Characterization of Differential Protein Regulation in Meningioma Aggressiveness

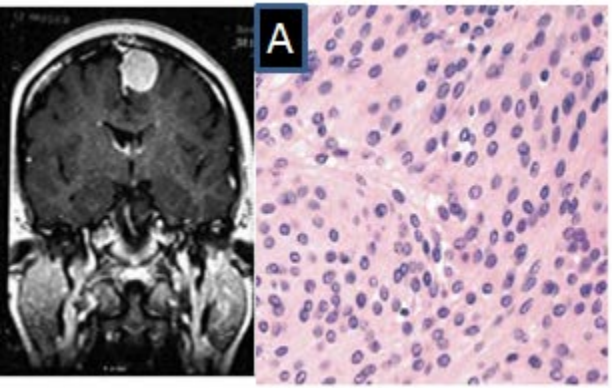
Dr. Ferreira's Skull Base Tumor Lab

Anna Cichocki and Rachel Catterall

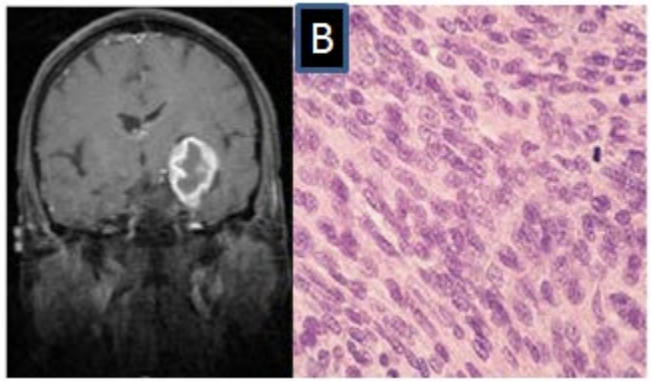
Introduction to Meningiomas

- WHO Grades: (according to histopathology)

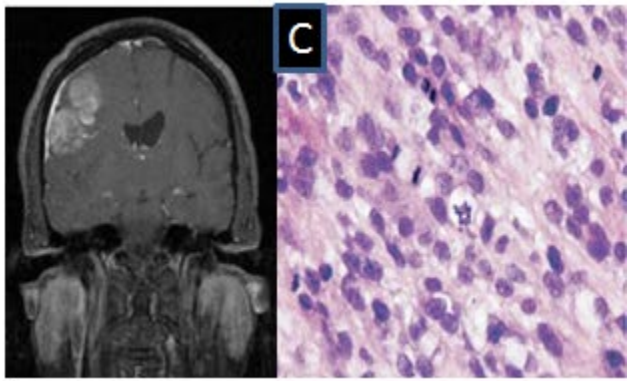
Grade 1: Benign



Grade 2: Atypical



Grade 3: Malignant

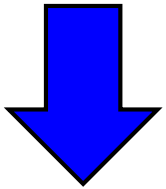


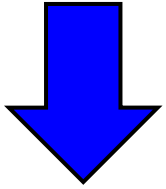
Grade 1.5: Histologically grade 1, can invade and recur (Ferreira et al)

Challenges of Meningiomas

No chemotherapy

Radio-resistant tumors





RESEARCH

Find biomarkers to improve early diagnosis, predict radioresistance, and develop chemotherapy treatments

Research

In our lab:

- Patient Specimens
- Human Meningioma Cell Cultures

Our Focus

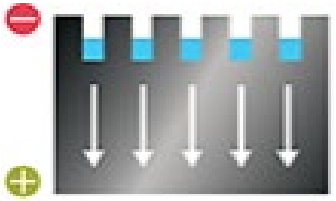
Characterize differential regulation of:

- AKAP12
- phospho-RB1 S780
- NF2 (Merlin)
- p53
- SMAD2/3

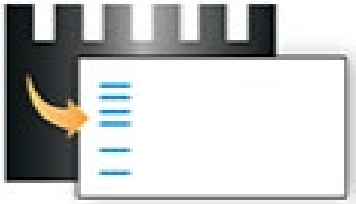
} Conclusive findings!

