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13. ABSTRACT (Maximum 200 words) Funds from this DEPSCoR project were used to purchase a Packard/Canerra TopCount Microplate Scintillation Counter system including harvester, software and printer. The TopCount A99XX Series Microplate Scintillation Counter includes software to run the machine and additional software packages to analyze the data. The Microplate 496 Plate Sealer includes pacers to handle 96- and 24-well plates both 96- and 24-well plates. The GAST Vacuum pump has a maximum of 760 mm Hg. The printer is an FX-870 printer. The complete system is being used for investigating the binding of radiolabelled ligands to membrane-bound neurotransmitter receptors. Additionally, it is being used to study the effect of environmental toxicants on these receptors. It is being utilized by the staff of the multidisciplinary Center for Environmental Health Sciences, located administratively within the College of Veterinary Medicine, at Mississippi State University.				
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## Final Technical Report

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Submitted by:

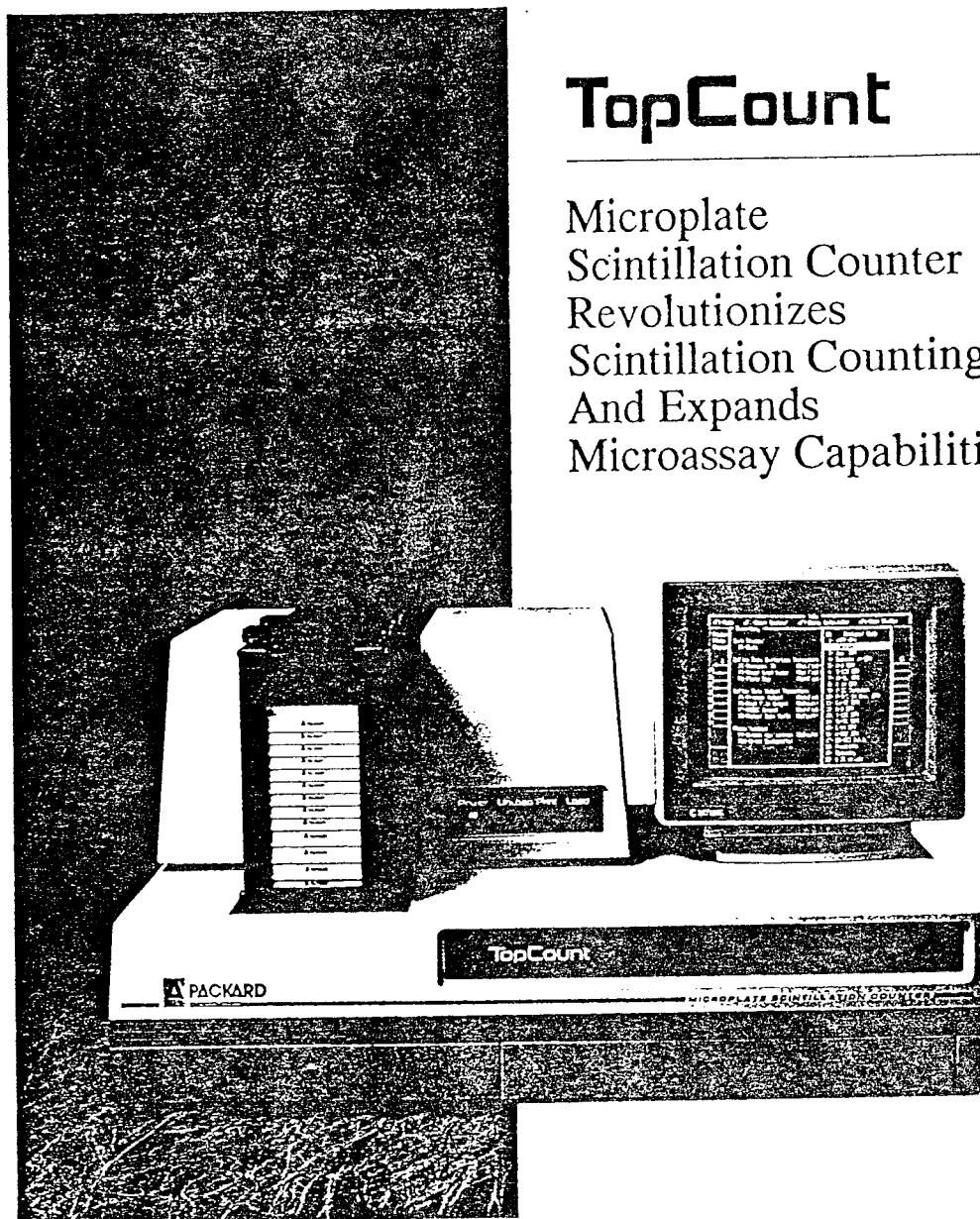
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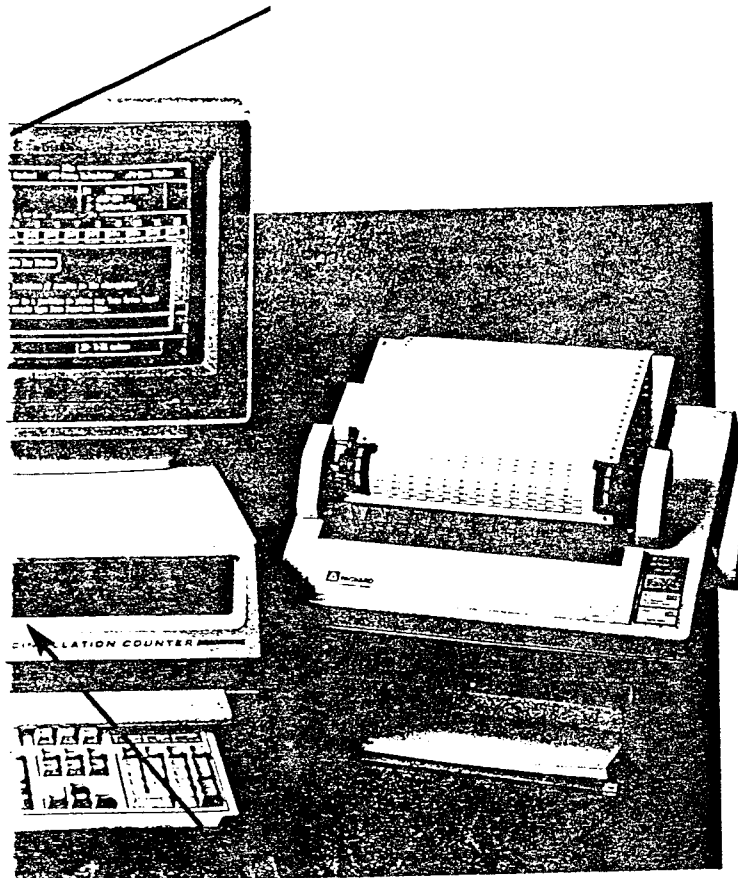
# TopCount

