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Douglas
INSTITUT UNIVERSITAIRE EN SANTÉ MENTALE
MENTAL HEALTH UNIVERSITY INSTITUTE

Unique features of functional connectivity fingerprints during aging

Frédéric St-Onge

Mohammadali Javanray
Alexa Pichet Binette
Cherie Strickwerda-Brown
Jordana Remz
Bratislav Misic
Étienne Vachon-Presseau
Sylvia Villeneuve

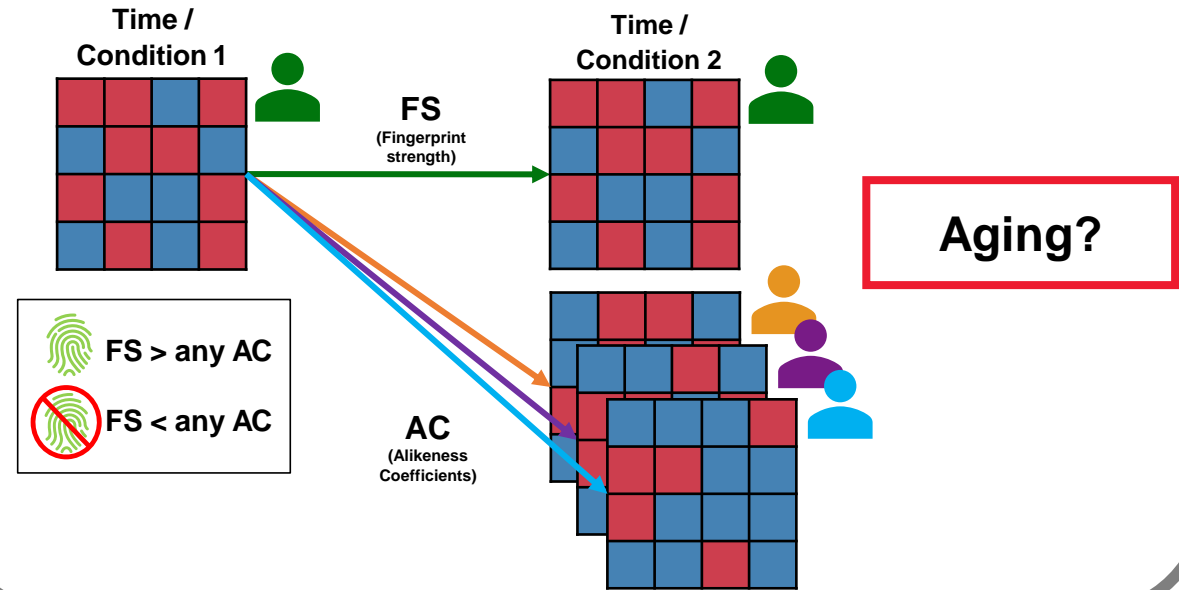frederic.st-onge@mail.mcgill.ca

@frederic_onge

Fingerprinting methodology

Time / Condition 1

Time / Condition 2

FS (Fingerprint strength)

🔖 FS > any AC

🚫 FS < any AC

AC (Alikeness Coefficients)

Aging?

Sample

CamCAN
Cambridge Centre for Ageing and Neuroscience

N ≅ 550

51% female

18-87 years (50.39 avg)

Rest – Task (n = 483)