Western Blot Protocol

Step 1
Perform electrophoresis

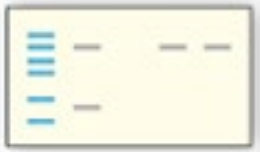


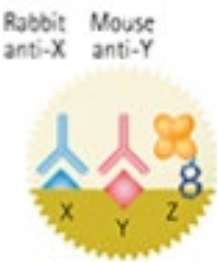
Step 2
Transference



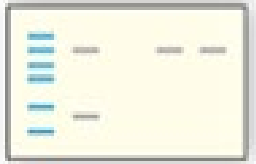
Step 3
Block

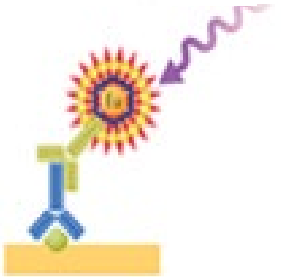
Step 4
Incubate with primary antibody



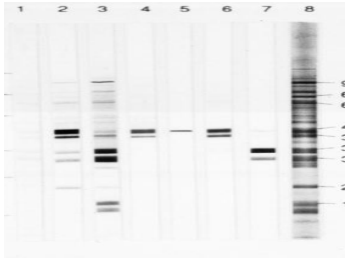


Step 5
Incubate with secondary antibody



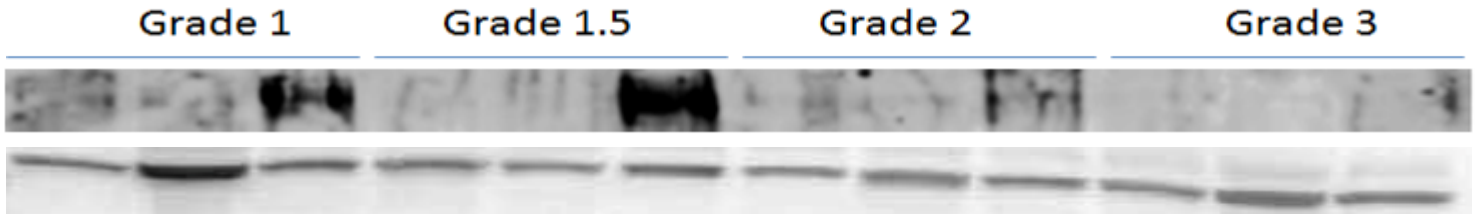


Step 6
Revelation
Imaging



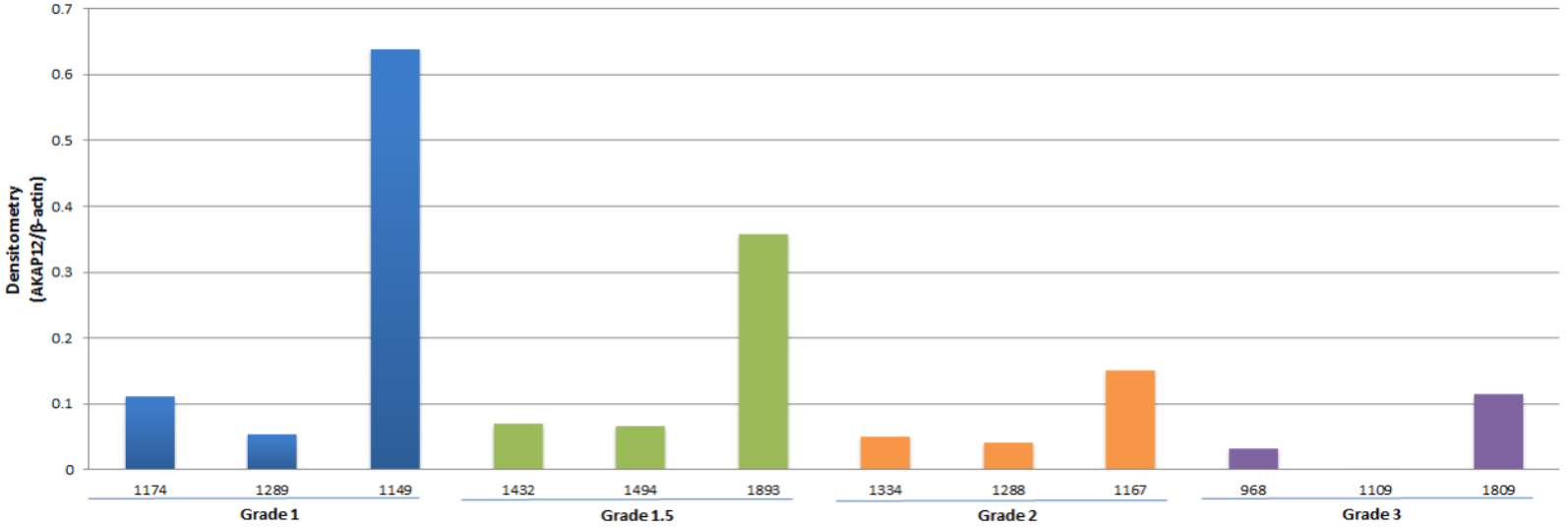
**Then repeat to quantify with Beta-actin

