Drosophila Brain Tumor is a translational repressor

Genes & Development 15:762

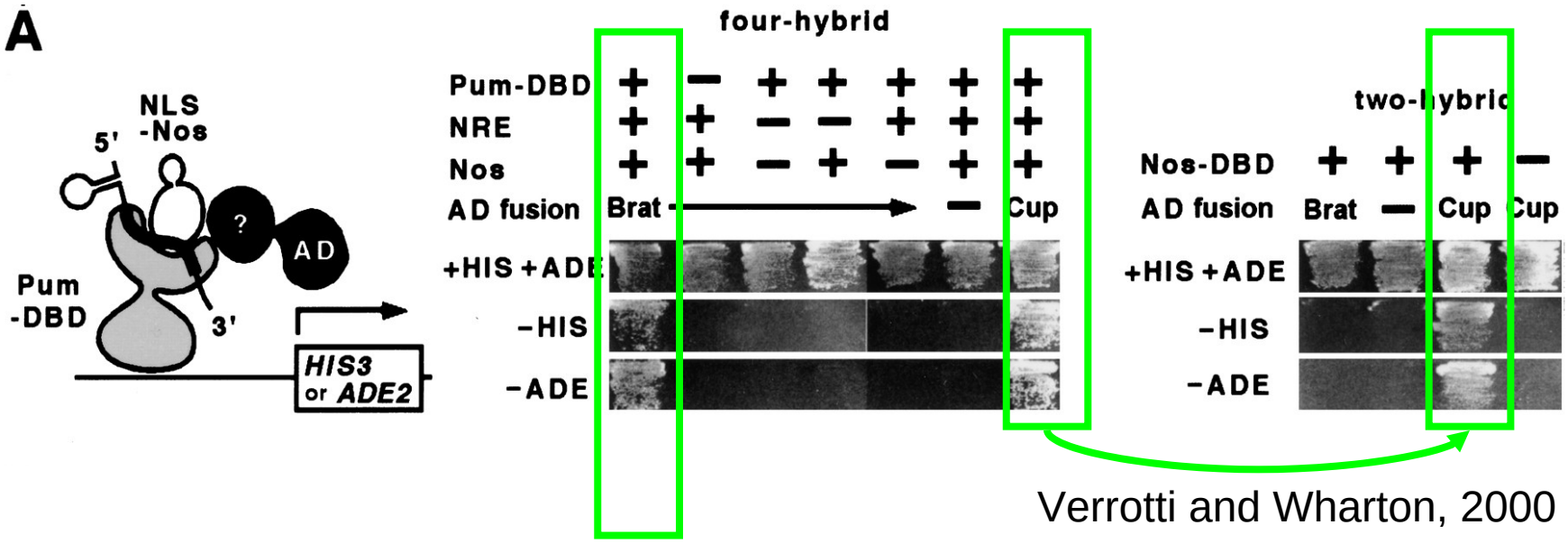
Present by Liang

Background

- *Hb* is regulated by *cis*-acting signal;
- Pum binds to NREs of *hb*;
- Nos contains a conserved zinc finger;
- Brat has a NHL domain, and N/H/L have ties to RNA metabolism;

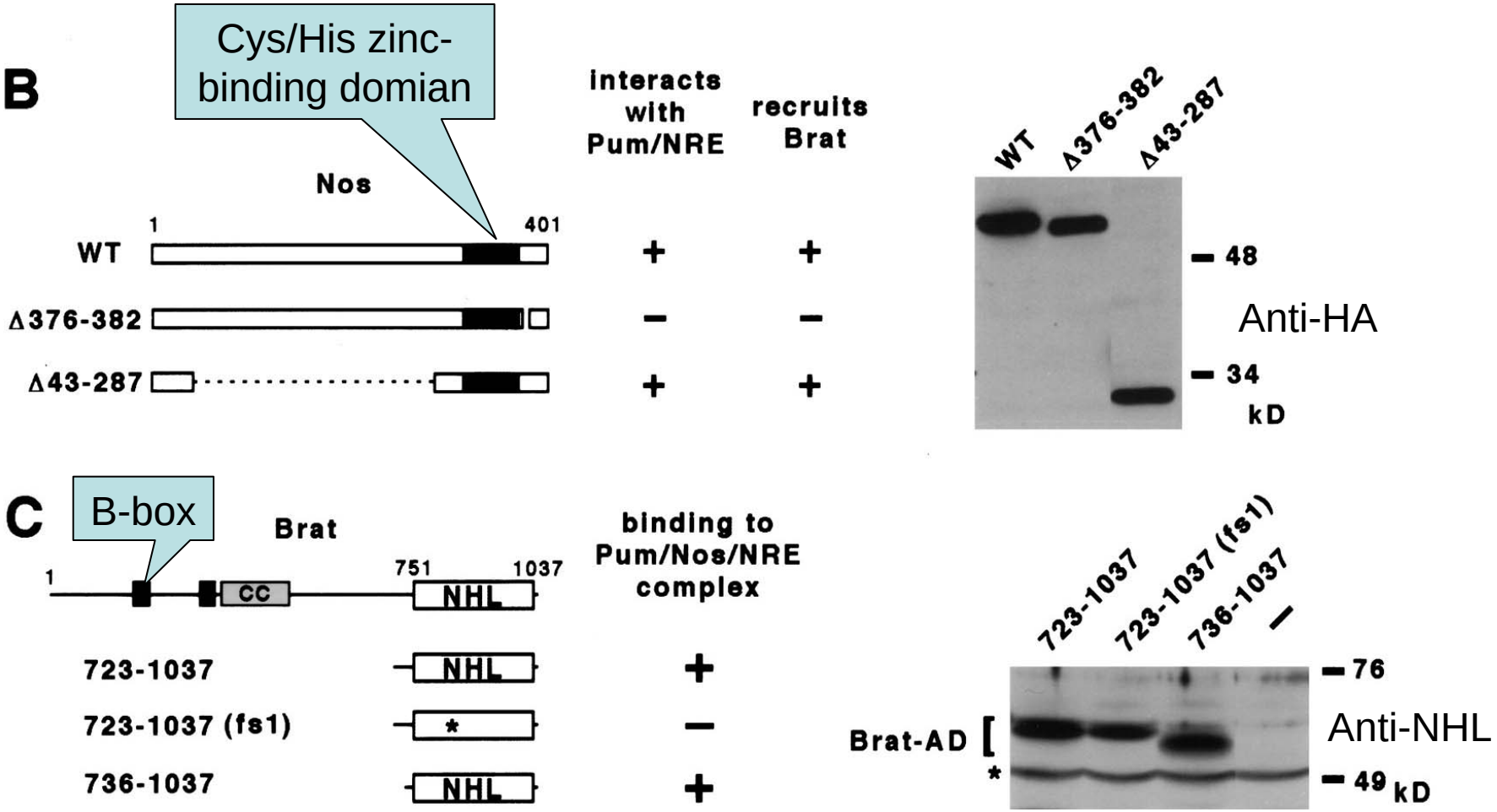
- How Nos/Pum/NRE regulates translation is not yet understand.

