or-none phenomenon.\textsuperscript{5,6}

As the carcinoma disrupts the normal tissue architecture, cells penetrate the underlying tissue, and glycocalyx components including CEA enter the vascular system.

---

**Diagrammatic representation of microscopic section of fetal colon. CEA is present in glycocalyx which faces lumen of colon.**

---

**a long-term commitment to cancer research**

Roche has long had a serious commitment to cancer research which has resulted in the development of such important chemotherapeutic agents as Fluorouracil (5-fluorouracil), FUDR (flouxuridine), Efudex\textsuperscript{®}(fluorouracil) and Matulane\textsuperscript{®}(procarbazine HCl).\textsuperscript{7}

Working in conjunction with the original Canadian researchers and with investigators at over 100 leading medical centers and research institutions throughout the United States, England and Canada, Roche Research has adapted, refined and evaluated this test for carcinoembryonic antigen (CEA) found in a variety of cancerous and noncancerous states.

CEA-ROCHE, a radioimmunoassay, employs the Hansen Z-gel method which is capable of detecting and measuring plasma levels of CEA in the nanogram (one billionth of a gram) range. The sensitivity of the assay has been shown to be 0.5 ng/ml of CEA.\textsuperscript{10}
an extensive clinical evaluation

During the initial studies with CEA, it became clear that in order to obtain the reproducibility necessary to make the CEA assay an important and reliable diagnostic tool, strict standardization of procedure and reagents was required. Therefore, Roche embarked upon a unique investigational program. More than 35,000 assays using standardized CEA-ROCHE reagents and procedure were run on samples from over 10,000 patients at over 100 leading medical centers and research institutions. Identical protocols and reporting methods were also utilized, thereby subjecting the CEA-ROCHE assay to one of the most thorough and well-controlled evaluations made on a diagnostic test.

Using the CEA-ROCHE assay, elevated CEA titers have been detected in carcinomas of entodermal and nonentodermal origin; in noncarcinomatous malignancies; in such nonmalignant diseases as emphysema, inflammatory bowel disease and colorectal polyps; and in some healthy individuals, particularly chronic smokers. The following data were derived from these studies.

<table>
<thead>
<tr>
<th>Patients</th>
<th>CEA Titer Ranges</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>0-2.5 ng/ml</td>
</tr>
<tr>
<td>Healthy Subjects</td>
<td></td>
</tr>
<tr>
<td>Non-smokers</td>
<td>892</td>
</tr>
<tr>
<td>Former smokers</td>
<td>235</td>
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<tr>
<td>Smokers</td>
<td>620</td>
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<tr>
<td>Colorectal Carcinoma</td>
<td>544</td>
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<tr>
<td>Pulmonary Carcinoma</td>
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<tr>
<td>Pancreatic Carcinoma</td>
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<tr>
<td>Gastric Carcinoma</td>
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<tr>
<td>Breast Carcinoma</td>
<td>125</td>
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<tr>
<td>Other Carcinoma</td>
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<tr>
<td>Noncarcinoma Malignancy</td>
<td>228</td>
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<tr>
<td>Non-malignant Disease</td>
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<tr>
<td>Benign Breast Disease</td>
<td>115</td>
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<tr>
<td>Rectal Polyps</td>
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<tr>
<td>Cholecystitis</td>
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<tr>
<td>Alcoholic Cirrhosis</td>
<td>120</td>
</tr>
<tr>
<td>Active Ulcerative Colitis</td>
<td>146</td>
</tr>
<tr>
<td>Pulmonary Embolism</td>
<td>49</td>
</tr>
</tbody>
</table>
CEA-ROCHE as an aid in the management of cancer

When used in conjunction with other tests in the diagnostic armamentarium, this highly sensitive and quantitative radioimmunoassay has been shown to be useful as an aid in the management of the cancer patient

- by monitoring the effects of surgery, radiotherapy and chemotherapy,
- by providing a basis for re-evaluating therapy,
- by determining the probable presence of metastatic disease,
- by providing an early indication of the recurrence or progression of malignant disease.

Decreases in CEA titers were reported to be associated with effective therapy.\textsuperscript{12-17} Serial determinations of CEA proved to be of value in assessing the condition of the patient during therapy.\textsuperscript{12-16} Persistent increases in titer were associated with a lack of response to therapy or a recurrence of disease; in some cases, the titer rise preceded clinical signs by as much as three months.\textsuperscript{18-20} Except for primary pancreatic and colorectal carcinoma, titers above 20 ng/ml were, with very rare exceptions, associated with the presence of metastatic disease.\textsuperscript{21} However, metastatic disease may also occur when the CEA titer is below 20 ng/ml.

