Introduction

Tourettes Syndrome is a neurological disorder, and is described by the presence of many motor ticks as well as at least one phonic tic. **What is a tic?** A tic is the uncontrollable muscle jerks and/or vocal sounds that usually occur suddenly (affected areas of the brain Fig 1). These symptoms typically begin around the age of 5 to 10, and persist into the adolescent and adult years where they become less frequent [5]. In 1885, Gilles de la Tourette, a French neurologist, first described this condition in an 86-year-old French woman, who many believed suffered from hysteria [6]. Today TS affects approximately 200,000 Americans, with males being 3-4 times more likely to show symptoms [7].

Causes

- TS may be brought on by pregnancy complications and other environmental effects.
- Recent studies have identified a gene that could be responsible.

The SLITRK1 Gene

**Location and Function**
- Located on chromosome 13q31 (seen in Fig 1).
- This gene belongs to a family that modulates dendrite outgrowth [1].

Various Conditions

- SLITRK1 has also been found to play a role in other disorders, such as Obsessive compulsive disorder (OCD) and Trichotillomania (TTM) [2].

Mutations

- A frameshift mutation has been identified in some TS patients.
- A study was conducted in mice comparing the Wild-type SLITRK1 to the SLITRK1 containing the mutation [3].

Conclusions

Cells containing the Wild-type SLITRK1, showed enhanced dendritic growth as apposed to the mutated gene. These discoveries support the association of SLITRK1 sequence variants with Tourettes syndrome [2]. Further studies will be conducted to test SLITRK1’s role in other related psychiatric illnesses [3].

References

The Geneticks of Tourettes
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The SLITRK1 Gene

Location and Function
• Located on chromosome 13q31 (seen in Fig 1).
• This gene belongs to a family that binds and regulates neurite outgrowth.
• Responsible for receiving messages from other cells [3].

Various Conditions
• SLITRK1 has also been found to play a role in other disorders, such as Obsessive compulsive disorder (OCD) and Trichotillomania (TTM) [2].

Mutations
• Mapped a de novo chromosome 13 inversion
• A frameshift mutation was identified in some TS patients
• The association of a rare 3' UTR variant that corresponded to a highly conserved miRNA binding domain [8].

Study
• They sequenced the gene in 174 individuals with TS
• 2 of 174 possessed the mutated gene, and not found in the 2148 controlled.
• Researchers then compared mice containing the Wild-type SLITRK1 to the SLITRK1 containing the mutation.
• Compared dendrite growth [5].

Conclusion
Cells containing the Wild-type SLITRK1, showed enhanced dendritic growth as opposed to the mutated gene. These discoveries support the association of SLITRK1 sequence variants with Tourette syndrome [2]. Further studies will be conducted to test SLITRK1’s role in other related psychiatric illnesses [3].

References