Microplate  
Scintillation Counter  
Revolutionizes  
Scintillation Counting  
And Expands  
Microassay Capabilities

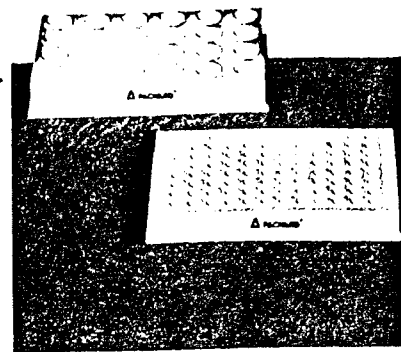


# ter, Easier And At Lower Cost !

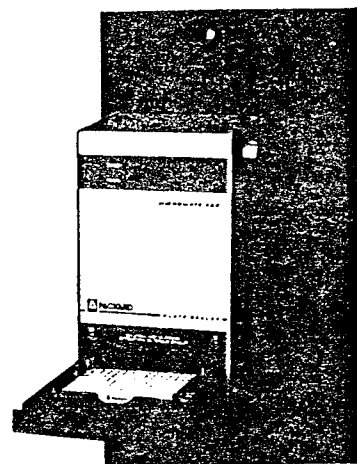
**1.** An isothermal counting chamber maintains a controlled counting temperature for all assays independent of laboratory environment, to assure reproducible counting conditions for even the most temperature sensitive binding reactions.



**7.** A built-in IBM®-AT compatible computer processes data automatically using any of the 60 pre-programmed assay protocols. Counting results can be directly imported into spreadsheet or database programs. Results can also be processed without user intervention using dedicated commercial programs, your own compatible data reduction routines, or Packard's special application programs.



Special Packard microplates speed up your most complex assays. Solvent resistant 24- and 96-well PicoPlates™ are designed for counting organic and aqueous samples. LumaPlates™ use a solid scintillator to count beta or gamma labeled samples, without cocktail. SPA samples can be counted with TopCount using standard, opaque microplates.

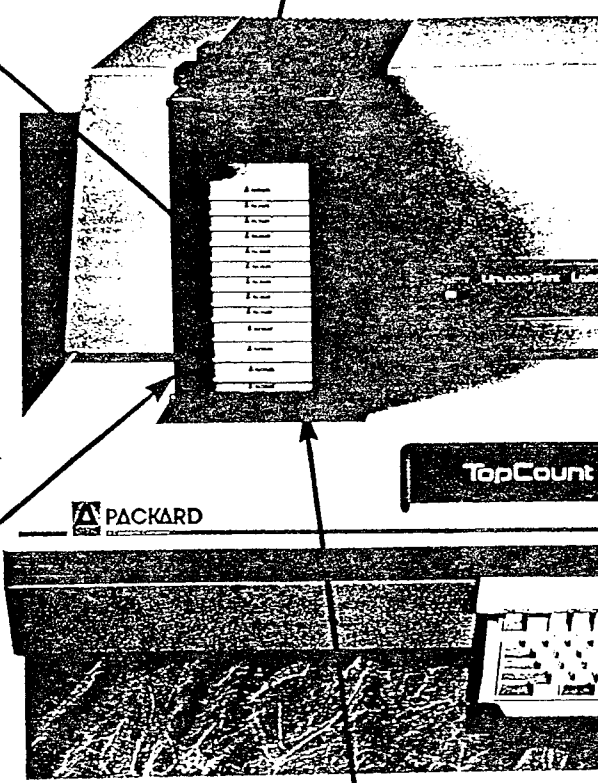


Packard's MicroMate 496™ Microplate Heat Sealer replaces tedious vial capping procedures with a simple, one-step heat-sealing process. All samples are prepared directly in the counting plates. No sample transfer is required. No special adaptor plates are needed. An adhesive-free, solvent-resistant film is welded to Packard microplates providing a complete, lasting enclosure for each sample well.

