

The what and where of operant self-learning mechanisms in *Drosophila* P 279



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1. PKC activity is required specifically for self-learning

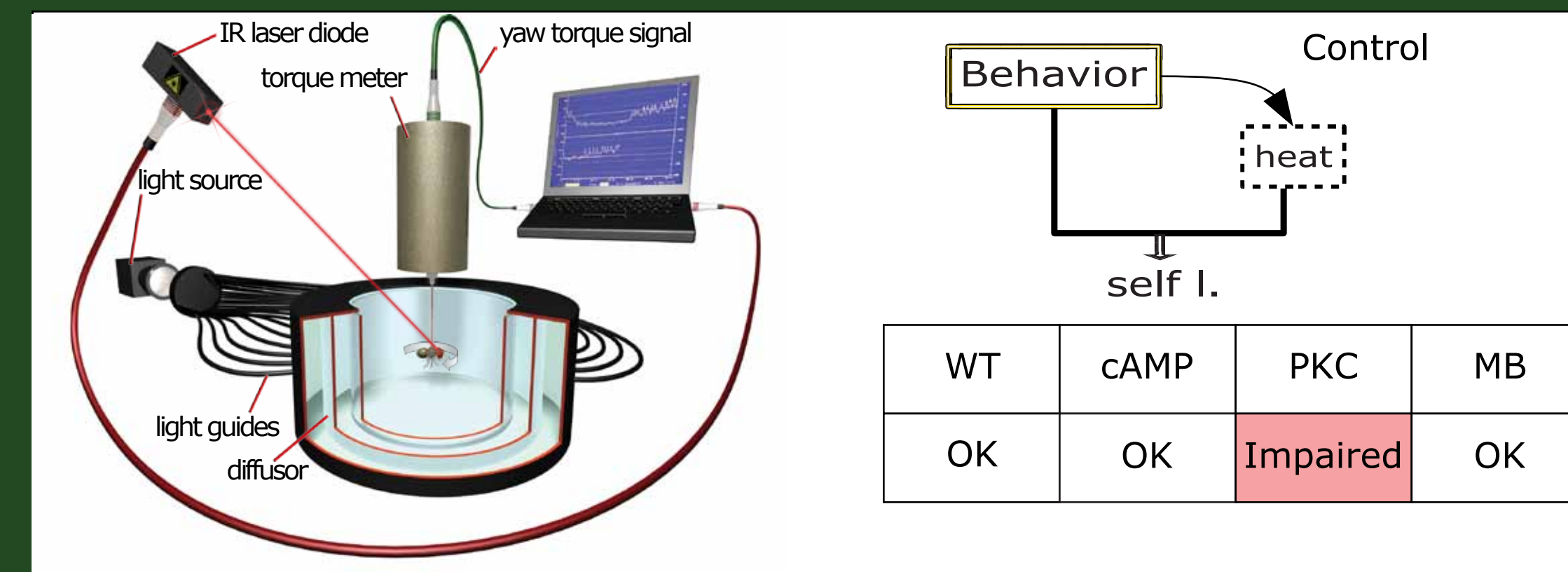
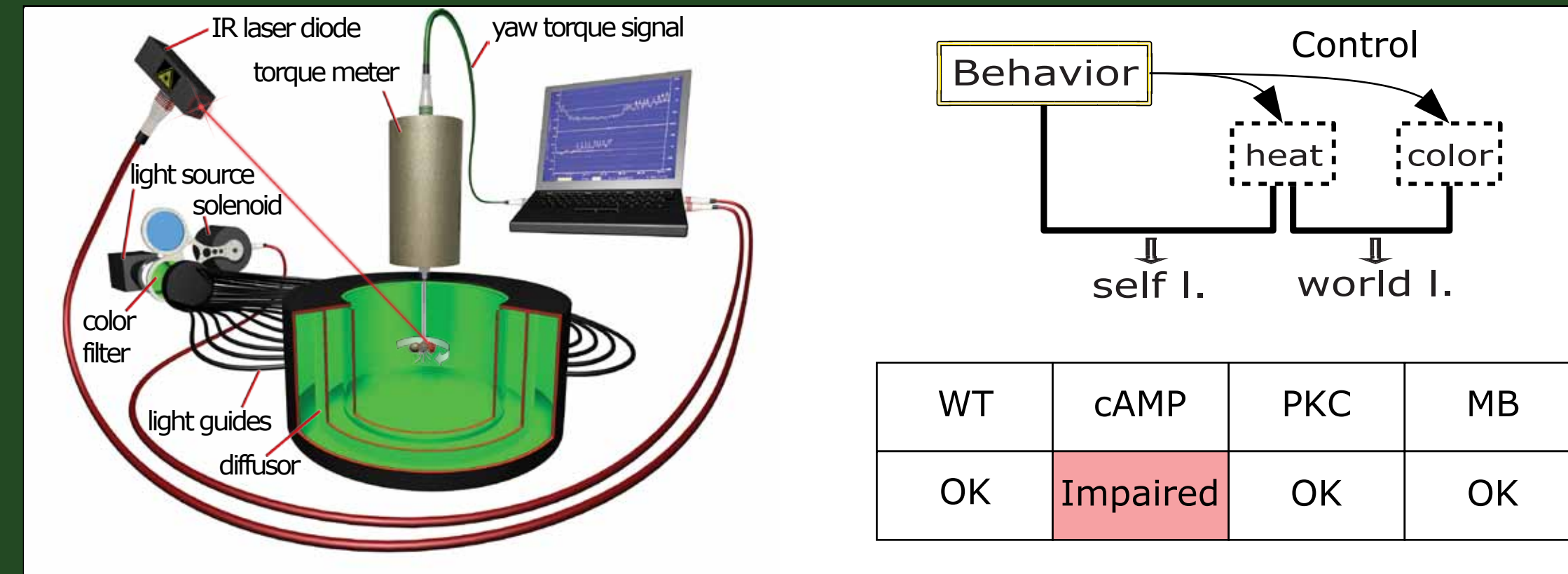


