







### TRACTOGRAPHIE DE LA RETINE:

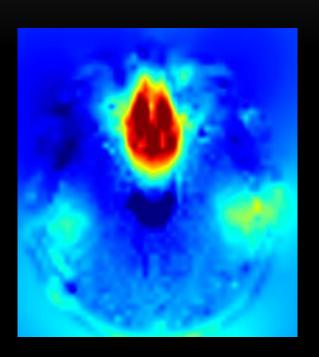
# FAISABILITÉ ET RÉSULTATS PRELIMINAIRES

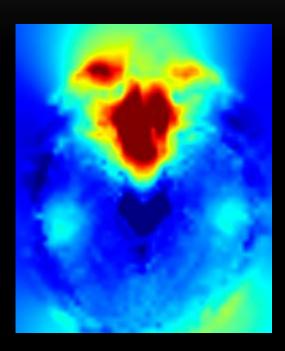
#### **Arnaud ATTYE**

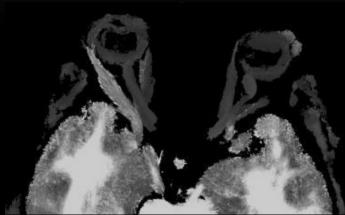
Neuroradiology Unit – Grenoble University Hospital IRMaGe Unit – Grenoble

