

Lab Meeting

February 13, 2009



(paraskavedekatriaphobia)

Spinocerebellar Ataxia 2

- Autosomal dominant
- Ataxic gait and limb movement
- Polyglutamine repeat disorder
 - Normal ~22 repeats
 - Pathological > 32 repeats

Ataxin 2

- ATXN2 gene on chromosome 12
 - Fxn? – It may be involved in protein/ protein interactions (or Ca^{++} signaling)
 - Pathology: +33 CAG repeats
 - Aggregation in the cytoplasm
 - disrupts the structure of the golgi apparatus (or Ca^{++} signaling)
 - Purkinje cell death

Animal Models



Phenotype

- Paw Clasping
- RotaRod
- Wire hanging
- Paw Print
- DigiGait



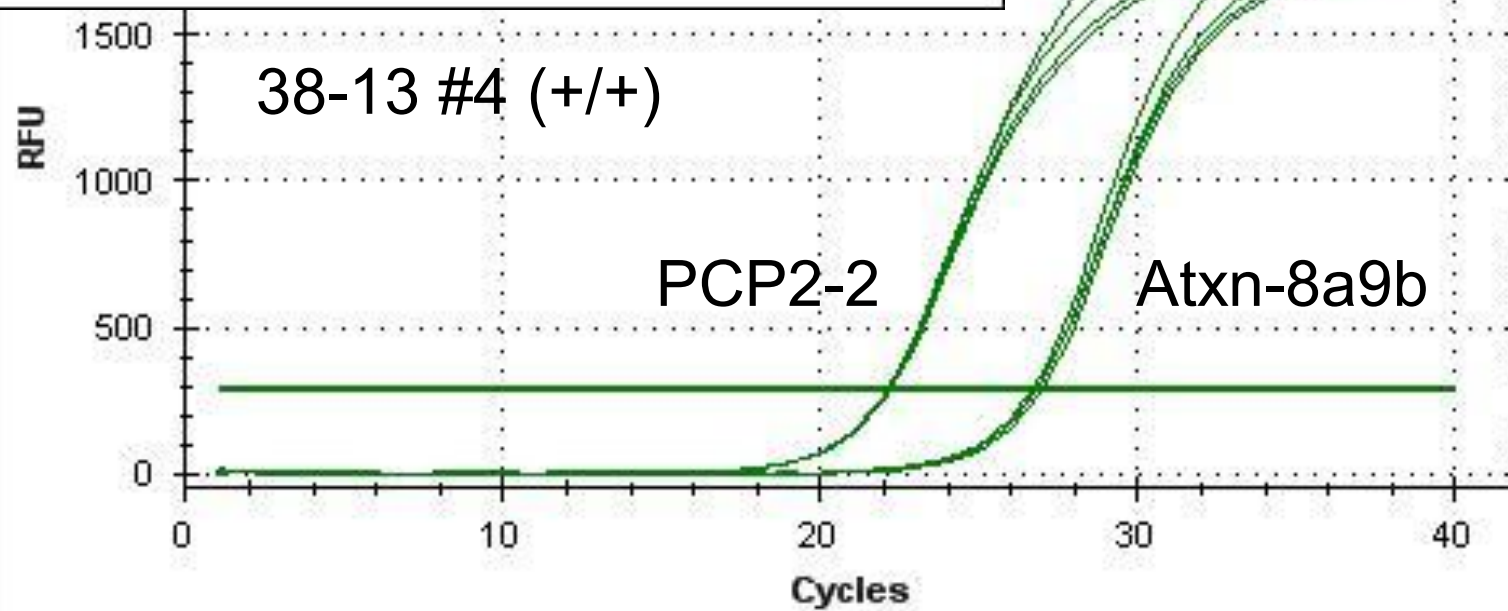
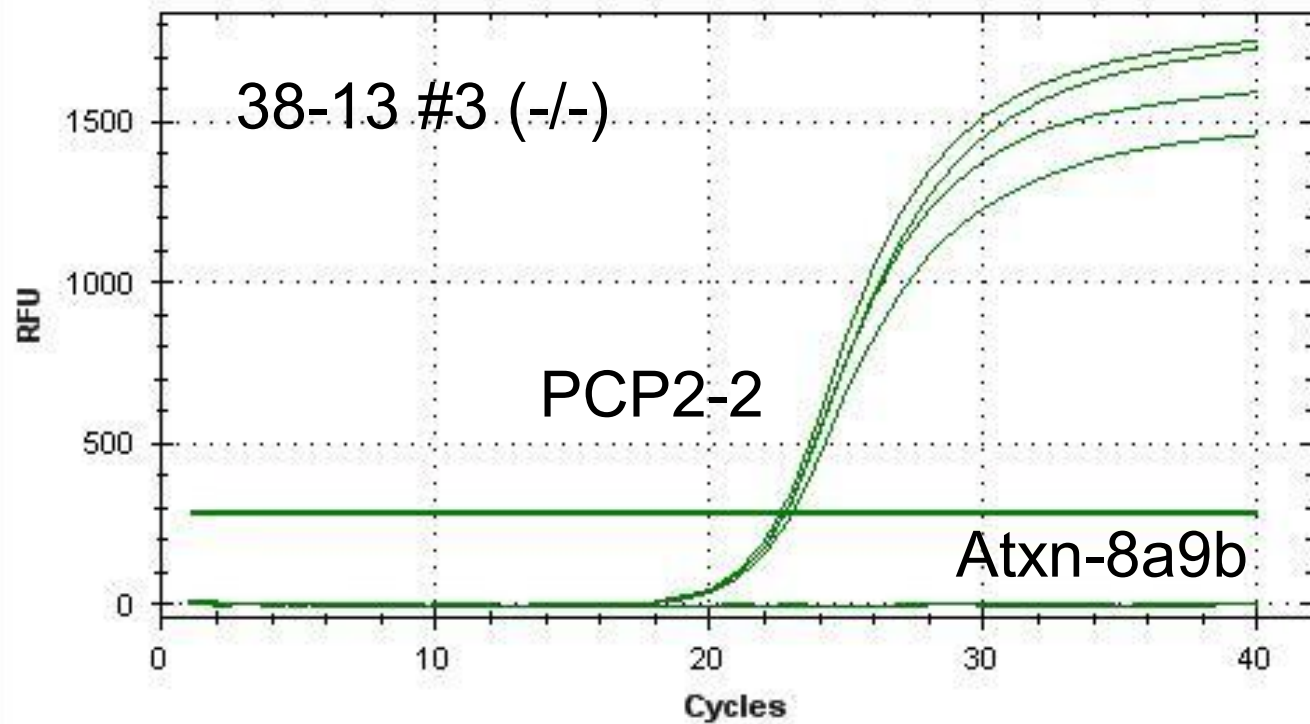
SCA2 Q127