Fig. 1: Two operant conditioning experiments, distinguished by the presence or absence of predictive stimuli. Above: Flies learn to avoid the heat associated with one of two colors and left or right turning, respectively. Manipulating cAMP levels abolishes learning in this task. Below: Removing the color stimuli leaves the animal with only its behavior as predictor of heat punishment. Manipulating PKC abolishes learning in this task. Brembs & Plendl, *Curr. Biol.* 2008

6. No obvious brain defects in FoxP mutants

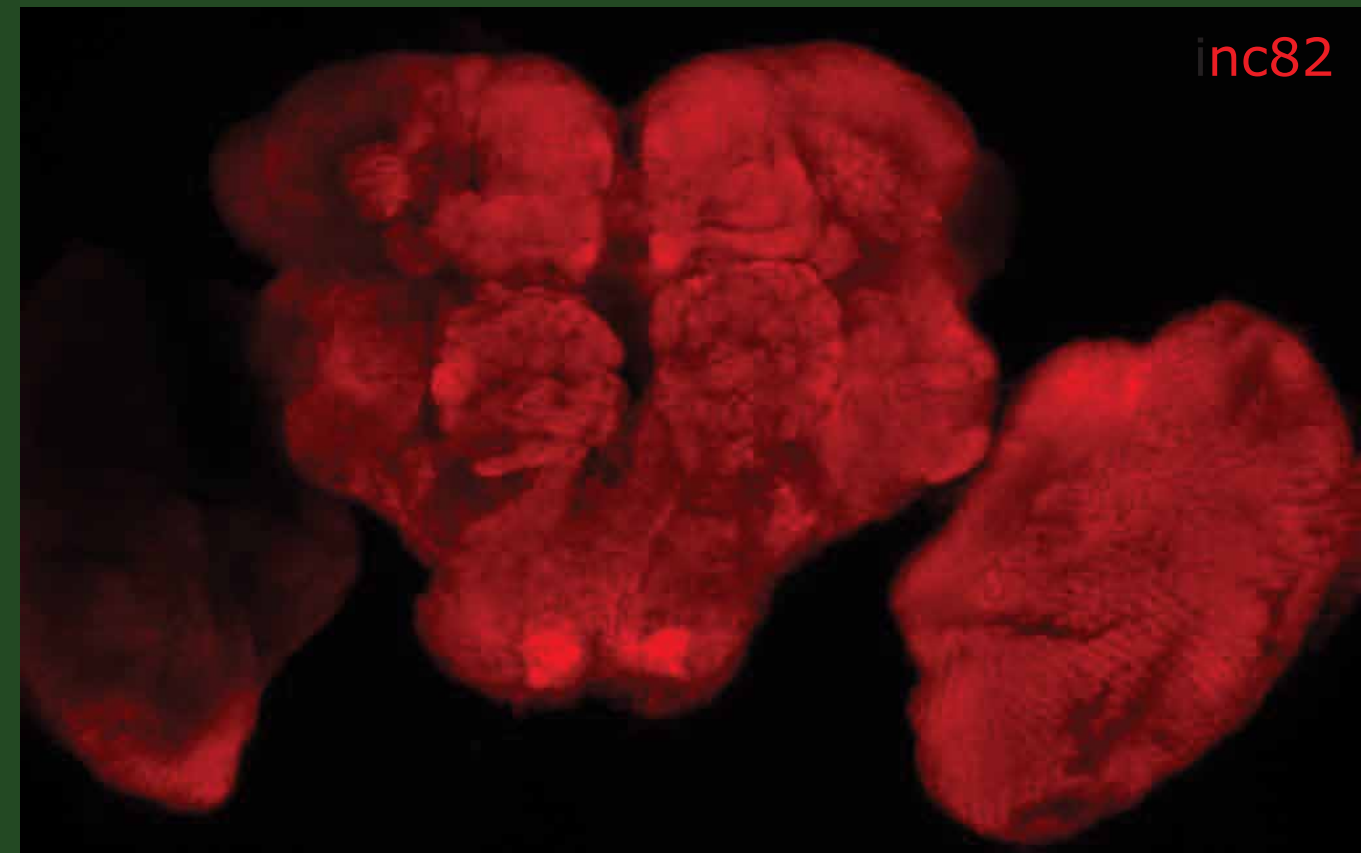


Fig. 6: FoxP mutant brains do not seem to be obviously malformed. A quantitative anatomical analysis searching for more subtle defects is currently under way.

