

### COVER SHEET

TITLE: Exploration of the Relationship Between GRAIL and Cbl-b

AUTHOR'S NAME: Paul Winograd

MAJOR: Biochemistry

DEPARTMENT: Biochemistry

MENTOR: Christine Seroogy

DEPARTMENT: Pediatrics

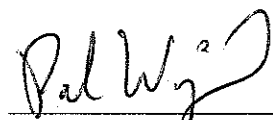
YEAR: 2010

## ABSTRACT

### Exploration of the Relationship Between GRAIL and Cbl-b

The E3 ligases GRAIL and Cbl-b are necessary for the induction CD4<sup>+</sup> T cell anergy. Using CD4<sup>+</sup> T cells from wildtype (WT) and Cbl-b knockout (Cbl-b<sup>-/-</sup>) mice, we investigated the relationship between GRAIL and Cbl-b. Induction of anergy led to an 8-fold increase in GRAIL mRNA expression in WT T cells compared to the Cbl-b<sup>-/-</sup> T cells. In contrast, ectopic expression of GRAIL in WT and Cbl-b<sup>-/-</sup> CD4<sup>+</sup> T cells led to a 30% decrease in proliferation in both groups relative to their respective GFP-transduced control, providing evidence that GRAIL functions independently of Cbl-b for conveyance of an anergic phenotype. In sum, these data suggest a Cbl-b dependent role for optimal upregulation of GRAIL mRNA under anergizing conditions and a Cbl-b independent functional role for GRAIL in the anergic phenotype.

Paul Winograd/Biochemistry  
Author Name/Major

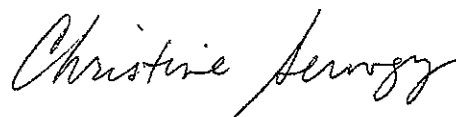


Author Signature

5/28/10

Date

Christine Seroogy/Pediatrics  
Mentor Name/Department



Mentor Signature