

Summary of Project History

Between 1963-1971, 67 human volunteer prison inmates were given x-irradiation to the testes in doses ranging from 8 to 600 rads. So as to determine the biological effects of irradiation of the human testes. The following parameters for the human-being were determined during the study: 1) the cytological effects produced in the germinal epithelium at various dosages; 2) determination of the minimal dosage that will result in an observable affect on the germinal epithelium; 3) determination of the spermatogenic recovery time; 4) determination of the lowest dose that will result in permanent damage to spermatogenic cells; 5) determination of irradiation effects on Leydig cells and the correlation between the blood gonadotrophin level and irradiation damage to the testis.

Summary, Rowley

A terminal year was requested by Mavis Rowley the acting principal investigator last year since Dr. Heller the P.I. had suffered a stroke. Miss Rowley felt that the studies could be completed and in publication at the end of 1974 fiscal year. However, because of several factors to be described below completion of parts of the contract and additional work cannot be done in less than two additional years.

Proposed Work

In the immediate future steps will be taken to recode for permanent storage of all the plasma and sperm samples. These samples are a unique asset to all investigators of radiation effects, both somatic and genetic. The samples become more significant now in the light of genetic damage which may be ascertained from sperm head abnormalities from doses at least as low as 30R and perhaps lower.

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Also to be completed is the orderly transcription of the data books from the entire investigation. This is partly underway, but much still remains to be done. The data books themselves cover so many aspects of radiation physiology, that they are an asset to future investigators. Dr. Heller and his colleagues have not begun to explore all the possible correlations between physiological traits and between the traits and radiation dose. They probably will not complete all possible investigations, but the data should be kept available for further work as necessary.

It is possible that if further extensive work is to be done with these data, they should be transcribed to computer, but this computerizing will be relatively easy from the data books as they are now being organized. Transcribing to computer probably should not be done unless there is a real need for massive further work, but this is a likely possibility considering the value of the data. It is not implied, however, that AEC is obligated for any such further efforts, although AEC should have copies of the data books.

Finally a major part of the effort over the next two years will be the completion of at least six comprehensive research papers that will include data and conclusions obtained during the ten year period of this study.

Evaluation:

Drs. Roderick and Harvey site visited the laboratory in ~~May~~<sup>Feb</sup> 1974 to determine the status of this contract and the materials and human samples available. The comments of the reviewers and our trip report are attached. We concluded that the sperm and plasma samples from each of the irradiated individuals are a unique research<sup>re</sup> source.

It is clear that this resource will be preserved by Miss Rowley and that they will be available to other research workers. This contract will enable the purchase of the freezers to preserve the specimens for long periods.

It was also later determined through the visit by Dr. Lalli to the Heller Laboratory that plasma samples on hand may be of value in further research of radiation effects and hormonal levels. His comments are also attached.

Our site review indicated to each of us that Miss Mavis Rowley is bright, preserving, and productive. She is dedicated to the Heller project and to the preservation of the samples for further research efforts. We feel that therefore it is in her laboratory that the samples should be retained, even though we anticipate our support under this contract may terminate in two years.

Recommendation:

The reviewers strongly endorse the continuation of this work as outlined above. The budget is modest to accomplish the effort. Although the request is for \$24,800, we feel the work during the first year can be accomplished for \$23,717 which is 7% above last year's level. Our recommendation is therefore to continue this program at the level of \$23,717.

Elmer B. Harvey *EBH*  
Thomas H. Roderick *THR*  
7/10/74

*Copy of report of site visit...  
...made available to the following individuals:*