Differential Expression Levels of AKAP12 Across Meningioma Grades

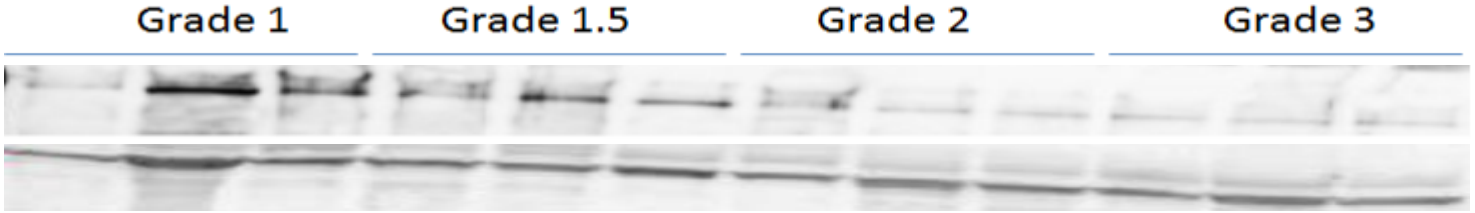


AKAP12

ß-actin

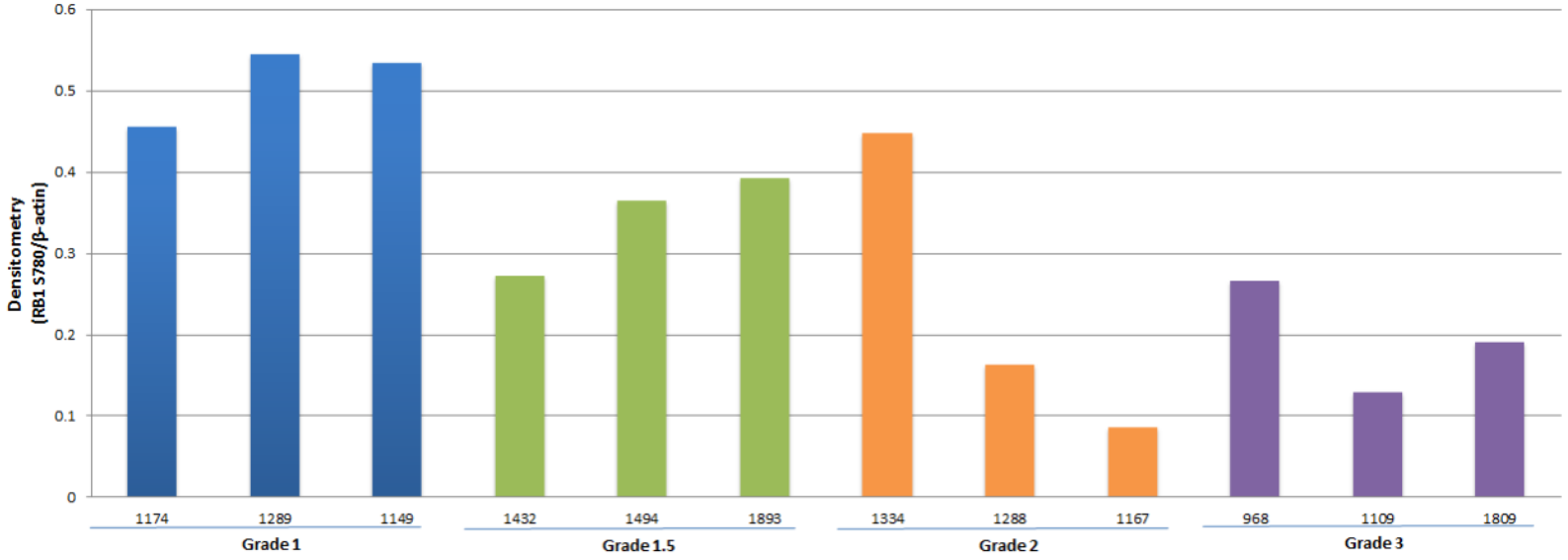


Differential Phosphorylation Levels of RB1 Across Meningioma Grades

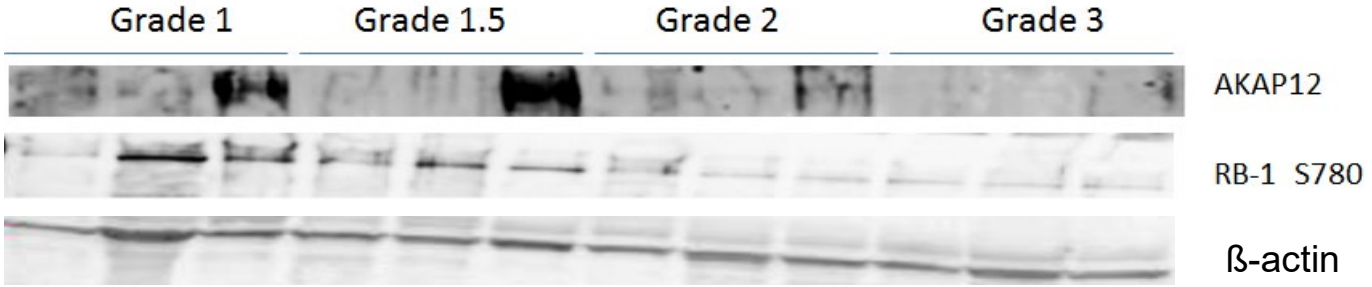


