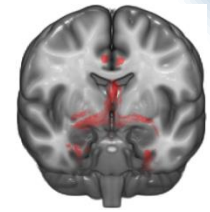
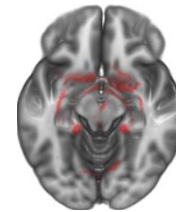


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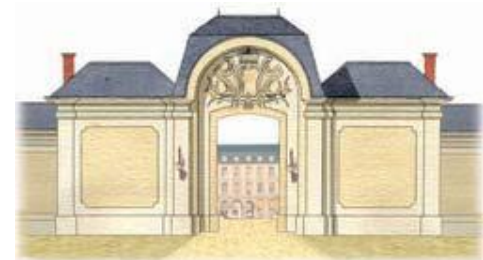
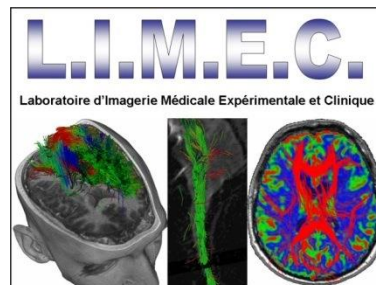
Connectomique Cérébrale Structurelle, Fonctionnelle et Effective étudiée en I.R.M.

Pr Denis Ducreux

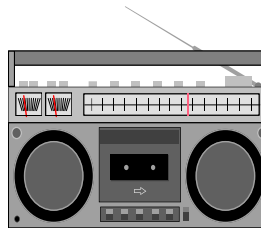
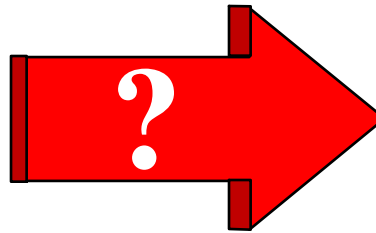
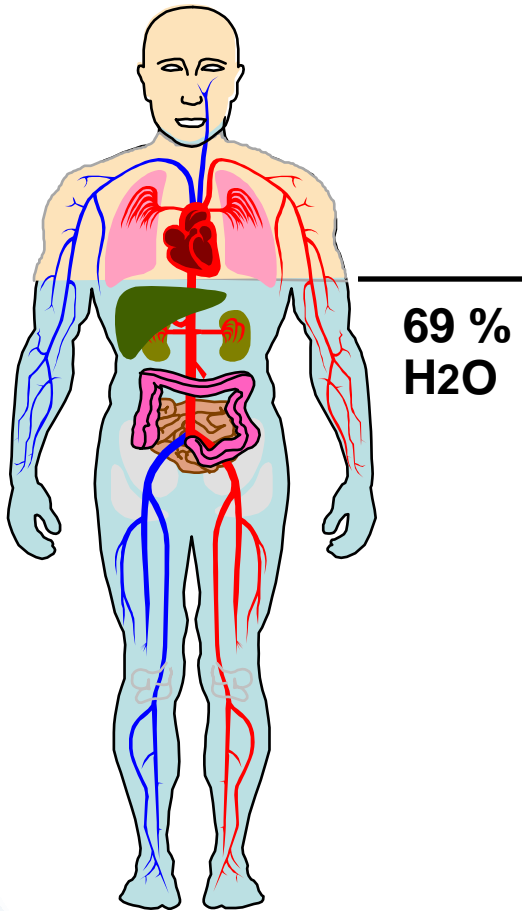
Neuroradiologie, CHU Bicetre

CNRS IR4M (UMR 8081), Université Paris 11

Hôpitaux
universitaires
Paris-Sud
Antoine-Béclère Bicêtre Paul-Brousse



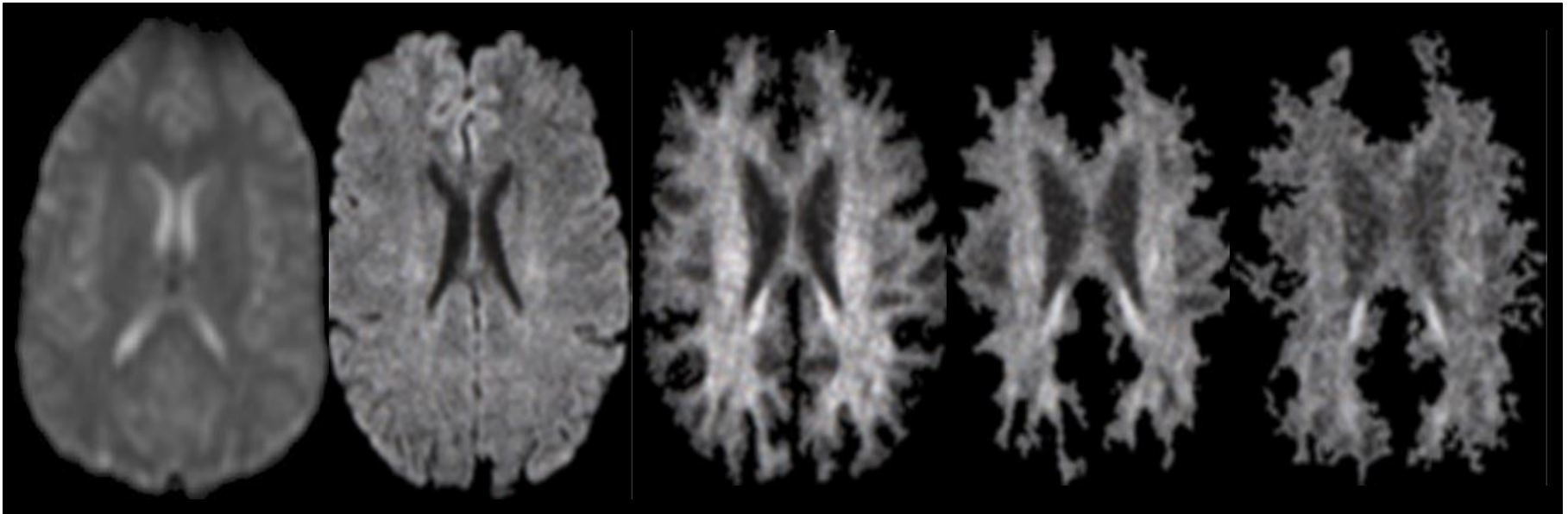
I.R.M.



IRM de Diffusion

DIFFUSION

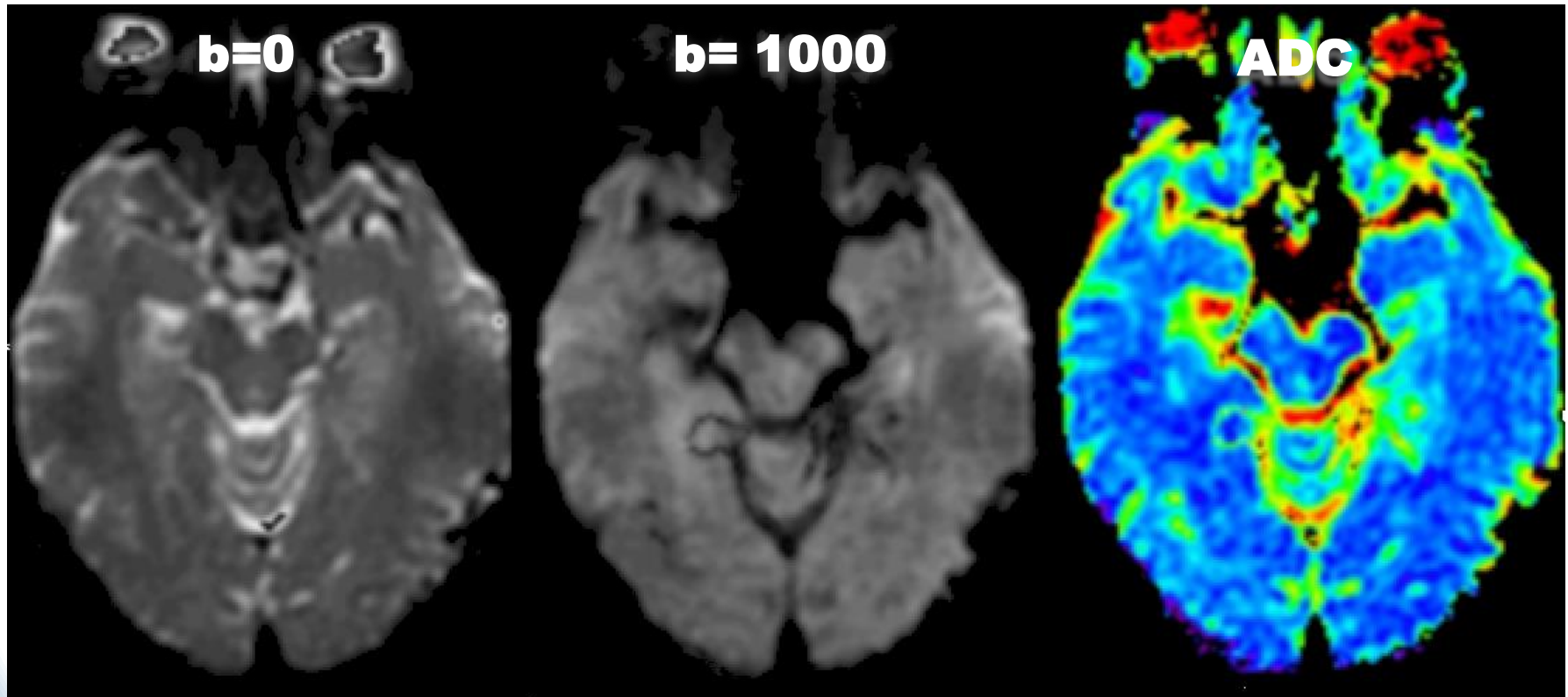
Diffusion = Imagerie d'Atténuation



T2 : $b=0$ s/mm² DWI : $b=1000$ s/mm² DWI : $b=2000$ s/mm² DWI : $b=3000$ s/mm² DWI : $b=4000$ s/mm²

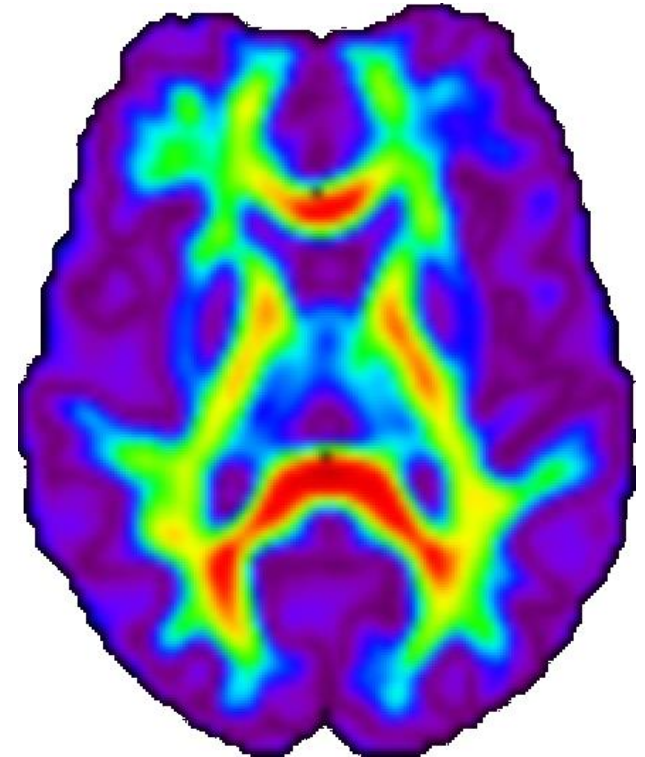
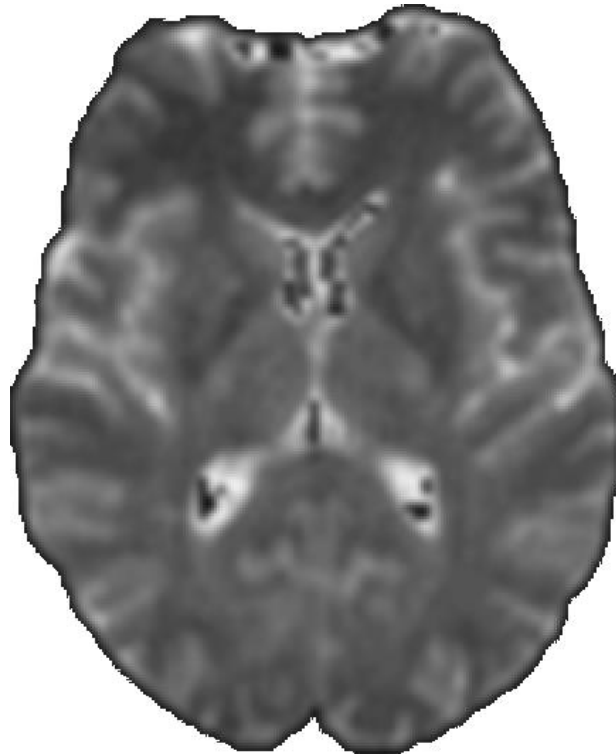
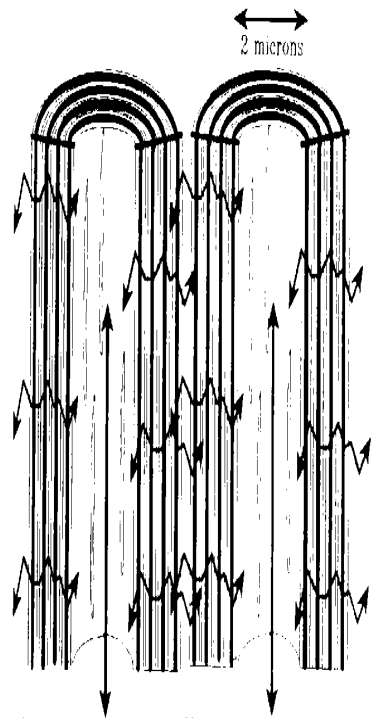
DIFFUSION

Coefficient de Diffusion Apparent

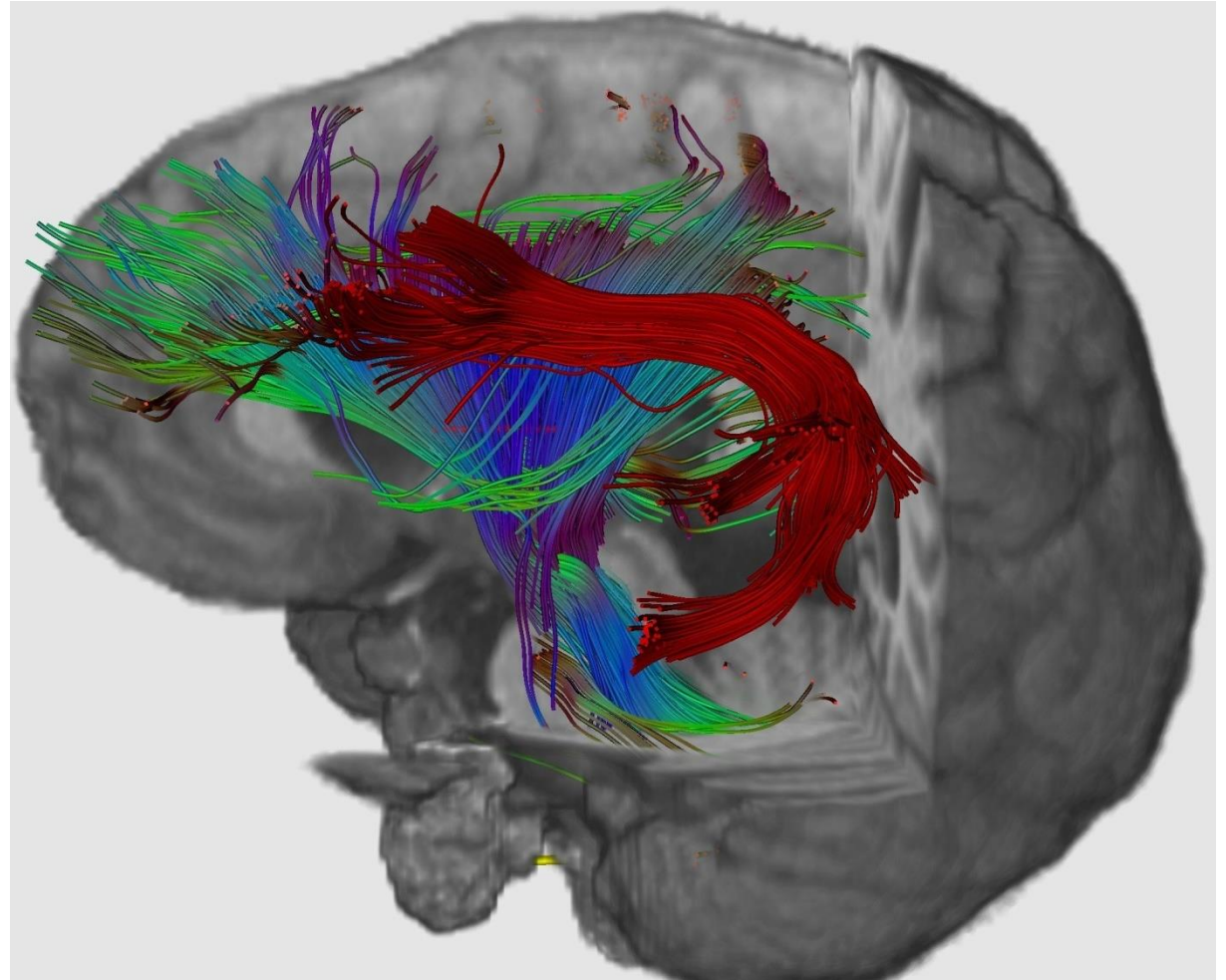
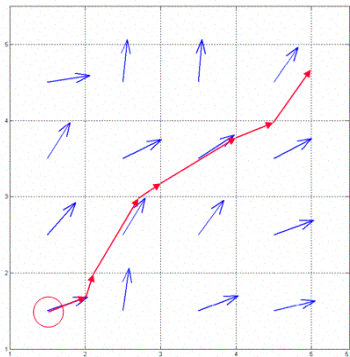
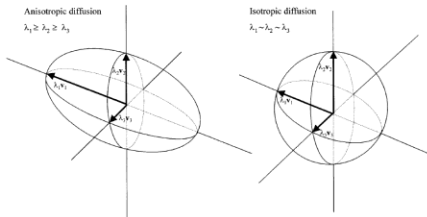
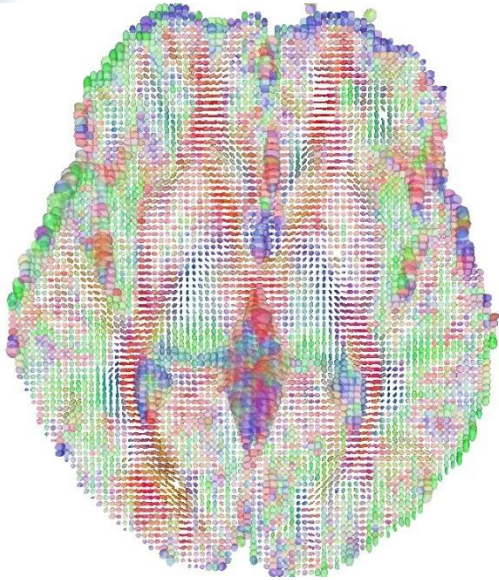


