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Cerebellar control of gaze orientation toward visual targets: studies in the non-human primate

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Cerebellar control of gaze orientation toward visual targets: studies in the non-human primate

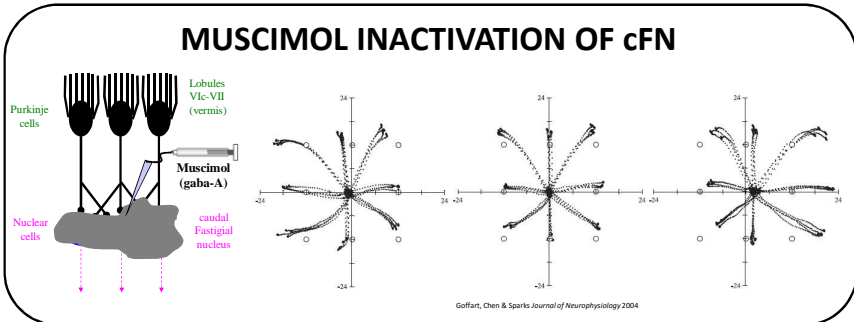
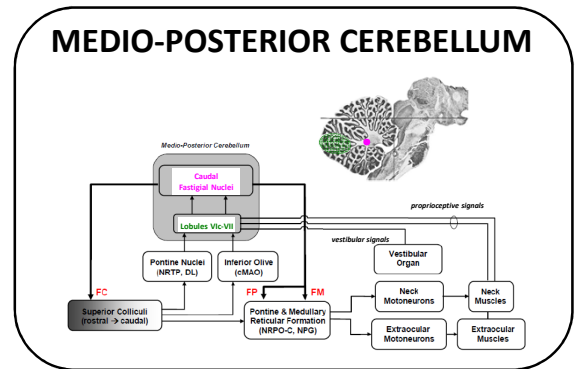
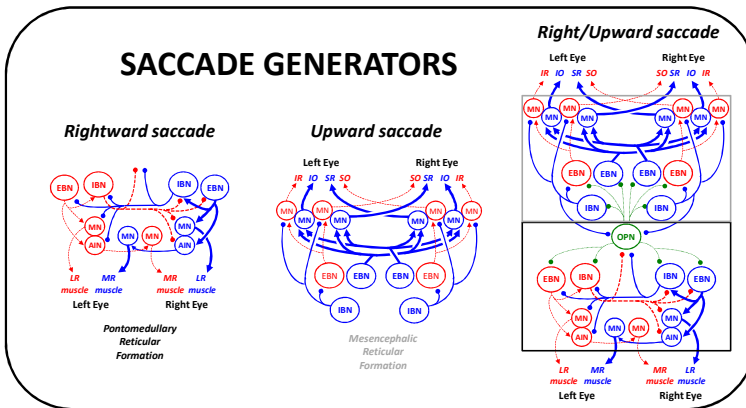
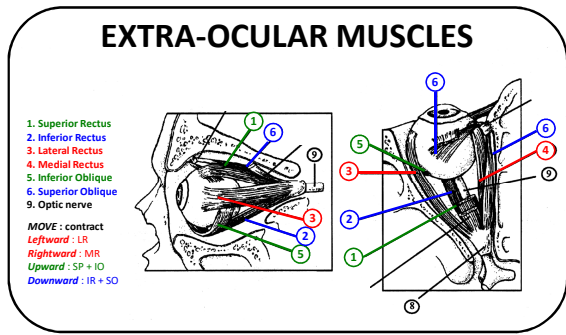
Laurent Goffart