1A. Brat/Nos/Pum/NRE in yeast

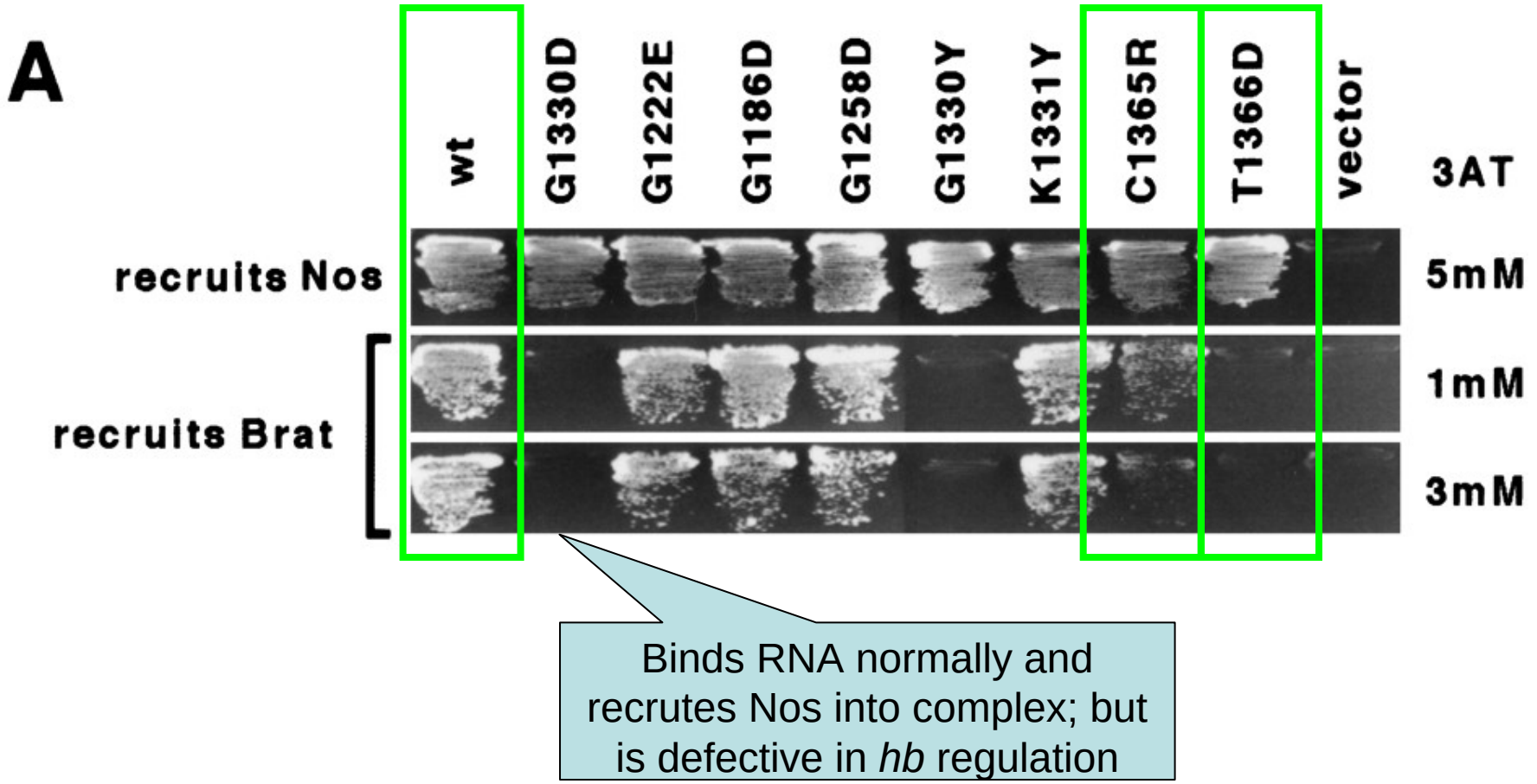


Verrotti and Wharton, 2000

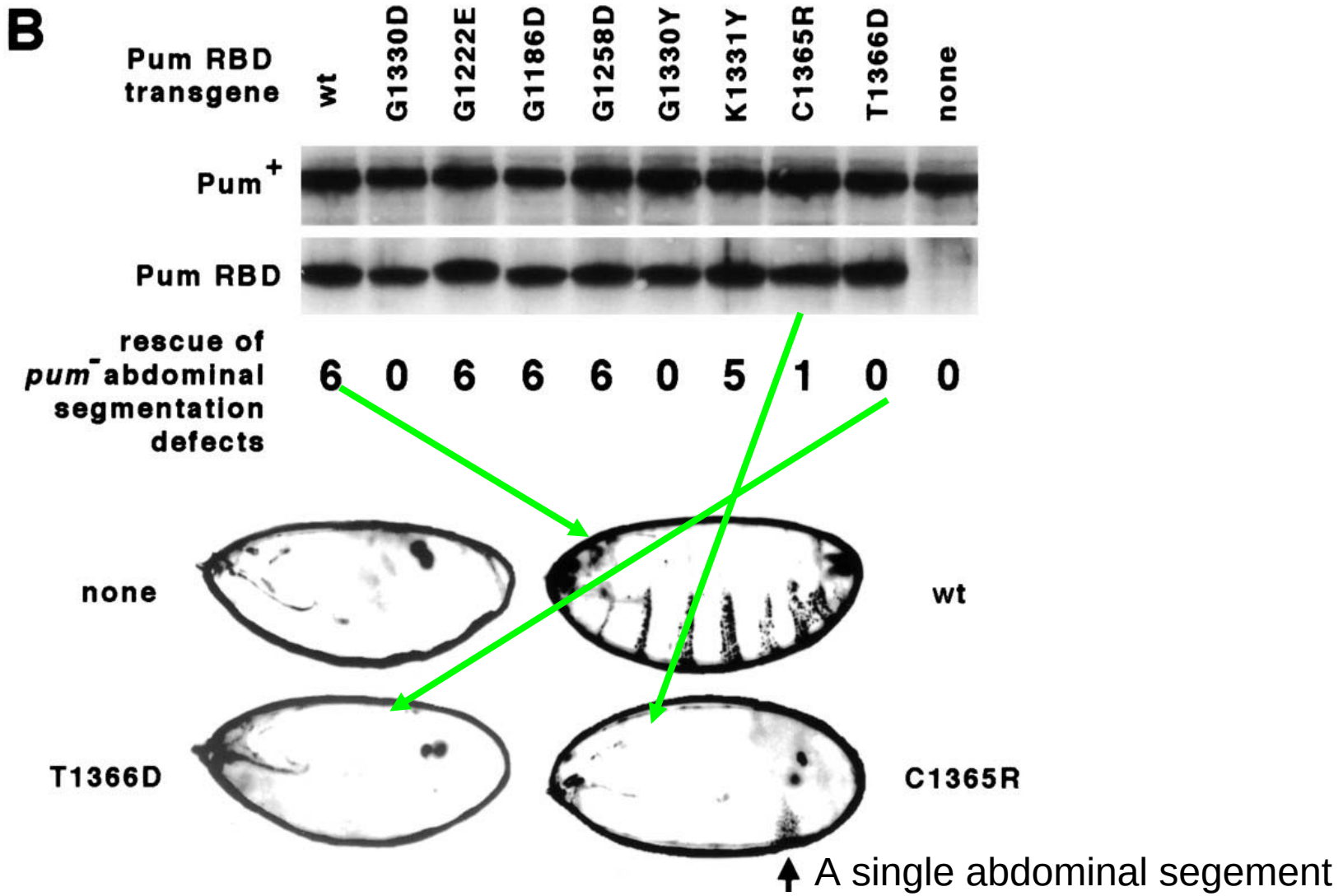
1B/C. Cterm@Nos - NHL@Brat



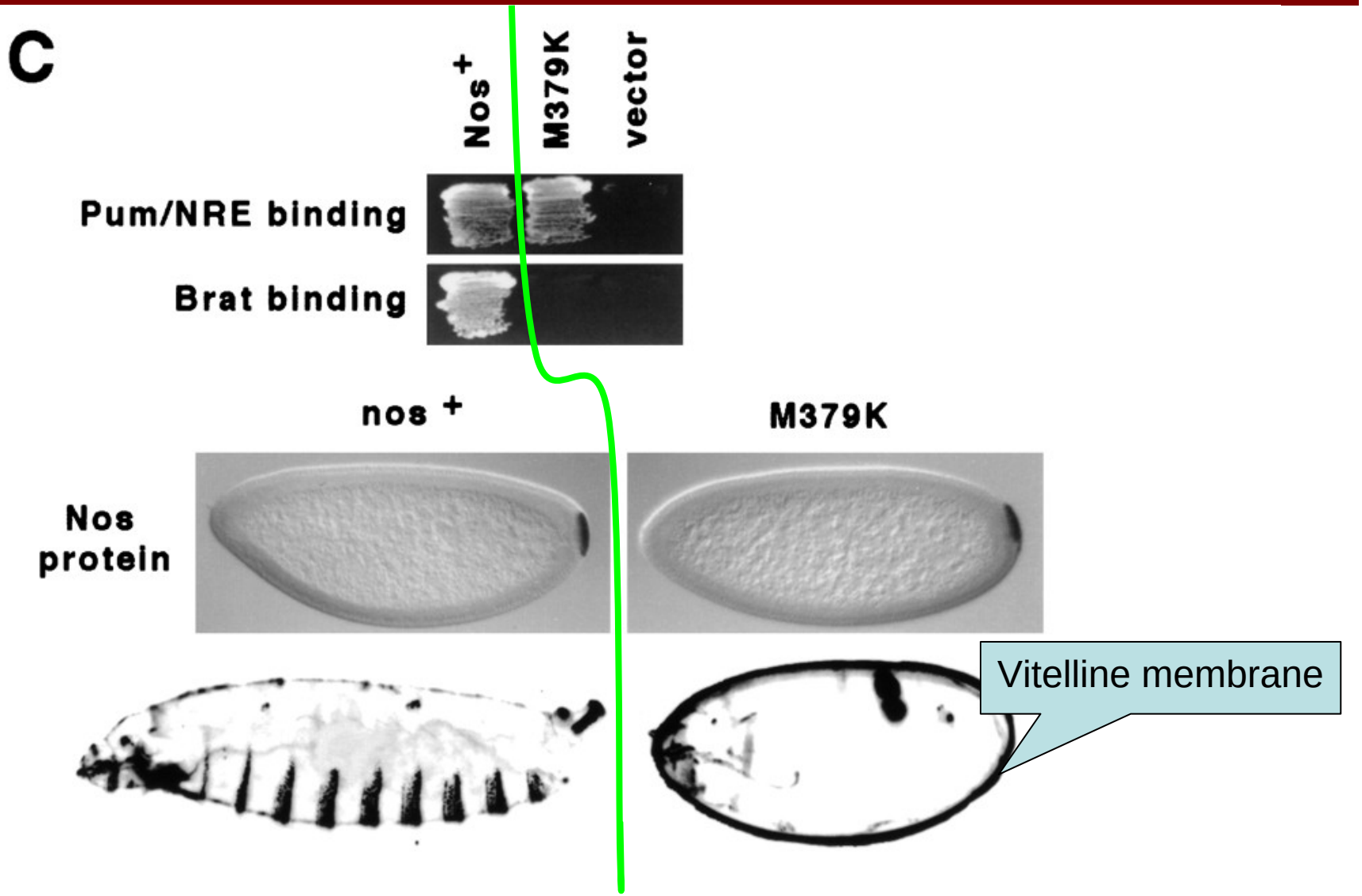