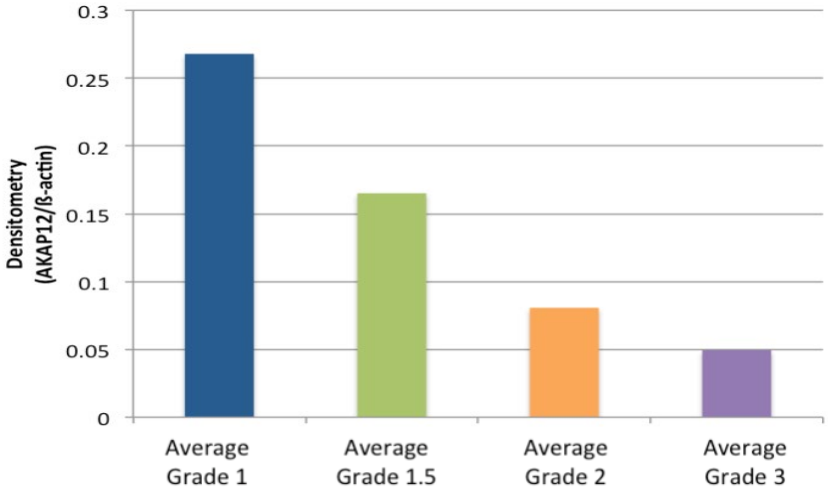
RB1 S780

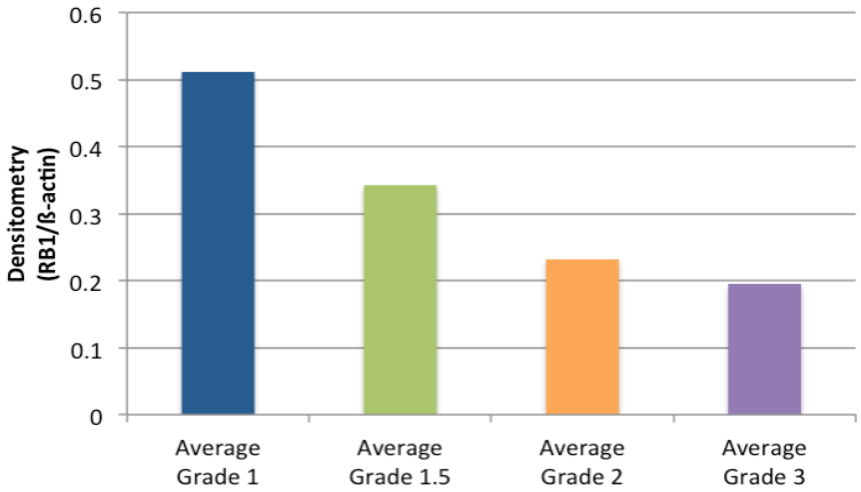
ß-actin



Conclusion

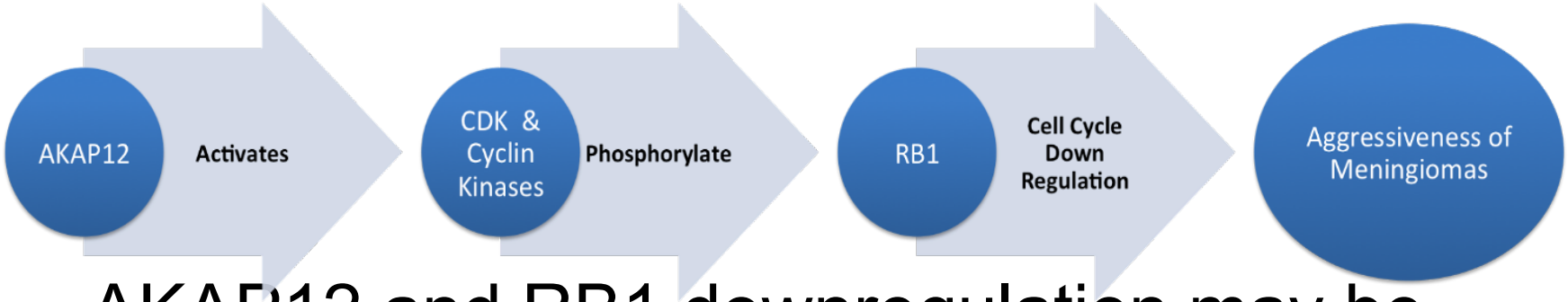






AKAP12 and RB1 are downregulated across the meningioma grades

Our Hypothesis



- AKAP12 and RB1 downregulation may be linked to aggressiveness in meningiomas
- AKAP12 and RB1 may participate in the same phosphorylation cascade
- AKAP12 and RB1 are involved in the cell cycle

Dr. Ellenbogen, M.D.
Mrs. Ellenbogen
Christina Buckman
Jim Pridgeon, MHA

Dr. Ferreira, M.D., Ph.D.
Dr. Carolina Parada, Ph.D.
Tina Busald