80 years of building new worlds through knowledge

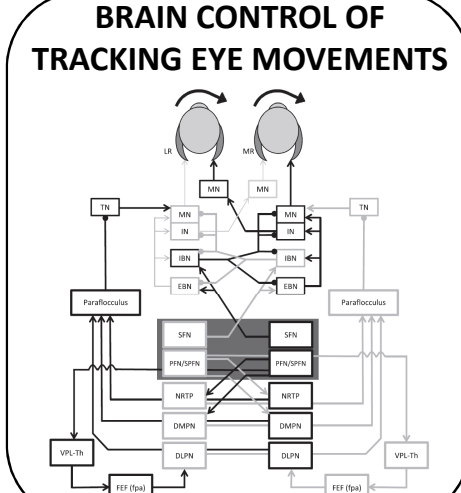
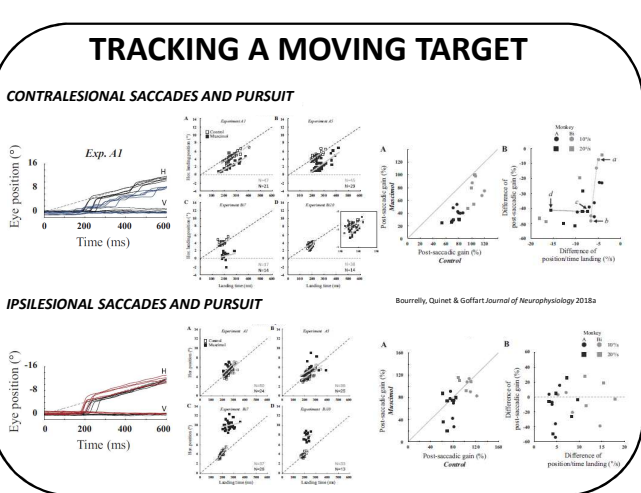
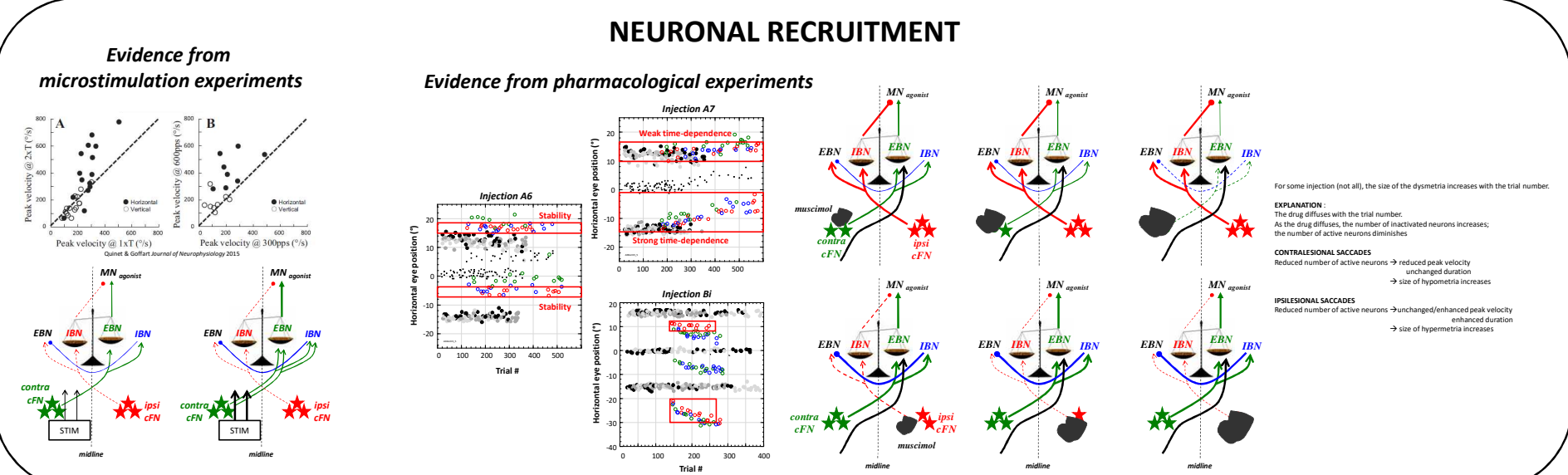
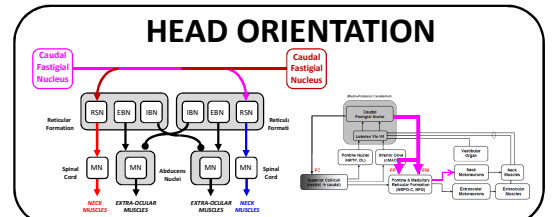
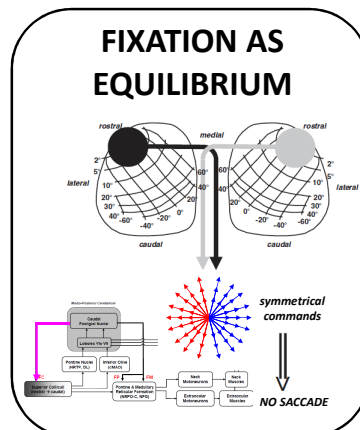
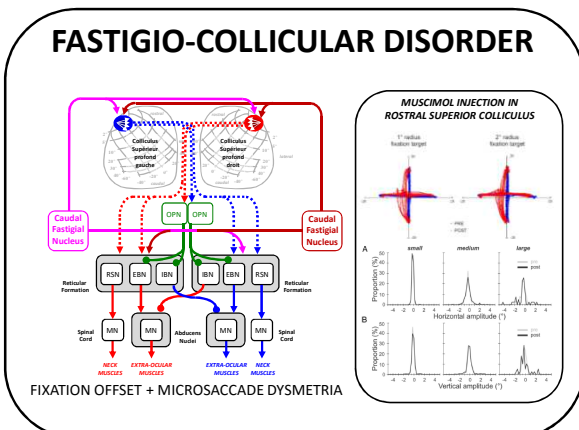
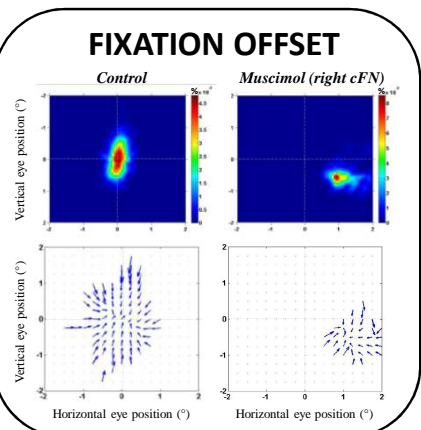
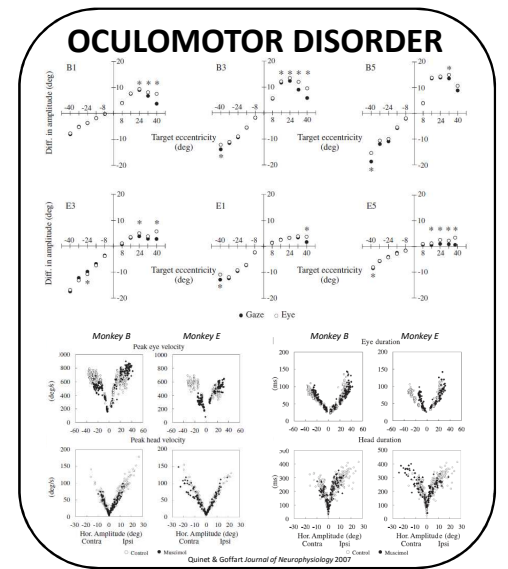
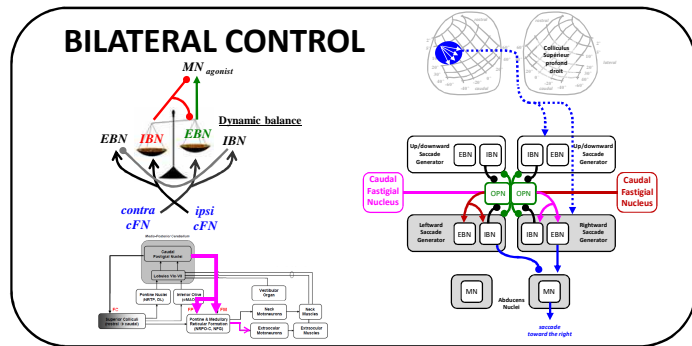
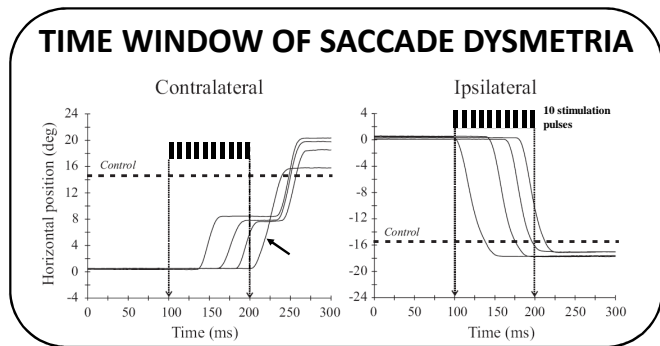
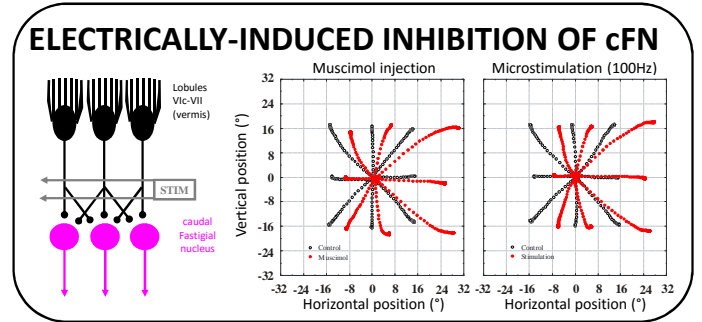
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FIRING RATE OF SACCADE-RELATED NEURONS

In the caudal fastigial nucleus (cFN), saccade-related neurons exhibit a burst of action potentials during saccades and a sustained firing rate between them. Electrophysiologists tried to relate the timing of the bursts to the acceleration and deceleration of saccades, i.e., with kinematic parameters. The dysmetria observed after cFN inactivation was considered as the outcome of the suppression of the burst; the pre-saccadic sustained firing rate was not considered for unjustified reasons. Therefore I searched for the critical time window during which an imbalance of cFN activity leads to horizontal dysmetria.



HYPOTHESIS: PURSUIT ALSO AS EQUILIBRIUM

STRENGTH and NOVELTY

Theory of neural control of movement which is strictly neurophysiological and does not embed kinematic notions (position, amplitude, velocity etc.) within the inner functioning of the brain.

LIMITS and PERSPECTIVES

- Extension to binocular eye movements
- Connections with reticulo- and vestibulo-spinal tracts (eye-head coupling)
- Extension to spatial cognition and the neural correlates of loci
- Inclusion of the climbing fiber input from cMAO
- Extension to basal ganglia and DA neurons

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