



Phenotyping developments

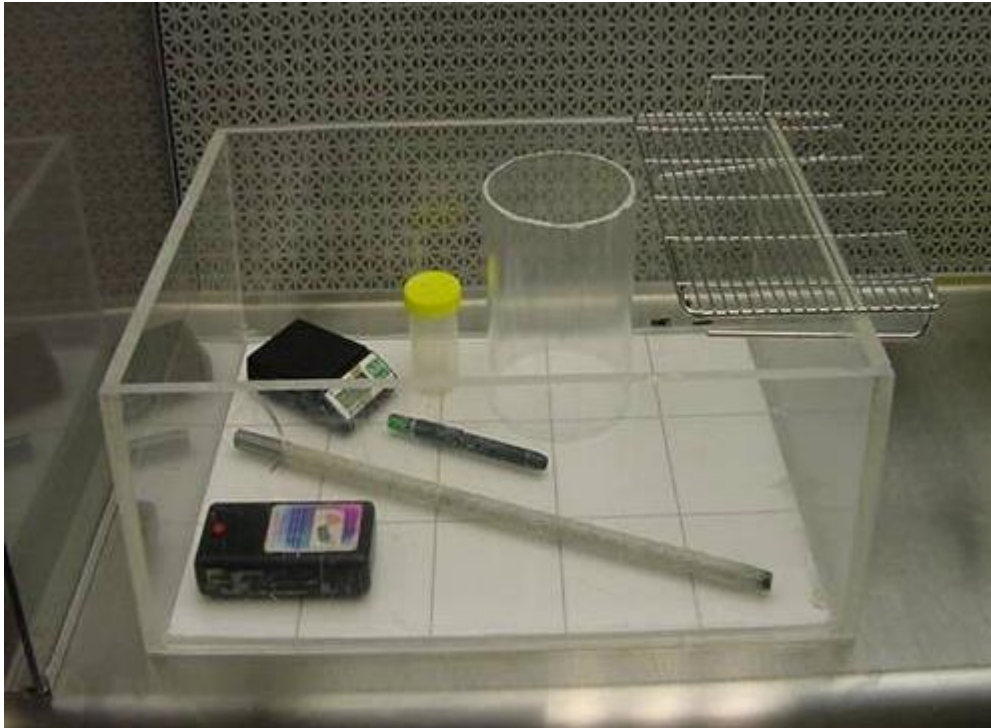
In-vivo

Metabolism - ECHO-MRI



- Allows measurement of fat mass, lean mass and water content
- Fast – less than 60s per mouse
- Does not require anaesthetic
- Currently added to the pipeline at Harwell in the same week as calorimetry