5. Developing antibodies against *Drosophila* FoxP

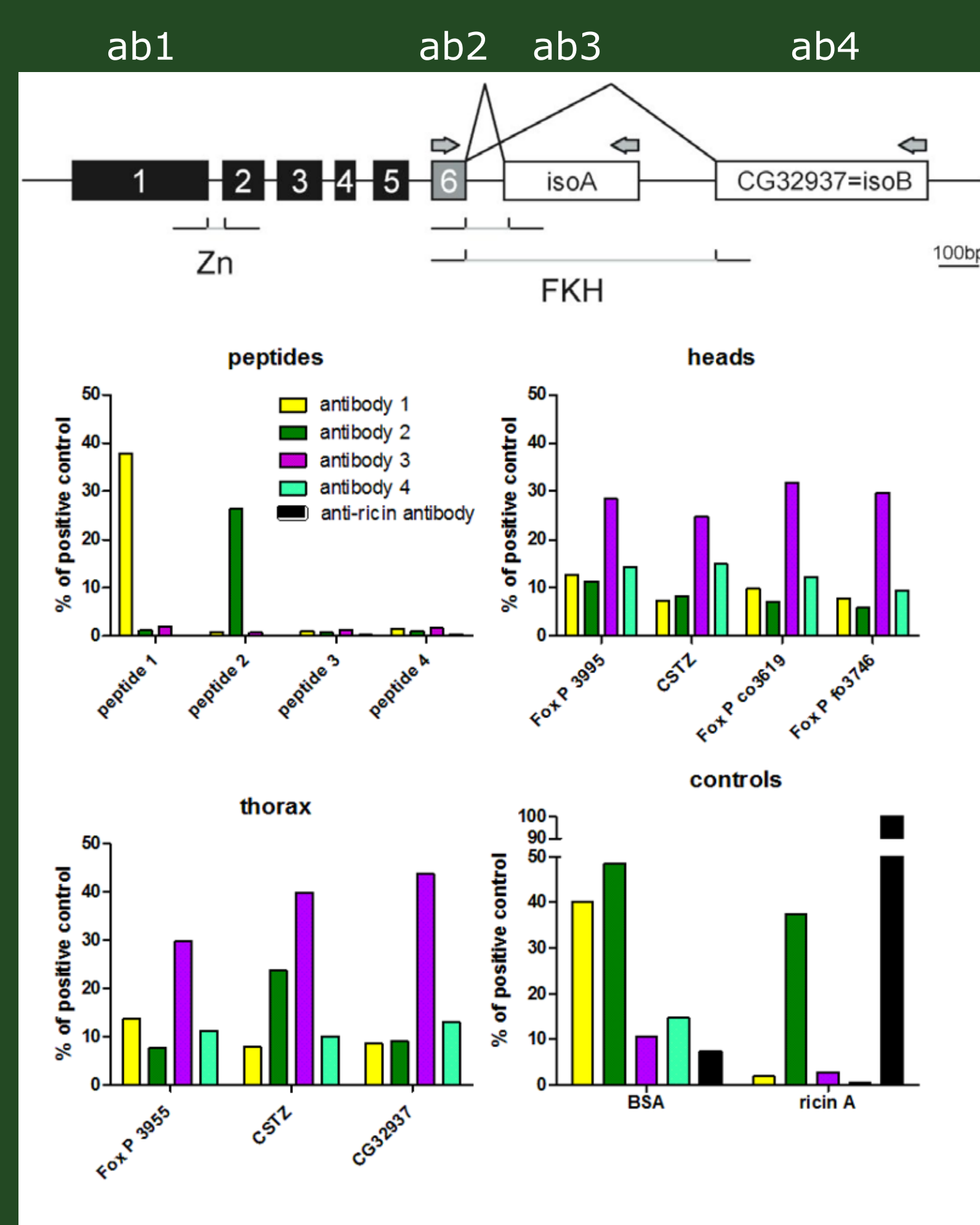
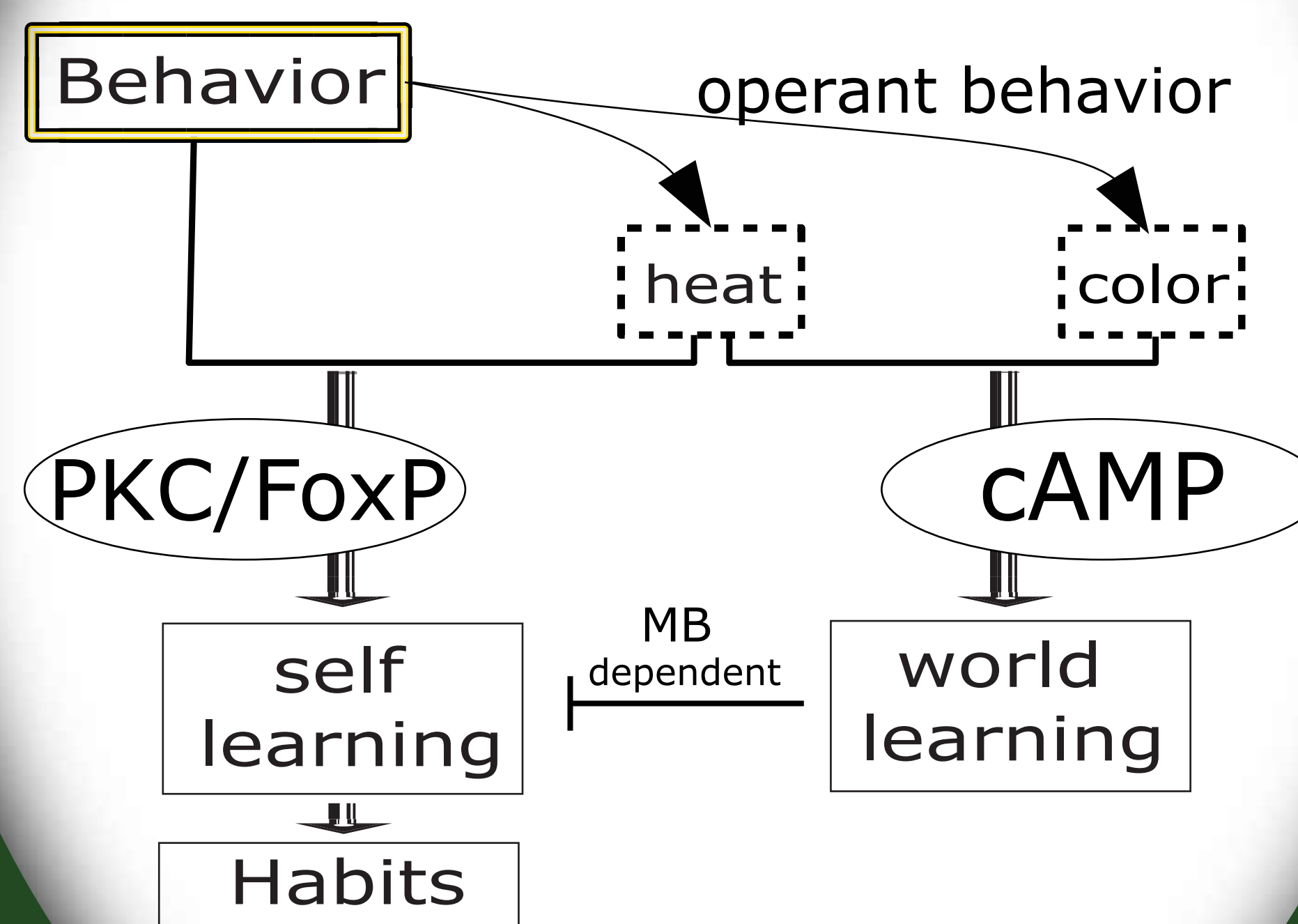


