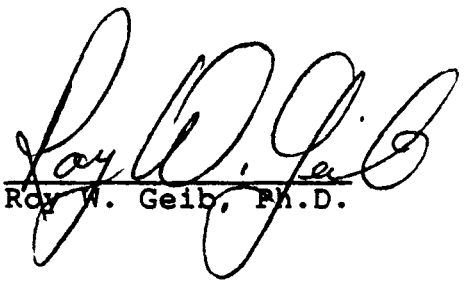
VARIANTS OF FRIEND ERYTHROLEUKEMIA VIRUSES IN GENETICALLY RESISTANT MICE: A HISTOLOGICAL STUDY

By: Marcella Liffick Stevens

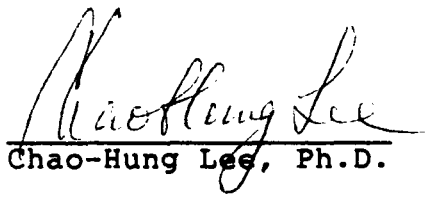
Submitted to the faculty of the Graduate School in partial fulfillment of the requirements for the degree
Master of Science
in the Department of Pathology
Indiana University
June 1987

This dissertation has been approved as partial fulfillment of the requirements for the Master of Science degree in the Department of Pathology at the Indiana University School of Medicine.

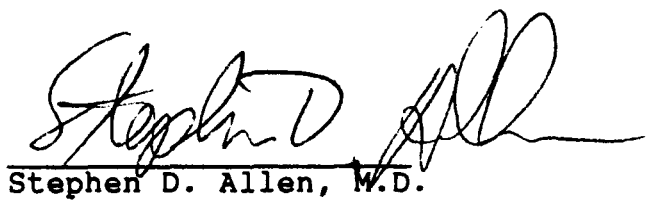


Roy W. Geib, Ph.D.

Ann T. Moriarty, M.D.



Chao-Hung Lee, Ph.D.



Stephen D. Allen, M.D.

ABSTRACT

Friend virus (FV) is an oncogenic retrovirus which rapidly induces erythroleukemia in sensitive mice (*Fv-2*^{s}/*Fv-2*^{s}). FV is a complex consisting of a replication competent helper virus (F-MuLV) and a replication defective spleen focus-forming virus (SFFV). Upon passage of this virus through genetically resistant mice (*Fv-2*^{r}/*Fv-2*^{r}), adaptation occurs resulting in an alteration of the SFFV envelope protein followed by development of erythroleukemia in adult animals. The adapted viruses in this study are the RB and BSB, as termed by Geib and Steeves. To determine if the adapted virus diseases are similar to those induced by the wild-type FV, the infected spleens were examined using gross and microscopic methods and the pathologic findings were compared. Mice were infected with the various viruses. Nine days post-infection the mice were sacrificed, and the spleens were weighed, fixed, examined for foci of Friend cells, and prepared for histologic examination. A "Friend-like" disease was seen with some characteristics unique to each virus. Pathological observations of the erythroleukemia produced by the adapted viruses provided insight into the target cell(s), viral-cell interactions, and the host immune interactions involved in cell transformation and mechanism of *Fv-2*^{r}/*Fv-2*^{r} resistance to development of leukemia.

TABLE OF CONTENTS