Neurobehaviour - Second SHIRPA



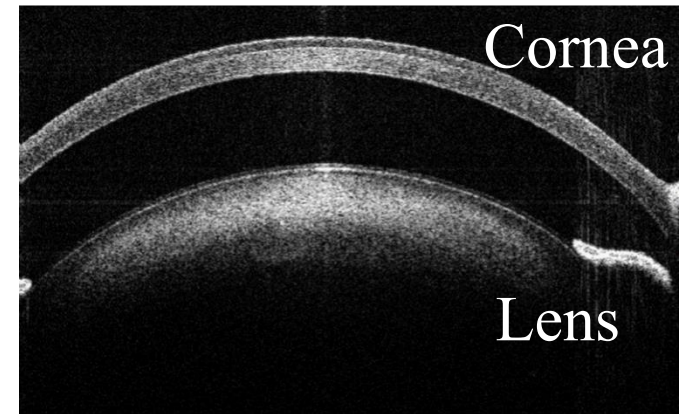
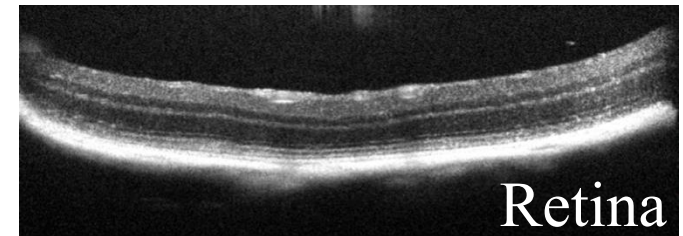
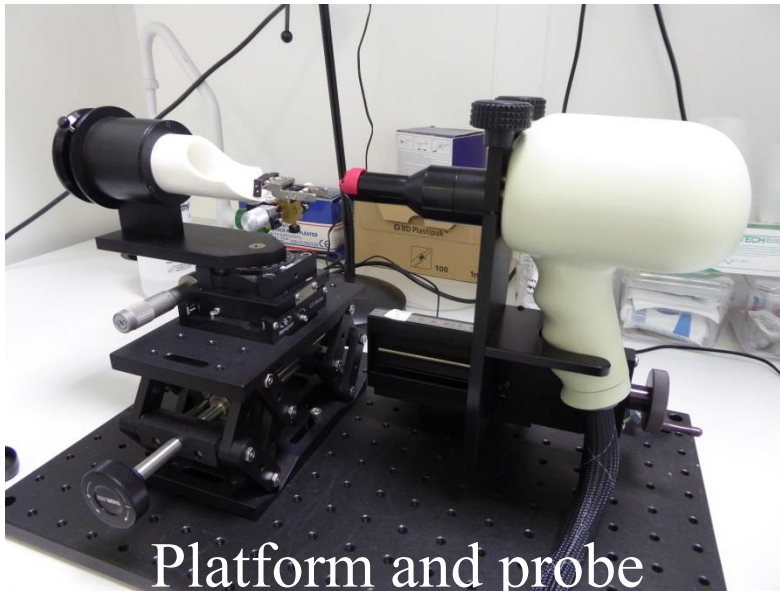
- A second SHIRPA at a later stage in the pipeline – 15 weeks
- Allow us to identify late onset or progressive phenotypes
- Currently carried out on lines with phenotypes in certain parameters at first SHIRPA, e.g. tremor, abnormal gait, limb grasp

Eyes - Optical coherence tomography



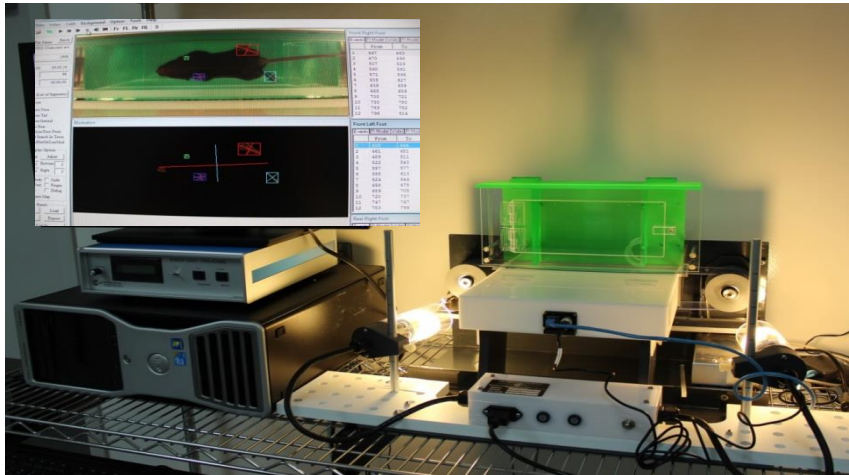
Eye imaging in live mice
10 minutes per mouse
Requires anaesthetic

Detailed images of the retina,
cornea, lens and fundus



Doppler function allows
measurement of blood flow in
retinal vessels

Motor function - Gait analysis



Automated Gait analysis

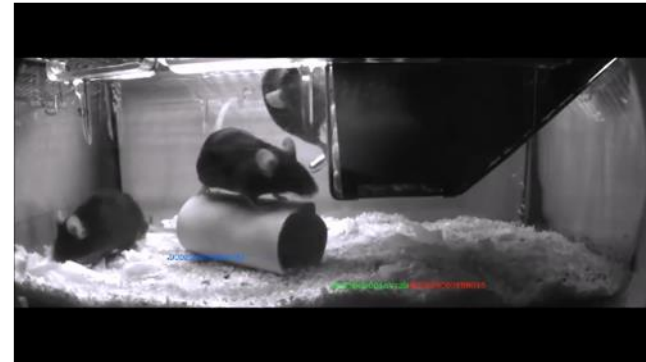
Detailed analysis of many gait parameters e.g. stride length, swing, angle etc.

