Exercise about Retinoblastoma Eye Tumors
(after Segment #6)

Retinoblastoma is a cancer in which tumors form on the retina of the eye. Tumors form when both versions (maternal and paternal) of the tumor suppressor gene Rb1 are mutated in the same cell.

Fill in the six empty boxes in the chart below to compare what the Rb1 genes would look like (i.e. mutated or normal) in different types of cells in the body of:
-- a person who does not have retinoblastoma
-- a patient with retinoblastoma that is familial
-- a patient with retinoblastoma that is sporadic (i.e. the ancestors of this patient did not have retinoblastoma)

Use a (**+**) sign to denote a normal version of the Rb1 gene, and a (**–**) sign to denote a mutated version of the Rb1 gene.

	Person who does not have Retinoblastoma	**Patient with Familial Retinoblastoma** (many tumors in both eyes, in many members of the same family)	**Patient with Sporadic Retinoblastoma** (one tumor in one eye, in only one person in the family)
Rb1 genes in a skin cell	+ / +		
Rb1 genes in an eye cell not from the tumor	+ / +		
Rb1 genes in an eye cell from the tumor	Not applicable (because this person doesn't have any tumors)		

To relate this activity to the mutation mat activity we did earlier in the lesson (for skin cancer), the mutation mat for retinoblastoma would only have to include 3 squares (because only three mutations need to accumulate to get retinoblastoma):

i) maternal Rb1, which would have to acquire a loss-of-function mutation
ii) paternal Rb1, which would have to acquire a loss-of-function mutation
iii) one of the two versions of the N-Myc oncogene, which would have to acquire a gain-of-function mutation