2A. Mutants of Pum in yeast



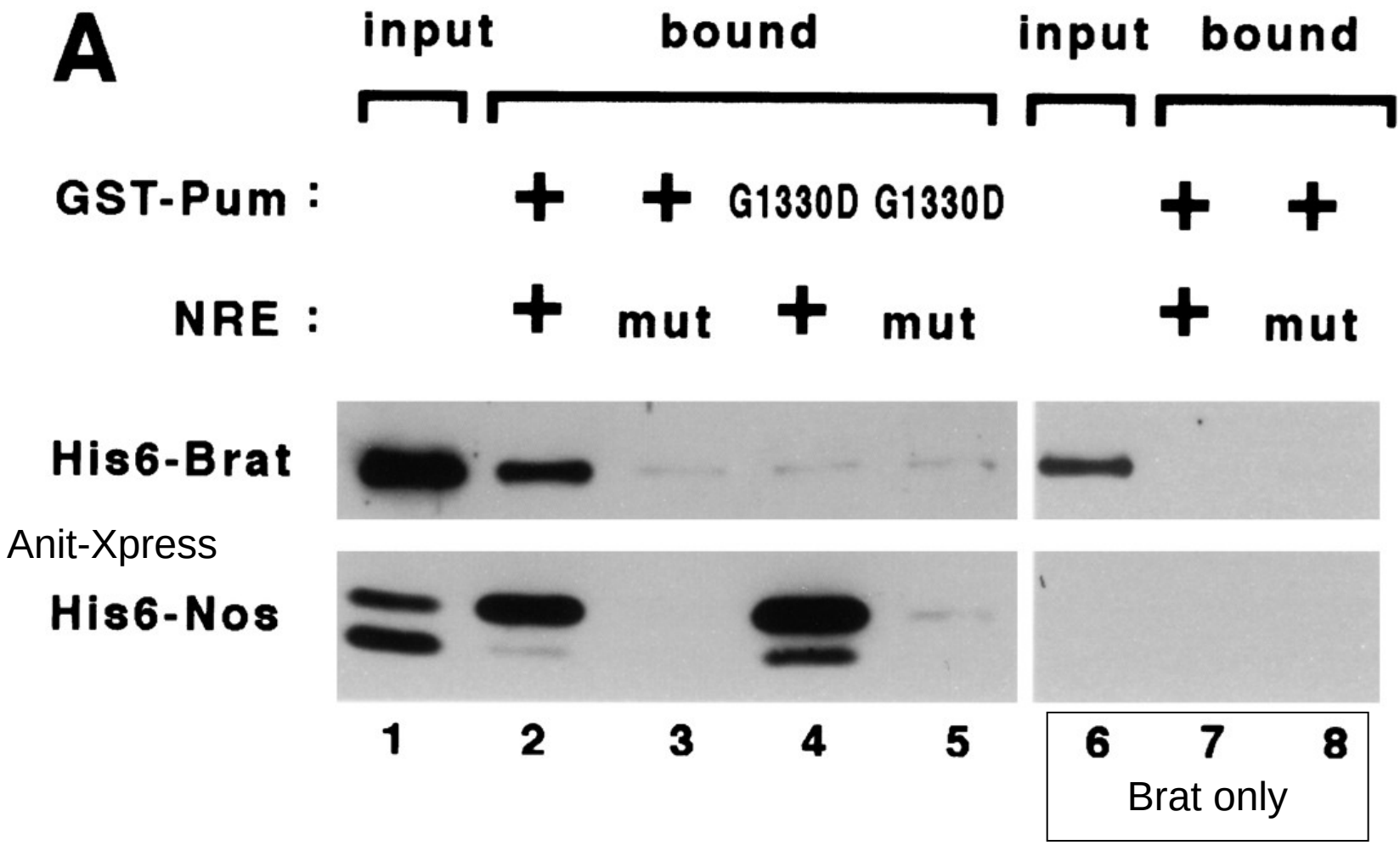
2B. Mutants of Pum in embryos



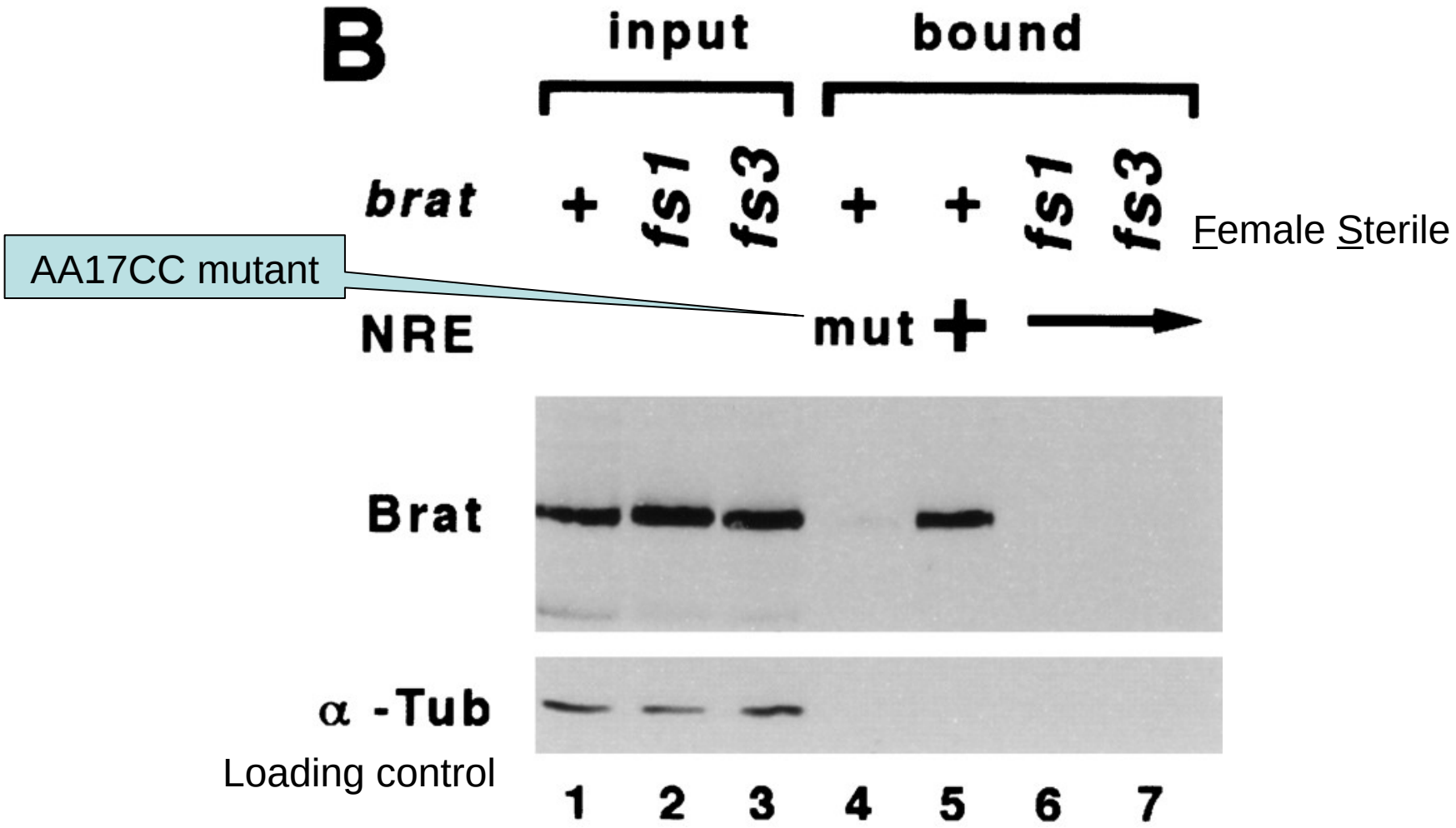
2C. Mutants of Nos



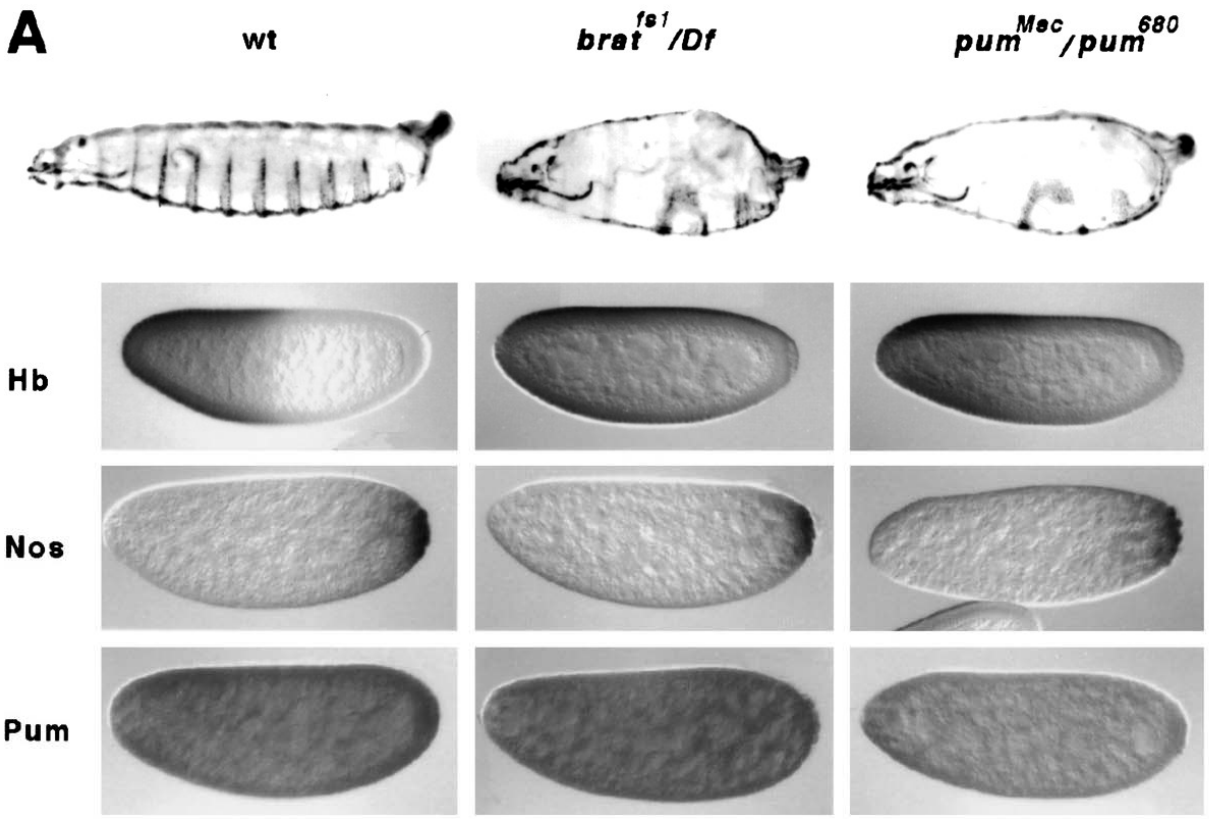
3A. Brat/Nos/Pum/NRE *in vitro*

