

Dr. Lipkin, Head of Image Processing Unit, Foresees Computer Role in Drug Care

Dr. Lewis Lipkin, who recently joined the National Cancer Institute's Division of Cancer Treatment, predicts that computers will play an increasing role in drug treatment of cancer patients.

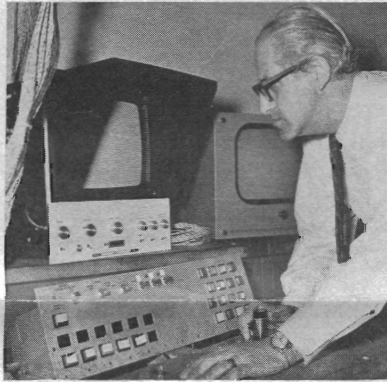
These computers, he foresees, will help physicians decide when a patient needs such treatment, how much he needs, and whether the disease is under control.

This type of care may be available in a matter of years, according to Dr. Lipkin, who is head of the new Image Processing Unit.

He comes to NCI from the National Institute of Neurological Diseases and Stroke, where since 1962 he headed the Section on Pathology, Perinatal Research Branch.

Dr. Lipkin, who received his M.D. degree in 1949 from the Long Island College of Medicine, trained as a neuropathologist. He has long been interested in the application of computer science to the study of cells.

Since 1966, NCI has supported Dr. Lipkin in his efforts to develop



Dr. Lipkin checks the operating panel of his computer-controlled microscope, which relays an image to the screen.

a computer-controlled microscope. He anticipates that, within the next year, the microscope will be ready for pilot study.

The immediate purpose of this instrument, Dr. Lipkin explains, is not to replace human skills with a machine but to provide highly trained, experienced pathologists and technicians with a tool that will expand their research capabilities.

In developing this instrument with the help of Peter Lemkin and George Carman, both of NINDS, Dr. Lipkin utilized image processing techniques.

A complex computerized optics system automatically scans and analyzes various materials, such as a printed page or, in the case of cancer research, tissue fixed on a slide.

The instrument can make all the required changes in microscope focus and wavelength, "remember" the location of an important section of a slide for later reference, and measure certain biological properties of cells, thereby saving many hours of tedious work.

Initially, the computer-controlled microscope will be used to count grains—tiny clumps of silver on film exposed to radioactive cells on a slide.

The number of grains produced on the film represents the amount of radioactive material taken up by the cells while they were growing and is a measure of the degree of their biological activity.

Grain counting may therefore prove useful for indicating which drugs are most effective against the activity of human cancer cells and at which point in the life cycle of the cells the drugs are most effective.

According to Dr. Lipkin, image processing may also become a valuable diagnostic tool. Although image processing instrumentation may be able to quickly pinpoint cells that may be cancerous, for the foreseeable future, the final diagnosis of cancer will depend on the judgment of a qualified physician.