

understand the effects of radiation on human health and the environment led Wigner to expand the biology and health physics organizations.

When John Wirth, head of the Health Division, returned to the National Cancer Institute in September 1946, Wigner and Lum split the Health Division into two new research sections, plus a medical department, which was headed by physician Jean Felton and later by Thomas Lincoln and then Seaton Garrett. In October, Wigner recruited Alexander Hollaender to form and head a Biology Division. Hollaender had received degrees in physical chemistry from the University of Wisconsin. At the National Institutes of Health, he had studied the effects of radiation on cells and the use of ultraviolet light to control airborne diseases.

Hollaender's initial research plan at Clinton Laboratories called for studying radiation's effects on living cells, including such cell constituents as proteins and nucleic acids.

Beginning with a few radiobiologists studying microorganisms and fruit flies in crowded rooms behind the dispensary, Hollaender initiated a broad program that would make his division the largest biological laboratory in the world. Hollaender would successfully unite fundamental research in the biological sciences with physics, chemistry, and mathematics and would recruit widely to staff the initial research units in biochemistry, cytogenetics, physiology, and radiology. William Arnold, Waldo Cohn, Richard Kimball, Elliot Volkin, and William and Liane Russell were among the Biology Division's most respected staff members, a group that included 70 scientists and technicians by 1947. Lacking space at the X-10 site, the new division moved into vacated buildings at the Y-12 Plant.

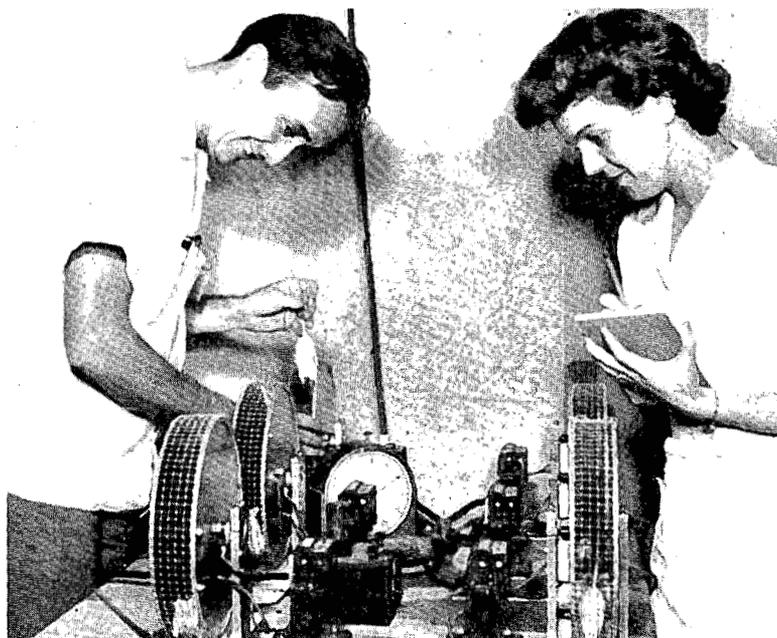
The biological research that attracted the most public interest was the genetic

experiments conducted under the supervision of William and Liane Russell, who used mice to identify the long-term genetic implications of radiation exposure for humans. Among the division's early scientific accomplishments, however, Hollaender took special pride in William Arnold's discoveries of the electronic nature of energy transfer in photosynthesis, Waldo Cohn and Elliott (Ken) Volkin's discovery of the nucleotide linkage in ribonucleic acid (RNA), and Volkin and Larry Astrachan's discovery of messenger RNA.

The Biology Division's greatest long-term influence on science, however, may have come from its cooperation with the University of Tennessee-Oak Ridge Graduate School of Biomedical Sciences and with universities and research centers throughout the nation and the world.

The second division separated from the old Health Division in 1946 was Health Physics, directed by K. Z. Morgan. The Health Physics Division eventually included 70 staff members who monitored radiation levels in research and production areas and furnished improved radiation

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Researchers at Clinton Laboratories studied the responses of mice to varying amounts of radiation.