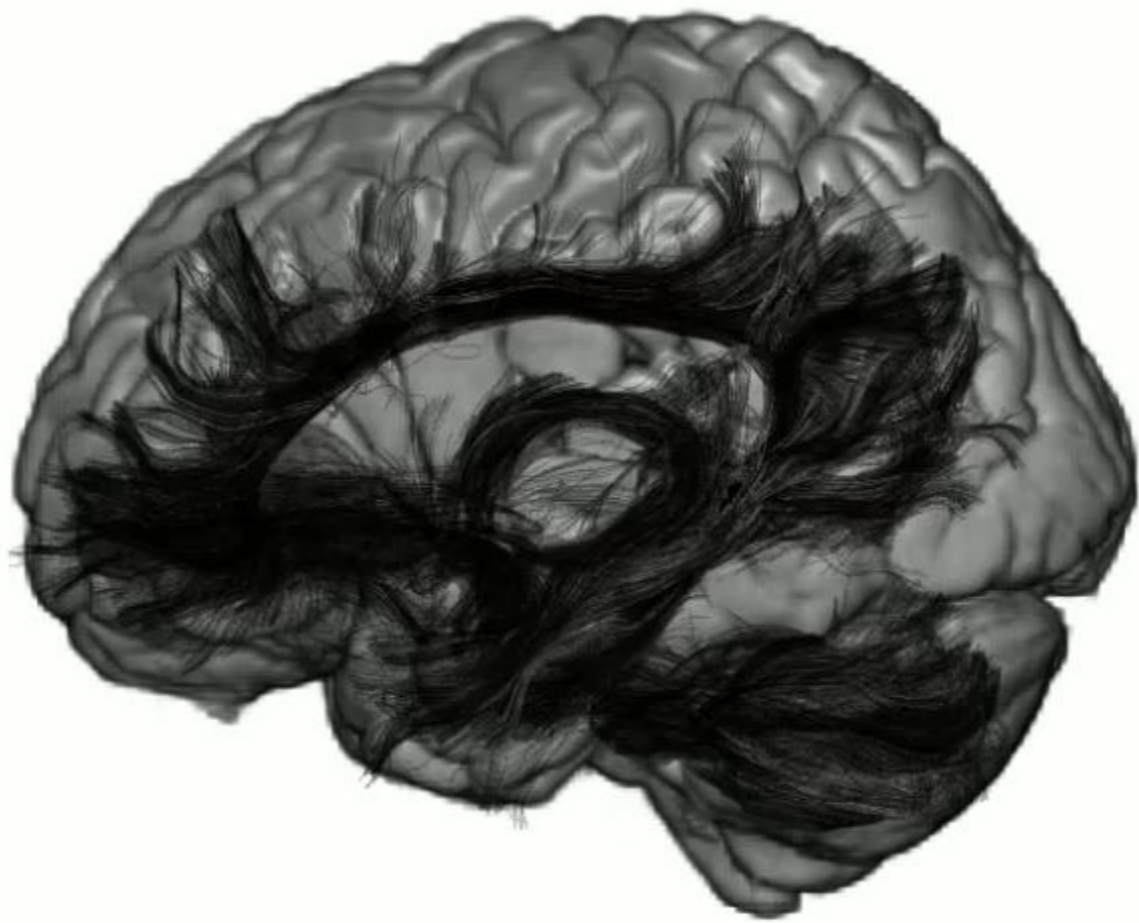
$$SA \approx e^{-b \cdot ADC} = e^{-\gamma^2 G^2 \delta^2 (\Delta - \delta/3) ADC}$$