- Time consuming analysis
- Currently carried out on lines that show gait abnormalities in SHIRPA

Mouse behaviour – in cage monitoring



High resolution cameras and advanced computer processing



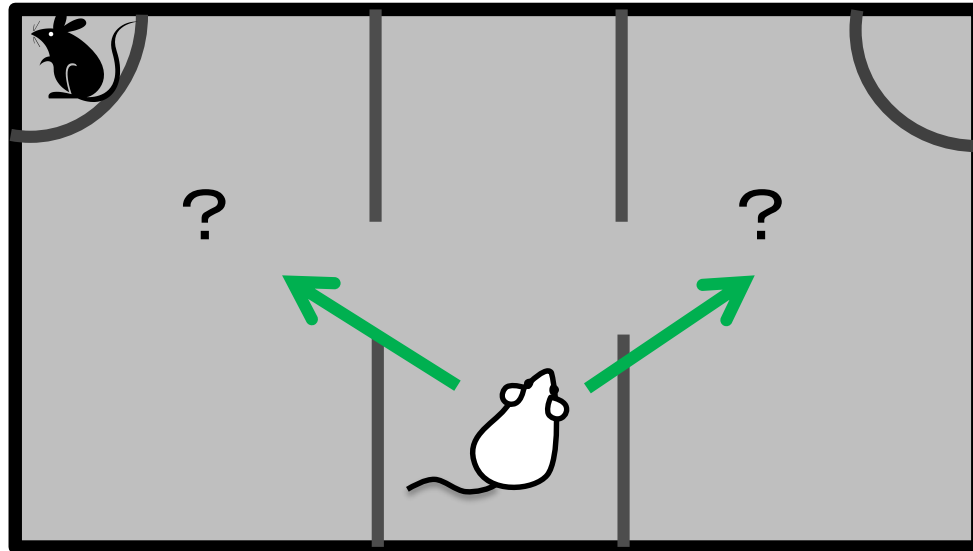
Behaviours currently annotated

- Rearing
- Climbing
- Locomotor activity
- Grooming
- Aggression
- Feeding and drinking
- Play
- Mating
- Aggression
- Disrupted sleep
- Nesting
- Social isolation

Behaviour - Social interaction



Stranger
(male mouse)



