



# AEC-NASA TECH BRIEF



AEC-NASA Tech Briefs describe innovations resulting from the research and development program of the U.S. AEC or from AEC-NASA interagency efforts. They are issued to encourage commercial application. Tech Briefs are published by NASA and may be purchased, at 15 cents each, from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

## Ultraviolet Microscopy Aids in Cytological and Biomedical Research

Ultraviolet microscopy has been used by cytologists and biochemists to study the morphological and physiological changes which occur in the living cell under varied culture conditions. The yeast cell was chosen as a suitable specimen for investigation because its content of ultraviolet-absorbing materials lies within the range of observation by ultraviolet microscopy, and its lack of motility is an important factor in the production of useful images with the available ultraviolet energy.

The yeast cells were cultured under conditions which produce a high concentration of the strongly ultraviolet-absorbing compound, S-adenosylmethionine, in the vacuole. The cells were induced to sporulate and ultraviolet photomicrographs were obtained. These showed that the vacuole is abolished at the onset of sporulation, and its contents may be observed temporarily within the old cell wall surrounding the spores. As sporulation progresses, the material is discharged into the culture medium and is not utilized. This is quite different from what occurs during budding, where the vacuolar material appears in the vacuole of the bud in a concentration indicating that parent and daughter share equally.

Ultraviolet photomicrographs of cells containing large, easily observed, cytoplasmic granules revealed that most of the granules disappeared during sporulation and that an ultraviolet-absorbing lipid substance lay between the spores, wetting them. It appeared, thus, that some of the granules were composed of, or contain, this lipid.

It is believed that the lipid material present in the granules takes part in the formation of the spore coat, especially the outer layer. Many more tests are being run to clarify this and other questions such as the role of deoxyribonucleic acid (DNA) during sporulation.

### Notes:

1. This information would be of interest to biophysicists, microbiologists, biochemists, and physiologists, as it can be applied to other cytological and biochemical studies.
2. Additional details are contained in:
  - (a) *Ultraviolet Microscopy of the Vacuole of Saccharomyces Cerevisiae during Sporulation*, Journal of Bacteriology. 88, 449-456 (1964), by G. Svihla, J. L. Dainko, and F. Schlenk.
  - (b) *Biological and Medical Research Division Annual Report*, 1964, ANL-6971, pp. 21-22, Argonne National Laboratory, Argonne, Illinois. The Argonne report is available from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151; \$3.00 each (microfiche, \$0.65).
3. Inquiries concerning this innovation may be directed to:

Office of Industrial Cooperation  
Argonne National Laboratory  
9700 South Cass Avenue  
Argonne, Illinois 60439  
Reference: B67-10590

Source: B. Svihla and F. Schlenk  
Biological and Medical Research Division  
(ARG-178)

### Patent status:

Inquiries about obtaining rights for commercial use of this innovation may be made to:

Mr. George H. Lee, Chief  
Chicago Patent Group  
U.S. Atomic Energy Commission  
Chicago Operations Office  
9800 South Cass Avenue  
Argonne, Illinois 60439

Category 04



# AEC-NASA TECH BRIEF



AEC-NASA Tech Briefs describe new developments from the research and development programs of the AEC or from AEC-NASA cooperative efforts. They are issued to promote commercial application of the research and development programs of the AEC and to provide information for Federal Government and Federal Government sponsored research and development.

## Advances in Cytology and Molecular Biology

The Department of Biology at the University of California, San Diego, has been awarded a grant from the National Science Foundation to study the role of cytochrome P-450 in the metabolism of drugs and carcinogens. The research is being conducted in the laboratory of Dr. Robert Schuster, who is the principal investigator. The grant is for a period of three years and is valued at \$150,000.

The Department of Biology at the University of California, San Diego, has been awarded a grant from the National Science Foundation to study the role of cytochrome P-450 in the metabolism of drugs and carcinogens. The research is being conducted in the laboratory of Dr. Robert Schuster, who is the principal investigator. The grant is for a period of three years and is valued at \$150,000.

The Department of Biology at the University of California, San Diego, has been awarded a grant from the National Science Foundation to study the role of cytochrome P-450 in the metabolism of drugs and carcinogens. The research is being conducted in the laboratory of Dr. Robert Schuster, who is the principal investigator. The grant is for a period of three years and is valued at \$150,000.

The Department of Biology at the University of California, San Diego, has been awarded a grant from the National Science Foundation to study the role of cytochrome P-450 in the metabolism of drugs and carcinogens. The research is being conducted in the laboratory of Dr. Robert Schuster, who is the principal investigator. The grant is for a period of three years and is valued at \$150,000.

The Department of Biology at the University of California, San Diego, has been awarded a grant from the National Science Foundation to study the role of cytochrome P-450 in the metabolism of drugs and carcinogens. The research is being conducted in the laboratory of Dr. Robert Schuster, who is the principal investigator. The grant is for a period of three years and is valued at \$150,000.

The Department of Biology at the University of California, San Diego, has been awarded a grant from the National Science Foundation to study the role of cytochrome P-450 in the metabolism of drugs and carcinogens. The research is being conducted in the laboratory of Dr. Robert Schuster, who is the principal investigator. The grant is for a period of three years and is valued at \$150,000.

The Department of Biology at the University of California, San Diego, has been awarded a grant from the National Science Foundation to study the role of cytochrome P-450 in the metabolism of drugs and carcinogens. The research is being conducted in the laboratory of Dr. Robert Schuster, who is the principal investigator. The grant is for a period of three years and is valued at \$150,000.

The Department of Biology at the University of California, San Diego, has been awarded a grant from the National Science Foundation to study the role of cytochrome P-450 in the metabolism of drugs and carcinogens. The research is being conducted in the laboratory of Dr. Robert Schuster, who is the principal investigator. The grant is for a period of three years and is valued at \$150,000.