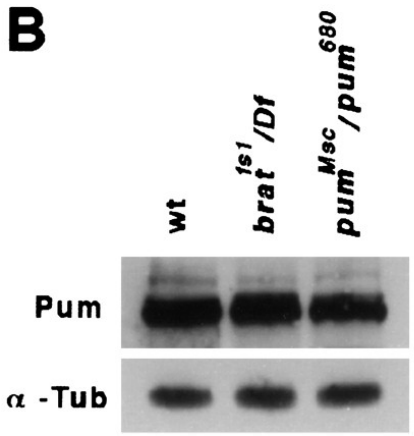


3B. Brat needs NHL domain



4A/B. Brat is required for *hb*





Lower level of Pum

4C. NHL rescues *brat$^{fs1/Df}$*

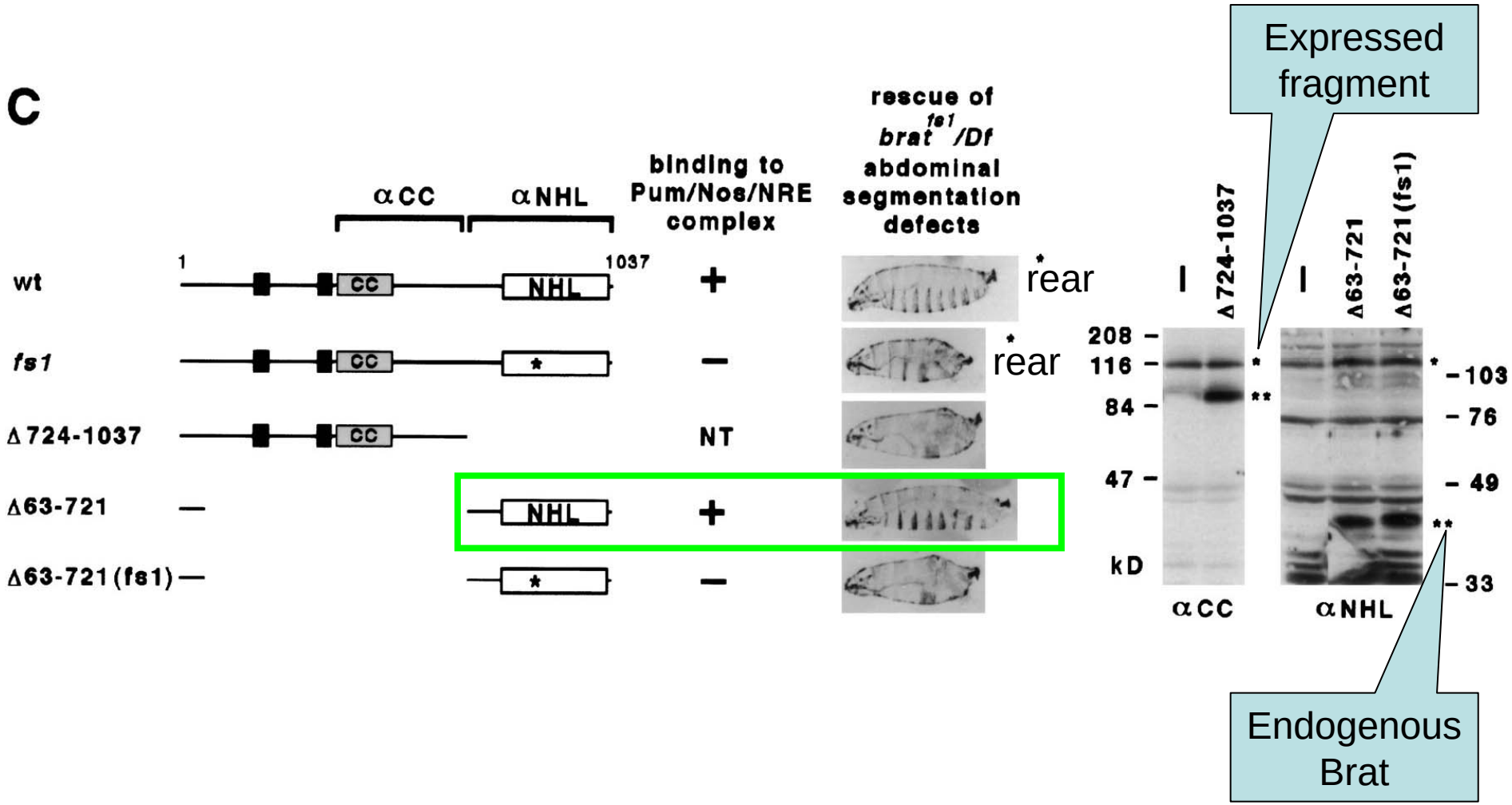