Tenseur de Diffusion



Tractographie

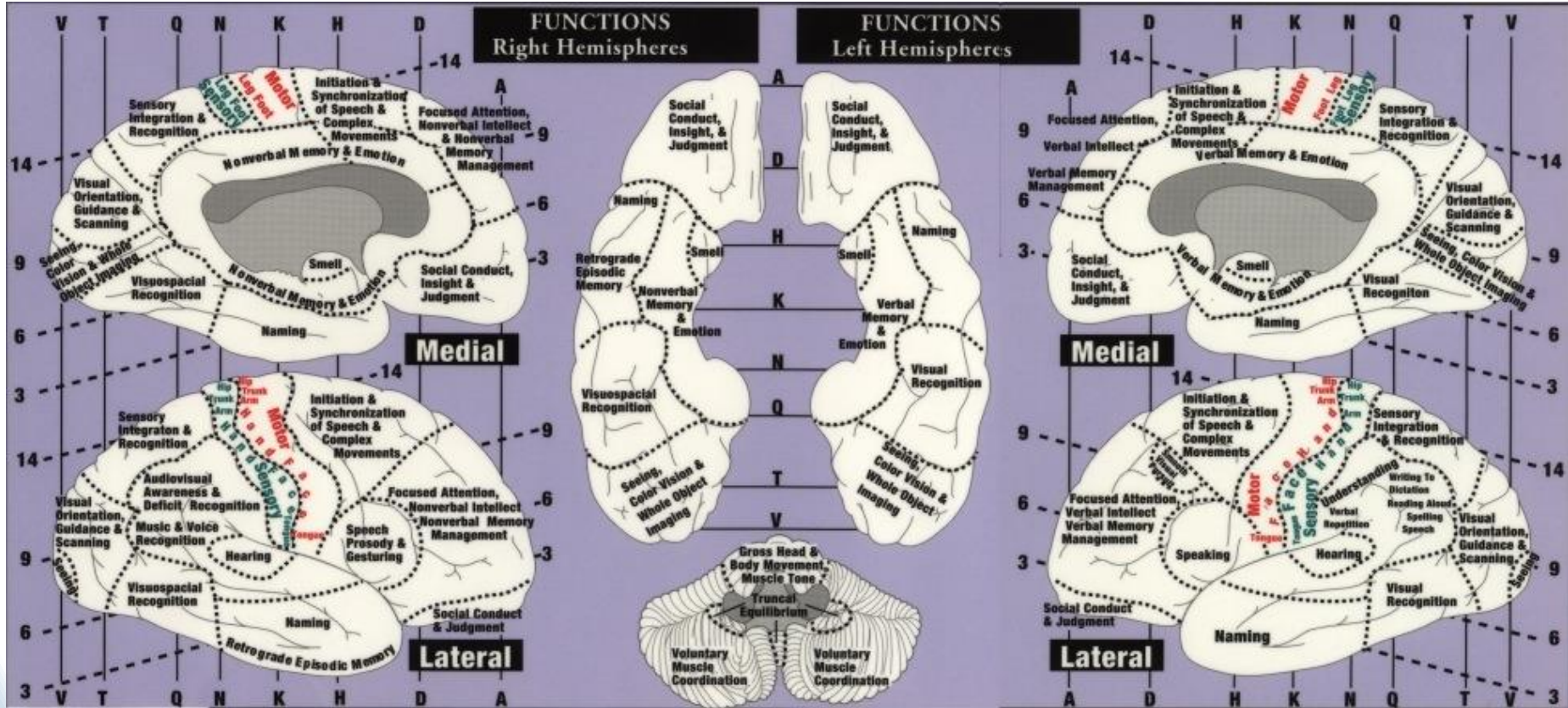




IRM d'Activation

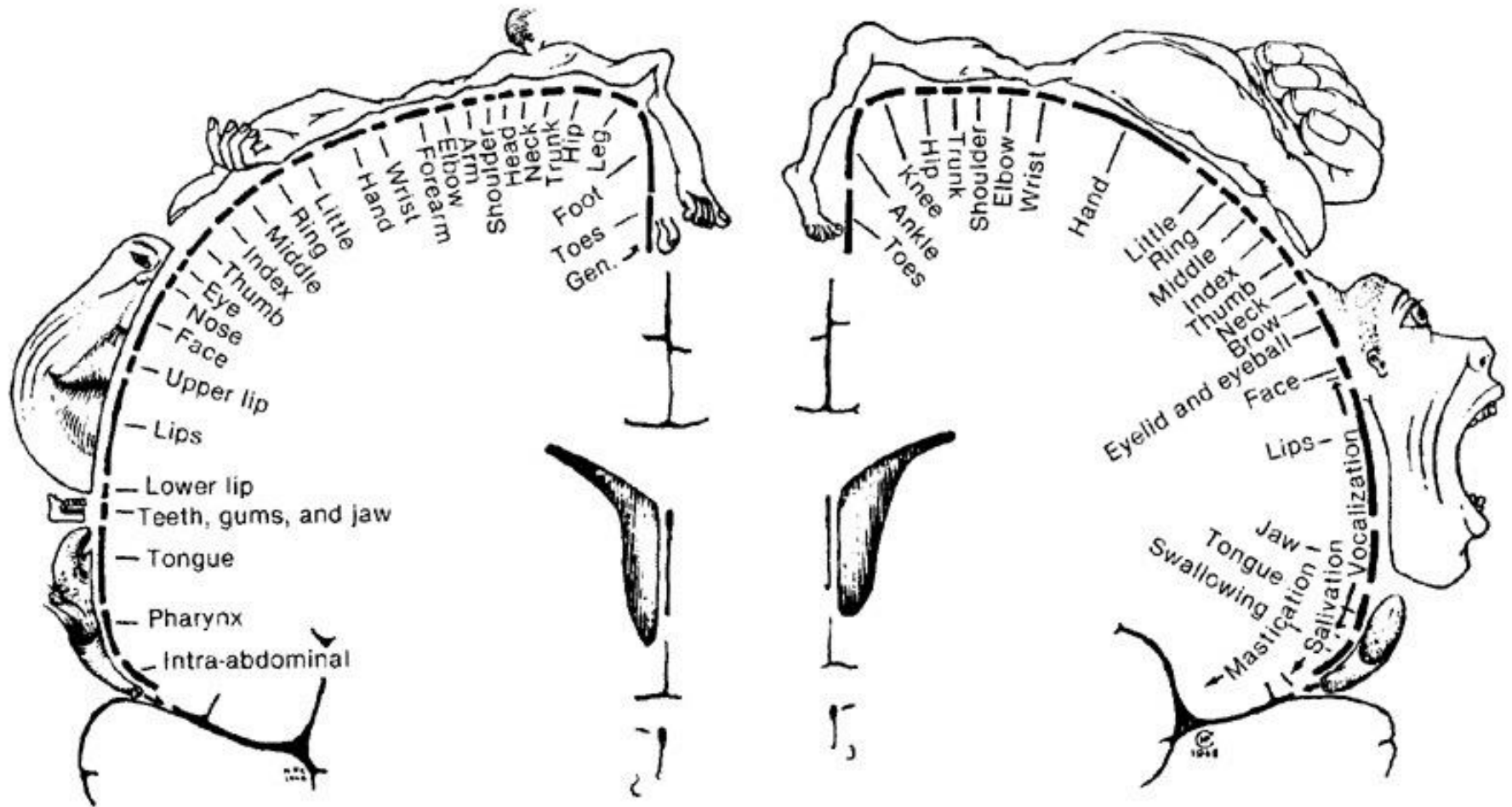
IRM d'Activation

Neuro-Anatomie Fonctionnelle



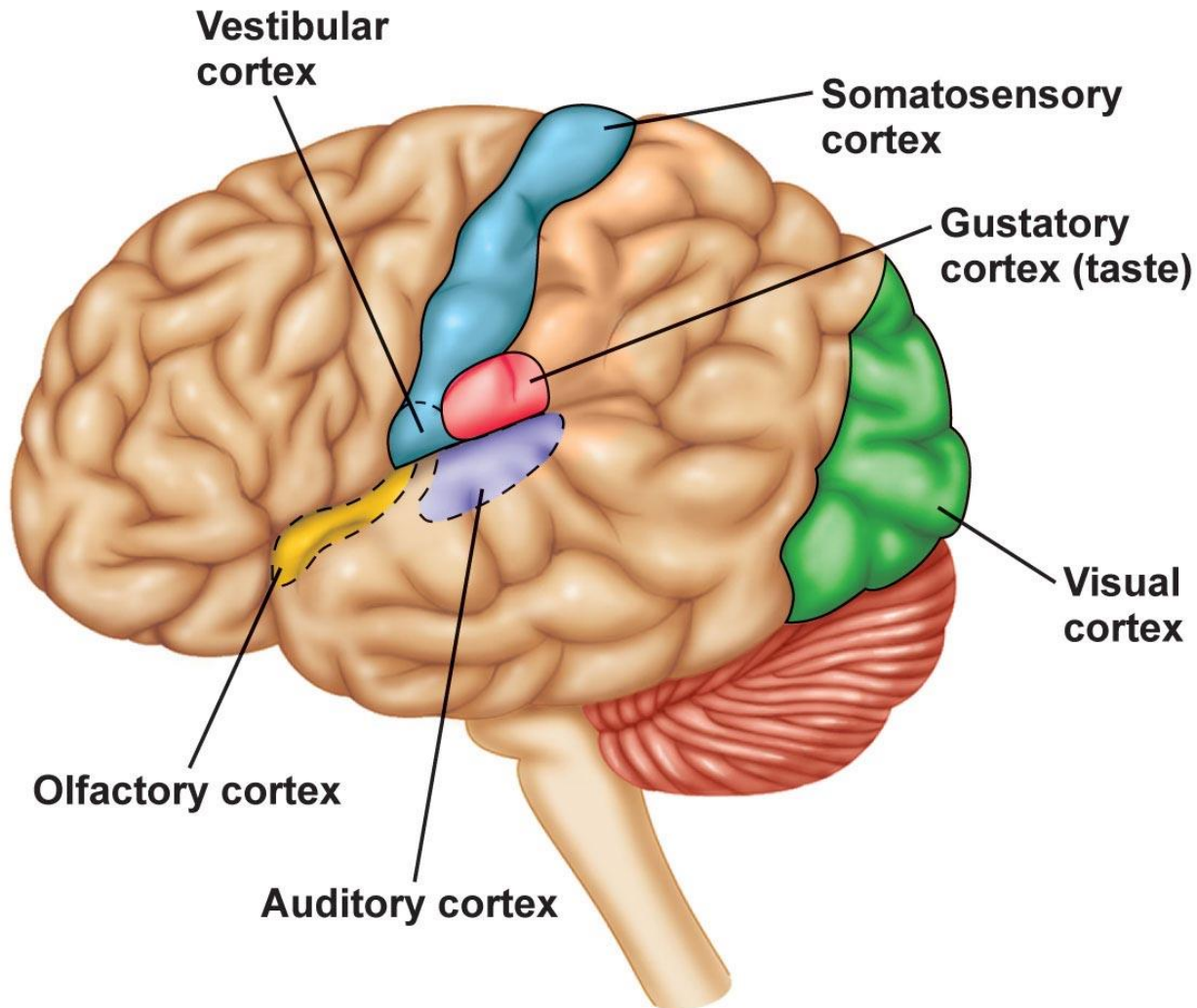
IRM d'Activation

Neuro-Anatomie Fonctionnelle



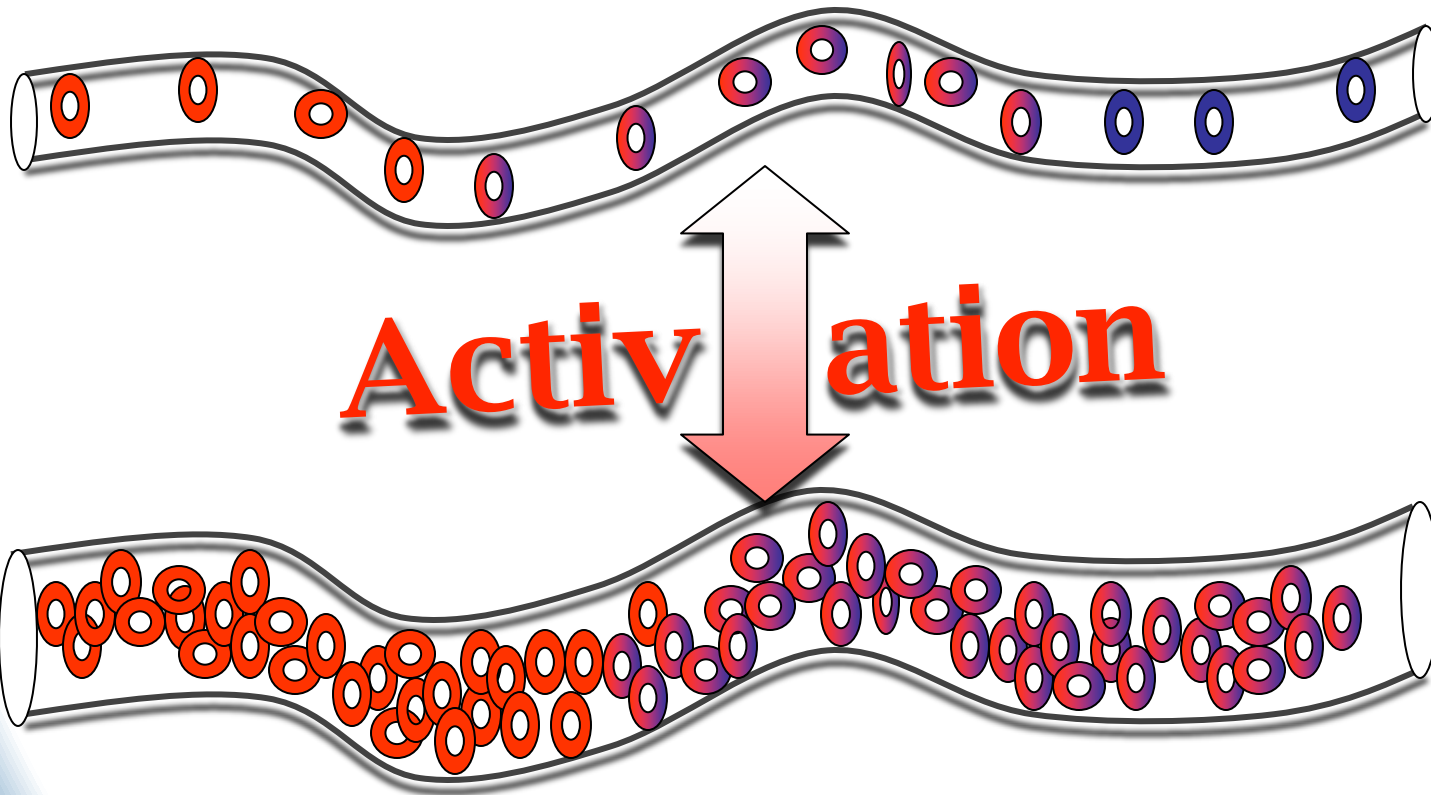
IRM d'Activation

Neuro-Anatomie Fonctionnelle



IRM d'Activation

Perfusion = Activation



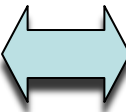
DSC



O² In



O² Ext



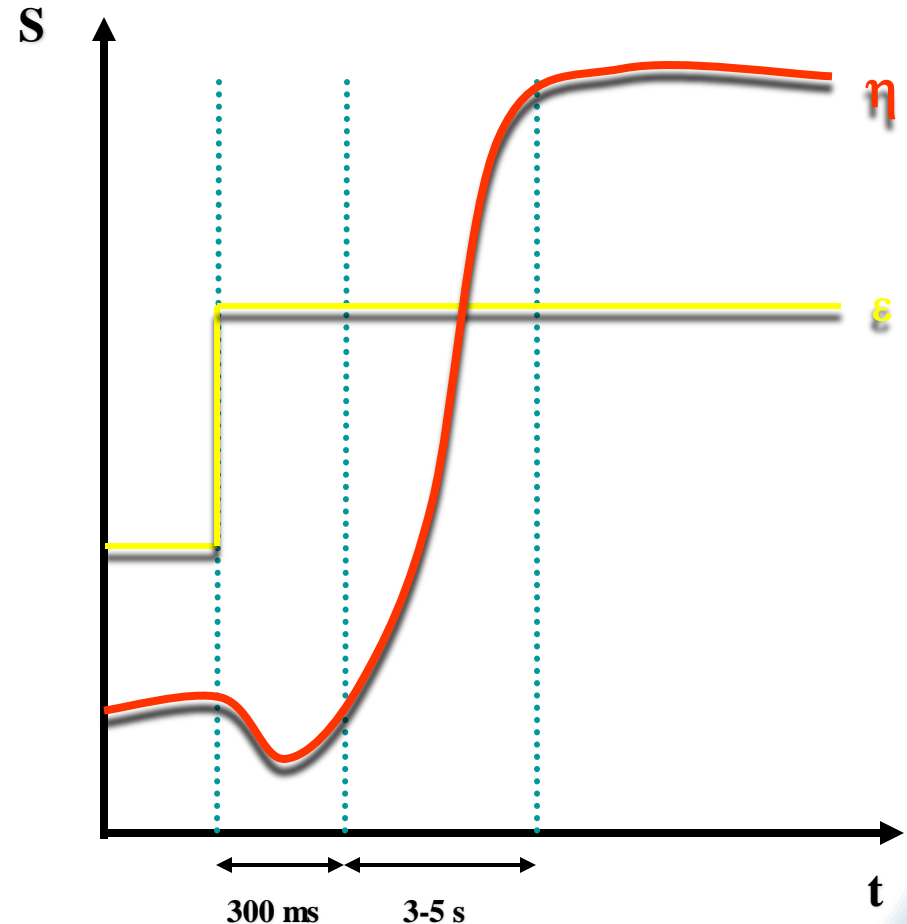
O² Out



IRM d'Activation

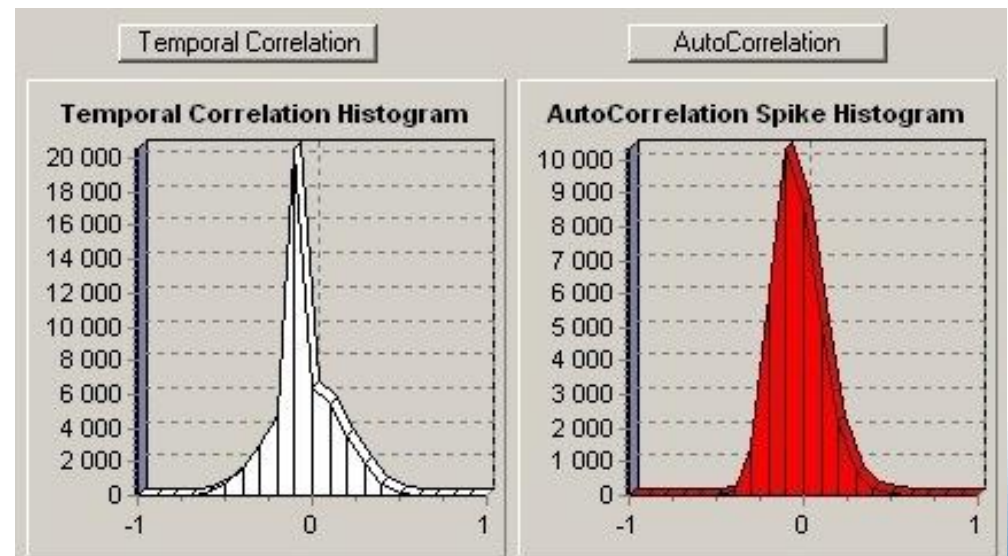
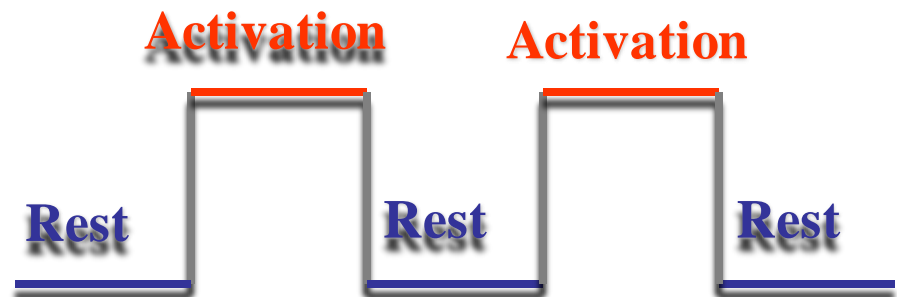
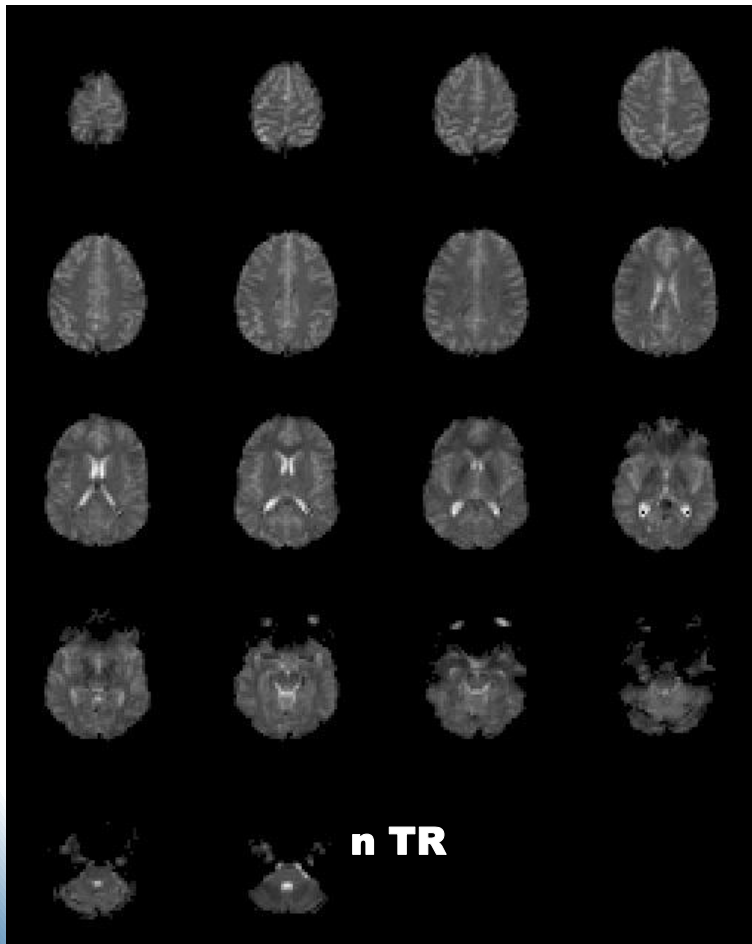
Perfusion = Activation

