recover purified gel zones

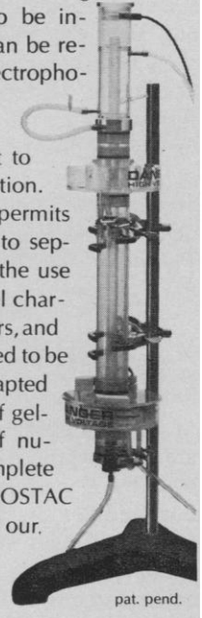
With conventional gel electrophoresis apparatus, recovery of undiluted sample components or quantitation of them without denaturation is difficult or impossible. By combining the separating power of sieving gels with the zone storage and retrieval convenience of density gradients, the ISCO ELECTROSTAC[T.M.] greatly improves zone recovery.

TYPICAL SCAN OF ZONES IN DENSITY GRADIENT

sample: 7.5 micrograms Yeast-RNA

5s fraction
4s fraction

The ELECTROSTAC positions a polyacrylamide gel above a sucrose density gradient column. Separated zones migrate from the lower surface of the gel downward into the density gradient, maintaining their isolation and relative positions. The zone is then recovered by removing the ELECTROSTAC and pumping the gradient upward through a UV absorbance monitor, and then to a fraction collector. If scanning shows separation to be incomplete, the gel can be replaced for further electrophoresis before fractionation. The sucrose can be dialyzed out to leave a purified fraction. The ELECTROSTAC permits a multiple approach to separation by allowing the use of wide ranges of gel characteristics and buffers, and has been demonstrated to be particularly well adapted to the preparation of gel-separable fractions of nucleic acids. For complete details on the ELECTROSTAC send for literature and our current catalog.



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search, excluding its expenditure for the training of researchers. This $34 million, plus the other $25 million currently spent by other HEW agencies in health-care-delivery research, amounts to a total expenditure of $59 million. This figure is substantially larger than the $18 million mentioned in Bevan's editorial. These funds are being utilized to support a variety of research efforts including the development and evaluation of experimental health-services delivery systems, new types of manpower (including those specially trained for working in rural communities), and a systems analysis of alternative national health-care plans. We expect to learn a great deal from the endeavors now under way. Moreover, a subcommittee of the President's Advisory Committee on Science is looking at the entire question of the future needs of health-services research, and we look forward to incorporating their thoughts into our long-range planning activities.

MERLIN K. DUVAL

Office of the Secretary, Department of Health, Education, and Welfare, Washington, D.C. 20201

Cancer Research

Many lay people believe that if we can put a man on the moon, we can also conquer cancer, if only we spend enough money. Let me point out the fallacy.

NASA and its Soviet counterpart are accomplishing fantastic feats. However, these feats are nothing other than the construction of machinery that is physically powerful and precise enough to reach specified velocities and directions. They have been accomplished with the help of Newton's celestial mechanics, which are two and a half centuries old, plus some more modern, but previously known devices. Man's ability to reach far into interplanetary space captures the admiration of the public. Space probes are scientific instruments comparable to telescopes. One can always build bigger and better instruments if one has enough money and trained manpower. The space probes have served us well; they have brought us much observational information, but to my knowledge no fundamental new concepts have been discovered.

Cancer is a horse of a different color. The nature of cancer is—let us admit it—still unknown. Certainly, much money and trained manpower are required to conquer cancer. But these are not the most important ingredients. We are in search of new ideas and concepts. They can only be gained by totally unprejudiced human brains.

Two of the greatest discoveries of our century, the theory of relativity and the genetic code, were achieved by brains without the help of machinery. The discovery of antibiotics, as that of x-rays, was due to an accidental observation. Other basic, novel concepts, such as the period-luminosity relationship of cepheids on which intragalactic distance estimates are based, and the concept of the expanding universe, which resulted from patient accumulation of observational data with powerful instruments, were unexpected results arrived at by unprejudiced persons. In all these cases, it took an unusually alert mind to notice a totally unknown phenomenon.

So, likewise, it will be necessary in the conquest of cancer for an individual biomedical scientist, unprejudiced by previously learned doctrines, to notice and correctly interpret a hitherto unknown property of malignant tissue. The best environment for this discovery is that of freedom of investigation. The more highly the new cancer agency is organized administratively, the less likely it is for the "breakthrough" to occur within its framework. The National Institutes of Health (NIH) possess a high degree of flexibility. Funding of research at academic institutions through NIH offers the atmosphere in which cancer may be conquered.

HANS ELIAS

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Price Advantage

Readers of the review (11 Feb., p. 621) of the book *Cosmic Gamma Rays* by Stecker might be interested to know that an edition of this book was published by the National Aeronautics and Space Administration and is available from the Superintendent of Documents, Washington, D.C., for $1.25. This edition is paperback, it is true, but that deficiency may not outweigh the tenfold price advantage, compared to the edition published in Baltimore. The NASA edition has the same name, and is further identified by "NASA SP-249."

N. PEARLMAN

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