IBM is a registered trademark of the International Business Machines Corporation.

# TopCount

## Count More Samples, Faster

- 
- 1.** Patented single PMT<sup>1</sup> counting uses TR-LSC<sup>2</sup> technology to measure each sample from the top, in standard format microplates. TopCount makes it possible to count liquid scintillation, solid scintillation, and scintillating proximity assays (SPA) in the same system.
- 2.** Simultaneously count 2, 6 or 12 samples in 96-well plates; 2 or 6 samples in 24-well plates; or select a VariPlate™ model to count 2 or 6 samples simultaneously in either format.
- 3.** Automatic single label DPM calculation is standard on all systems. An Automatic External Standard (AES) option for 24-well and VariPlate systems ensures the highest accuracy for low count rate, single label samples and for most dual label applications.
- 4.** Easy access external loading microplate sample changer. Removable microplate stackers (optional on some models) load up to 1920 samples in the 96-well format, 360 samples in the 24-well format for multi-assay sample processing. Plate formats can be intermixed in VariPlate systems.
- 5.** Positive sample identification is insured with an automatic bar code reader, and with bar code labels affixed directly to the sample microplate. Bar coding also facilitates automatic protocol selection and data processing for multiple assays.

1 U.S. Patent Pending.

2 U.S. Patent #4,528,450

# Beta & Gamma Counting...

## In Microplates, Using Little Or No Cocktail

### TopCount Efficiencies For Various Radionuclides Counted In 96-Well LumaPlates Without Scintillation Cocktail

Radionuclide	% Counting Efficiencies
$^3\text{H}$	49
$^{14}\text{C}$	85
$^{32}\text{P}$	87
$^{51}\text{Cr}$	24
$^{125}\text{I}$	75

Background - 10 CPM

### Microplate liquid scintillation counting for $^3\text{H}$ , $^{14}\text{C}$ , $^{125}\text{I}$ , $^{35}\text{S}$ and $^{32}\text{P}$ .

You can transfer just about any LSC assay from a vial to the 96- or 24-well microplate formats, and achieve comparable results - faster, with less sample, less effort, and less waste.

Packard's MicroScint™ cocktails are specially formulated to provide the maximum counting performance. Sample preparation simply involves adding sample and cocktail, sealing with TopSeal sealing film, mixing and counting with TopCount.

Prepare 96 samples as easily as one! Cocktail consumption is 1/12 or less of that required for conventional LSC, and counting throughput is 12 times higher.

### Solid scintillation counting of liquid samples.

Packard's unique LumaPlates eliminate vials, cocktail, radioactive liquid waste, and they are easy to use. Just pipette your samples, dry and...TopCount!

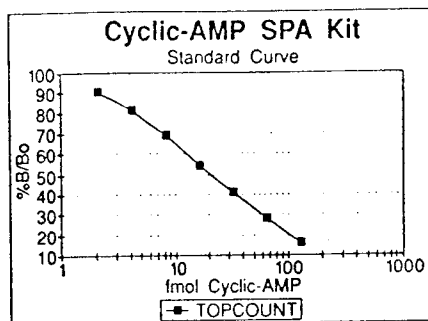
Up to 12 samples are counted simultaneously in the 96-well format. Counting efficiencies are higher than, or equal to liquid scintillation and gamma counting... and backgrounds are lower! After counting, simply dispose as dry waste.

LumaPlates are non-toxic and non-hazardous. You can count samples of up to 500uL in the 24-well format, or 75uL in the 96-well format.

### Scintillation Proximity Assays (SPA)...

...eliminates the separation step.  $^3\text{H}$  and  $^{125}\text{I}$  labeled assays can now be processed without separating bound ligand from free labeled ligand. Simply pipette the sample into standard white microplates, add SPA reagent, seal, incubate and count in TopCount.

A single microplate is used from start to finish. TopCount's isothermal counting chamber ensures uniform and reproducible counting conditions for all samples. TopCount virtually eliminates crosstalk between wells, so the results are as accurate as if they were from the same detector.



### TopCount leads the way in microplate counting!

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*TopCount Topics provide detailed discussions of liquid counting, solid counting, coated well RIA, SPA with TopCount systems, and information on the TopCount technology. Just ask your Packard representative for more information.*



**PACKARD**  
A Conberra Company

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Tel: 203-238-2351 Toll Free: 1-800-323-1891 TX: 643251 FAX: 203-235-1347

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