BASAL GANGLIA PATHWAYS ASSOCIATED WITH CLINICAL IMPROVEMENT FOLLOWING DEEP BRAIN STIMULATION FOR TOURETTE SYNDROME

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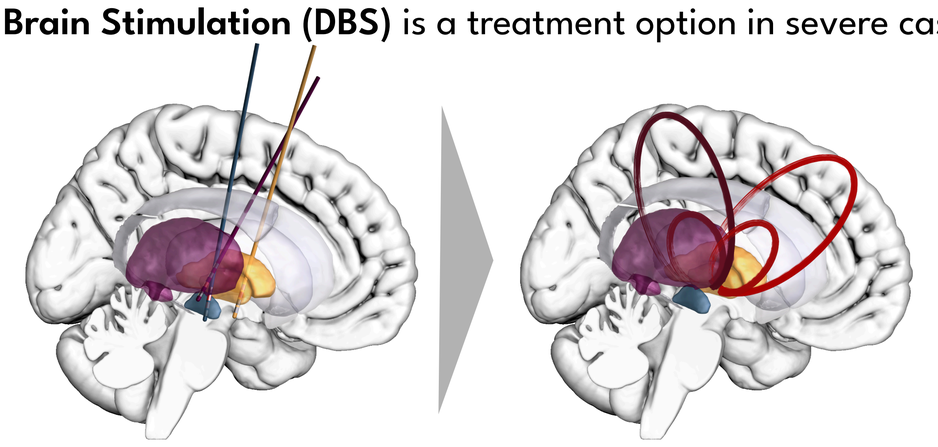
INTRODUCTION

Tourette Syndrome

- Childhood onset, characterized by motor and phonic tics[1]
- **Deep Brain Stimulation (DBS)** is a treatment option in severe cases[1]



What are the networks associated with clinical improvement for Tourette Syndrome following deep brain stimulation in thalamus, pallidum and subthalamic nucleus?

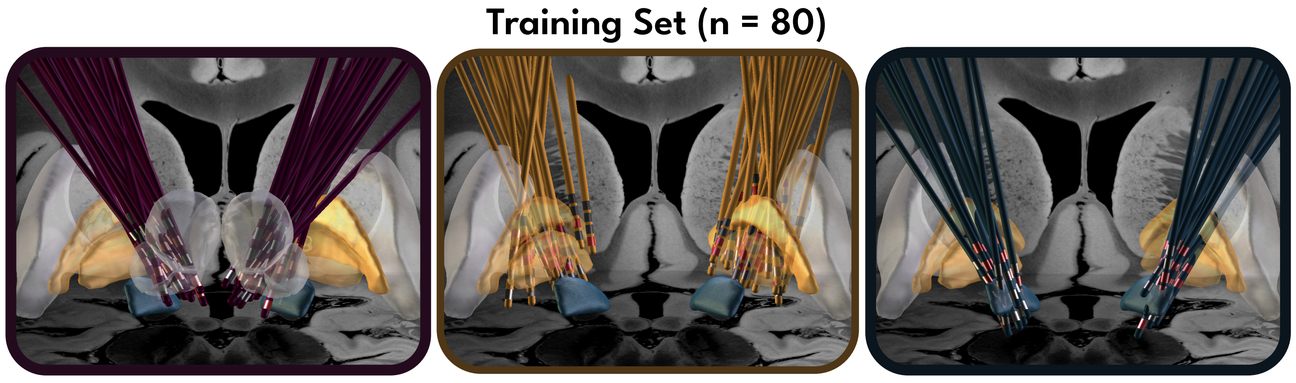
METHODS

1.

115 Tourette-DBS patients from 12 centers world-wide

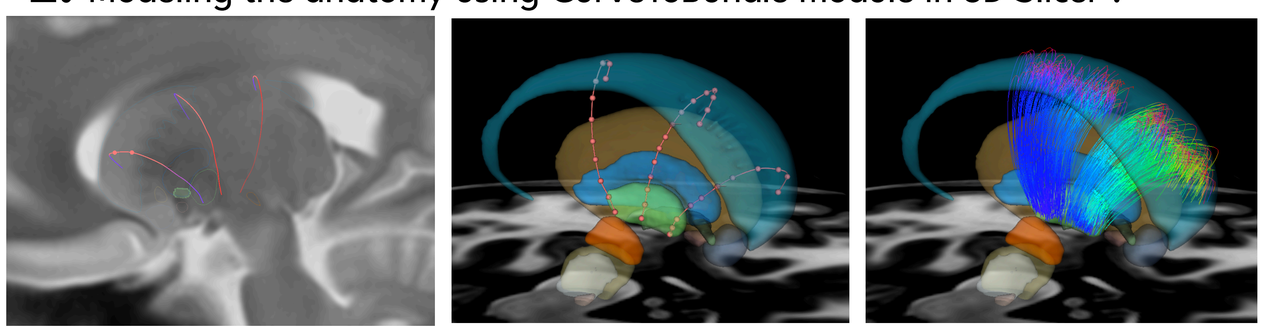
Split into training and test sets

Training Set (n = 80)



