

# Design of study

Work in progress

## Surgical response

“**Duration of response**” was calculated based on patient’s **surgery date** and **self-reported time of pain recurrence**. Patients with no pain recurrence were followed for a maximum of 5 years.

- “**Responder**” = Patient with  $\geq 50\%$  reduction in pain, assessed by the pain numeric ranking scale (NRS), and a score of I-III on the BNI scale.
- “**Non-responder**” = Patient with  $< 50\%$  reduction in pain, assessed by the pain numeric ranking scale (NRS), and a score of IV-V on the BNI scale.
- “**Pain recurrence**” was defined as reversion of pain to a score of IV-V on the BNI scale.

## Pain grade

Selection of **principal components** was conducted in consecutive manner (highest to lowest  $\lambda$ ) to account for a 95% threshold of cumulative explained variance.


- Statistical testing (Spearman correlations) of PCs and duration of response to determine the best ‘pain grade’.
- PC weights provided insight on important variables.

*NB!* PCA and surgical response data are independent, so there is no leaking of information about the outcome !

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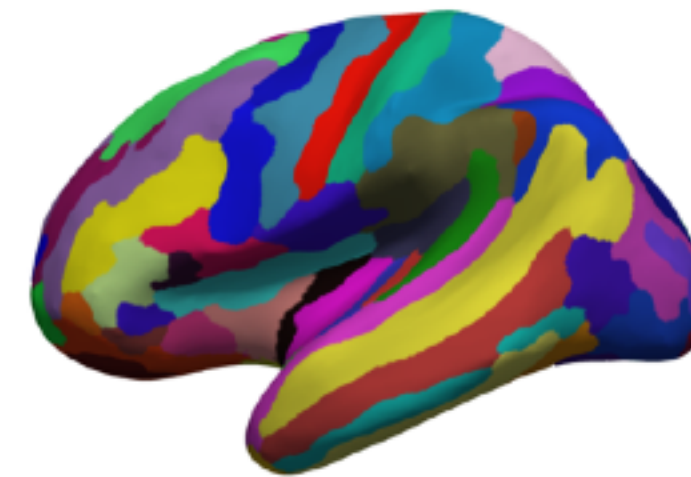
## Supervised ML classification task



86 TN subjects with  
T1 and DWI imaging

Initial diagnosis of TN

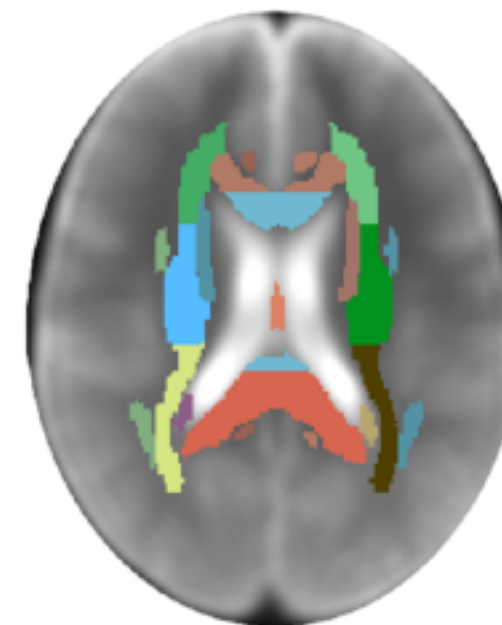
**Freesurfer recon-all (GM)**



420 T1 imaging metrics in  
Destrieux atlas parcellation

- Cortical GM
- Thalamus
- Hypothalamus
- Hippocampus
- Amygdala
- Basal Ganglia

**FSL DTI estimation (WM)**



144 regional DTI scalar  
measurements in JHU White  
matter atlas

- FA
- AD
- RD



**Duration of response**

SVM Classification task  
10-fold Cross-Validation