CEA-ROCHE as an aid in the diagnosis of cancer

The CEA-ROCHE assay has also been shown to be of value as an aid in cancer diagnosis. When used as an adjunct to other tests and procedures, the CEA-ROCHE assay has proven to be most useful

- in patients with signs, symptoms and clinical history suggestive of a diagnosis of cancer,
- in patients with such diseases as ulcerative colitis, pulmonary emphysema, alcoholic cirrhosis and gastric and duodenal ulcers in which the risk of developing cancer is greater than in the corresponding normal population.

These nonmalignant inflammatory diseases in their active state may give rise to CEA titers above 2.5 ng/ml. These titers usually drop below 2.5 ng/ml when these diseases are in remission.\textsuperscript{17, 20-22} In a special study of 883 patients, cigarette smoking with titer elevations were associated with atypical sputum cytology.\textsuperscript{23} Decreases in CEA titer often occurred within 30 to 60 days after cessation of smoking.

It must be stressed that test results and data arrived at using the CEA-ROCHE assay cannot be compared with results obtained by any other method or reagents.

Limitations of CEA-ROCHE

CEA-ROCHE is not recommended as a screen to detect cancer. CEA titers are not an absolute test for malignancy, nor for a specific type of malignancy. In the management and diagnosis of the patient suspected or known to have cancer, all other tests and procedures must continue to be given emphasis. CEA titers less than 2.5 ng/ml are not proof of the absence of malignant disease.
representative case history of patient being treated for malignancy without known metastases

A 42-year-old woman presented with a squamous-cell anal carcinoma. CEA-ROCHE level at time of surgery was 0.6 ng/ml. CEA titer rose to 12.6 ng/ml 10 days later and was still 9.8 ng/ml 20 days after surgery. Upon discharge three months later CEA level was 4.1 ng/ml and there was no clinical evidence of disease. Six weeks later titer had risen to 8.8 ng/ml and then to 9.3 ng/ml after another 30 days without any clinical sign of disease. Patient was hospitalized three months later and biopsy was positive for recurrence of cancer. In spite of initial low CEA value preoperatively, titer levels accurately reflected patient’s condition and gave evidence of recurrence some 4 months prior to clinical signs.

representative case history of patient being treated for malignancy with metastases

Chemotherapy was initiated in a 37-year-old man presenting with synovial sarcoma and metastases to the lungs. The first CEA-ROCHE titer was performed three months later. Titer level was 6.2 ng/ml. In six weeks CEA titer dropped to 3.0 ng/ml and a 50% reduction of tumor in the right upper lobe of the lung was noted. One month later titer rose to 4.6 ng/ml and there was a reappearance of a left upper lung lesion.

Chemotherapy was reinstituted and assays run at 2, 3, 5, 12 and 20 weeks. There was no change in radiologic appearance of metastases. Patient gained weight and worked regularly. The CEA titers during this period were 3.8, 0.0, 0.5, 0.0 and 4.6 ng/ml respectively. One and one-half weeks later, CEA titer rose to 10.0 ng/ml and a review of x-ray films revealed appearance of new lesions.

The above representative case histories, using actual CEA-ROCHE titer readings and timing of assays, illustrate the correlation of results with published clinical studies.
CEA-ROCHE
Carcinoembryonic Antigen assay
A significant contribution to the management and diagnosis of cancer

availability of CEA-ROCHE
The CEA-ROCHE™ assay may be obtained through your hospital, institutional and private clinical laboratory obtaining the necessary reagents and procedure in a kit developed by Roche Diagnostics or as a direct reference service of Roche Clinical Laboratories, Inc.

And, as with all our pharmaceutical agents, this assay may be obtained for your patients who are unable to afford it through the Roche Indigent Patient Program.

comprehensive information available
Because of the clinical significance of CEA-ROCHE and the critical area of medicine involved, a comprehensive Clinical Monograph containing in-depth information on the nature of the assay, its applications and interpretation as well as an extensive summary of the collaborative study has been prepared.