## INTRODUCTION

Le problème



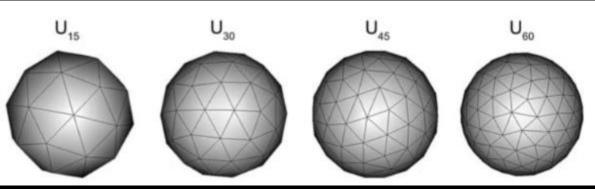




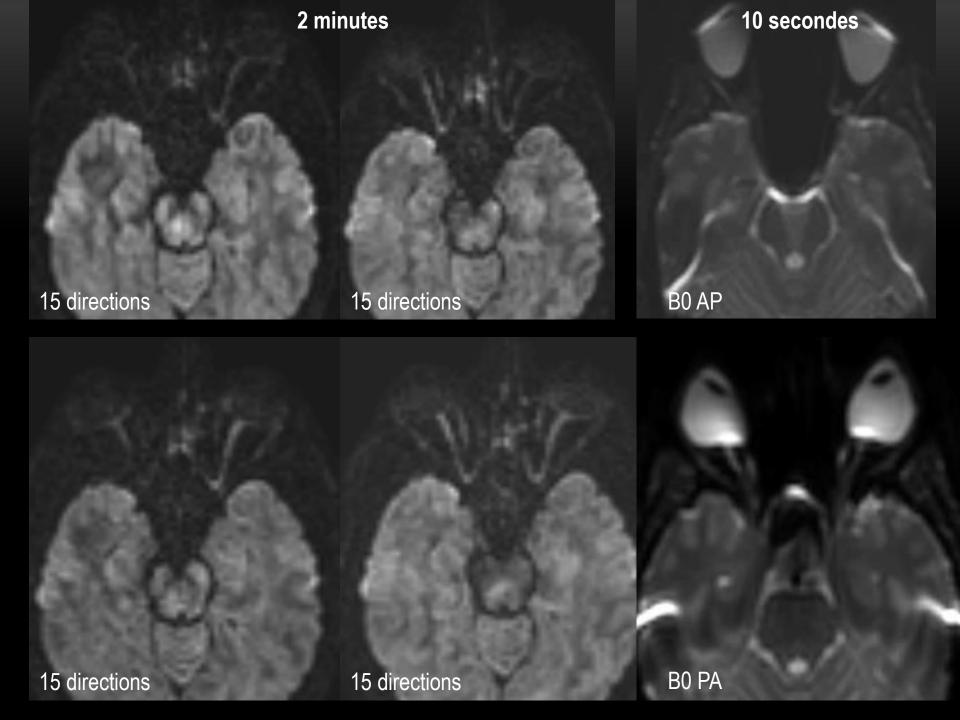
### INTRODUCTION

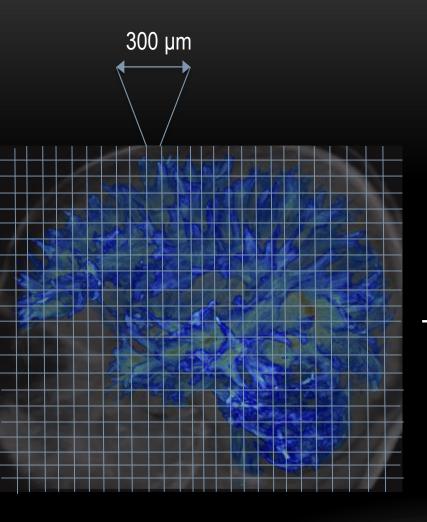
Les solutions



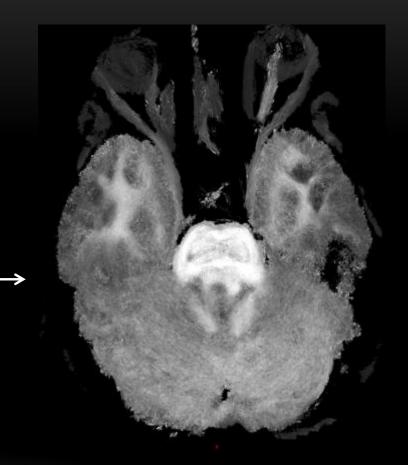


Dubois et al., Magn Res Mater Phy 2006



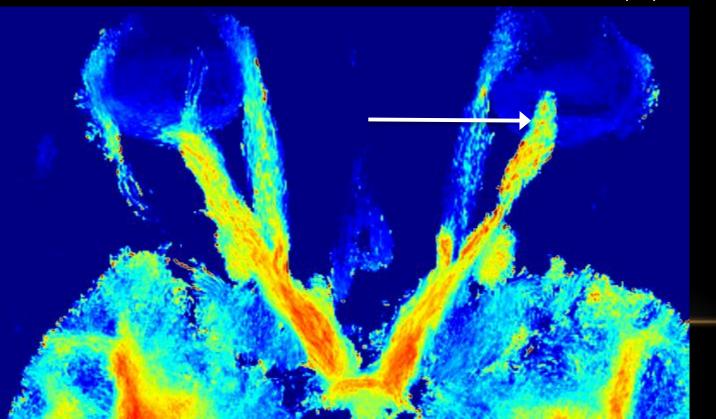


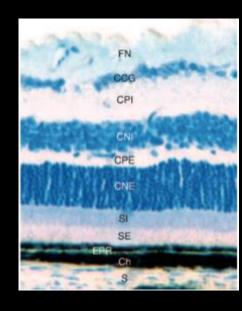
Tractographie: génération de 5 millions de fibres