Thalamus DBS (n = 33) | Pallidum DBS (n = 33) | STN-DBS (n = 14)

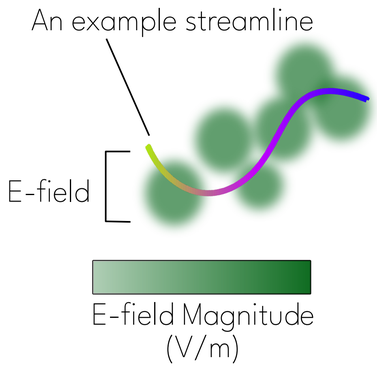
2. Modeling the anatomy using CurveToBundle module in 3D Slicer[2].



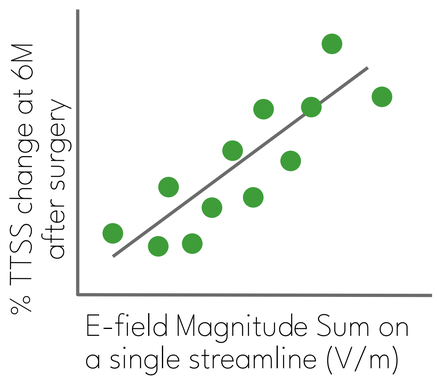
Combined with Human Basal Ganglia Pathway atlas[3]

