

NUCLEAR-CHICAGO RESEARCH QUALITY RADIOCHEMICALS

CERTIFIED SOLUTION STANDARDS OF RADIOACTIVITY

NUCLIDE†	VOL. (ml)	NOMINAL ACTIVITY (dps)	PRICE
◆ Ca-45	3	3 x 10 ⁵	\$36.00
C-14	5	5 x 10 ³	32.00
C-14	5	5 x 10 ⁴	32.00
◆ Cs-137*	5	5 x 10 ⁶	32.00
◆ Cs-137	3	3 x 10 ⁴	32.00
◆ Cs-137*	5	5 x 10 ⁵	32.00
◆ Cl-36	3	3 x 10 ⁴	36.00
◆ Co-57	3	3 x 10 ⁴	32.00
◆ Co-60	5	1 x 10 ⁵	32.00
◆ Co-60	3	3 x 10 ⁴	32.00
◆ Co-60*	5	1 x 10 ⁶	32.00
◆ Au-198**	3	3 x 10 ⁵	36.00
◆ I-131**	3	3 x 10 ⁵	30.00
Fe-55	5	1 x 10 ⁶	32.00
◆ Fe-59	5	3 x 10 ⁵	36.00
Pb-210	5	1 x 10 ⁵	32.00
◆ P-32**	3	3 x 10 ⁵	30.00
◆ Pm-147	3	3 x 10 ⁵	36.00
◆ K-42**	3	3 x 10 ⁵	36.00
◆ Na-22	3	3 x 10 ⁵	36.00
◆ Na-24**	3	3 x 10 ⁵	36.00
◆ Sr-90/Y-90	3	3 x 10 ⁴	32.00
◆ Sr-90/Y-90	3	3 x 10 ³	32.00
◆ S-35	3	3 x 10 ⁴	36.00
◆ Ta-182	3	3 x 10 ⁵	36.00
◆ Tl-204	3	3 x 10 ⁴	36.00
◆ Zn-65	3	3 x 10 ⁵	32.00

†Supplied in flame-sealed glass ampoules.
Volume accuracy within $\pm 0.5\%$. Stated
activity within $\pm 3\%$ of true value. Individual
certificate supplied with each standard.
On it are listed volume; specific activity;
and date, hour, and method of calibration
for that standard.

◆ Samples of each production run master
solution are assayed by the National
Bureau of Standards.

*Requires AEC license to purchase.

**Scheduled short-lived standard.

Detailed information about each of
these solution standards, including the
availability of the short-lived standards,
is available on request. Please write,
or call 312 827-4456 collect.

NUC-G-4-270



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tional forms must be taken into account. The transitional forms are non-bacterial phases, including the L-phase, in which the organism preserves its generic identity, survives, and multiplies.

Data suggesting the possible pathogenic activity of transitional forms have been gathered from cases of subacute bacterial endocarditis, rheumatic fever, Reiter's syndrome, rheumatoid arthritis, staphylococcal osteomyelitis, and other chronic or recurrent diseases. Transitional forms isolated from patients have multiplied in tissue culture and occasionally exhibited cytopathogenicity. In cell-free culture media, these forms could revert to the parent bacteria. As a model, in a case of subacute bacterial endocarditis, transitional forms persisted for 5 years, were resistant to all antibiotics, and remained capable of reversion to bacterial form in vivo. Changes in morphological form of the organism could be correlated with changes in the clinical symptoms of the patient. The capacity of transitional forms to survive, multiply, and revert in vivo would suggest intrinsic pathogenic potential.

Discussion was enthusiastic and lengthy. Concerning the formation of protoplasts in vivo, L. Muschel (University of Minnesota) commented on early contributions of his group with Gram-negative bacteria, such as *E. coli*. E. A. Mortimer (Western Reserve University) presented preliminary results from experiments in mice inoculated intraperitoneally with several strains of group A streptococci. The L-forms were recovered from heart blood in about half of the instances and from peritoneal exudate in the remainder; L-forms and streptococci both were isolated at death of mice. By reversion, as well as other techniques, the L-forms have been shown to be derived from the group A streptococci. A reverse relationship may exist between virulence for mice and the production of L-forms. Although it was believed that the L-forms were produced in the mice, one could not be absolutely certain that they were not produced in vitro on L-form medium. In any event, this appeared to be an exciting way to produce these L-forms of group A streptococci, and another facet of host-parasite relationships may be observed.