Blood
Oxygenation
Level
Dependent



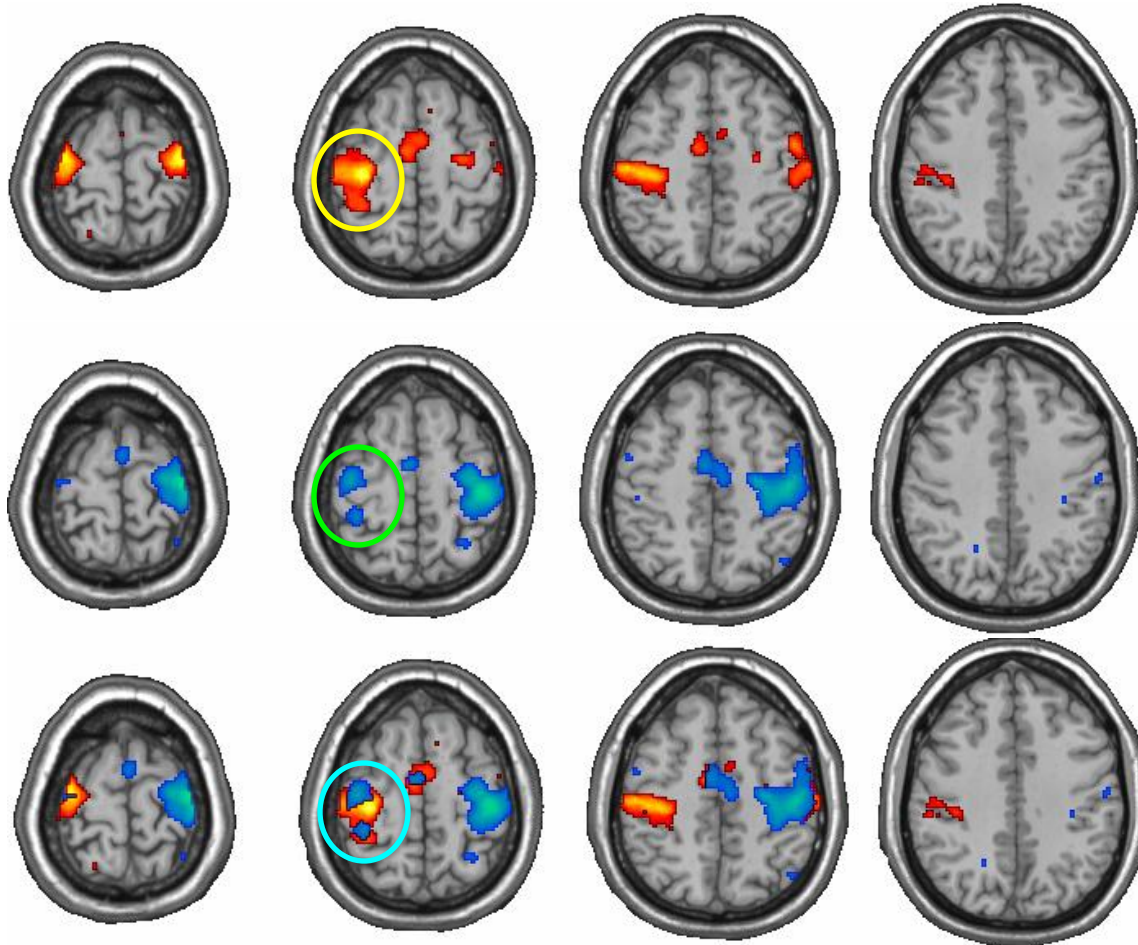
IRM d'Activation

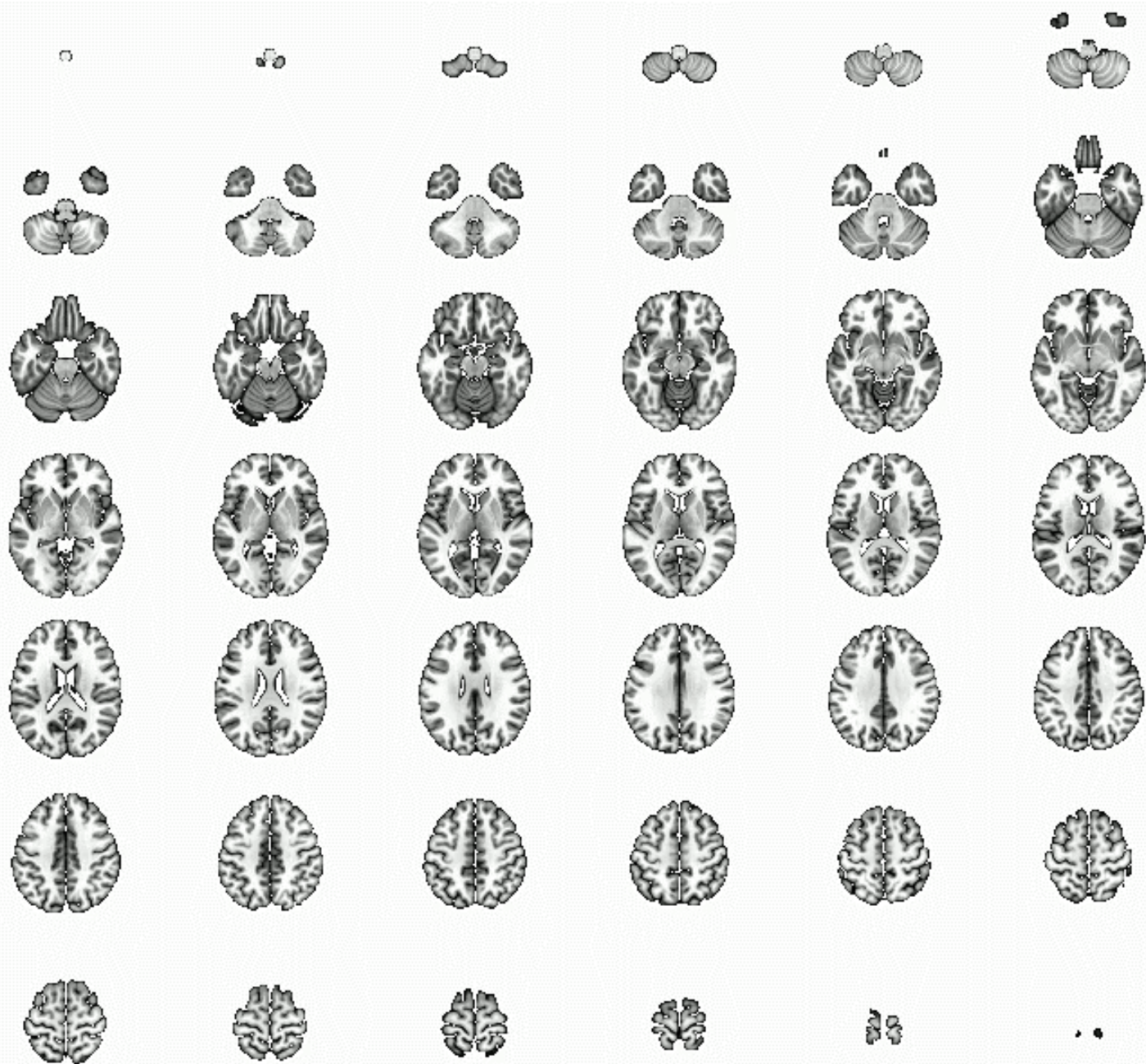
Traitement d'Image



IRM d'Activation

Imagerie Mentale

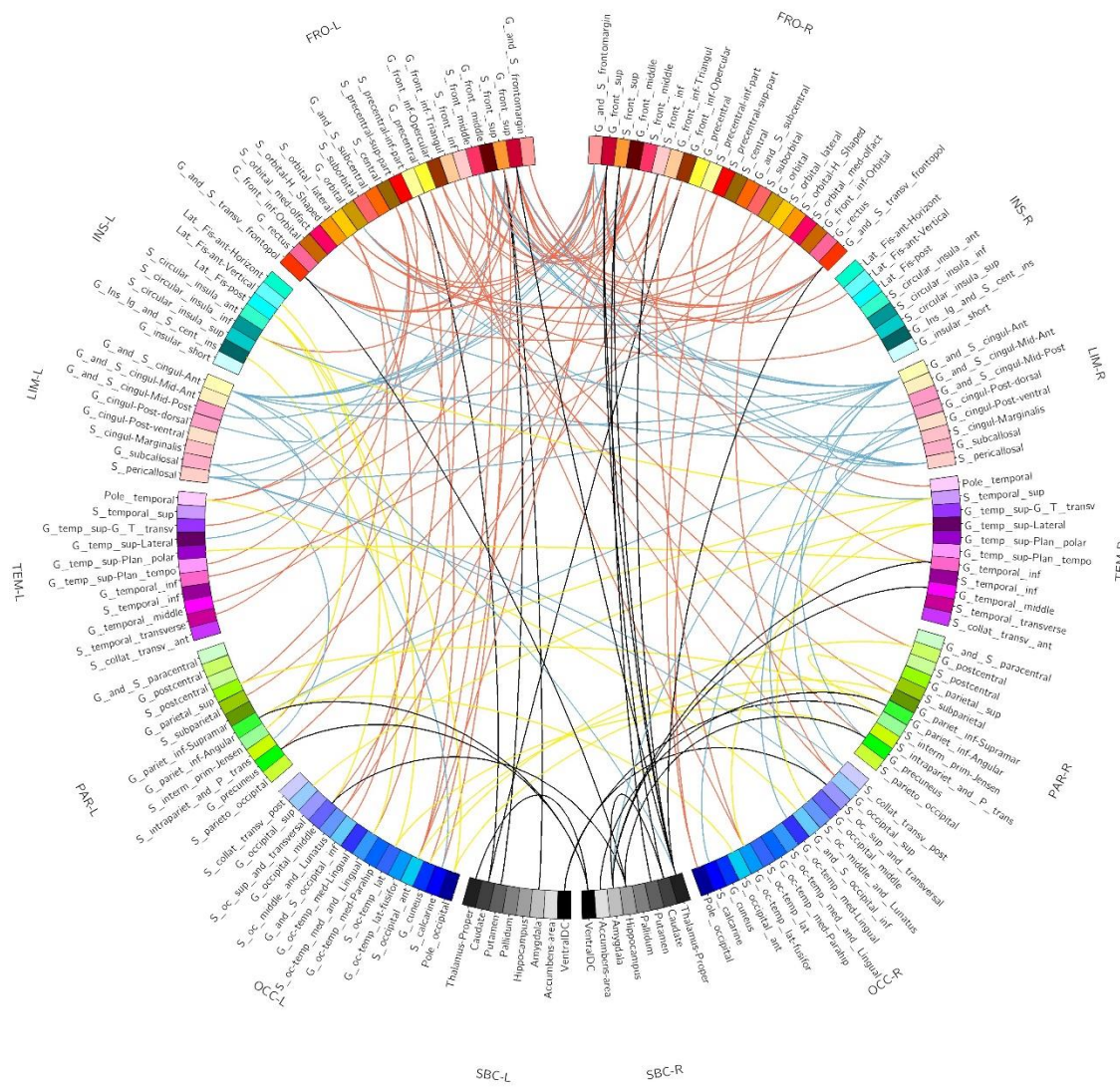
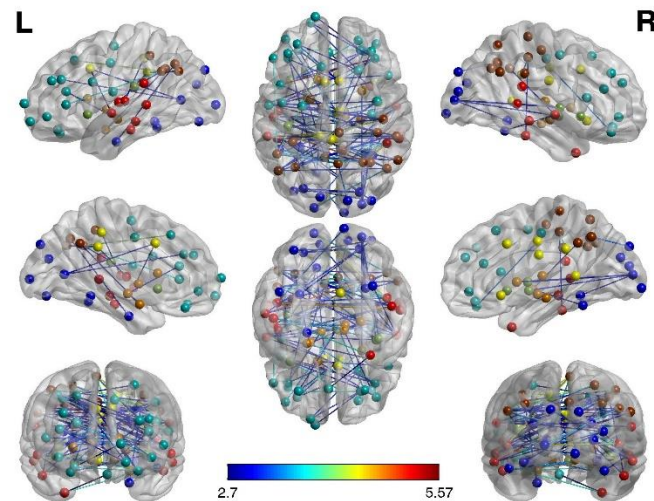
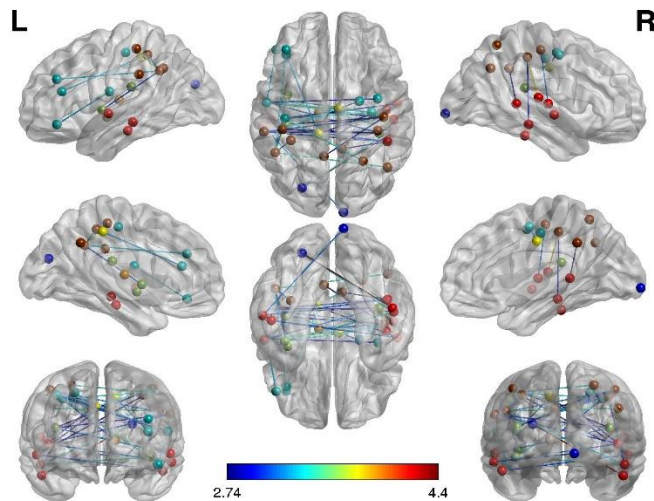




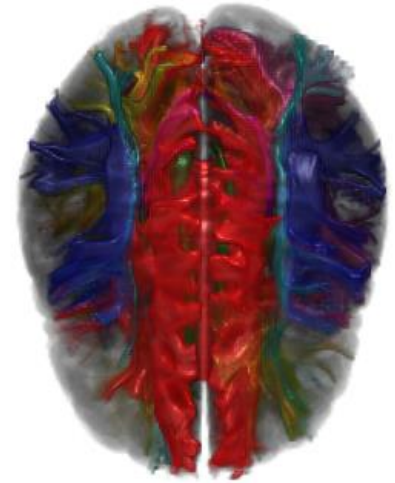
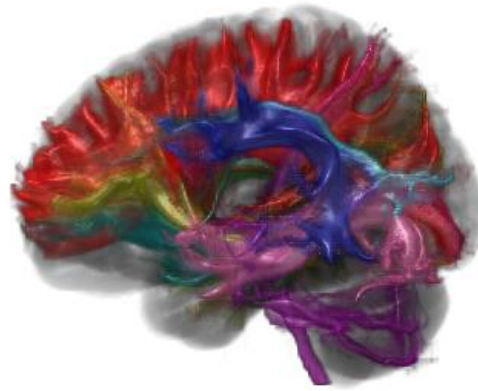
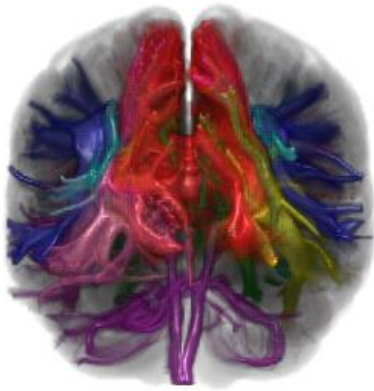
Connectomique Cérébrale

Connectomique Structurelle

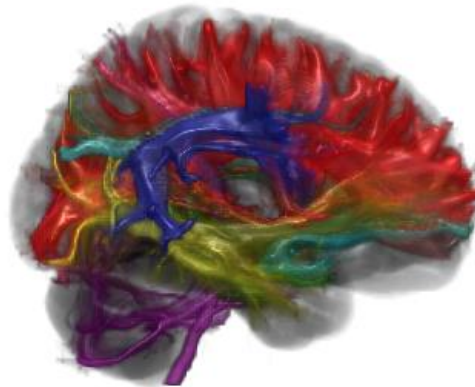
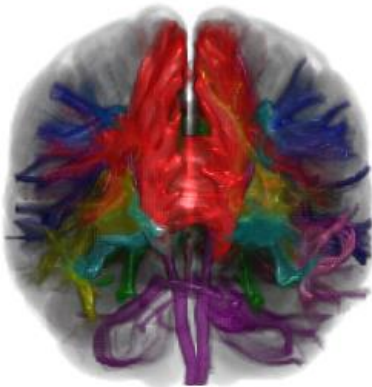
Connectomique Structurale



Connectomique Structurelle

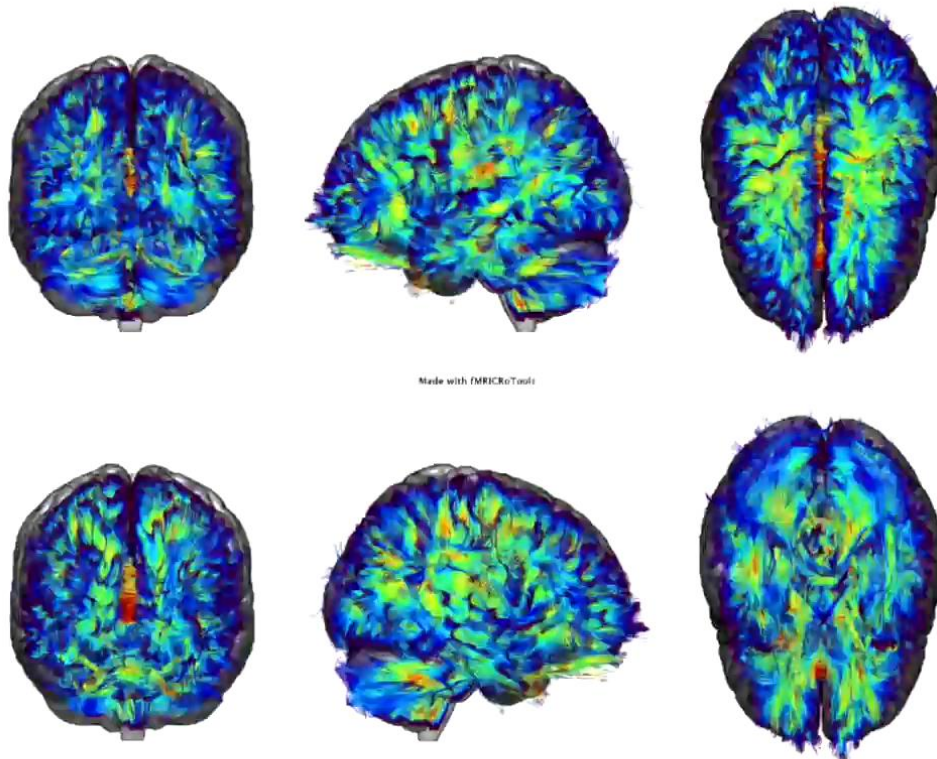


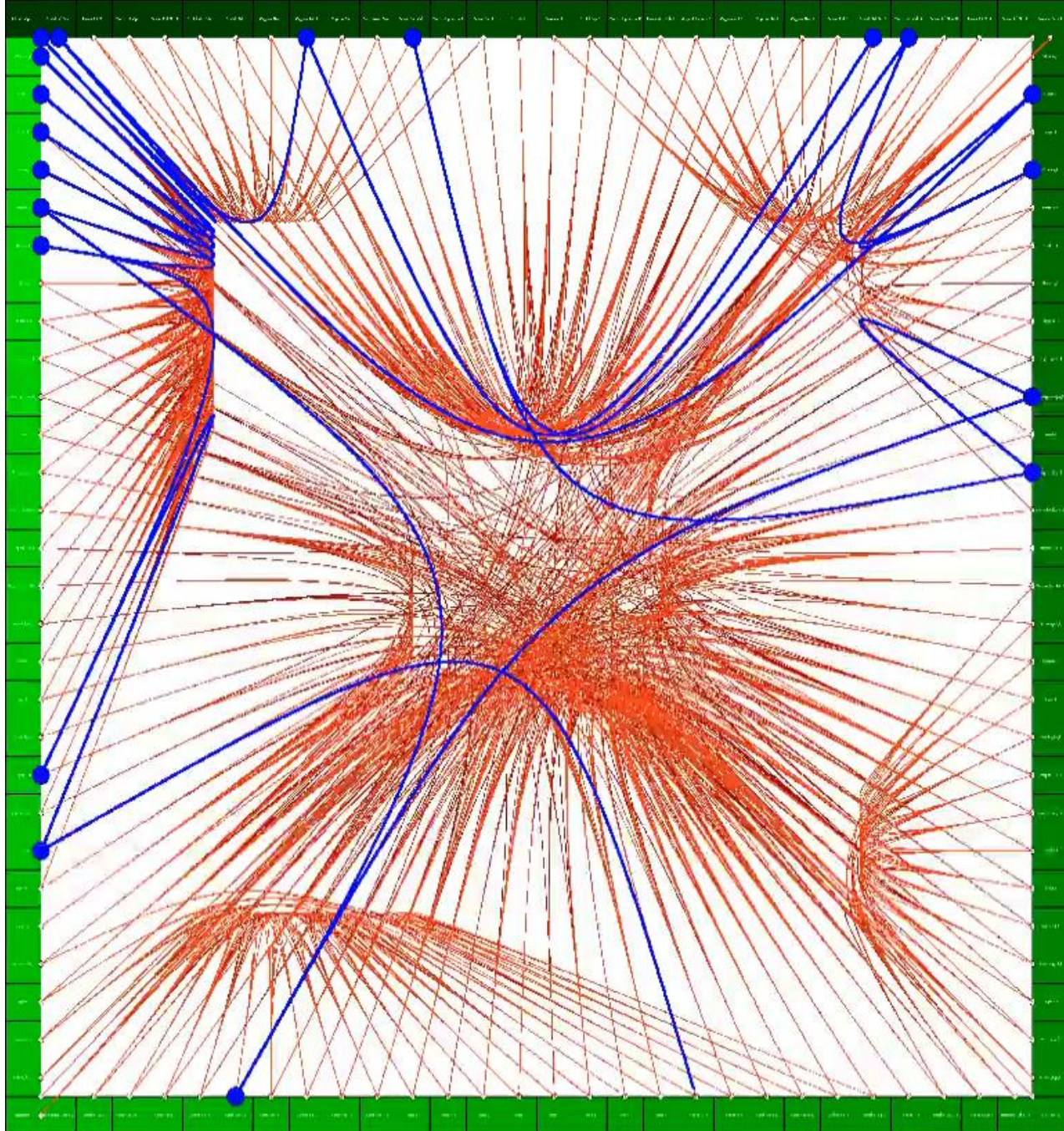
Made with Connectopedia



Fibers Bundles Analysis:

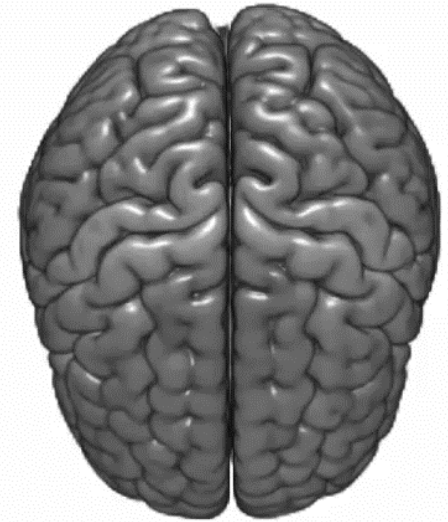
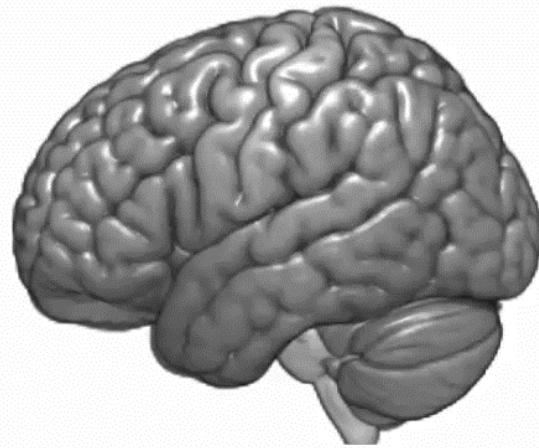
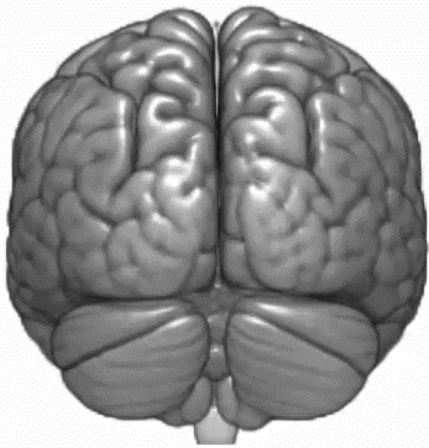
Patient: DUCREUX_DENIS / Date: 20151028



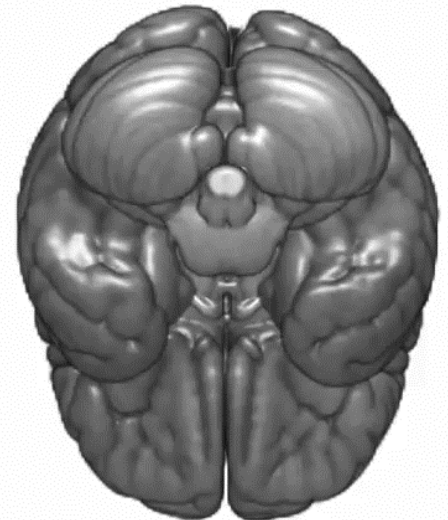
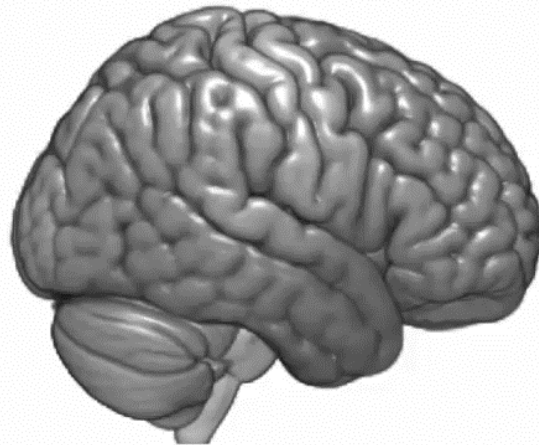
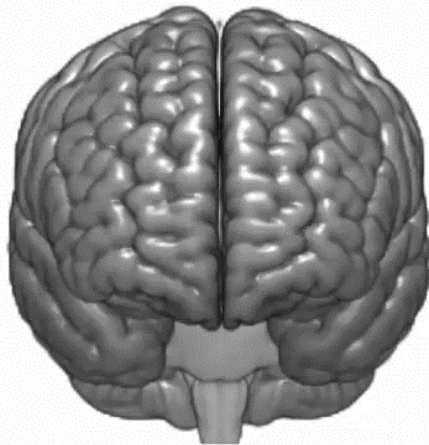


Anterior_Commissure (Connections [Total/Min/Max/Mean/SD]: 114/0/17/0.982758620689655/3.11792226977515)