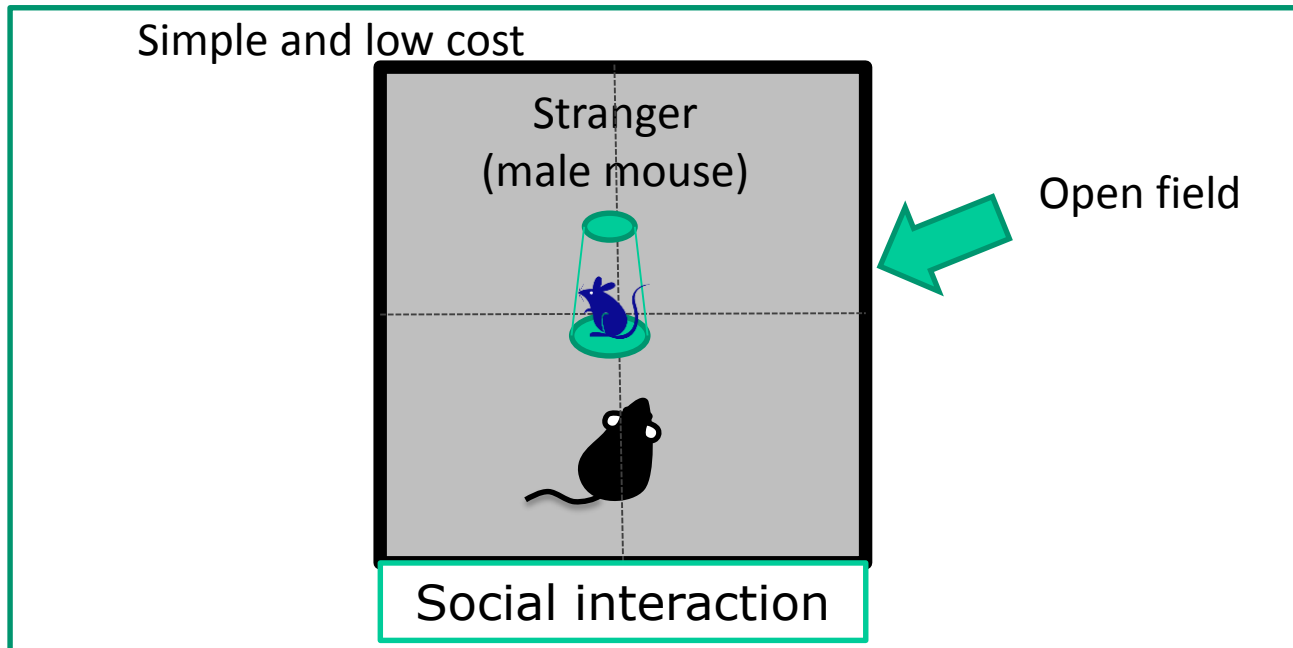
Novel object
(object recognition)
7

Decrease of social approach is observed in many psychiatric disorders including autism and schizophrenia

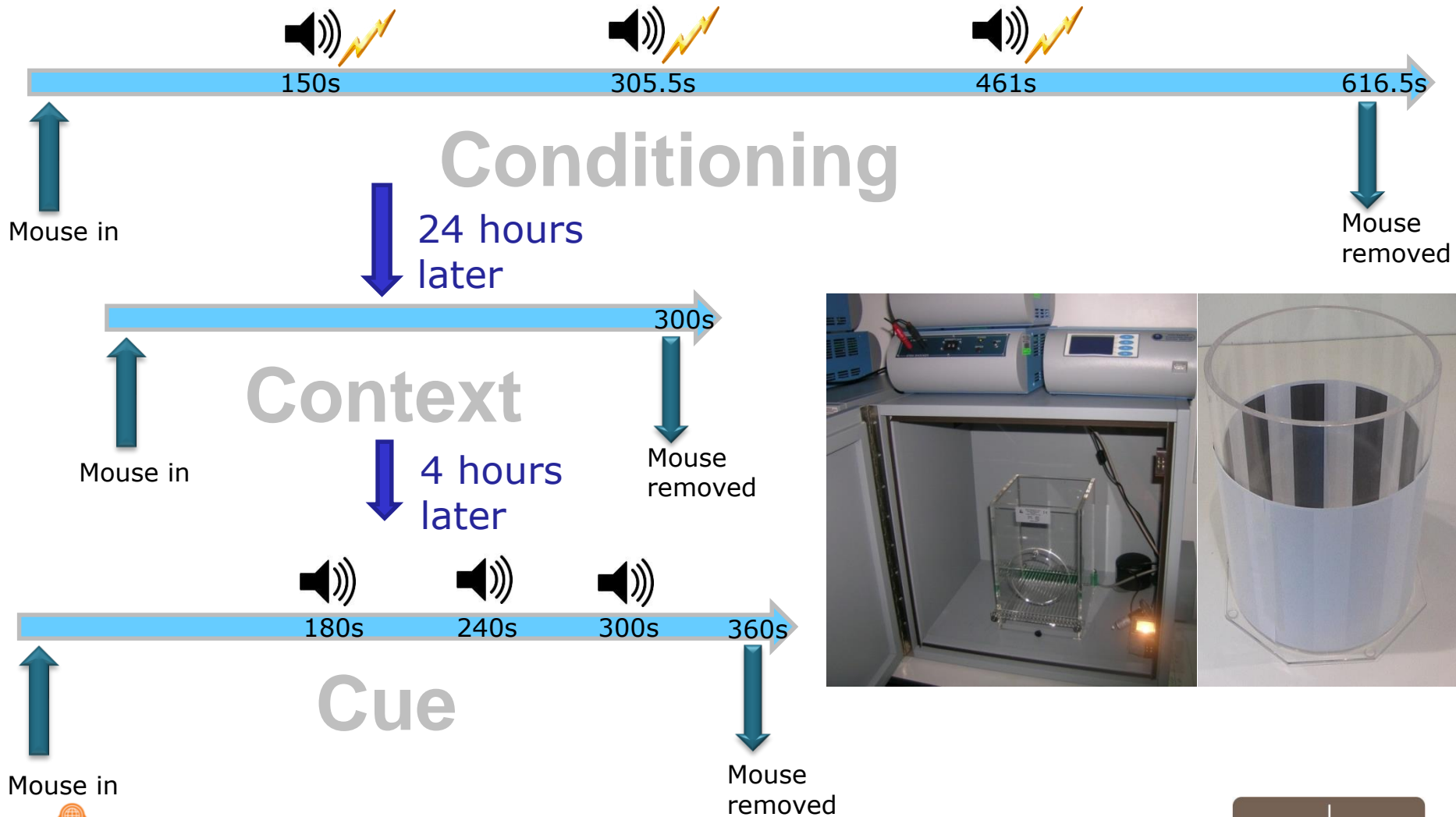
Modified Crawley Social Interaction Test