Fig. 5: ELISA results after seven immunizations of four chicken immunized with peptides from different regions in the FoxP sequence. No specific immunoresponse, yet.

Self-learning and world-learning



2. *Drosophila* FoxP is required specifically for self-learning

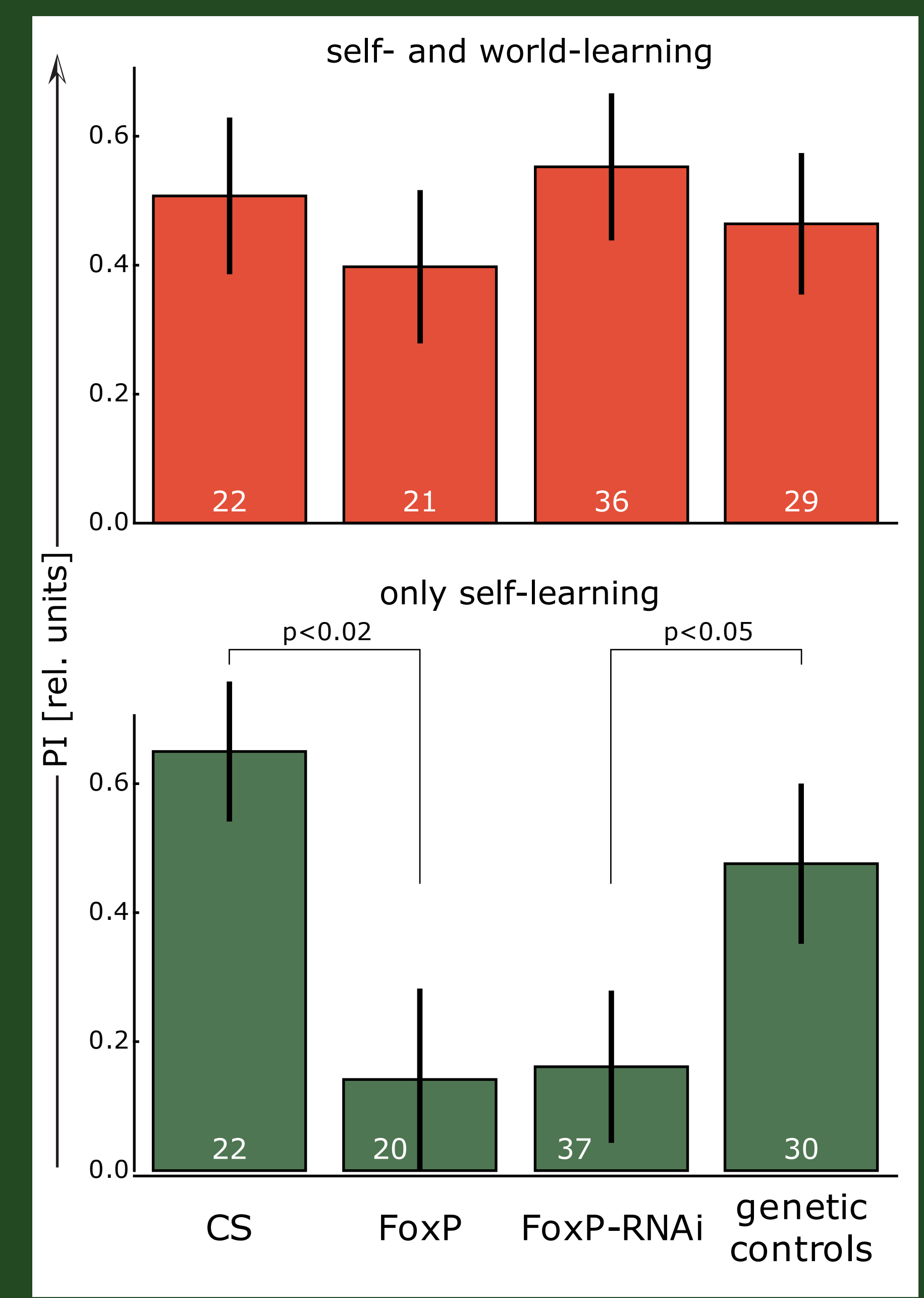


Fig. 2: FoxP function dissociates between self- and world-learning. Canton S and genetic control lines perform well in both learning situations, whereas a FoxP mutant line and a FoxP RNAi line show significantly reduced learning scores specifically in the self-learning task.