It is recommended that this brochure be consulted before ordering or interpreting the CEA assay. You may obtain a copy by completing and returning the coupon below.

references
1. American Cancer Society: 1974 Cancer Facts and Figures
7. Go V LW: Data on file, Hoffmann-La Roche Inc, Nutley NJ
9. See Package Insert or Physicians’ Desk Reference for complete product information.
11. Third Conference, Carcinomembryonic Antigen (CEA) Test Collaborative Study, Hoffmann-La Roche Inc, Nutley NJ, April 21, 1973
20. Data available on request from Hoffmann-La Roche Inc, Nutley NJ
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More than just a sample changer
A programmable multi-user system

The Raytheon/ICN GammaSet 500 adds a major new dimension to automatic gamma counters: The unique Programmable Sample Cassette. Each 10-sample cassette can be easily programmed for automatic selection of counting parameters and user identification. The cassette can be coded for preset time, preset count, background subtract, and isotope selection on the 4-mode, dual scaler. The cassette concept also makes system loading and unloading considerably faster.

And there are other key reasons why the GammaSet 500 is more than just a sample changer:
- Contamination-proof “Set and Forget” Operation. Sample counting / changing operation — including shut-off — is completely automatic and under full protection of the transparent cover. The foldaway electronics drawer, when closed, keeps controls from being changed accidentally. Data is recorded by printing lister, teletypewriter or punched paper tape.

Multi-User Capability. Rapid loading, 500 sample capacity accommodates many different users with various test requirements. Cassettes can be loaded in random order and interrupted at any time for manual counting.

In virtually any gamma counting application the GammaSet 500 will give new operating convenience, versatility and economy.

For full details, write Raytheon Company, Medical Electronics, P.O. Box 397, Fourth Ave. Burlington, Mass. 01803 (617) 272-7270
RADIOIMMUNOASSAY
...IS FOR EVERYBODY

Curtis Nuclear Corporation’s RIA diagnostic test kits are ideal for Pediatrics (HGH, Vitamin B12) to Geriatrics (Digoxin, Insulin, Vitamin B12). Micro sera sampling plus a highly specific polymerized protein antibody run at room temperature, reduces total test time without altering the precision, specificity, accuracy or reproducibility of the test.

Curtis instruments, pipettes and lyophilized serum standards further insure reliable test results. Regardless of the family needs, Curtis has radioimmunoassay diagnostic test kits for the assessment of hematological and hormonal problems.

Curtis Nuclear Corporation
1948 East Forty-Sixth Street, Los Angeles, California 90058 Telephone (213) 232-3531
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GOOD RESPONSE TIME. You get it, because we have enough men in our Service Group to handle even the peak demands created by seven hundred installations in the U.S. alone. More in Europe and other places, but that's another story.

OUR FIELD ENGINEERS ARE EQUIPPED, not only with their "little black bag" and an oscilloscope, but with so much gear in their service cars that we specify heavy duty suspensions on all vehicles we lease. Why?

MODULAR DESIGN in everything we build. That's important. Pull one out, and plug another in. Even down to individual ICs (integrated circuits) and transistors. And nobody else can offer you that. We do it at the expense of some short range profit. But our long range thinking tells us, if it's easier to maintain, you get better service. And we get a better customer.

And EXCLUSIVE SPECIALIZATION. Our Field Engineers work only on clinical nuclear equipment. That's what we sell. That's what we service. No other equipment. We're specialists.

We're also RECOGNIZED IN THE INDUSTRY. It's interesting. Two years ago, we had a tough time recruiting experienced Field Engineers. Today, they're coming to us, all the time. Does that tell you something?

Right. WE'RE GROWING. And that means a better opportunity, for the right man. During 1974, we plan to add five new Field Engineers each quarter, twenty for the year, just to keep up with our increasing sales.

"DIRECT SERVICE IS MORE IMPORTANT THAN DIRECT SALES." Quote. Joe Teague, President, Ohio-Nuclear. Want proof? Last year, one of our sales territories was without a salesman for about six months. Yet sales continued, over projected quota. Why? Our Field Engineers were there, on the job. We figure those potential customers knew they could get service, knew the equipment was right for them, and decided we would somehow get the orders processed and the equipment installed. Which we did.

Finally, we're COMMITTED to service, wherever we sell. And we live up to that commitment, day after day, before and after that occasional breakdown that plagues any piece of sophisticated equipment. Ask our users. Or ask us, about service agreements. Details and cost vary with type and model of equipment. Write us for full information. We'll be here — this year, next year, and the year after.
#1...Multi-Imager System

The complete system for static, dynamic, whole body, and physiological function gated imaging.