V	75.6%
S	80.7%
L	81.2%
D A	93.2%
D M	100%
S V	69.6%
F	98.3%
W	100%

Count
0   100   200   300   400
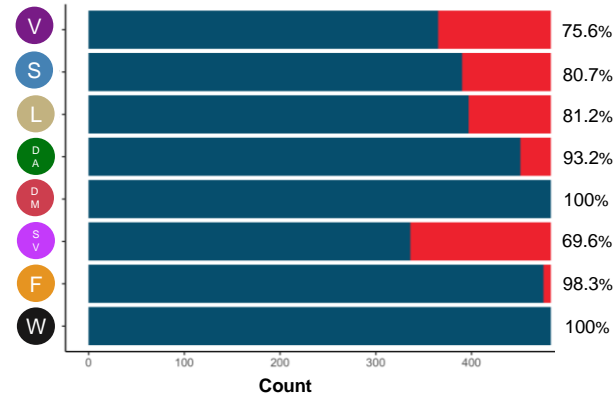
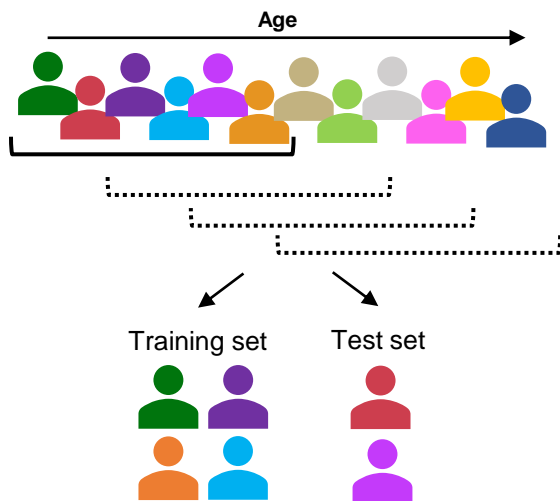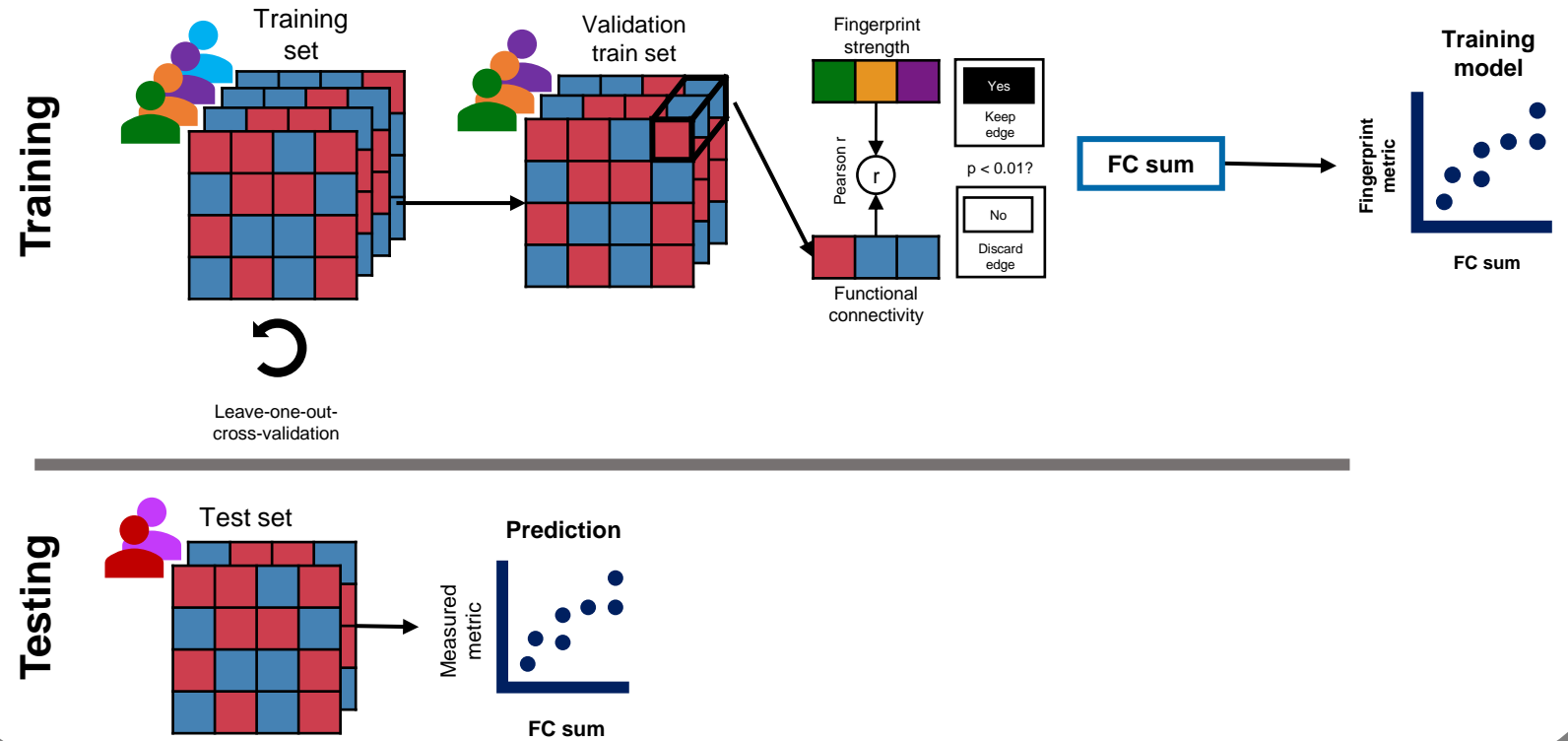**Functional connectivity patterns are highly unique during aging**

Which brain regions are unique ?
Do they change with age?

Sliding-window approach

Age

Training set Test set

Connectome predictive modelling

Training

Training set

Validation train set

Fingerprint strength

Pearson r

r

Functional connectivity

Yes
Keep edge

p < 0.01?