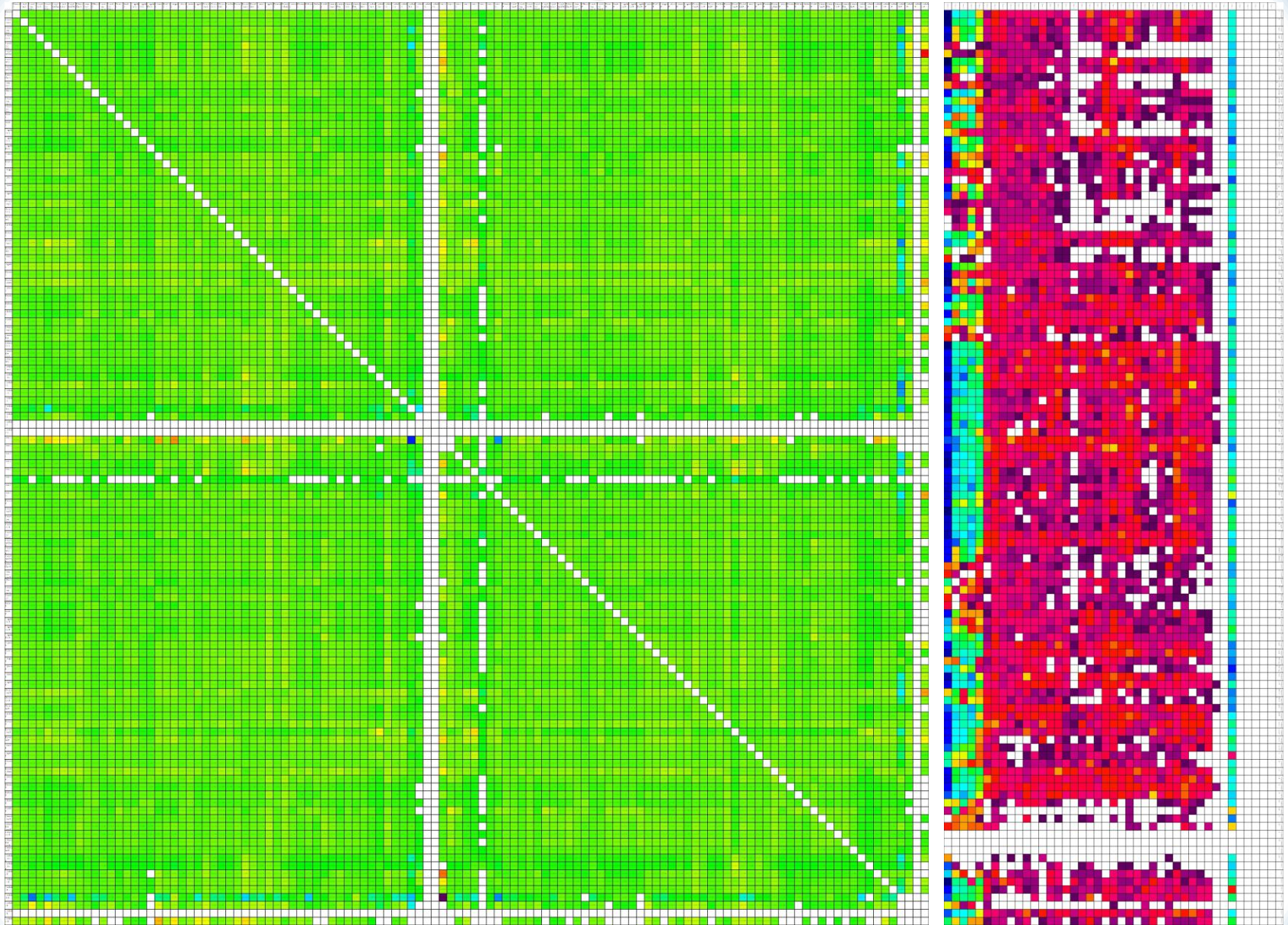
Connectomique Fonctionnelle



Made with fMRICRoTools

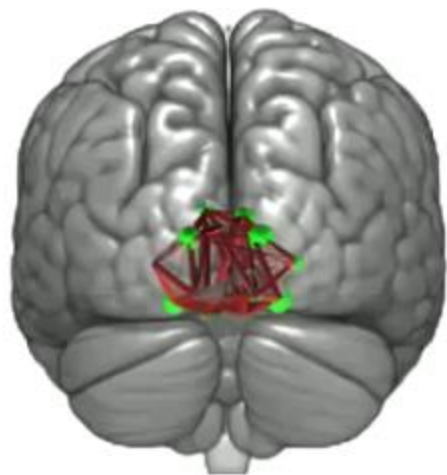


Connectomique Fonctionnelle

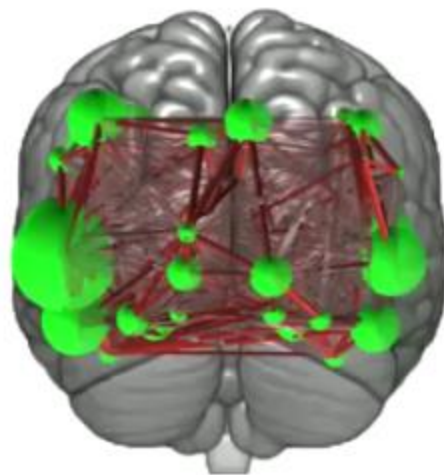


Connectomique Effective

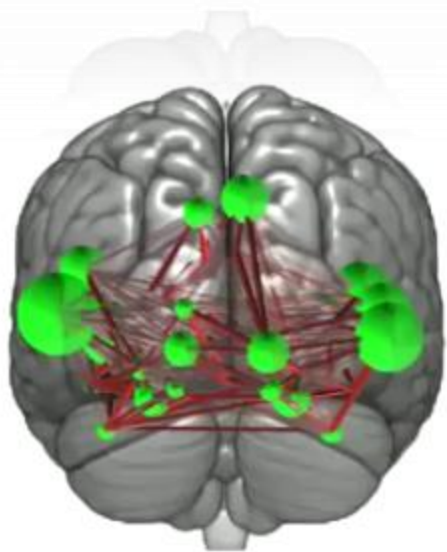
Made with fMRICRoTools



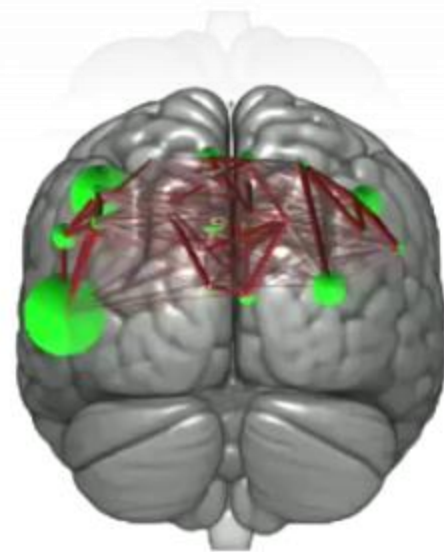
Made with fMRICRoTools



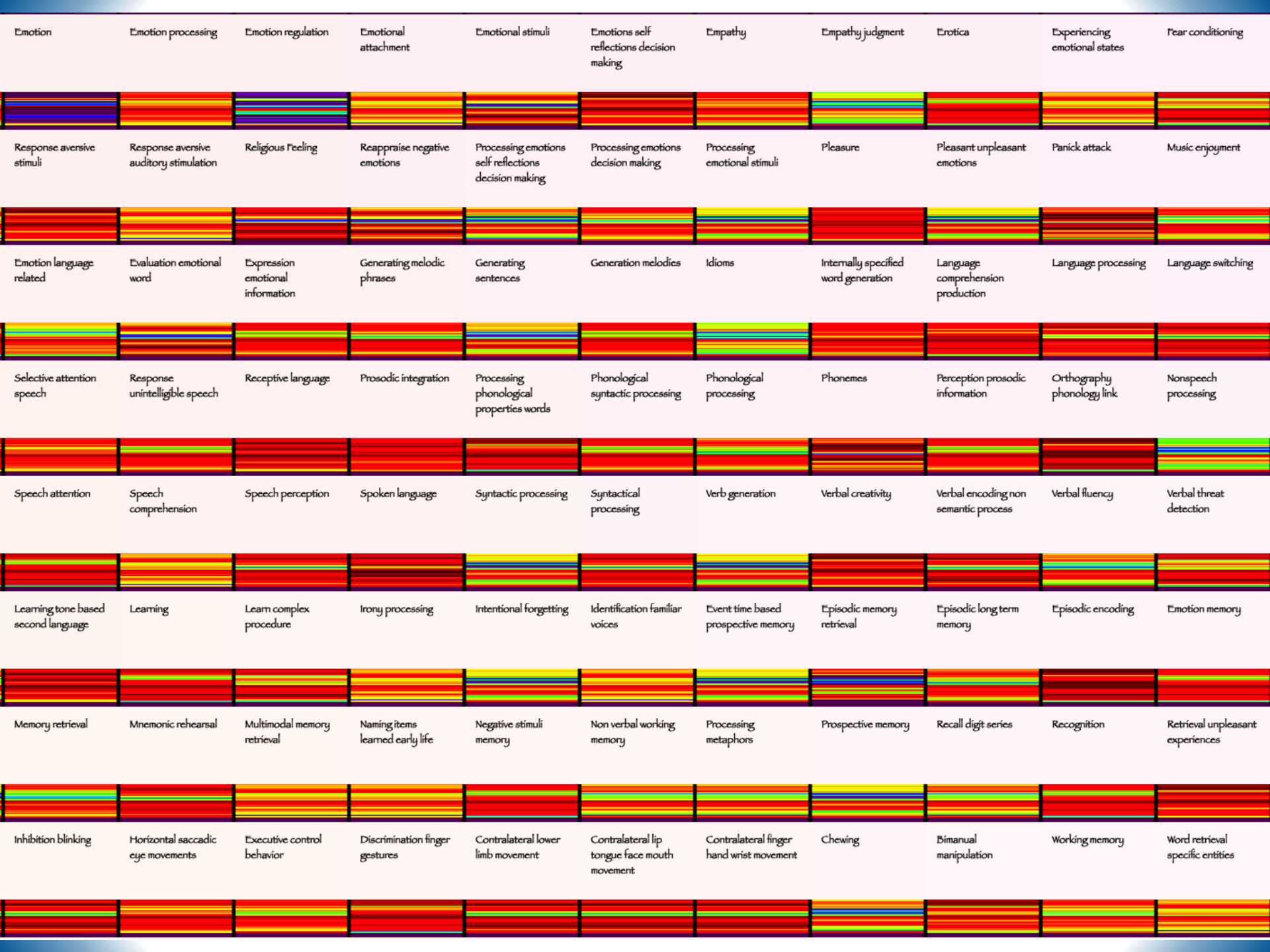
Made with fMRICRoTools



Made with fMRICRoTools

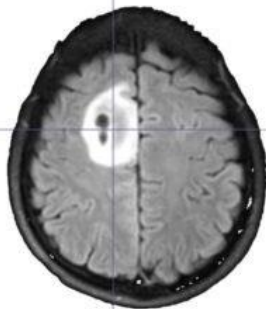
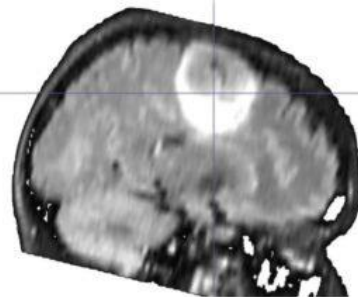
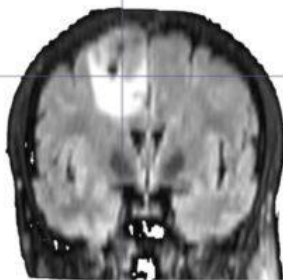
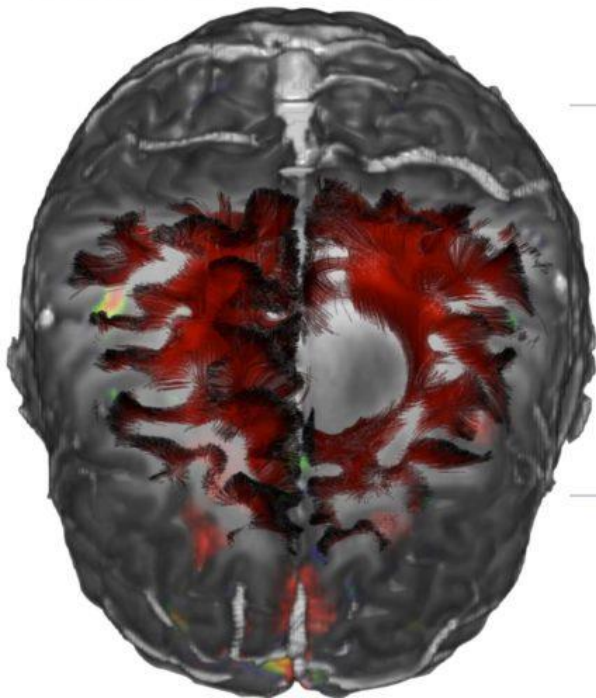
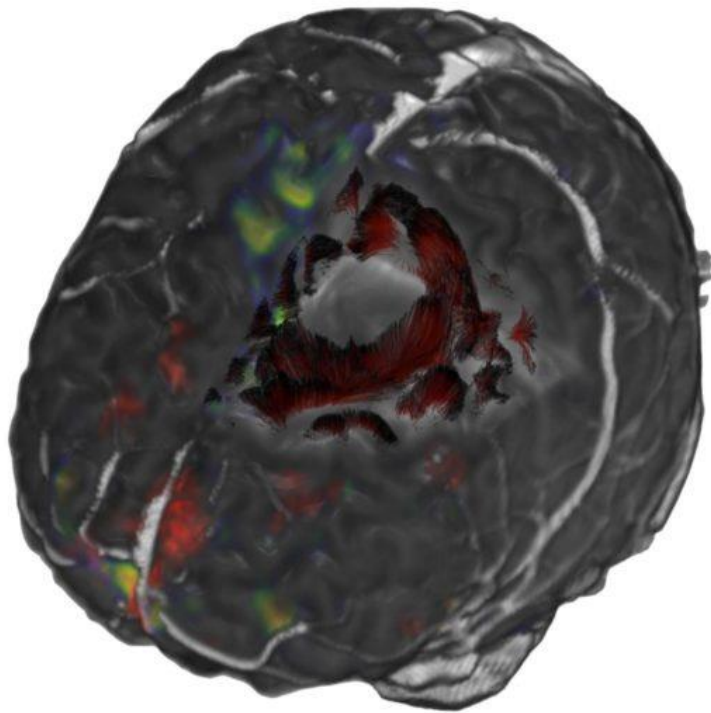
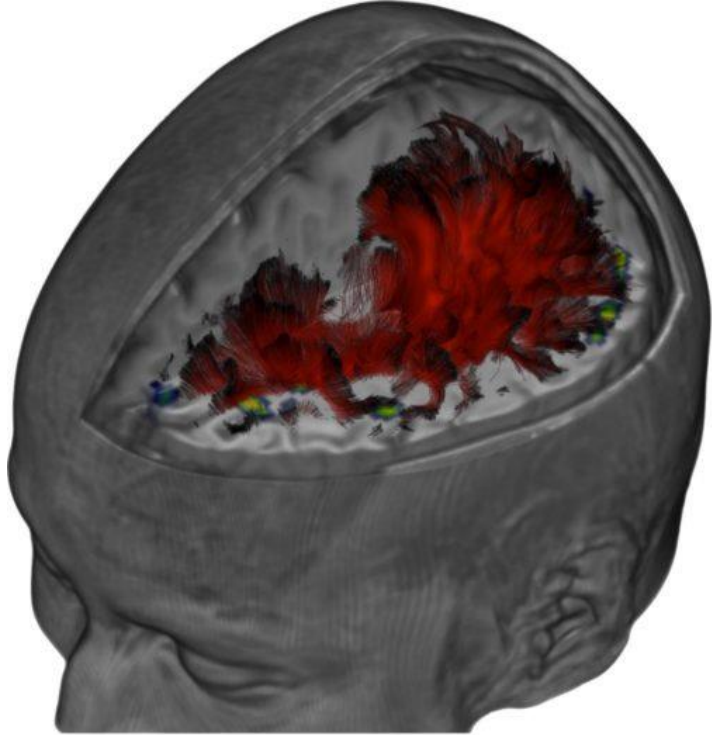


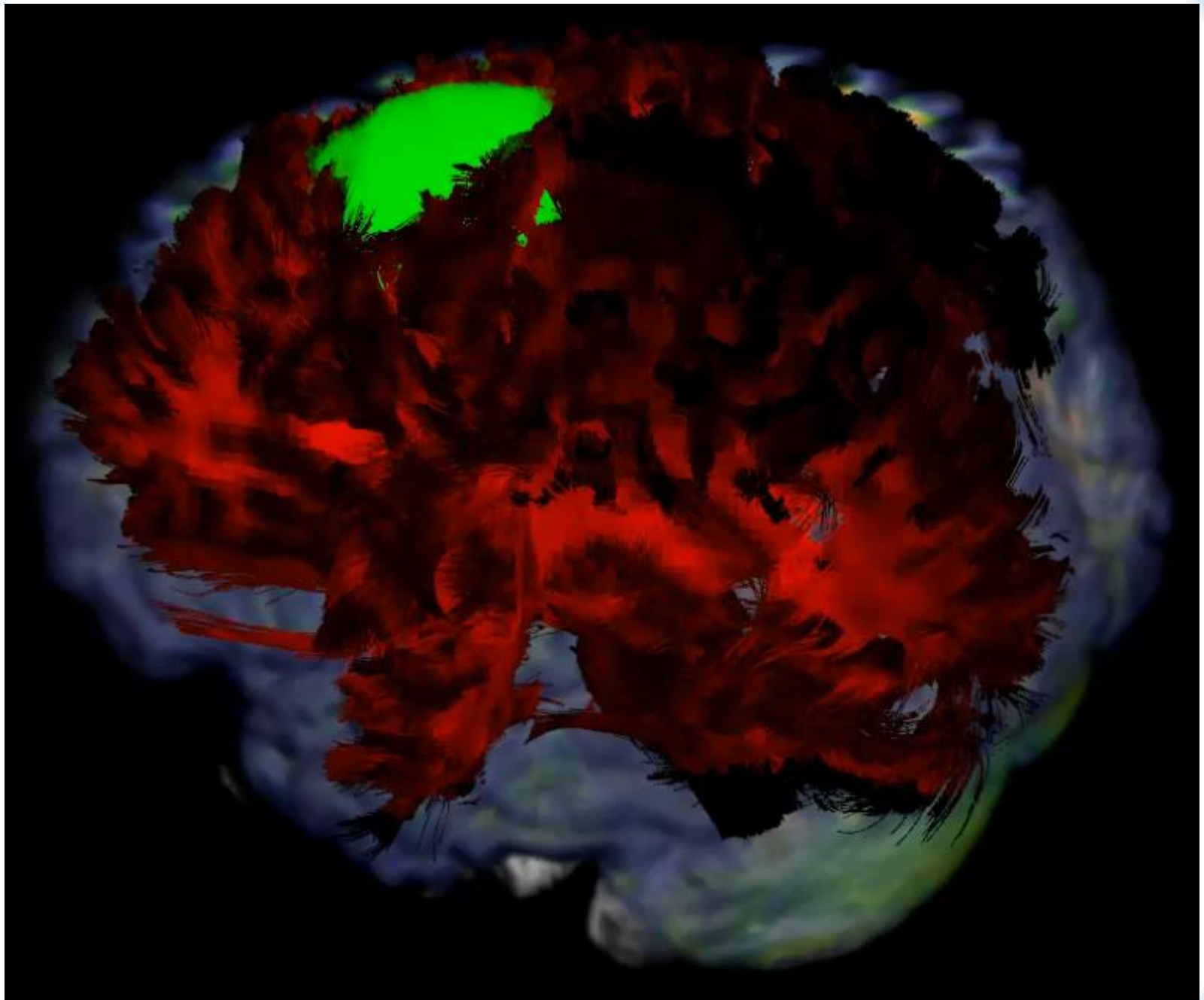
Analyse des Fonctions Cérébrales



Quelques Applications Cliniques...

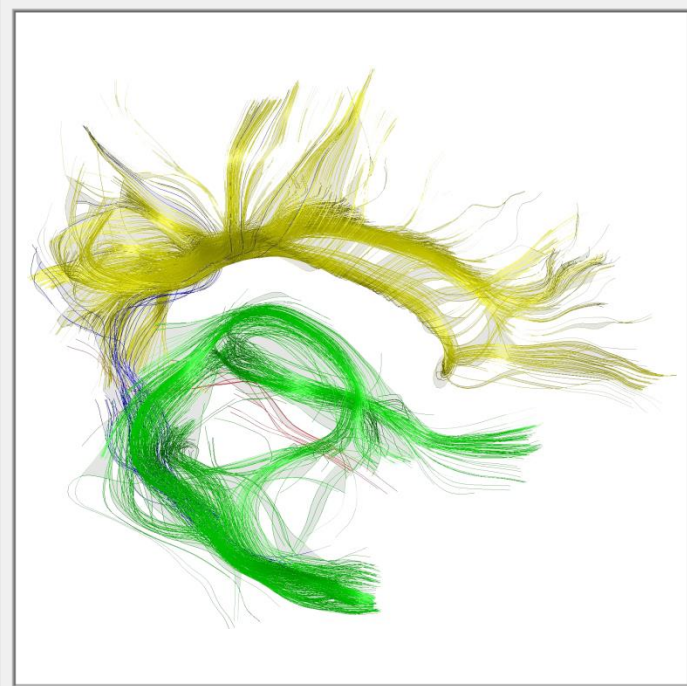
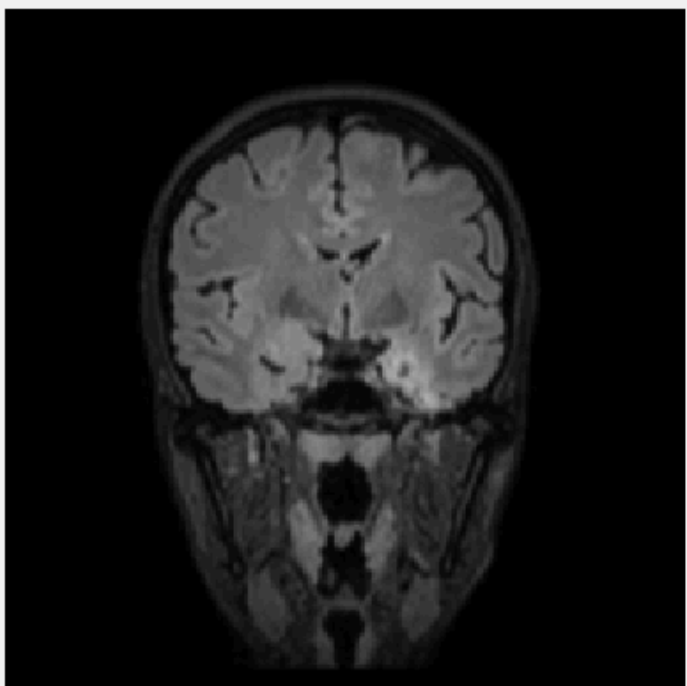
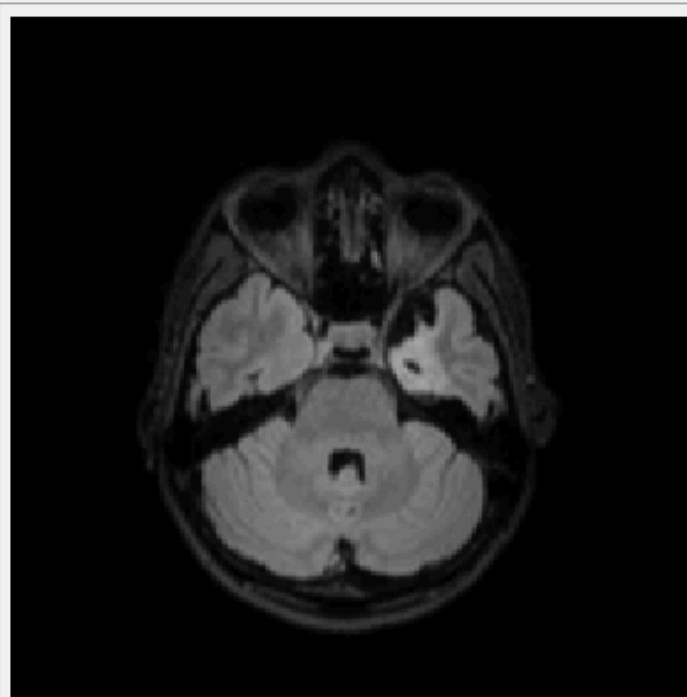
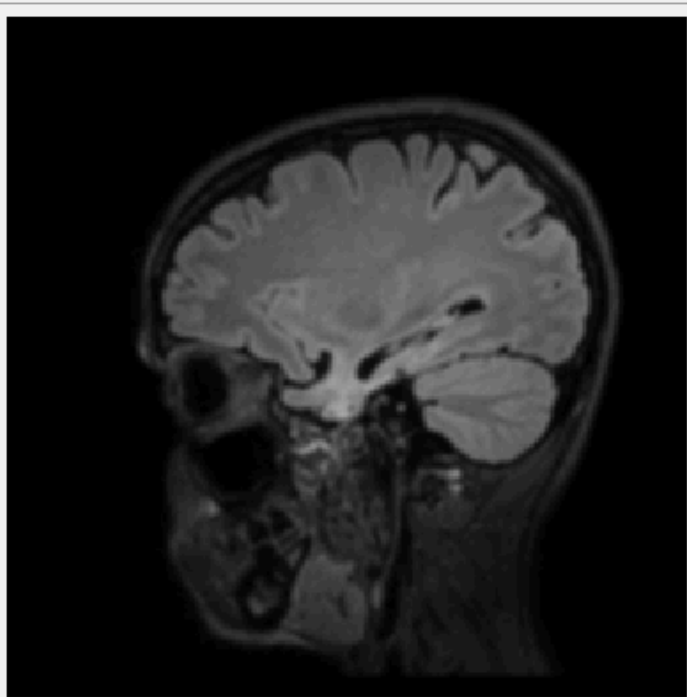
Tumeurs Cérébrales