3. Screening PKC isoforms Mutants

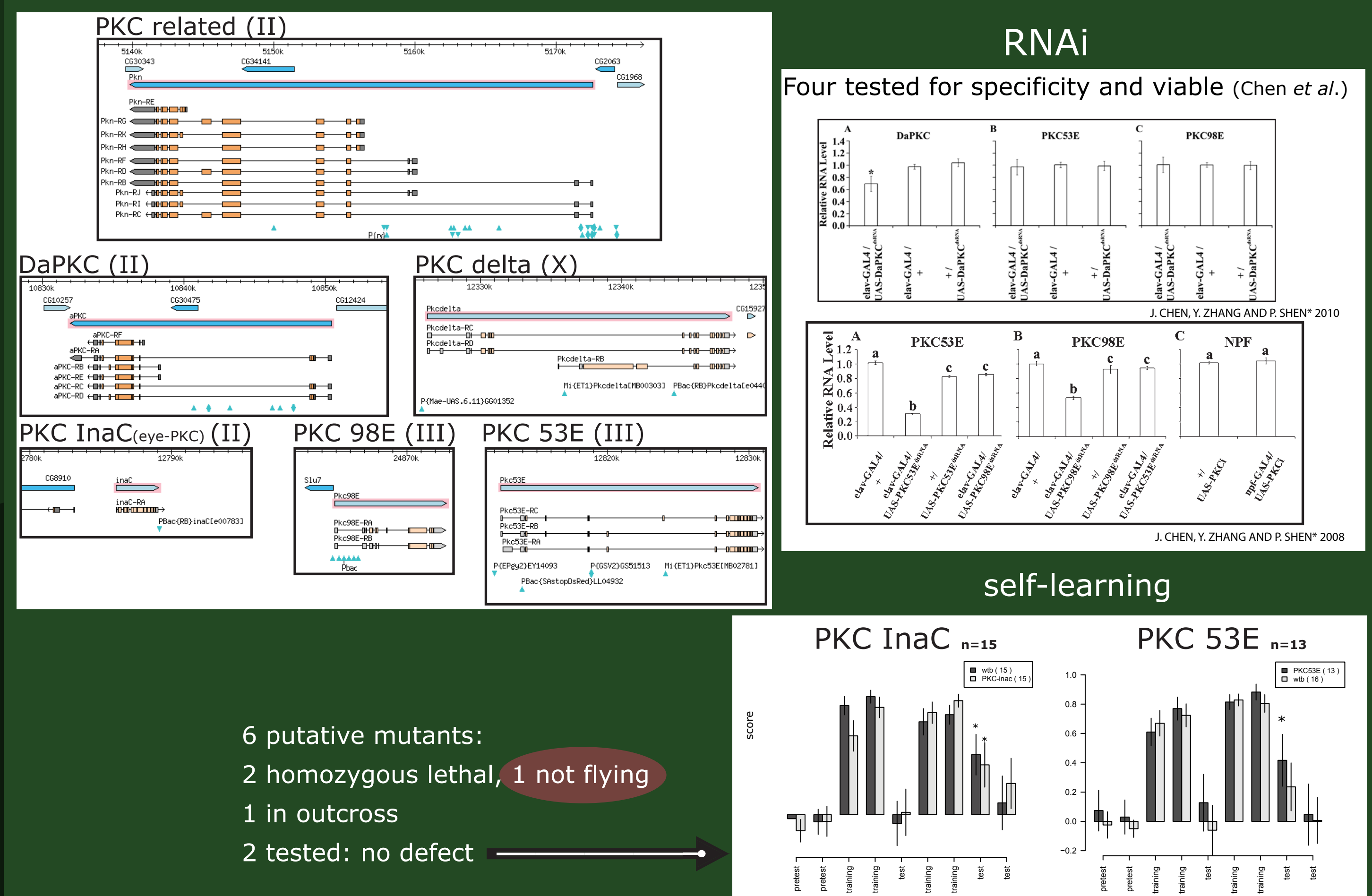


Fig. 3: We are currently in the process of screening various mutant and RNAi lines affecting different PKC isoforms. Two viable, flying mutant lines have been tested in self-learning and are not impaired.