No
Discard edge

FC sum

Training model

Fingerprint metric

FC sum

Leave-one-out-cross-validation

Testing

Test set

Prediction

Measured metric

FC sum

Model performance

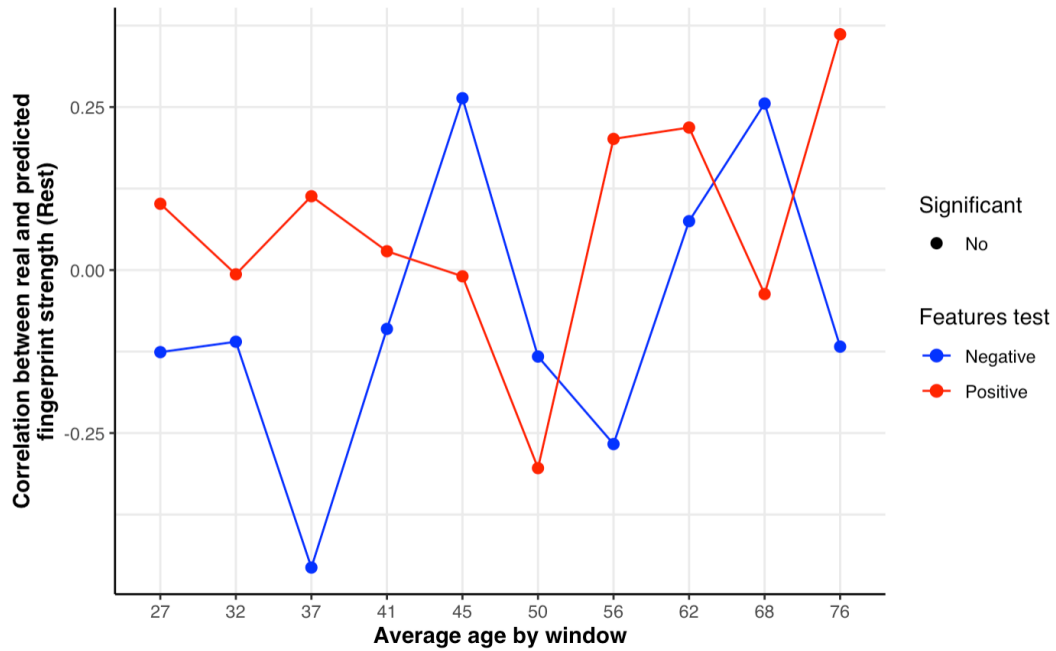## Predicted brain regions

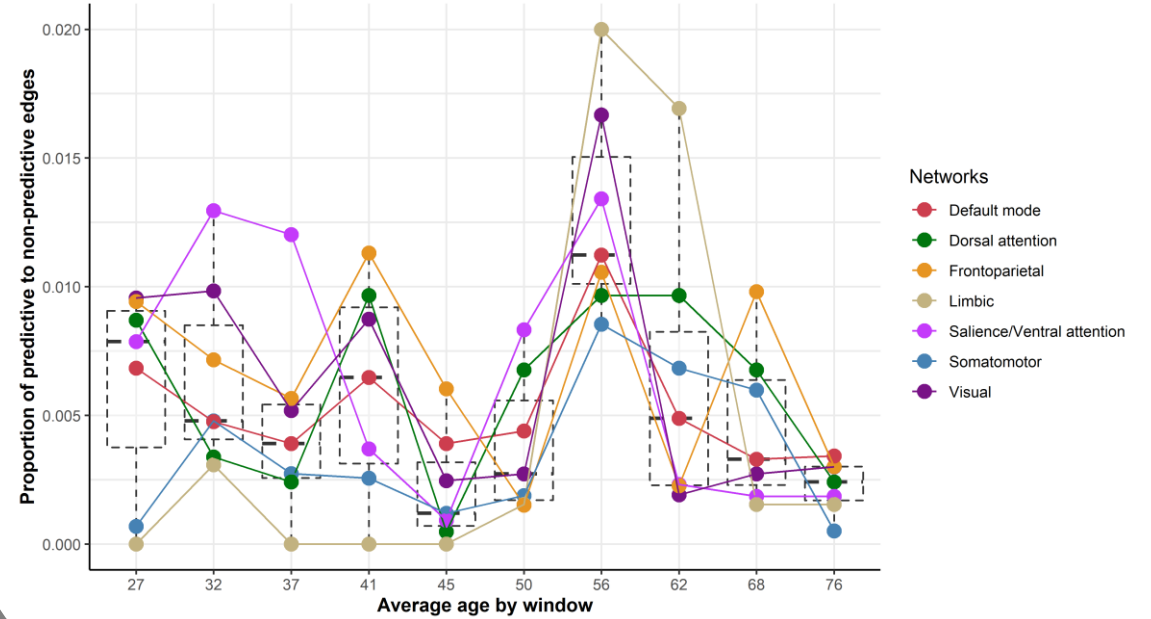frederic.st-onge@
mail.mcgill.ca

@frederic_onge

Model performance

Associated brain regions

Not only are **fingerprints unique,**
but there is **no "one-region-fits-all" that can predict fingerprints**
across individuals AND across the lifespan

frederic.st-onge@
mail.mcgill.ca

@frederic_onge