Trauma Craniens

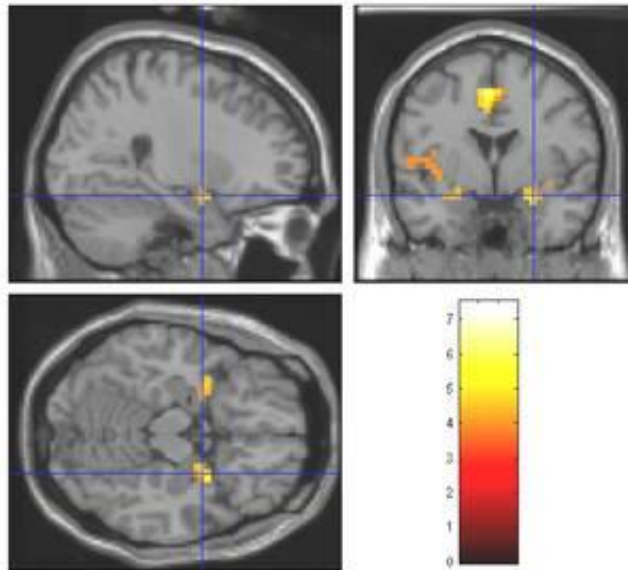
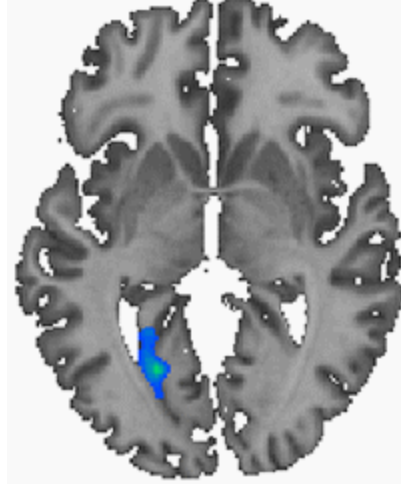
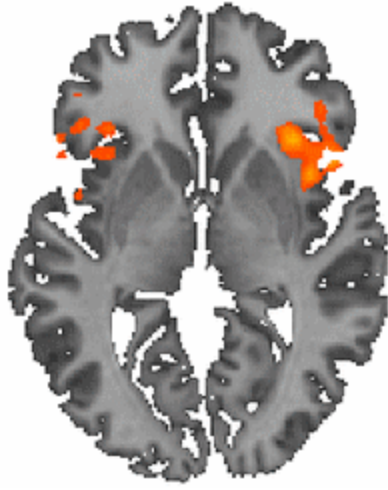
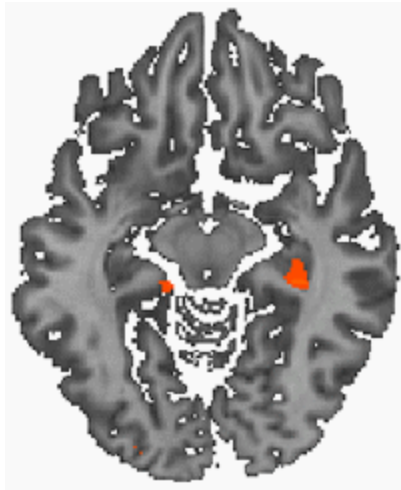




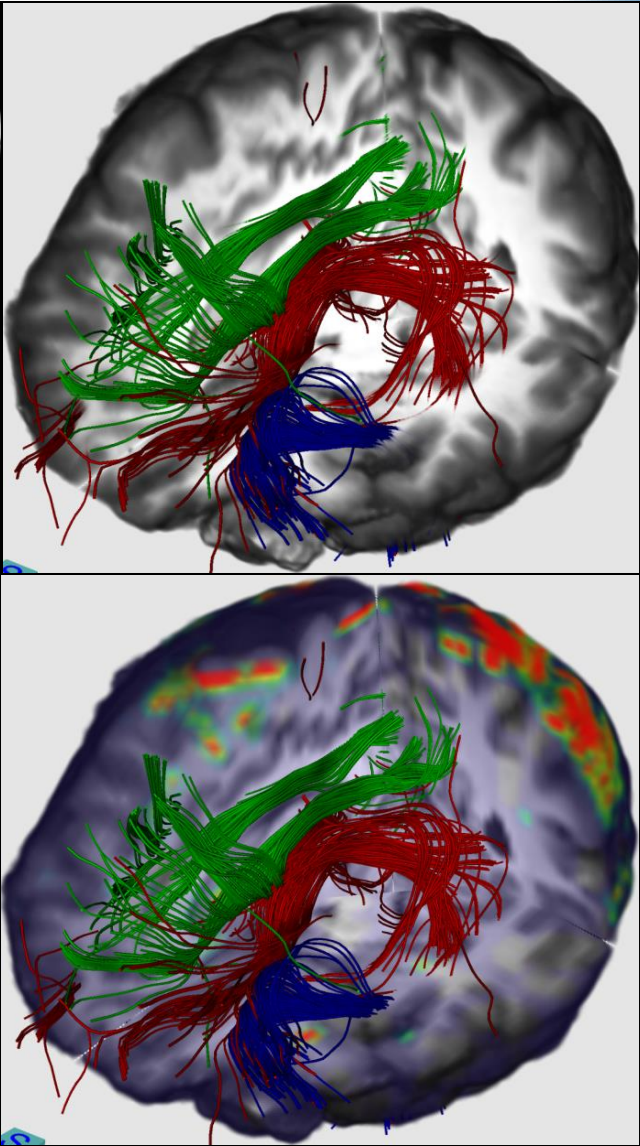
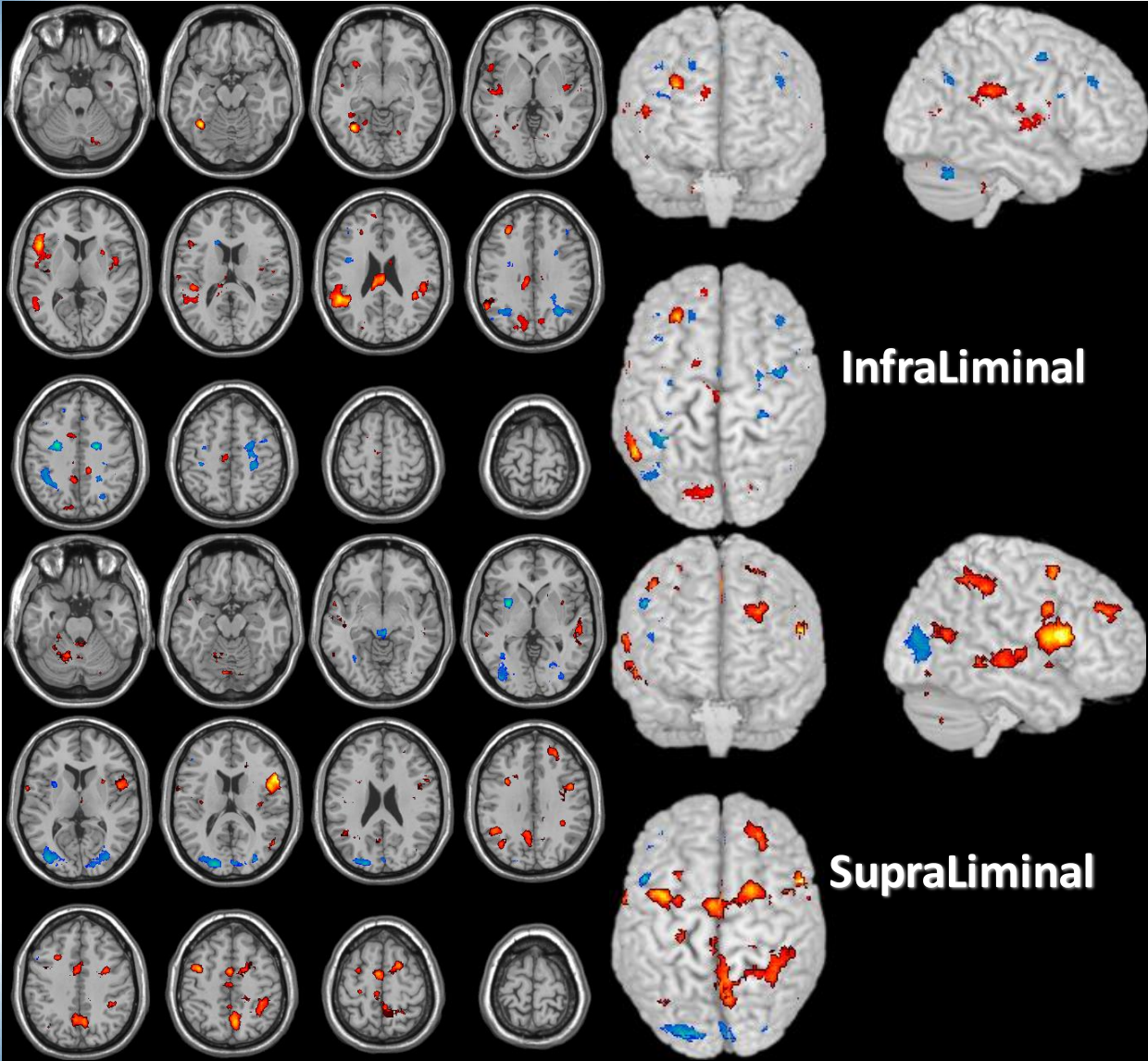


Emotion	Emotion processing	Emotion regulation	Emotional attachment	Emotional stimuli	Emotions self reflections decision making	Empathy	Empathy judgment	Erotica	Experiencing emotional states	Fear conditioning	Fear response	T
Response aversive stimuli	Response aversive auditory stimulation	Religious Feeling	Reappraise negative emotions	Processing emotions self reflections decision making	Processing emotions decision making	Processing emotional stimuli	Pleasure	Pleasant unpleasant emotions	Panick attack	Music enjoyment	Mood swings	M
Emotion language related	Evaluation emotional word	Expression emotional information	Generating melodic phrases	Generating sentences	Generation melodies	Idioms	Internally specified word generation	Language comprehension production	Language processing	Language switching	Language translation	L
Selective attention speech	Response unintelligible speech	Receptive language	Prosodic integration	Processing phonological properties words	Phonological syntactic processing	Phonological processing	Phonemes	Perception prosodic information	Orthography phonology link	Non-speech processing	Narrative comprehension	M s p
Speech attention	Speech comprehension	Speech perception	Spoken language	Syntactic processing	Syntactical processing	Verb generation	Verbal creativity	Verbal encoding non semantic process	Verbal fluency	Verbal threat detection	Word comprehension	Y
Learning tone based second language	Learning	Learn complex procedure	Irony processing	Intentional forgetting	Identification familiar voices	Event time based prospective memory	Episodic memory retrieval	Episodic long term memory	Episodic encoding	Emotion memory	Dual working memory task processing	D n
Memory retrieval	Mnemonic rehearsal	Multimodal memory retrieval	Naming items learned early life	Negative stimuli memory	Non verbal working memory	Processing metaphors	Prospective memory	Recall digit series	Recognition	Retrieval unpleasant experiences	Semantic memory retrieval	S g

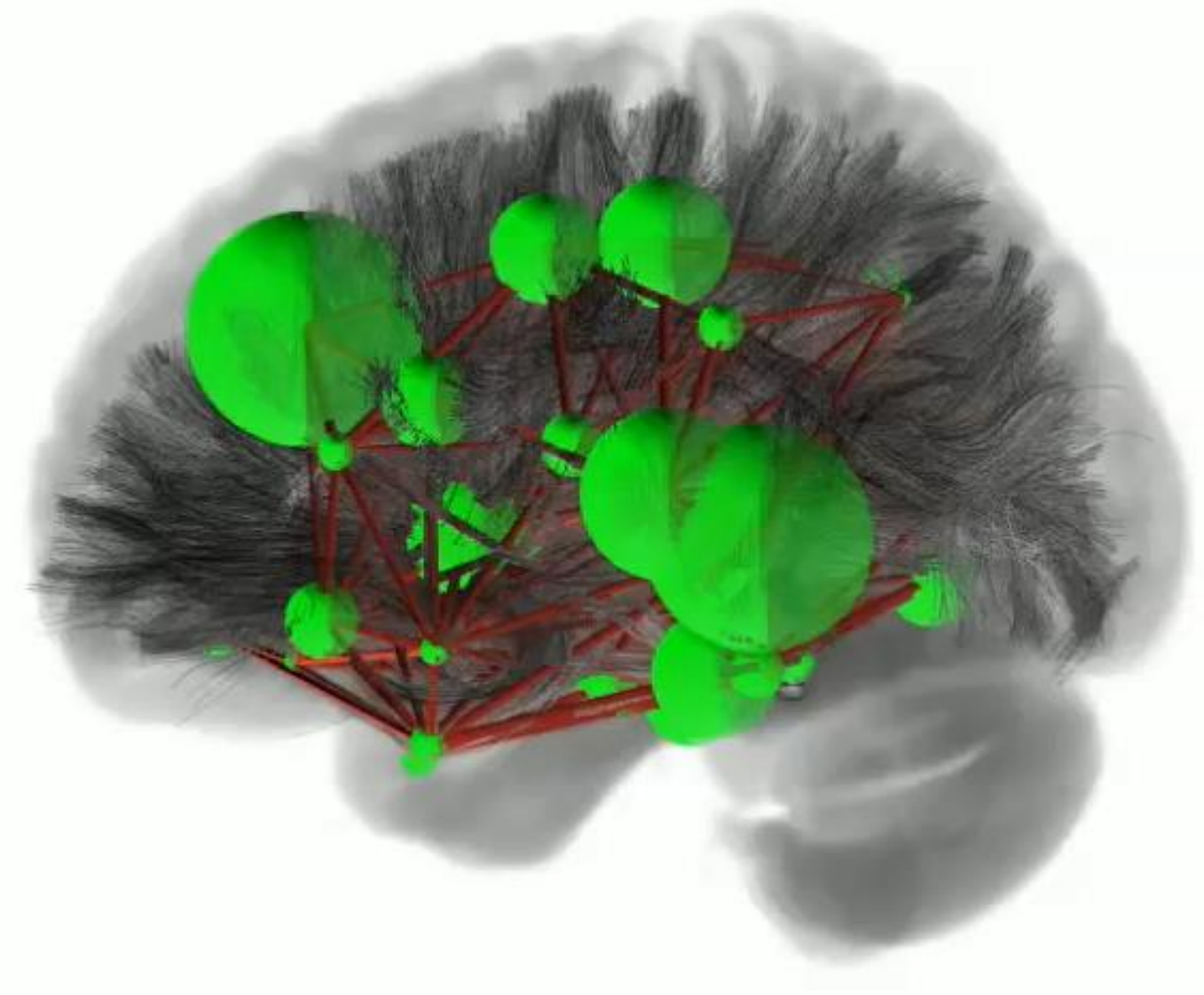
Dépression & Syndrome de Stress



(1) : Plailly et al, HBM 2012

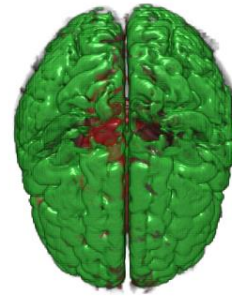
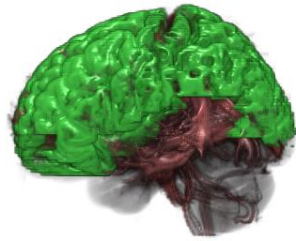
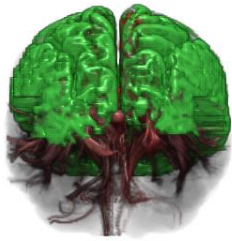




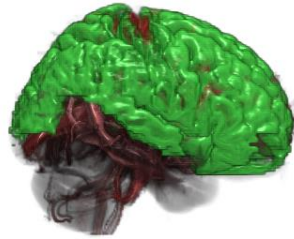
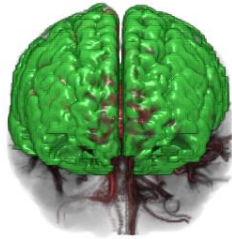


O ccurrence(s):

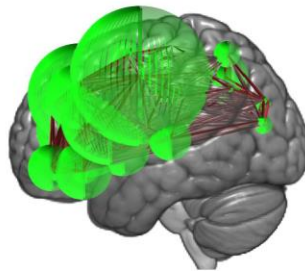
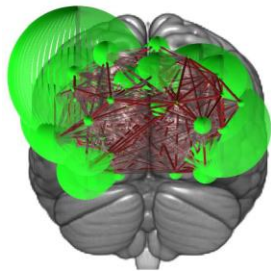




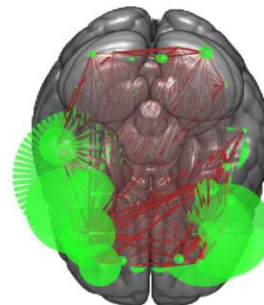
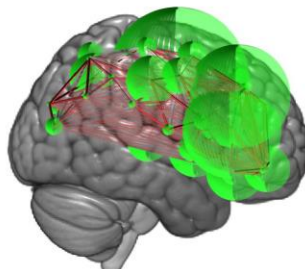
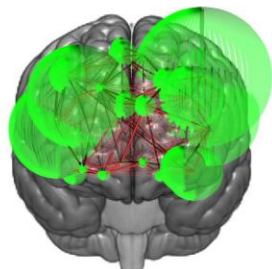
Made with Connectopedia

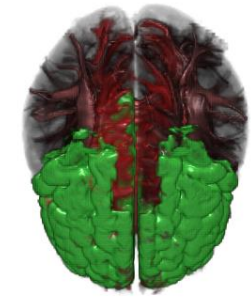
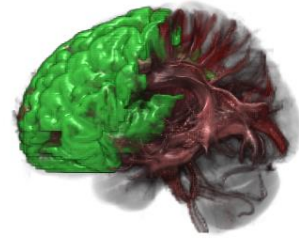


Working Memory: 2,756 %

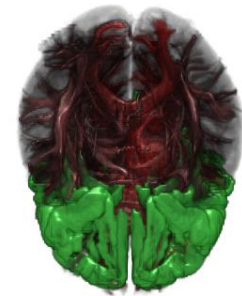
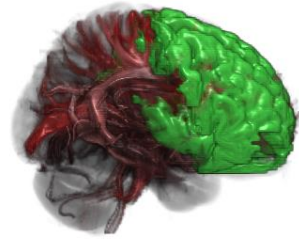
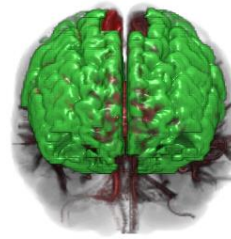