Table 1

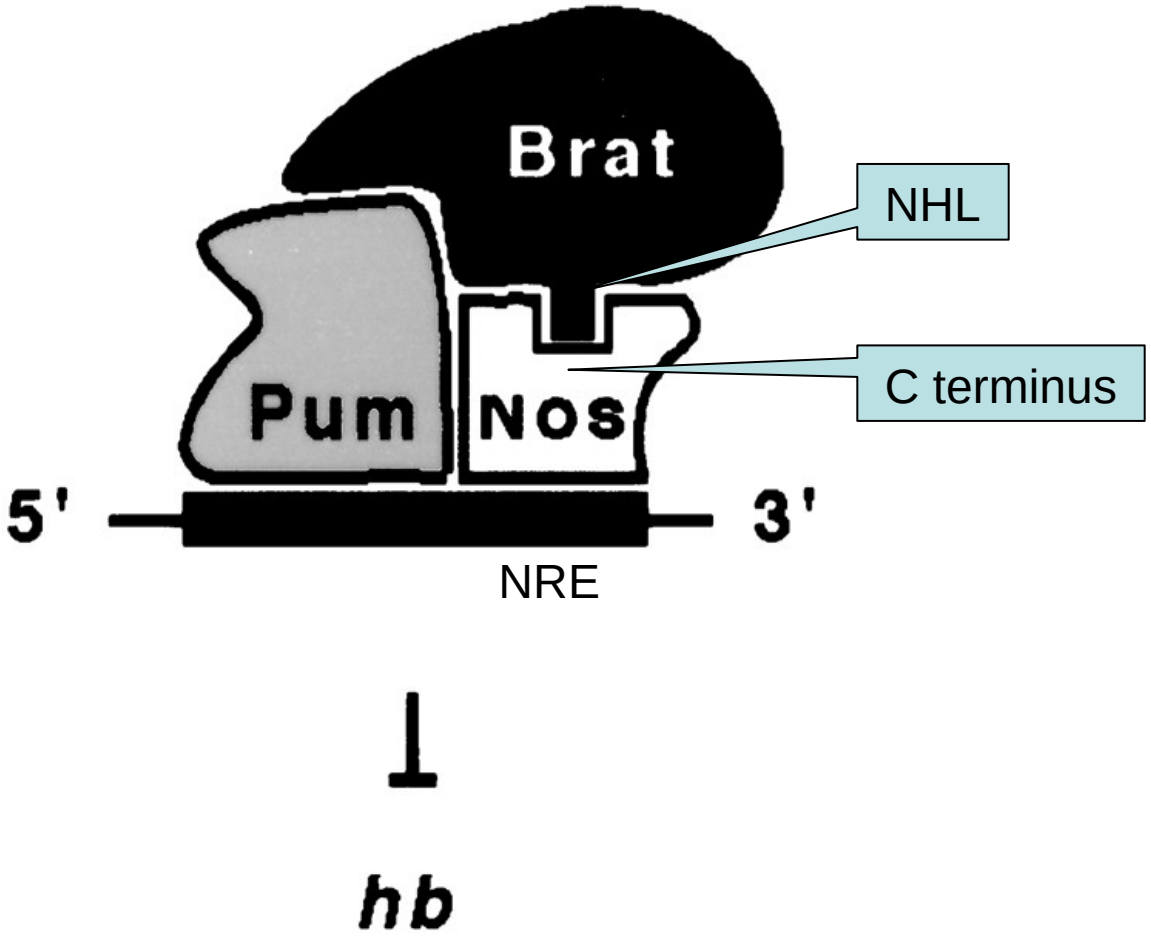
Table 1. *Abdominal segmentation defects in embryos from various mutant females*

		No. of abdominal segments							
		1	2	3	4	5	6	7	8
pum	*Msc/680*	4	46	39	10	2			
	fs1/Df(2L)TE37C-7	13	52	30	4	1			
	fs3/Df(2L)TE37C-7		4	28	28	24	11	4	
	fs1/fs3		2	45	34	17	3		
brat	*1/fs3*		3	11	42	24	8	13	
	k06028/fs3					18	30	25	27
	k06028/k06028[a]						7	29	63
	+/fs3								100
	+/Df(2L)TE37C-7								100