Imagerie pondérée par les faisceaux de fibres

Fibres radiaires de la couche du nerf optique

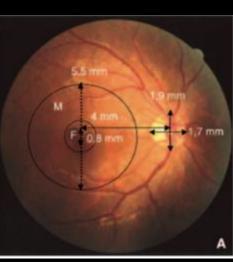




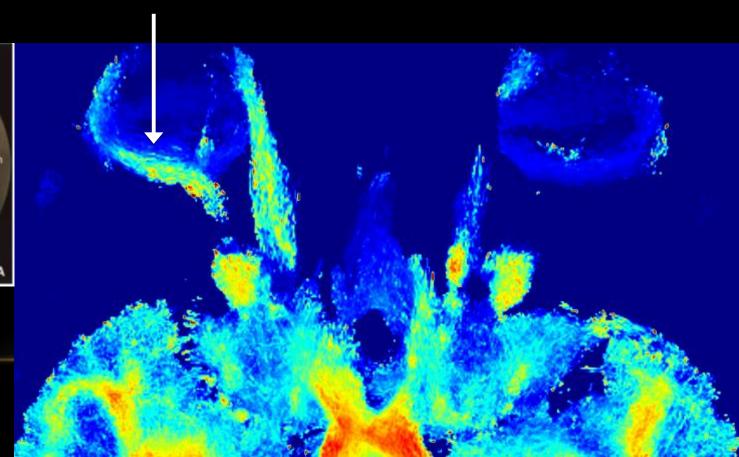
Behar Cohen et al., EMC

Radioanatomie normale en tractographie à 60 directions

Faisceau inter papillo-maculaire

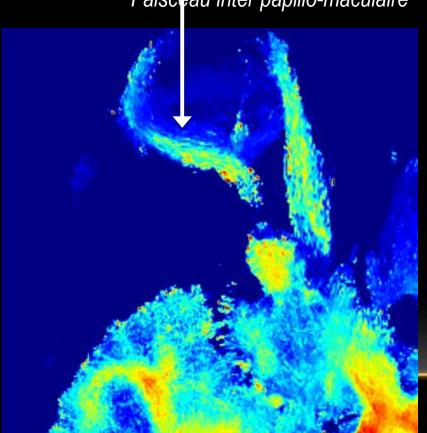


Behar Cohen et al., EMC



Radioanatomie normale en tractographie à 60 directions





PLoS One. 2016 Feb 26;11(2):e0150035. doi: 10.1371/journal.pone.0150035. eCollection 2016.

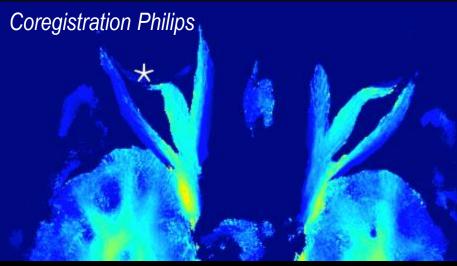
Ocular Dominance Is Associated with the Ganglion Cell-Inner Plexiform Layer Thickness Profile in the Macula.

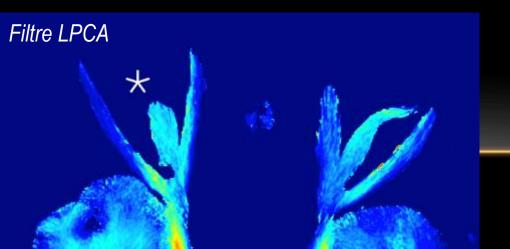
Choi JA1, Kim JS2, Jeong HJ3, Lee JA1, Park CK3.



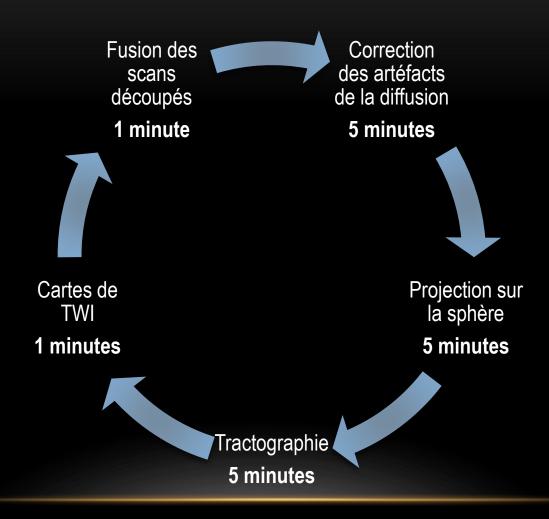
Technique de Débruitage (Coupe et al., IEEE Processing 2012. Manjon et al., Plos One 2013)