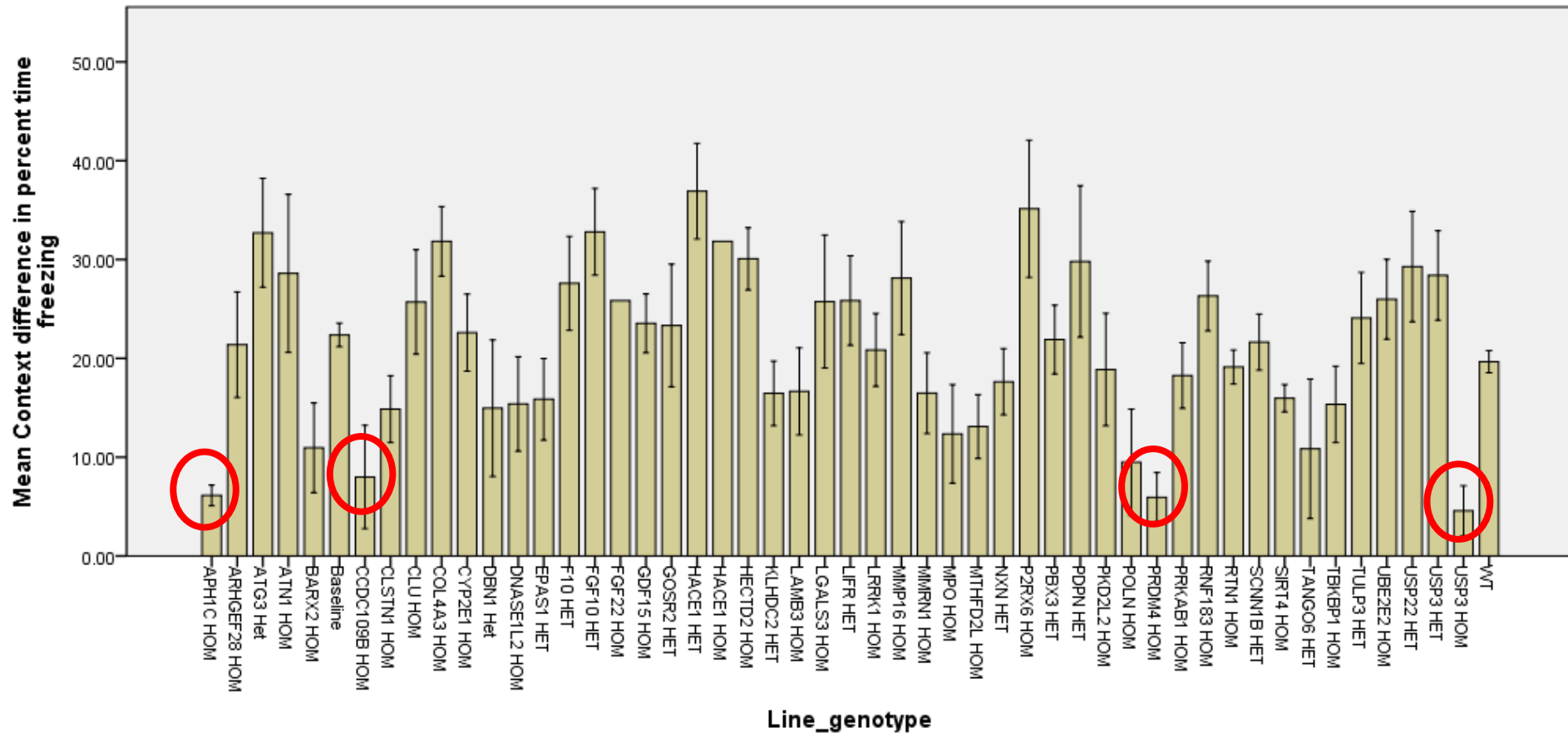
- Procedure is complicated
- →RIKEN are constructing labor-saving and low-cost procedure



Learning and memory - Fear conditioning



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Error Bars: +/- 1 SE