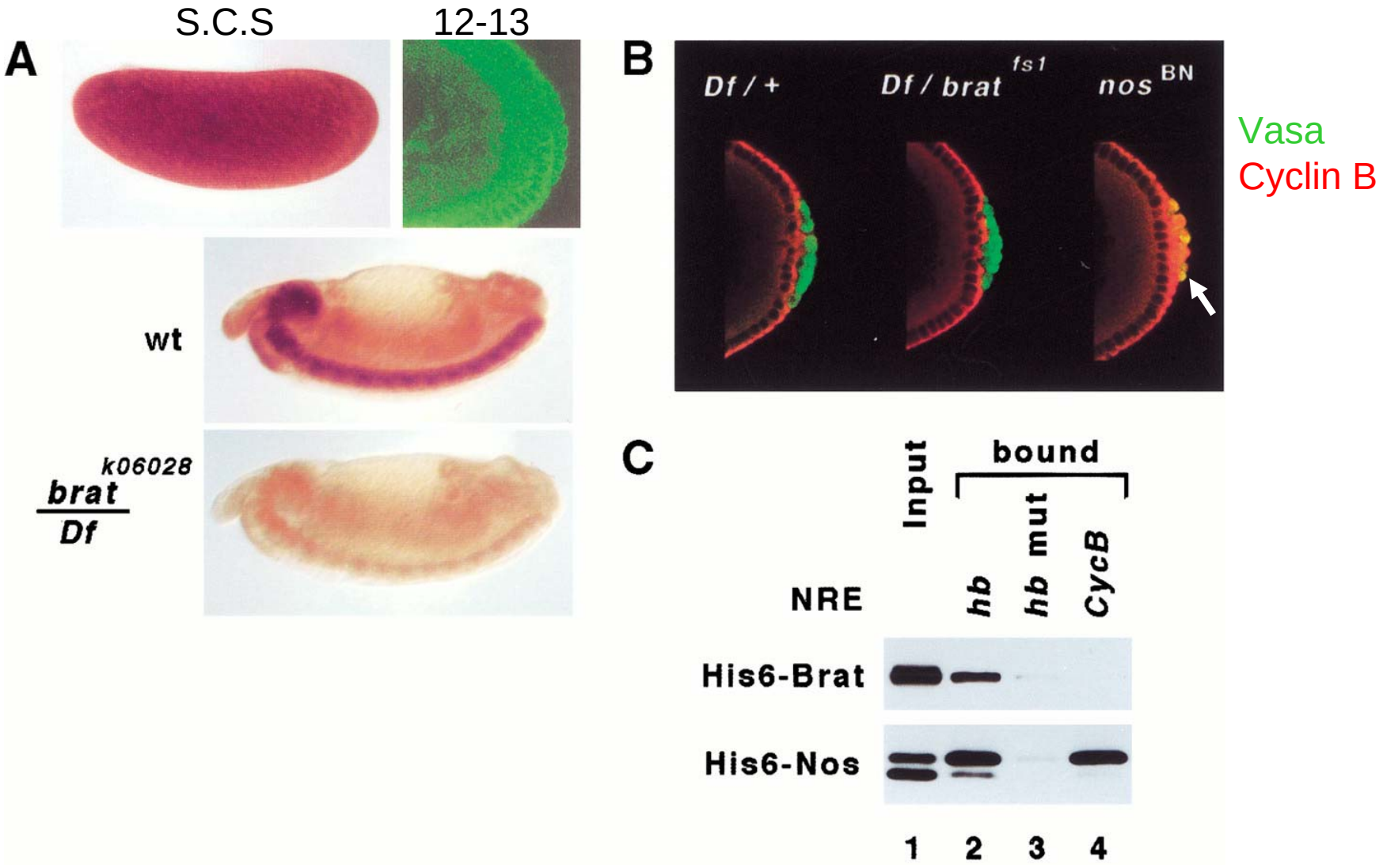
Each entry is the percentage of embryos derived from females of the indicated genotype (*left*) bearing the indicated number of abdominal segments (*above*). Forty to one-hundred embryos were scored in each case.

[a] Germ-line clone.

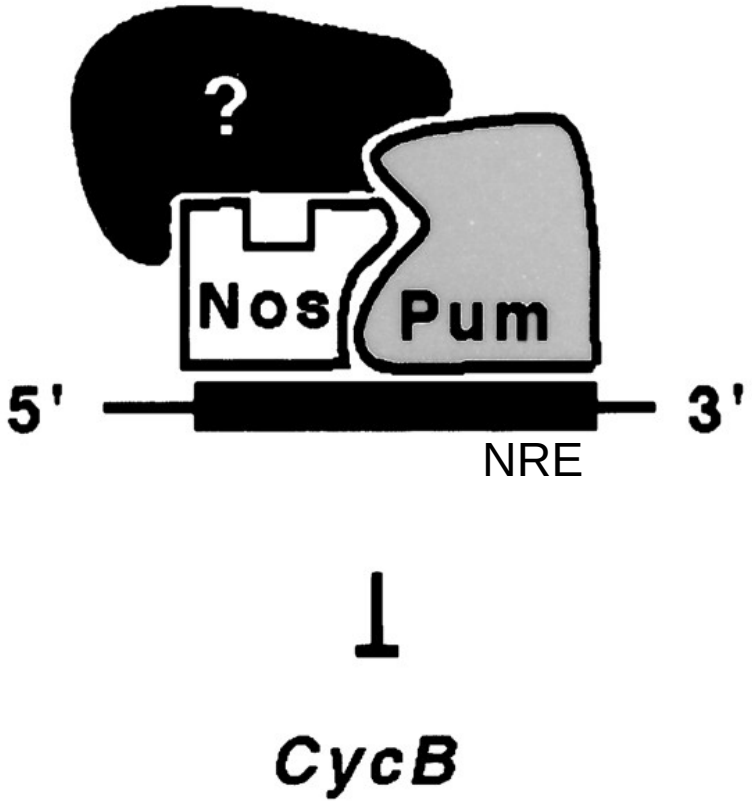
Model 1



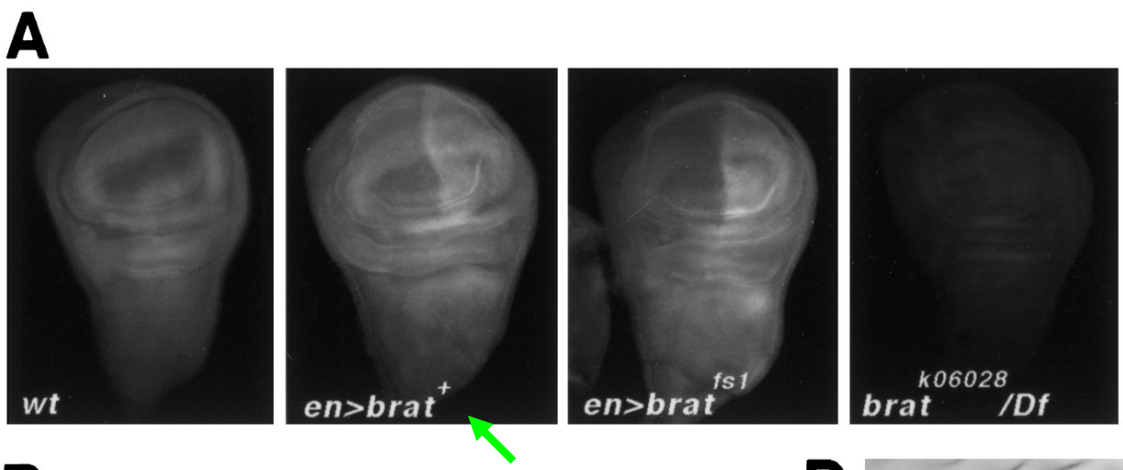
5. *Cyclin B* is normal in *brat*^{mutant}