Made with fMRICRoTools

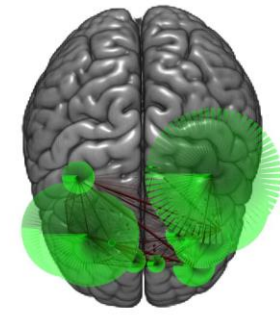
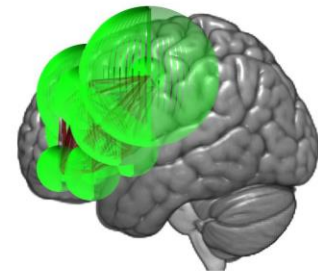
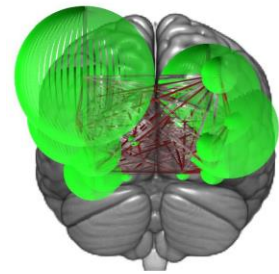




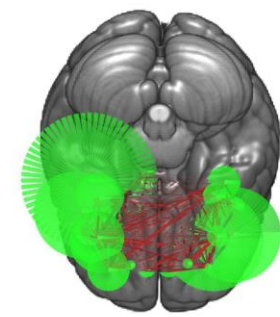
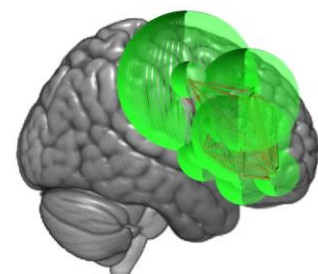
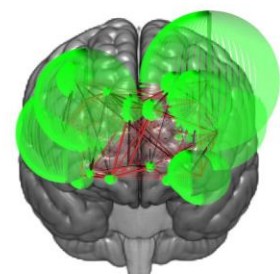
Made with Connectopedia

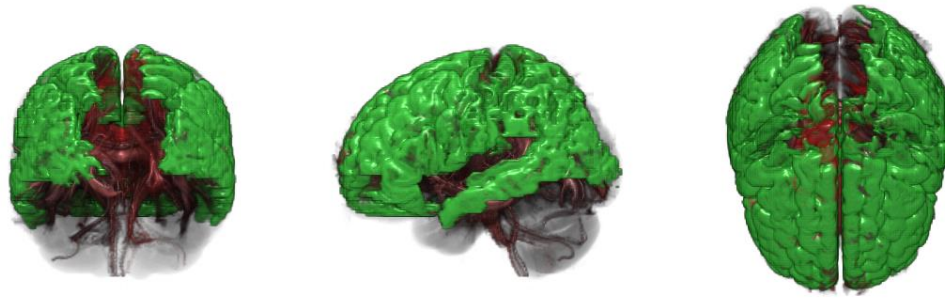


Smelling Familiar Odor: 1,551 %

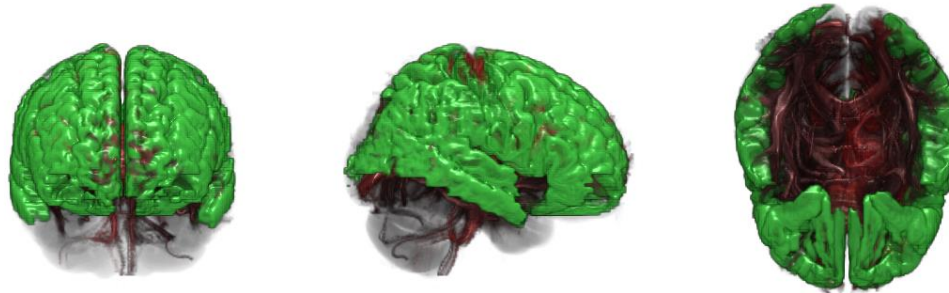


Made with fMRICRoTools

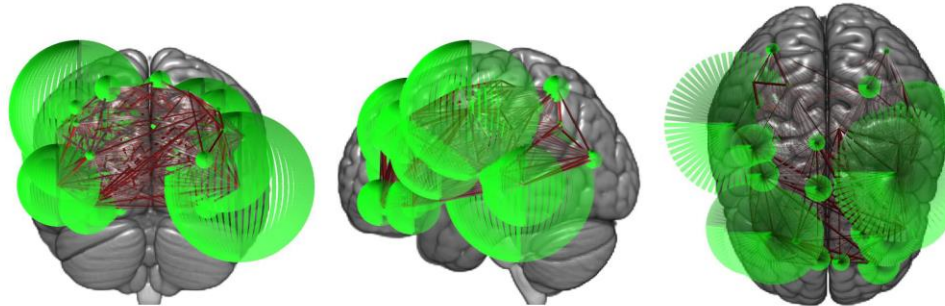




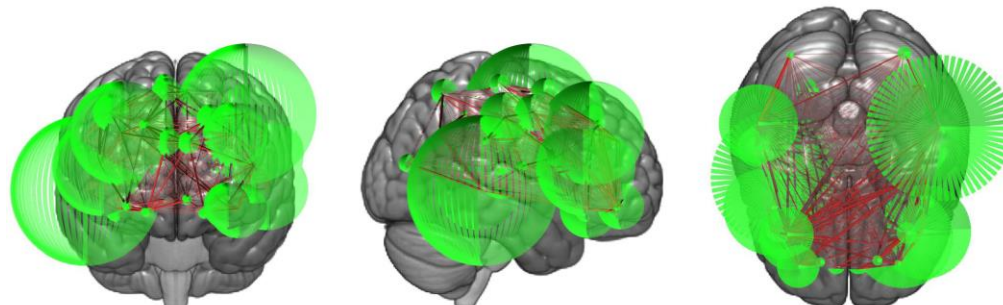
Made with Connectopedia

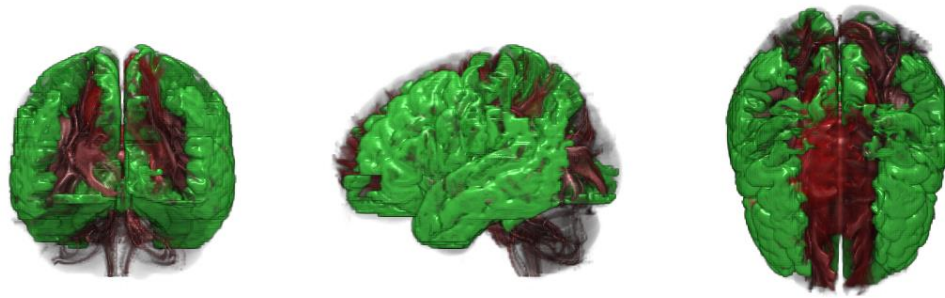


Executive Control Behavior: 1,551 %

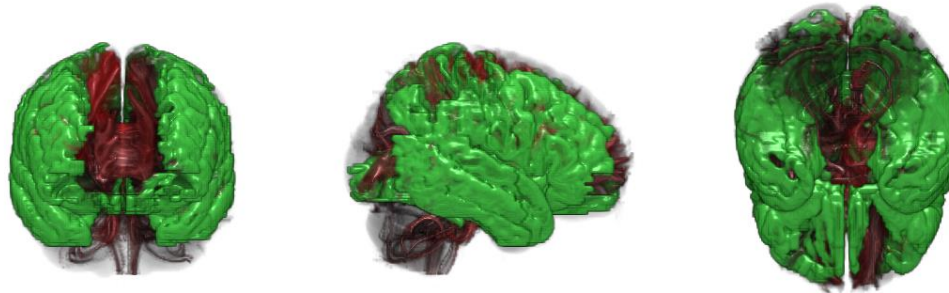


Made with fMRICRoTools

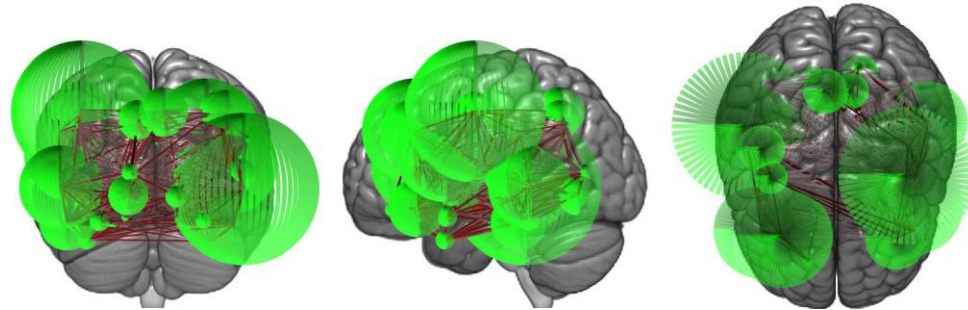




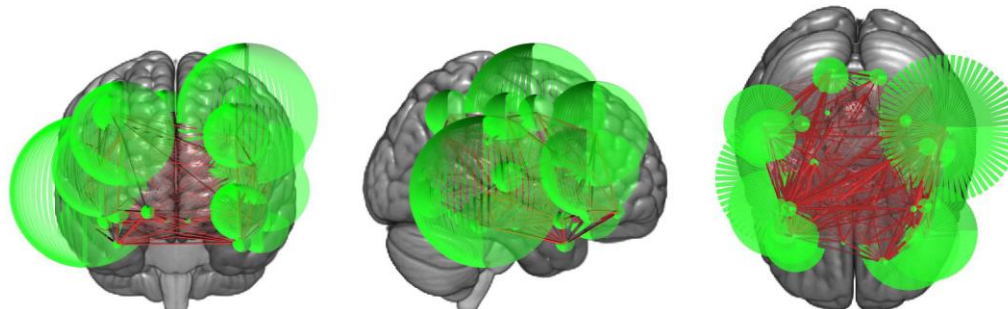
Made with Connectopedia



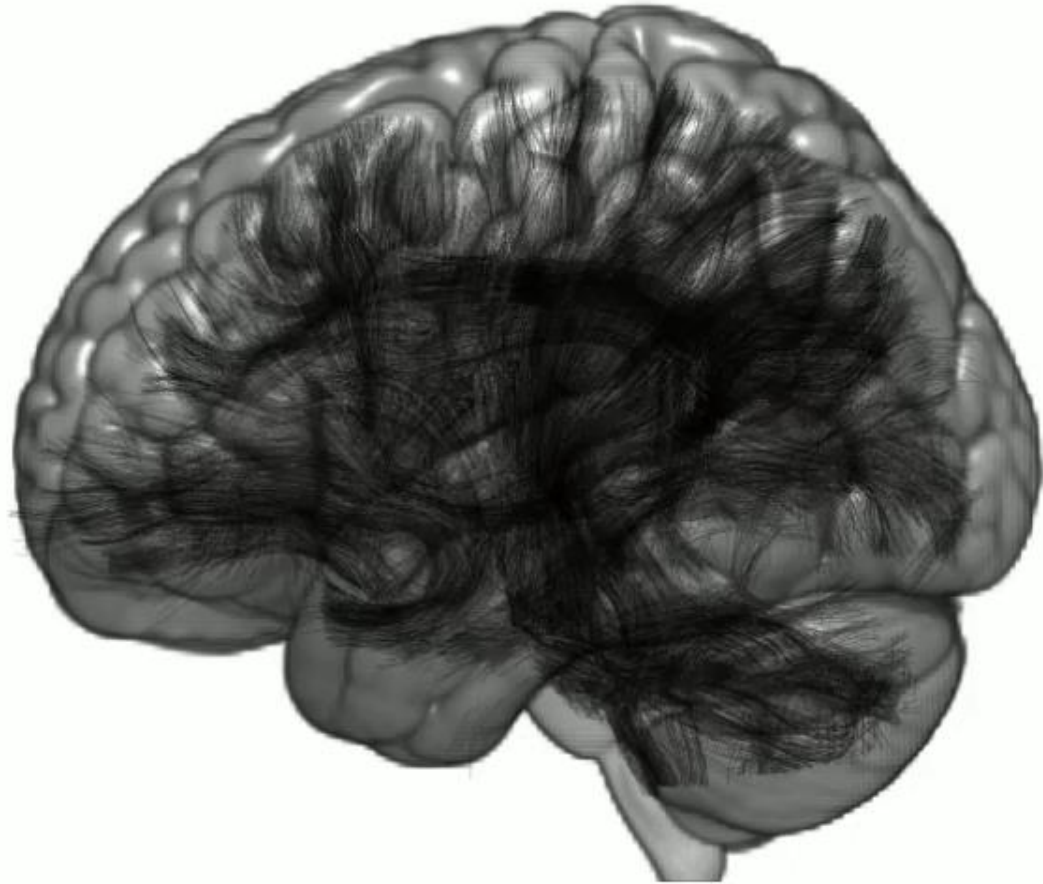
Emotion Processing: 1,573 %



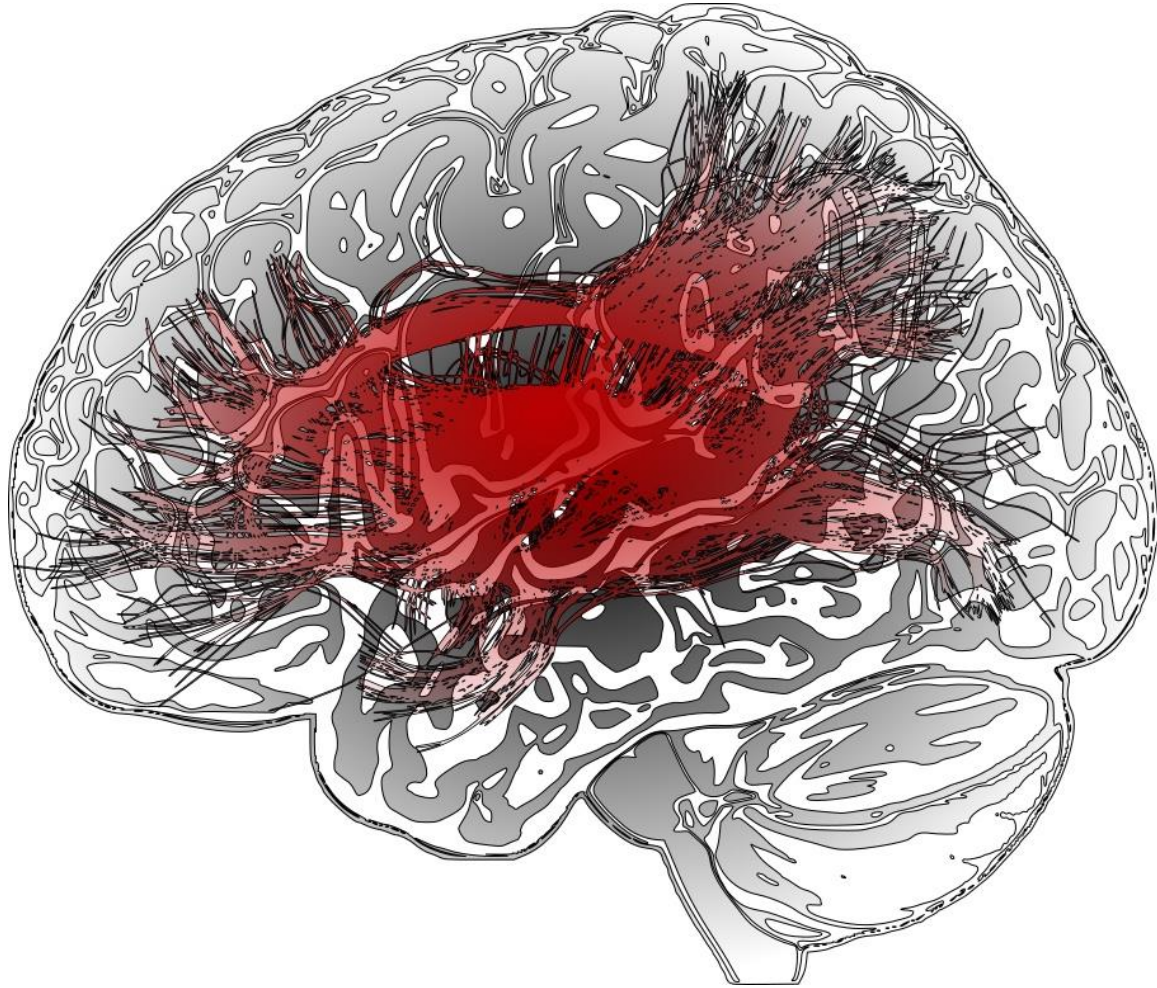
Made with fMRICRoTools



Conclusions



Merci pour votre attention !



<http://brainanalyze.com>