3. Correlating the clinical outcomes with e-field magnitudes on each streamline

A

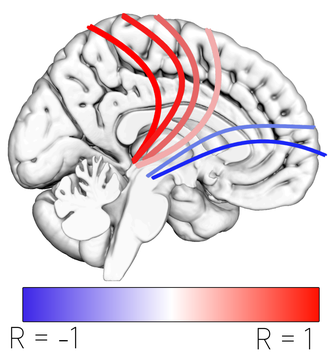


B



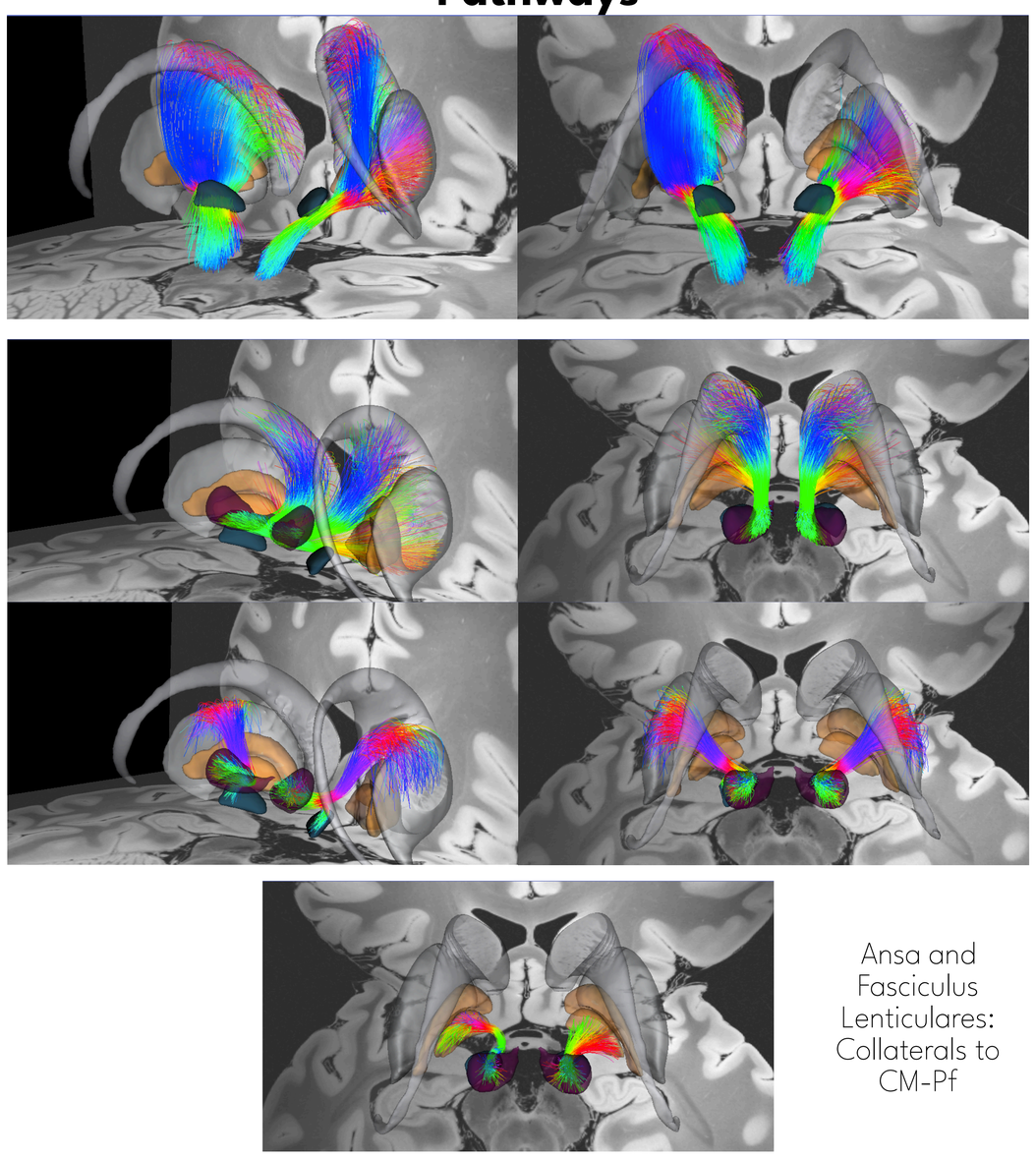
C

Each streamline is colored by the resulting R value

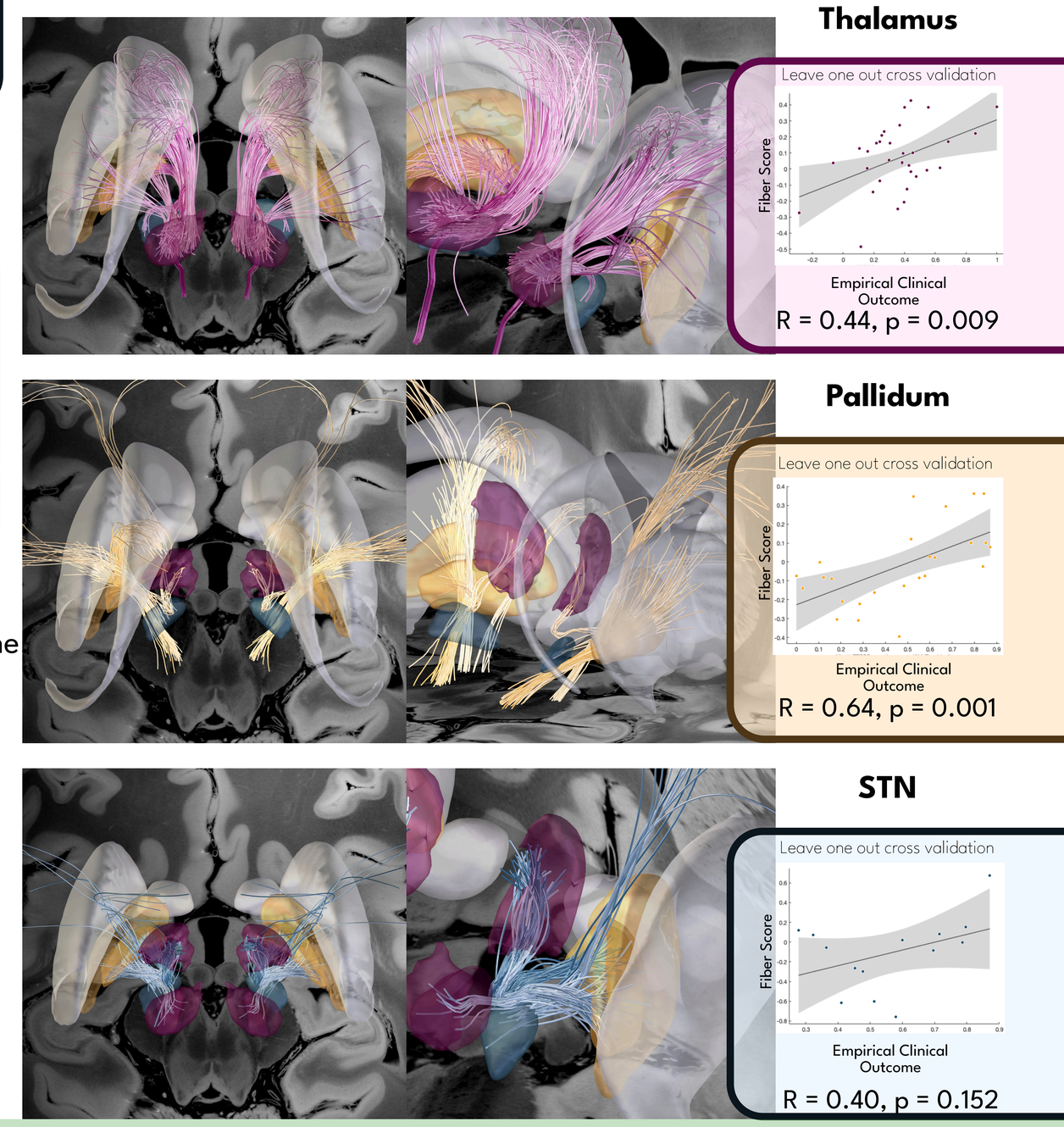


RESULTS

1. Architectonic Tract Models of Basal Ganglia Pathways



2. Basal Ganglia Pathways Associated with Clinical Improvement in Tourette Syndrome



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