Louis Dienes (Massachusetts General Hospital, Boston) closed the meeting with observations suggesting that

L-forms may take part in some pathological processes. T. M. Brown (George Washington University) had expressed similar views in comments on antibody studies of human material (presented with H. W. Clark and J. S. Bailey) which indicate that the rheumatoid factor is associated with *Mycoplasma* immunologic complex. Antibody studies by Y. Crawford (Naval Medical Research Unit No. 4, Great Lakes, Illinois) have suggested L-forms in streptococcosis.

T. R. HAMILTON

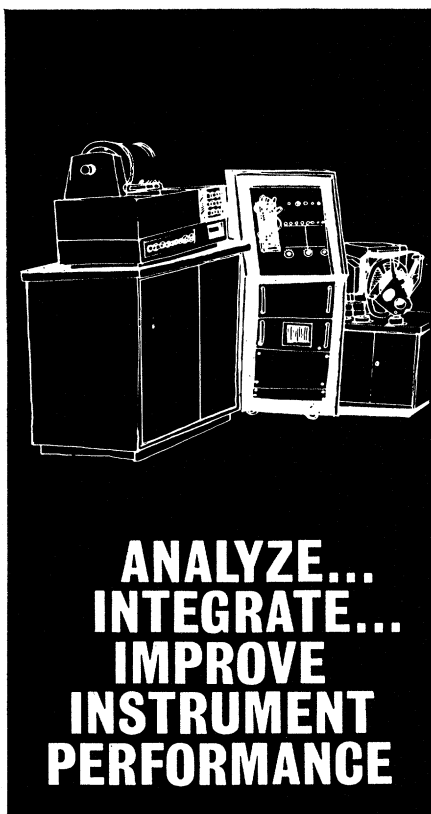
University of Kansas Medical
Center, Kansas City 3

Marine Microorganisms

Many disciplines of science—chemistry, geology, physics, biology—are involved in marine research. One rapidly developing field is marine microbiology. In order to introduce other workers to this field, a conference on biology of marine microorganisms was held in Berkeley, California, 21–23 December 1964. Approximately 70 participants from all parts of the United States attended.

The conference opened with a discussion of microbial environments in the sea. After introductory remarks by M. B. Allen (Kaiser Foundation Research Institute) two extremes of environment were described—the deep sea, by C. E. ZoBell (Scripps Institution of Oceanography), and the surface film, or neuston, by R. E. Norris (University of Washington). Techniques used in the study of marine microorganisms were also described—methods for the collection and study of bacteria (C. E. ZoBell), chemical methods (J. D. H. Strickland, Scripps Institution of Oceanography), collection and preservation of phytoplankton (R. W. Holmes, Scripps Institution of Oceanography), and the collection and cultivation of living phytoplankton (M. B. Allen).

The principal types of marine microorganisms were described and discussed. These included marine bacteria (J. Liston, University of Washington), marine fungi, including those living as endosymbionts with invertebrates (H. Whisler, University of Washington), and diatoms and dinoflagellates (R. W. Holmes). R. E. Norris discussed the still little-known nanoplankton which he suggested might better be called cryptoplankton because it includes all



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the phytoplankton, large and small, not amenable to preservation by usual methods. M. B. Allen mentioned some effects of pollution on the marine biota.

Various activities of marine microorganisms were considered. The primary production of organic matter by photosynthetic microorganisms in the sea was discussed by J. D. H. Strickland. R. Y. Morita (Oregon State University) presented recent results from his laboratory on the effects of low temperature on marine bacteria and the factors responsible for obligate cryophily. The nutrition of phytoplankton and the possible role of soluble organic compounds produced by phytoplankton in the nutrition of zooplankton were discussed by M. B. Allen. (Allen also commented on the cycles of nitrogen and sulfur.) C. E. ZoBell described various geomicrobiological activities of marine microorganisms.