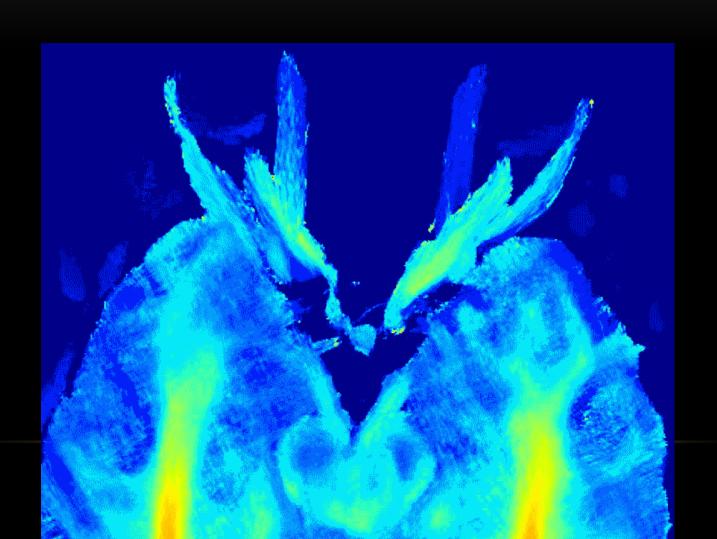


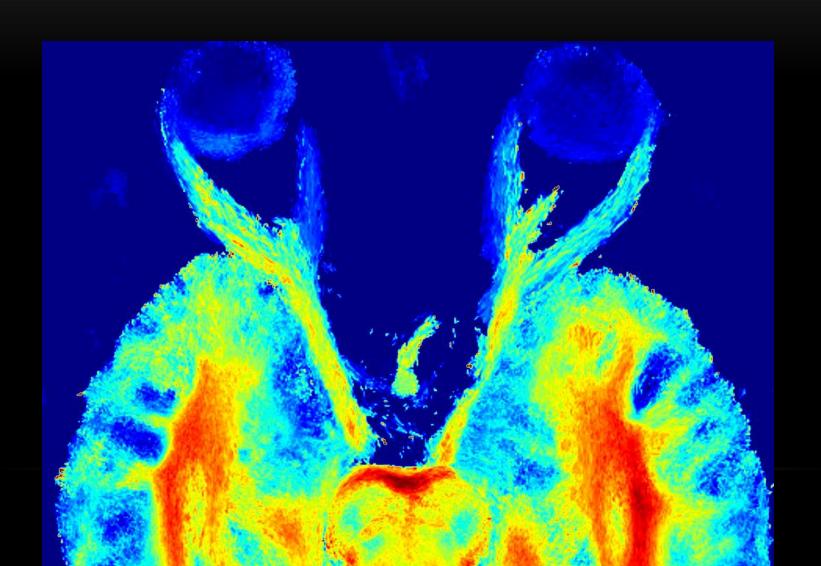


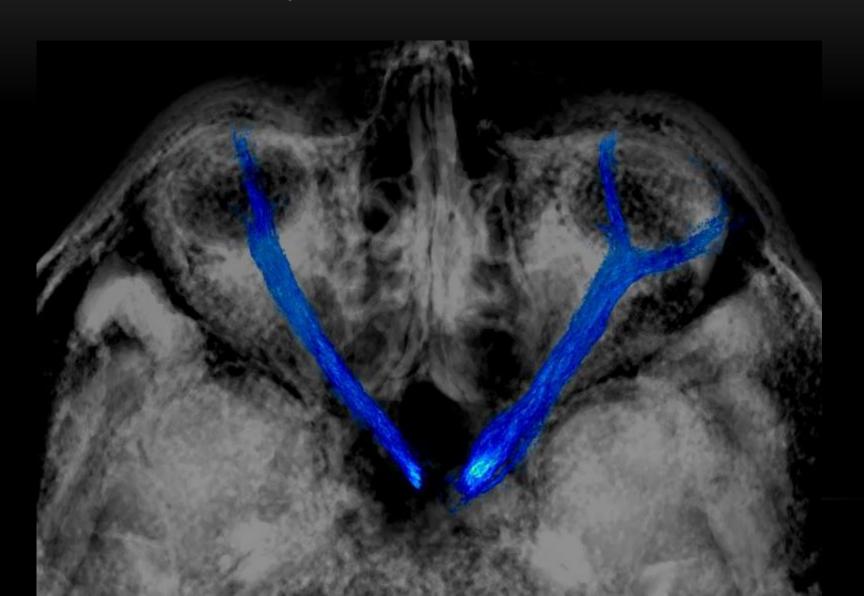


### TIME IS MONEY...AND QUALITY



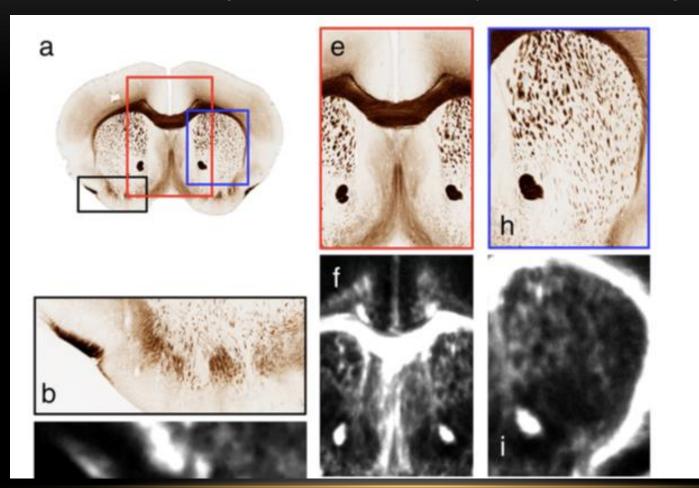






#### VALIDATION SUR L'ANIMAL

Comparaison à l'histologie sur un modèle de souris (Calamante, Neuroimage 2012)