Three film size formats for optimum imaging versatility:
4"X5"
5"X7"
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# MATRIX INSTRUMENTS
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The Multi-Imager System offers
- Up to 36 image frames on a single sheet of film
- Physiological gating permitting imaging of predetermined multiple phases of the respiratory and/or cardiac cycles in separate frames
- Electronic frame advance without any moving mechanical components
- Electronic frame advance dead time of less than one μ second
- Film cost savings of up to several thousand dollars per year
- Compatibility with all scintillation cameras

The Multi-Imager System is designed for use with scintillation cameras to provide dynamic, static, whole body, and physiological function synchronized imaging. The system operates by altering the CRT deflection signals, changing the size, location, and duration of the image on the display scope. Frame advance is achieved electronically, yielding sequential exposures with essentially no data loss.

The Cardiac Gate accessory records both end-systolic and end-diastolic images simultaneously, using a two frame format. The Multi-Imager System alternates exposures between the two frames synchronous with the patient’s cardiac cycle. The Cardiac Gate is a complete ECG instrument, including a heated stylus strip chart recorder that records both the cardiogram and the exposure gates.

The Respiratory Gate accessory records both inspiration plateau and expiration plateau images simultaneously, using a two frame format. The Multi-Imager System alternates exposures between the two frames synchronous with the motion of the organ being imaged. The Respiratory Gate operates without attaching any sensors to the patient. Either the gamma camera split crystal mode or areas of interest are used to sense organ motion.

Cardiac and respiratory gating can be combined to simultaneously record in a four frame format all four possible combinations: end-systole/inspiration plateau, end-systoleexpiration plateau, end-diastole/inspiration plateau, and end-diastoleexpiration plateau.

**MATRIX INSTRUMENTS**

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Digital's Gamma 11.
When you need something special from a nuclear medicine system.

A lot of nuclear medicine computers can give you the standard operations. Thresholding, Image smoothing, Crystal non-uniformity correction. Profile slices. Dynamic function curves. But that's just routine with Gamma-11.

What happens when you want to find out something special? On most systems, things get horribly complicated.

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And, of course, you get Digital Equipment Corporation. And Digital's huge service organization. More people have opted for Digital than for any other nuclear medicine computer supplier...and Digital has produced more than half the minicomputers across the world.

Write for more information.
We've mixed a better cocktail for RIA

It's called RIAFLUOR™ and it's an entirely new liquid scintillator for radioimmunoassay. For the first time you can count tritium and iodine-125 in large aqueous samples with unusually high efficiency but without the problems of phasing.

RIAFLUOR is the first liquid scintillator formulated expressly for use with samples provided by RIA techniques. It accommodates inorganic salts, such as alkali metal phosphates, human and other serums, and blood fractions such as bovine serum albumin.

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JOURNAL OF NUCLEAR MEDICINE
No knobs, no meters, no errors
The spartan panel above tells the second-best part of our story. If you want to photograph peak systole, press the SYSTOLE button. If, say, you want systole only at full expiration, press the EXPIRATION button as well. If only breathing is relevant, don't press the heart button.

The Brattle is connected to the patient and to your gamma (or x-ray or ultrasonic) camera. Whenever the patient is in the selected phase, both the scope and the scaler on your gamma camera are gated ON, and film is exposed. Otherwise, they are OFF.

Some Brattles have been in clinical use for over 18 months—very good hospitals have them
Two of these hospitals, Johns Hopkins and Mass. General, have kindly supplied us sample clinical pictures which we'll gladly show you. And if you want references on effectiveness, reliability and safety, we'll supply them, as well as a bibliography on ten years' worth of medical uses of synchronization.

What's the next step? Write or call
Yes, write us. Or call. We'll send you data (on this and other models, applications) and the name and phone of our man in your area (37 states so far, and growing). He can show you samples, give you a demo and arrange for you to have a machine of your own. (This is the best part of our story.)

Brattle Instrument Corporation
767/C Concord Avenue • Cambridge, Massachusetts 02138 • 617-661-0300

Volume 15, Number 6
Seven facts about computerized image processing and storage systems that our worthy competitors hope you never ever hear.

**Fact:** Nuclear Data has installed more such systems than all other companies combined.

**Fact:** Our MED II has helped with more nuclear medical diagnoses than any similar system.

**Fact:** MED II has more clinical software actually available today. (See facing page.)

**Fact:** Nuclear Data supplies superior continuing field support and service.

**Fact:** The MED II offers unmatched capability at an unparalleled $42,000. (And this is for a complete, fully operational system with a full 12-month warranty!)

