

262

This document consists of 4 pages
No. 1 of 1 Copies, Series HD-A

~~THIS DOCUMENT CONSISTS OF 35 PAGES,
NUMBER 8 OF 47 SERIES A.~~

MONTHLY STATUS AND PROGRESS REPORT

407680

SEPTEMBER 1953

PART II

(Including Sections A, B, & C)
Top Secret Appendix Under Separate Cover

UNIQUE DOCUMENT # SAA20005440000

Excerpt

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
DATE REVIEW AUTHORIZED BY: <i>Serisquelli 11/2/94</i>	DETERMINATION (CIRCLE NUMBER(S)) 1. CLASSIFICATION RETAINED 2. CLASSIFICATION CHANGED TO: 3. CONTAINS NO DOE CLASSIFIED INFO
REVIEWER (ADD): <i>HRB/forrest</i>	4. COORDINATE WITH:
NAME: <i>HRB/forrest</i>	5. CLASSIFICATION CANCELLED
DATE: <i>12/7/94</i>	6. CLASSIFIED INFO BRACKETED
	7. OTHER (SPECIFY): <i>Cover and pp. 10-12 only</i>

~~"This document contains restricted data as defined in the Atomic Energy Act of 1946. Its transmittal or the disclosure of its contents in any manner to an unauthorized person is prohibited."~~

OPENNET ENTRY	
<input type="checkbox"/> Authorized for Public Release	
By: _____	Date: _____
Entered in OpenNet	
By: _____	Date: _____
<input type="checkbox"/> Not Authorized for Public Release	
By: _____	Date: _____

Budget and Reports Division
October 10, 1953

US DOE ARCHIVES	
326 U.S. ATOMIC ENERGY COMMISSION	
Collection	<u>1342</u>
Box	<u>1</u>
Folder	<u>11</u>

~~CLASSIFIED INFORMATION~~

1342-1-1-3

94HDDT1801

CONFIDENTIAL

BIOLOGY AND MEDICINE

RESEARCH

Biology

Mammalian Genetics--Data from a 1000-r X-ray experiment on specific loci in mice produced additional evidence that the mutation rate at this dose is lower than expected, on the hypothesis of linearity, from the 600-r rate previously determined. The rates for doses lower than 600 r may be higher than expected from the 600-r rate. Preliminary data from a 300-r experiment show a total of 14 presumed mutations, at the seven loci tested, in a total of 23,036 offspring examined. This rate is slightly, but not significantly, higher than expected on the hypothesis of linear increase between 0 r and 600 r. Final conclusions on the shape of the curve must await the testing of the mutants and the collection of more data. The 300-r data support the most important

[REDACTED]

BIOLOGY AND MEDICINE (CONTD.)

RESEARCH--CONTD.

conclusion reached from the 600-r data, namely, that the induced mutation rate in the mouse is approximately one order of magnitude higher than the rates obtained from similar experiments on Drosophila.

Radiation Protection--Studies on the release of material (absorbing in the ultraviolet) from X-irradiated Escherichia coli, have shown that the phosphate concentration of the suspending medium has an important influence on this release of material. In the absence of added phosphate or in the presence of relatively high concentrations, this release is almost completely prevented. Arsenate in proper concentration antagonizes the release of material. A relationship between phosphorylation and the development of "leakage" in X-irradiated cells is suggested by these data.

Purification of a factor from beef spleen which effects bacterial recovery from irradiation has been attempted by using a 90 percent ethanol extraction of the hot water extract from homogenized decapsulated spleen. A pool of this filtrate is being accumulated and dried by lyophilization for use as source material for further purification by several methods including solvent extraction, charcoal adsorption, and chromatography. Preliminary experiments with adsorption on charcoal and elution with absolute ethanol indicate that another several-fold purification may be accomplished in a single step. Experiments are in progress to determine if the partially purified material is destroyed by ionizing radiation.

Biochemistry--The factor from hog kidney cortex responsible for the great stimulation of luminescence in luminous bacterial extracts was identified as palmitic aldehyde. The molecular weight of the 2,4-dinitrophenylhydrazone of kidney cortex factor was determined by its extinction per unit weight, and its identity was checked by mixed melting points with a synthetic sample of the palmitic aldehyde derivative.

Biophysics--Calibration of the fast neutron counting equipment by the associated particle method using the D-D reaction with the new Cockroft-Walton accelerator is about 70 percent complete. Good pulse-height distribution have been obtained and extrapolated values yield counting efficiencies for the counter within about 8 percent of the published values for instruments of the same type. Good agreement with the output of a standardized Po-Be neutron source has been obtained.

Math for Biology--Data, obtained from mice exposed in a recent weapons test in Nevada and from mice exposed to neutrons in the ORNL 86-inch cyclotron, were compared to provide neutron dose estimates. Satisfactory least squares fits were computed for both sets of data and from these, dose estimates were derived.

RESEARCH--CONTD.

The following problem has been solved (by numerical integration) for the two-dimensional case: It is required to compute that fraction of the total counts, registered by an immersion counter, which is derived from radioactive material located at any given distance from the counter. The results were computed for β -particles in bone and compared with those from an approximate formulation available in the literature.

Medicine

Use of Radioisotopes in Medicine--The Oak Ridge Institute of Nuclear Studies conducted a course in the techniques for using radioisotopes in medicine September 14-25. Enrollment in the course totaled 122.