Myelin (mouse brain)

TWI (20 µm)

HYPOTHESE FORTE: L'INTENSITE DU SIGNAL EST DIRECTEMENT PROPORTIONNELLE A LA DENSITE DU **MILIEU INTRACELLULAIRE** 

### MODELE ISCHEMIQUE

Ischémie de la tête du nerf optique et des cellules ganglionnaires de la rétine

Histo-pathologie

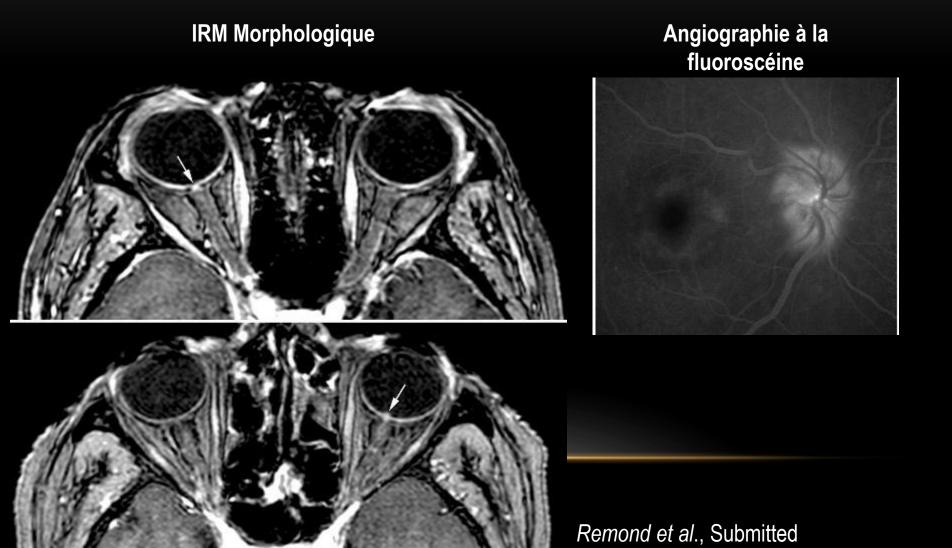