**Fact:** Nuclear Data built the first commercial system of this kind and has had the most experience in interfacing computers with cameras.

**Fact:** You ought to check out the MED II before choosing a computerized image processing and storage system.
Available Software
In Vivo Tests (Static)
- Brain Imaging
- Lung Imaging
- Liver/Spleen Imaging
- Kidney Imaging
- Pancreas Imaging
- Placenta Localization
- Thyroid Imaging
- Pericardial Effusion

In Vivo Tests (Dynamic)
- Liver Function
- Kidney Function
- Cerebral Transit Time
- Regional Cerebral Blood Flow
- Xenon Ventilation/Perfusion
- Cardiac Ejection Fraction
- Cardiac Output
- Cardiac Shunt
- Cisternography

In Vitro Tests
- T3
- T4
- Red Cell Survival
- Schilling

RIA Tests
- Digoxin
- Digitoxin
- Human Growth Hormone
- Anti Australian Antigen
- Human Placental Lactogen
- Insulin

Functional Software
- Patient and Study Data with Every Record
- Tumor Registry
- Uniformity Correction
- Background Subtraction
- Contrast Enhancement
- Static Study Projection Display
- Dynamic Frame Mode Acquisition
- Dynamic List Mode Acquisition
- Dual Isotope Acquisition and Subtraction
- Dual Camera Acquisition
- Formatted Administrative Data with 3,000 Characters of Free Text

Mathematical Functions for Data Manipulation
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- Addition
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Nuclear Data Inc.
Golf and Meacham Roads
Schaumburg, Illinois 60172
312/885-4700

Please send information on the MED II.

NAME ____________________________

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Zip _______
The Res-O-Mat® ETR® Test for thyroid function: what it can do, can’t do and needs to do.

What the ETR test can do is deliver fast, highly accurate diagnosis of thyroid function. It’s the first in vitro test to consider simultaneously total T4 concentration and the degree of hormone saturation of protein binding sites. It completely obviates the effects of pregnancy, the pill, iodides and many commonly used drugs. They don’t even figure in the test system.

Based on actual clinical evaluation, this test has been shown to have a high degree of correlation with the true thyroid function of the patient. The Res-O-Mat ETR test has proven to be an extremely valuable method of monitoring thyroid therapy.

What the Res-O-Mat ETR test doesn’t do is talk the routine language of traditional thyroid tests. It talks in ETR units. Precise, informative, but somewhat different. The test doesn’t reflect protein abnormality. It isn’t designed to. Its specific job is determining thyroid performance.

What the ETR test needs to do is to get a chance to prove itself to you. It’s unfamiliar, so it’s easy to resist. Those who have tried it usually see its advantages right away. They find themselves with a fast, highly accurate test. Isn’t that worth looking into?

---

For the first time — a Renin Activity assay that is as fast as it is simple — GammaCoat by Clinical Assays.

- No more overnight assays
- No more complicated pipetting steps
- No more centrifugation or decanting
- No more patient sample dilutions
- Same day results

Angiotensin I is generated in a buffered pH(7.4) solution for three hours. The five step assay is then carried out in the antibody coated tubes provided with the kit.

1. Add buffer.
2. Add serum or standards.
   Incubate 15 minutes.
3. Add $^{125}\text{I}$ Angiotensin I tracer.
   Incubate 3 hours.
4. Aspirate and wash.
5. Count the coated tubes.

The simplicity, speed, accuracy and reproducibility characteristic of the GammaCoat family of assays is now available for your most difficult, time-consuming assay-Renin Activity.

Also available are:

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- Vitamin $\text{B}_12$ ($^{57}\text{Co}$)
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- Digoxin ($^3\text{H}$)
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For full details contact:

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NEW
Audio/Visual programs for teaching
NUCLEAR MEDICINE
to residents and fellows

Here, for the first time, is a series of audio/visual programs prepared specifically for the resident and fellow in nuclear medicine.

Under the editing of Drs. Leonard M. Freeman and M. Donald Blaufax of the Albert Einstein College of Medicine, N.Y., key topics have been selected to demonstrate the multi-faceted diagnostic approaches provided by radionuclides. Each program was selected because of its clinical importance and its ability to dramatize basic physiological and clinical principles.

Each was created by an expert in his field.