- C57/B6 background
- 7 lines of mice expressing hQ127
 - 36-1
 - 36-4
 - 37-8
 - 38-6
 - 38-13
 - 39-12
 - 40-2

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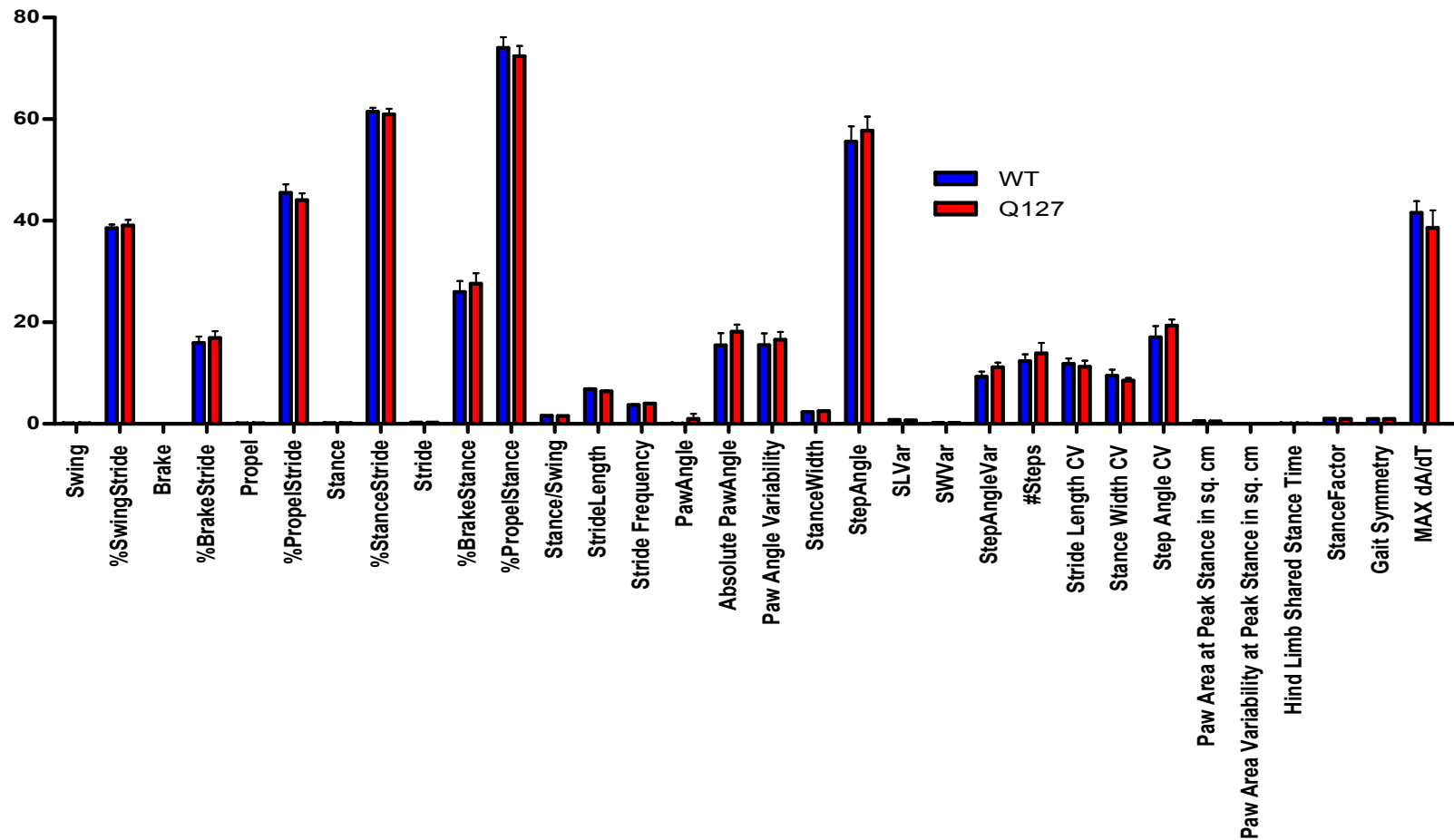
Amplification



DigiGait Methods

- All paws lightly 'inked' with red food coloring
- Mouse acclimated to chamber for 30s
 - Lights on; treadmill on 5cm/s after ~15s
 - Most mice exhibited no problem. Occasionally mouse would require extra time
- Each mouse tested at 3 speed (15, 20 & 25 cm/s) in a pseudo random fashion
- Mouse required to run in the same position for 3-5s of video at each speed