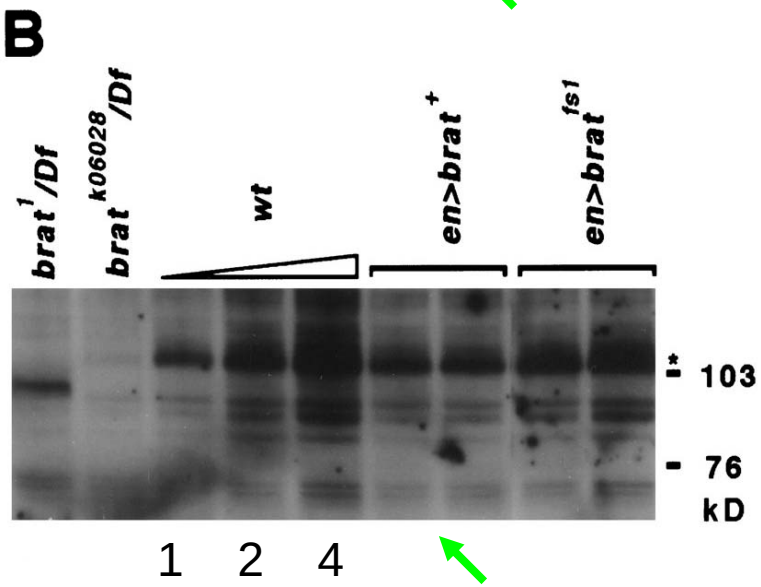


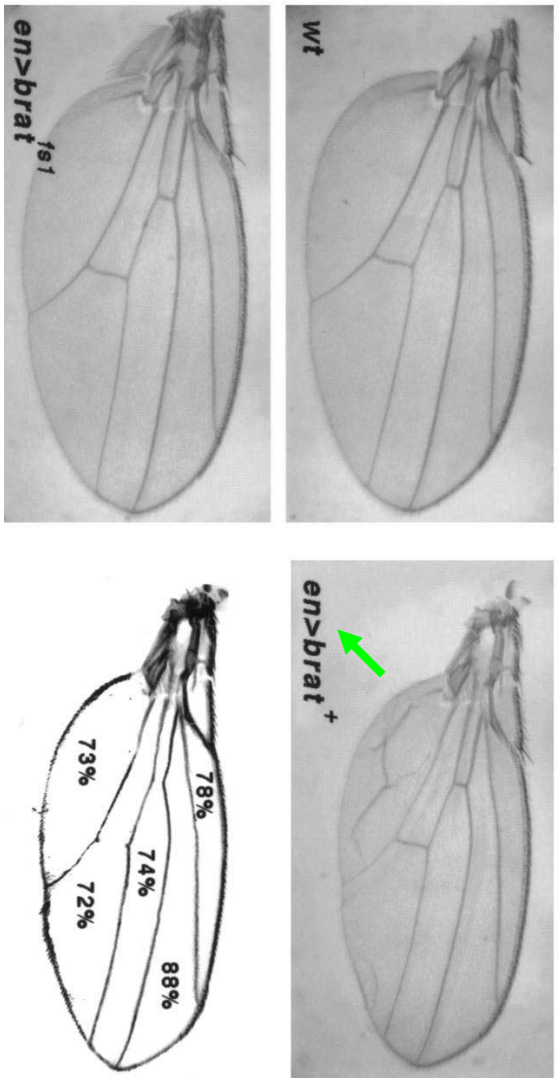
Model 2



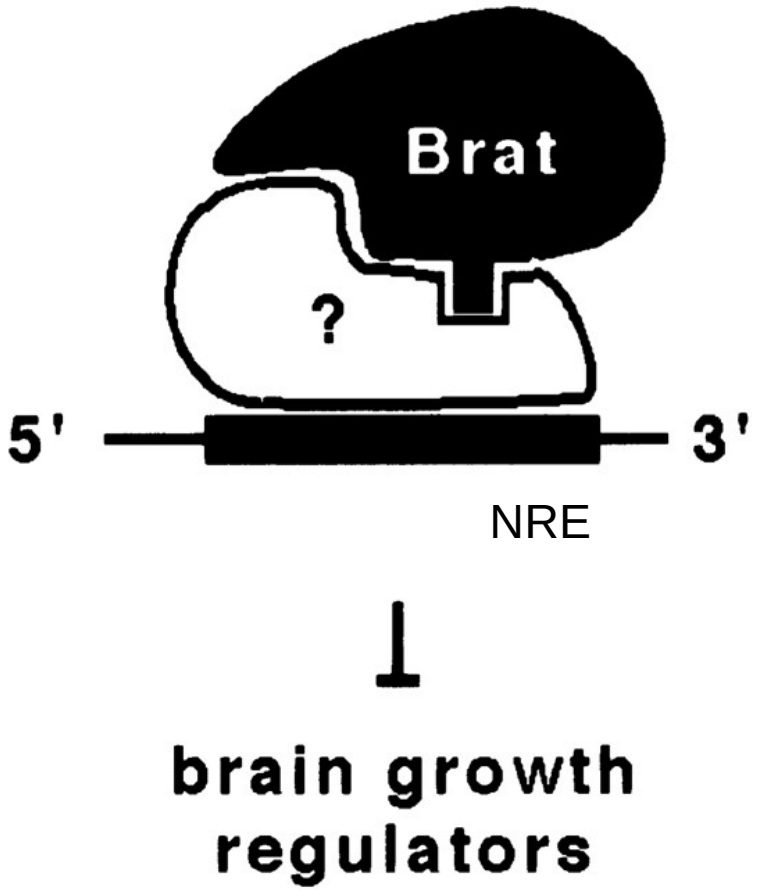
6. Ectopic expression Brat







Model 3



Q&A

Thank you.