4. FoxP is not transcribed in the mutant line

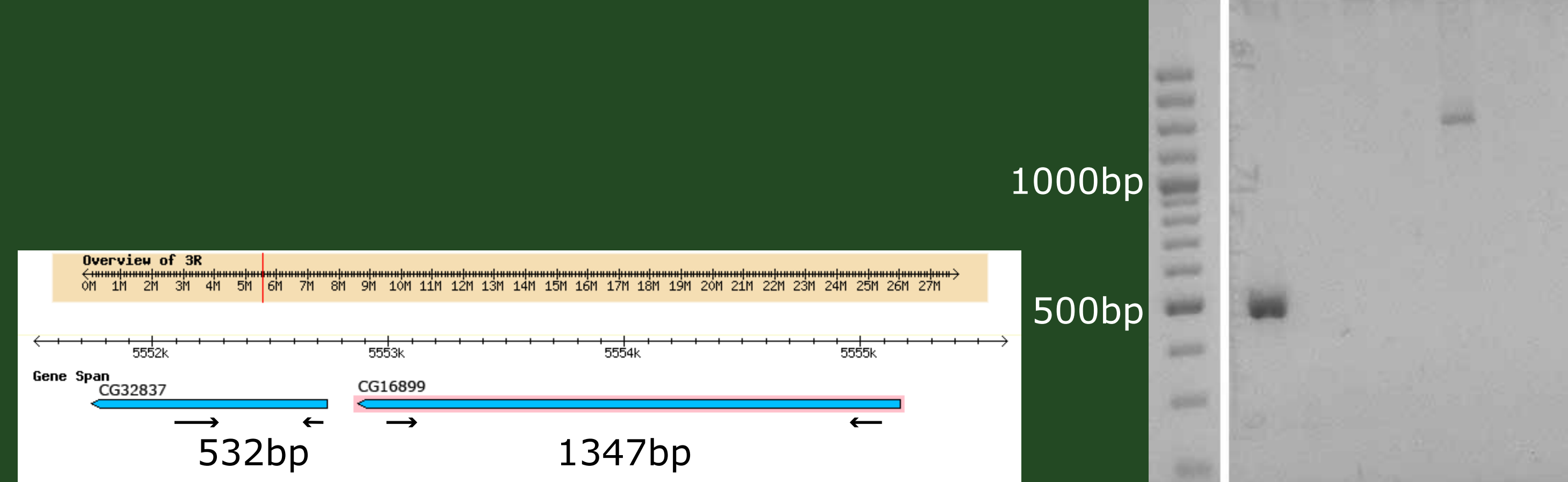


Fig. 4: Primer pairs directed against each of the two FoxP isoforms (left) do not lead to any amplificate in the FoxP mutant line.