WT v. Q127 Hind Limbs @ 25cms



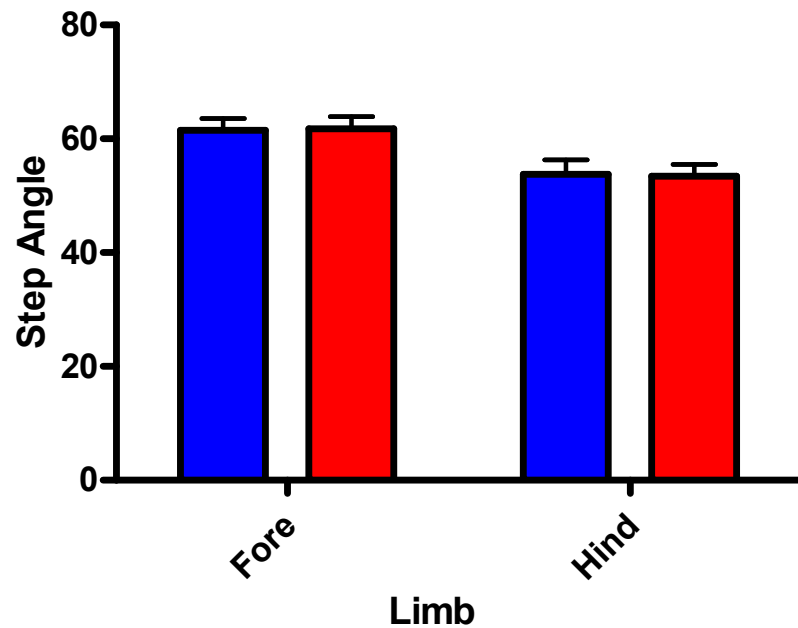
Gait Parameters

DigiGait Measure of Ataxia

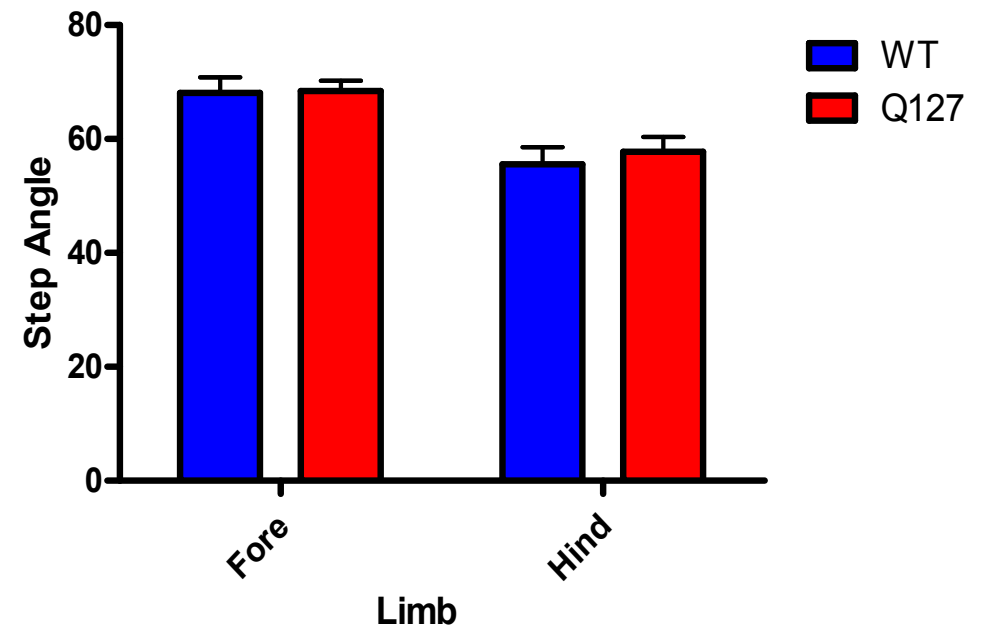
- Step Angle
 - Increase with decreasing stride
- Paw Angle
 - Decreases with speed
 - More open angle associated with Ataxia