These self-instructional programs use 35 mm color films or slides (your choice) coordinated with audio cassettes.

After initial presentation, they can be reviewed at the option and leisure of the resident.

The presentations are created to complement your training programs, making teaching more effective and learning easier for your students.

Send for full details.
Ask for Bulletin 138-B
At last... \textit{one} instrument that counts and computes all \textit{three} of the major thyroid function test values for you. Now, all you do is push the buttons. The digital read-out shows the T3\textsuperscript*, T4 and Effective Thyroxine Ratio test values. No ratios to figure. No curves to draw. The laboratory is spared time, extra work, and concern.

The new ACCUWELL COMPUTER simplifies T3, T4 and Effective Thyroxine Ratio tests still more with its push-button sequencer that shows the counting procedure required for each test... step-by-step.

The ACCUWELL COMPUTER automatically subtracts background. Totally push-button operated. Complete solid-state, self-contained counting and computing (includes well counting flexibility for iron binding, RIA and other work). A unique instrument that makes thyroid testing as easy as it should be... as an ACCUWELL demonstration will quickly show. Mail coupon now or call (314) 731-4141.

*Subject only to adjustment for normalizing factor.
Nuclear medicine is predominantly a visual discipline. Static imaging represents 50-70% of the daily patient workload. Baird-Atomic, recognizing this need, offers in its SYSTEM SEVENTY not only the best static resolution available today, but also the most versatile in image presentation, viz., digital color, black-and-white Polaroid, 70mm, 35mm, and multi-imaging on X-ray film.

In the past, the difficulty of rapid data analyses of quantitative dynamic function studies has inhibited their growth. However, nuclear medicine is developing, and quantitative brain, kidney, and heart dynamics are becoming a valued part of the nuclear diagnostic work-up. Hence, the need for a camera which can
for all reasons

deliver these fast analyses and grow with your department, whichever direction it takes.

Baird-Atomic, with its computerized camera, allows dynamic function studies to be produced routinely . . . another plus factor added to your diagnostic procedures.

SYSTEM SEVENTY is, indeed, the camera which supplies both capabilities and is “the camera for all reasons.”

See this system in operation at the San Diego exhibition, Society of Nuclear Medicine, Booths 166-168, 173-178.

Cerebral blood flow study demonstrating delayed perfusion in the right hemisphere.

Quantitative brain dynamic showing 30% decreased perfusion on right side.

Curves produced in less than 30 seconds after conclusion of patient study.

Normal Lt. ventricular curve ejection fraction .60

Normal cardiac blood flow
Searle puts it all together...with the new Micro Dot Imager.

A new Multi Imager that produces up to 80 images on a single film.

It's taken us some time but at last we can offer Pho/Gamma users a display system that puts it all together. Gone is the expensive and tediously inaccurate pulling of Polaroids. Gone is the unreliable and complicated 35 or 70 mm mechanical transport system.

The new Micro Dot Imager electronically minifies and manipulates the images across the CRT screen and displays them on a choice of three different conventionally sized X-ray films... handled and processed with conventional techniques.

In addition the new Micro Dot Imager provides the following exclusive benefits.

Clinically Oriented

- Choice of either 5 x 7 or 8 x 10 X-ray film sizes as well as the competitively available 11 x 14 film size.
- Built in whole body imaging with choice of each view presented in dual intensity on the film to facilitate diagnosis or the more economical two views with single intensity.
- Highest cine sequential time per frame resolution of up to 80 frames/study.

- Organ-specific push buttons automate, standardize and speed the proper exposure settings for routinely performed studies.
- Simplified Operation
  - Light emitting diode (LED) display indicates system status and exposures available for format selected as well as exposures remaining on the individual film.
- Absolute exposure control insures consistent day to day and week to week exposure levels on a separate but built in high resolution, high uniformity CRT.

Economical Operation

- A variety of film sizes guarantees the lowest operational cost of any imager offered.
- System designed lightweight, low cost cassettes with future daylight unloading capability.
- Built in view-box saves space as well as steps.

And what's more, the Micro Dot Imager's inherent reliability is backed by a team of factory trained service engineers that perform on-site service for your total camera system. There is no longer any need to be concerned about system service responsibility, or here today, gone tomorrow... "pack it in the box and we'll service it at our factory" suppliers.

Searle Radiographics Inc.
Subsidiary of G. D. Searle & Co.
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Des Plaines, Illinois 60018

See us at the S.N.M. show, San Diego, June 11-14.