A general discussion period concluded the conference.

M. B. ALLEN

*Kaiser Foundation Research Institute,
Richmond, California*

Forthcoming Events

February

8-10. American Astronautical Soc., annual, Denver, Colo. (Miss G. W. Heath, Flight Safety Foundation, 468 Park Ave. S., New York 10016)

8-11. Managerial Implications of the Emerging Technology, Washington, D.C. (P. W. Howerton Center for Technology and Administration, American University, 2000 G St., NW, Washington 20006)

8-12. American Soc. for Testing and Materials, spring meeting, Cleveland, Ohio. (ASTM, 1916 Race St., Philadelphia, Pa.)

9-10. International Soc. of Terrain Vehicle Systems, U.S.-Canadian regional meeting, Houghton, Mich. (E. W. Niemi, Dept. of Mechanical Engineering, Michigan Technological Univ., Houghton)

10-11. Corrosion of Water Supply Systems, 7th sanitary engineering conf., Urbana, Ill. (B. B. Ewing, Univ. of Illinois, Urbana)

10-12. American Educational Research Assoc., annual, Chicago, Ill. (R. A. Der-shemer, 1201 16th St., NW, Washington, D.C.)

10-12. National Assoc. Corrosion Engineers, conf., Calgary, Canada. (T. J. Hull, NACE, 980 M&M Bldg., Houston, Tex. 77002)

10-13. National Soc. of College Teachers of Education, annual, Chicago, Ill. (E. J. Clark, Indiana State College, Terre Haute)

10-13. American College of Radiology, annual, Philadelphia, Pa. (F. H. Squire,

NUCLEAR-CHICAGO RESEARCH QUALITY RADIOCHEMICALS

LIQUID SCINTILLATION STANDARDS

Four sets, two individual scintillation standards, and two standardized solutions for internal calibrating are available.

SCINTILLATION STANDARDS SETS

Consist of calibrated samples containing PPO and POPOP in toluene. Volume of each standard is 15 ml, sealed in a 20 ml low-activity glass vial. Packaged in foamed-plastic holders which double as storage racks. Stated activities within $\pm 3\%$ of true values. Certification of each standard supplied with each set.

Unquenched C^{14} and H^3 Set. Consists of unquenched samples of carbon-14 and tritium labelled toluene plus a toluene blank. Model 180040 Set, complete. \$65.00

Quenched H^3 and C^{14} Sets. Accurately assayed standards. Each has different counting rate due to quenching.

Model 180050 Tritium Set (5 standards, 1 x 10^6 dpm nominal each). \$65.00

Model 180060 Carbon-14 Set (6 standards, 2 x 10^5 dpm nominal each). \$ 75.00

Model 180070 (both sets). \$125.00

Quenched S^{35} Set. Six accurately assayed quenched standards.

Model 180080 Sulfur-35 Set (6 standards, 4 x 10^5 dpm nominal each). \$80.00

INDIVIDUAL STANDARDS

P^{32} and S^{35} Scintillation Standards. Furnished in flame-sealed, 20 ml low-activity glass vials. Stated activities within $\pm 4\%$ of true values. Individual certification supplied with each standard.

Model 188350 Phosphorus-32 (15 ml, 2 x 10^6 dpm nominal). \$40.00

Model 188240 Sulfur-35 (15 ml, 4 x 10^5 dpm nominal). \$30.00

Standardized Solutions of Toluene- C^{14} and Toluene- H^3 . For internal calibration in liquid scintillation counting. Supplied in flame-sealed glass ampoules. Stated activities are within $\pm 2\%$ of true values. Individual certification supplied with each standard.

Model 188270 Toluene- C^{14} (5 ml, 3 x 10^6 dpm nominal). \$20.00

Model 188280 Toluene- H^3 (5 ml, 5 x 10^6 dpm nominal). \$20.00

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