Predicting cognitive decline with rsfMRI

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Background

 2011-2014 Baccalauréat en sciences bio 	biomédicales
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- 2014-2016 Maîtrise en microbiologie-immunologie
- 2015-2018 Baccalauréat en psychologie
- 2018-20?? Doctorat en psychologie research and intervention
 - Concentration in clinical neuropsychology

PnD3 PnD4 PnD5

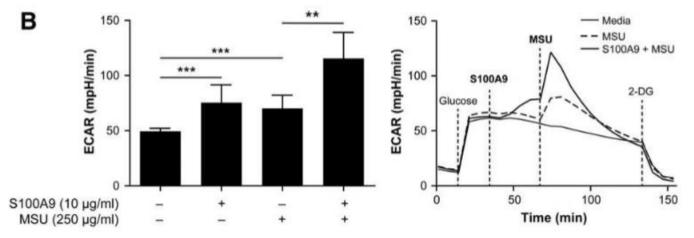
PnD6

PnD7

PnD8 PnD9

PnD10

Things I've done



GESTATIONAL PERIOD

LPS treatment (120 µg/kg, i.p.) 1 injection/day for 3 days from GD15 to GD17

Poly I:C treatment (5 mg/kg, i.v.) 1 injection/day for 3 days from GD15 to GD17



	Measures		
GD15	Body weight	Body weight	
	Body temperature	Body temperature	
GD16	Food intake	Food intake	
	Surviving pups/litter	Surviving pups/litter	
	Behav	/iors	
GD17	Anxiety-like behavior	Anxiety-like behavior	
	Nest building test	Nest building test	
GD18	Post mortem analy	yses (in foetuses)	
	Inflammatory markers		
	TNF-α	TNF-α	
	CD68	CD68	
	mGluR5	mGluR5	
	Cellular markers		
	lba1	lba1	
	GFAP	GFAP	
	NeuN	NeuN	

POSTNATAL PERIOD

Offspring exposed to LPS	Offspring exposed to poly I:0
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Measures			
Body weight	Body weight		
Reflex development			
Righting reflex	Righting reflex		
Geotaxis reflex	Geotaxis reflex		
Grasping reflex	Grasping reflex		

Post mortem analyses				
Plasma cytokines				
IL-1α IL-12 IL-1β IL-17 IL-2 MCP-1 IL-3 IFNγ IL-4 TNF-α IL-5 RANTES IL-6	IL-1α IL-12 IL-1β IL-17 IL-2 MCP-1 IL-3 IFNγ IL-4 TNF-α IL-5 RANTES IL-6			
TNF-α CD68 mGluR5 Brain cy	TNF-α CD68 mGluR5			
IL-1α IL-10 IL-1β IL-12 IL-2 IL-17 IL-3 MCP-1 IL-4 IFNγ IL-5 TNF-α IL-6 MIP-1α RANTES	IL-1α IL-10 IL-1β IL-12 IL-2 IL-17 IL-3 MCP-1 IL-4 IFNγ IL-5 TNF-α IL-6 MIP-1α RANTES			
Cellular markers				
Iba1 Iba1 GFAP GFAP NeuN NeuN				

Ph. D. project

Beginning of the study

- Initial diagnosis
- Initial MRI
- Neuropsychological tests

First year

- Diagnosis
- Neuropsychological tests

Second year

- Diagnosis
- Neuropsychological tests

Third year

- Final diagnosis
- Final MRI
- Neuropsychological tests

Four different initial diagnosis → four different initial groups

- Cognitively healthy
- Mild cognitive impairement without depressive symptoms
- Mild cognitive impairement with depressive symptoms
- Geriatric depression

Brainhack School 2018

- Learn how to use NIAK and fMRIprep for preprocessing
- Start to think about the analysis of rsfMRI data
- Learn how to visualize and present nicely my results
- Understand Python enough to know what I'm doing when using a pipeline

Enjoy Montréal!