Step Angle

36-4: 16weeks @ 25cm/ s

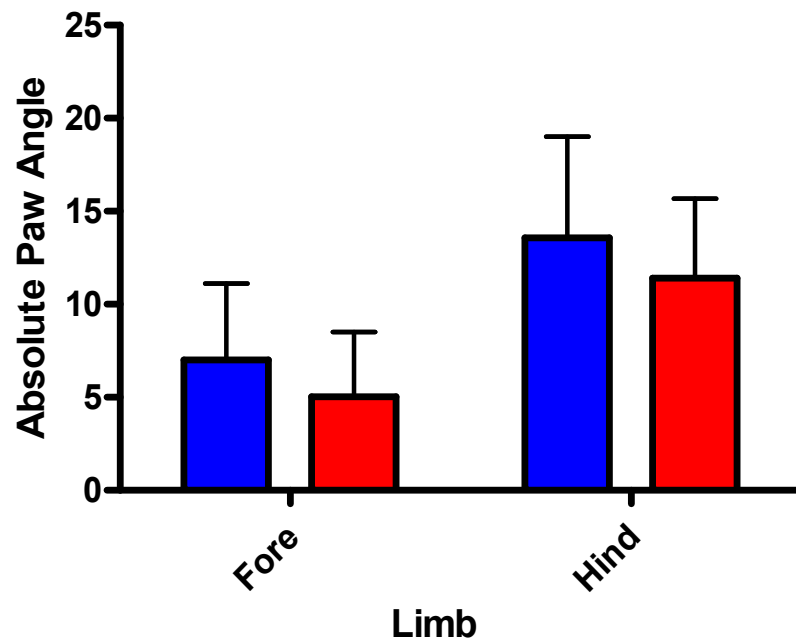


38-13: 16 weeks @ 25cm/ s

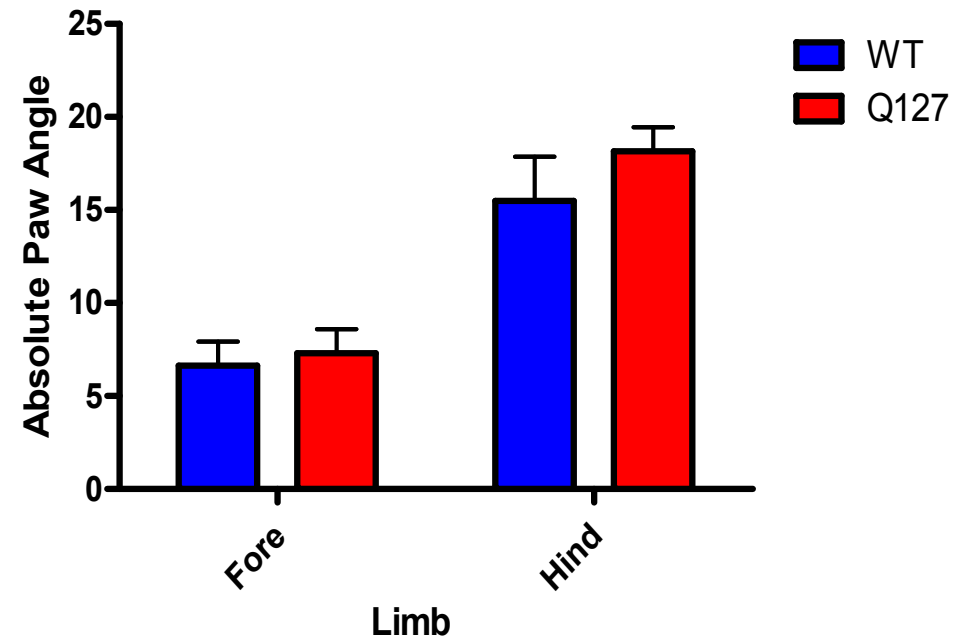


Absolute paw angle

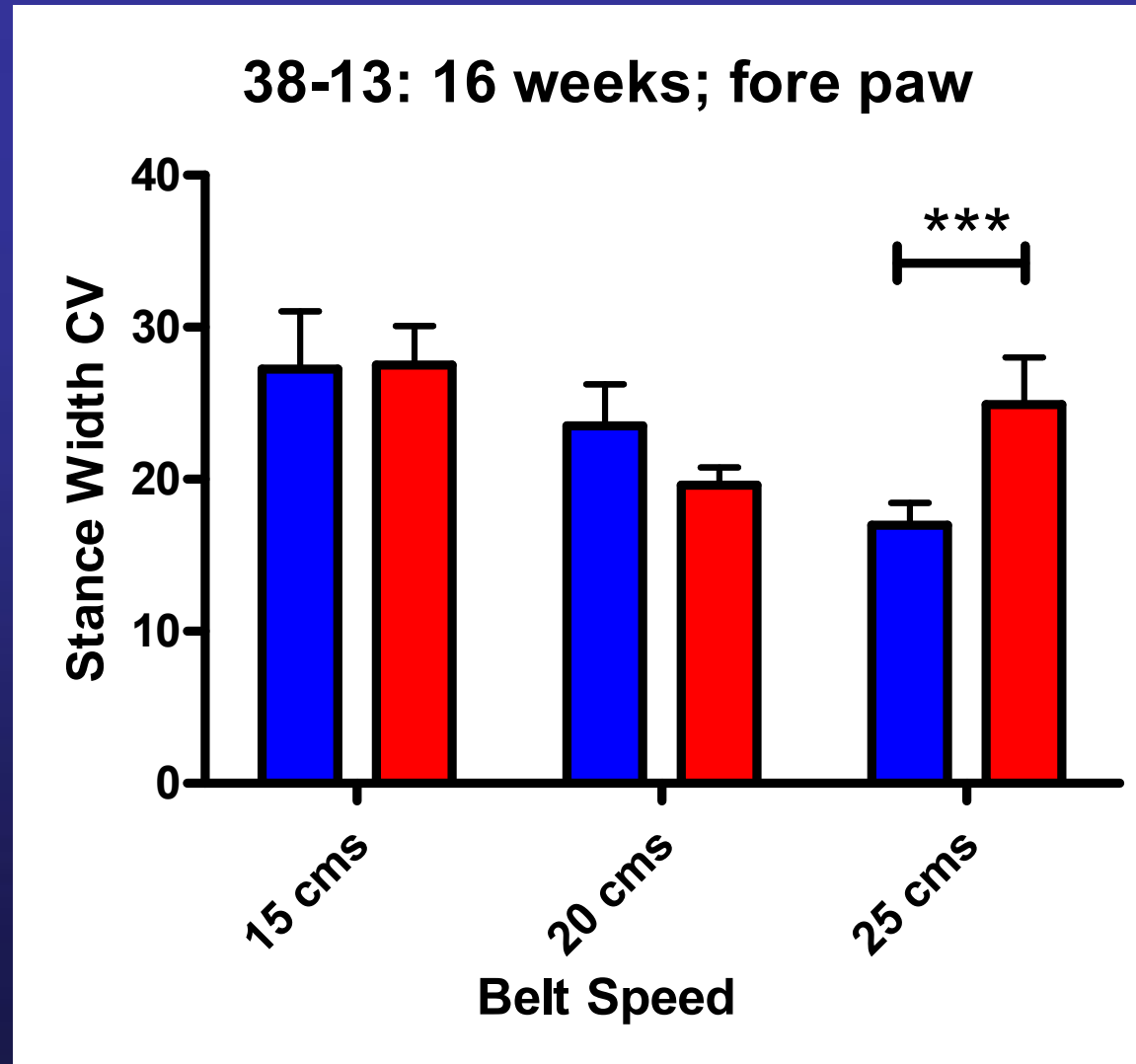
36-4: 16weeks @ 25cms



38-13: 16 weeks @ 25cm/ s



DigiGait: others...



Future

- Compare Atxn2 expression with DigiGait, RotoRod performance
- Compare lines across age