OCT



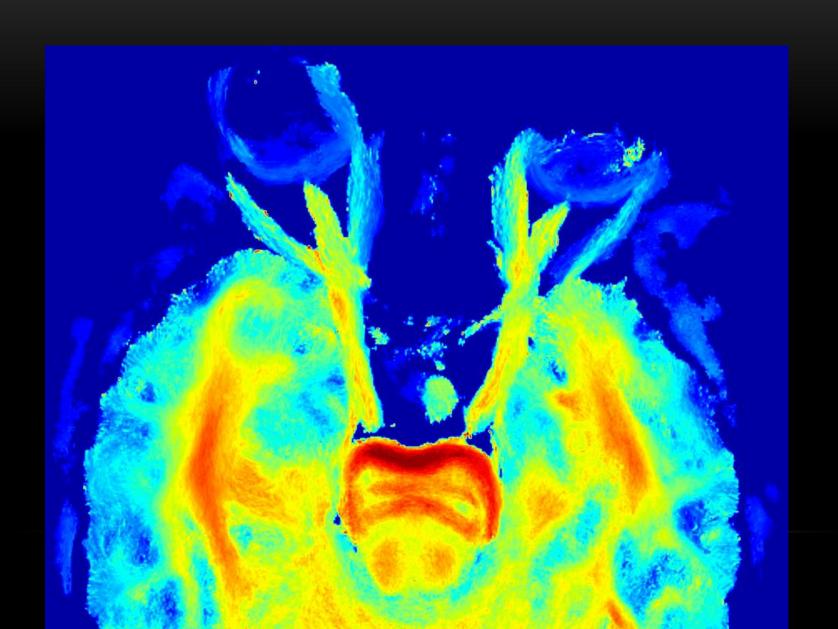
Bernstein et al., Jpn J Ophtalmol, 2015

### MODELE ISCHEMIQUE

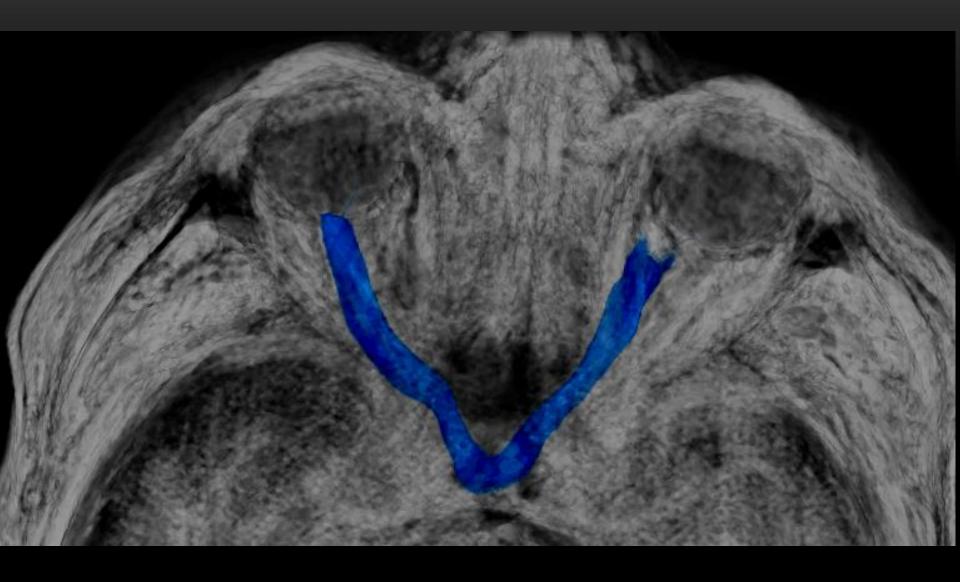
Ischémie de la tête du nerf optique et des cellules ganglionnaires de la rétine



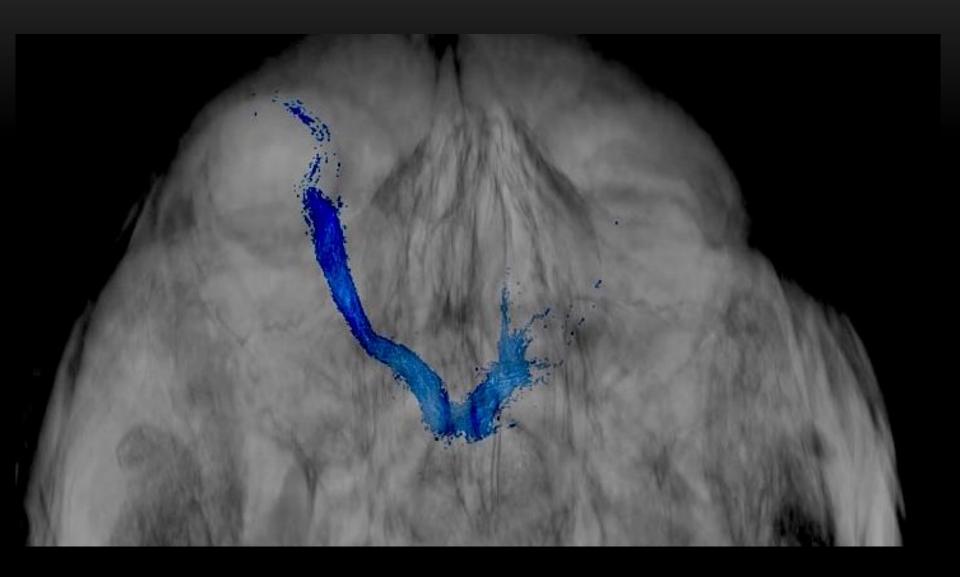
# MODELE ISCHEMIQUE



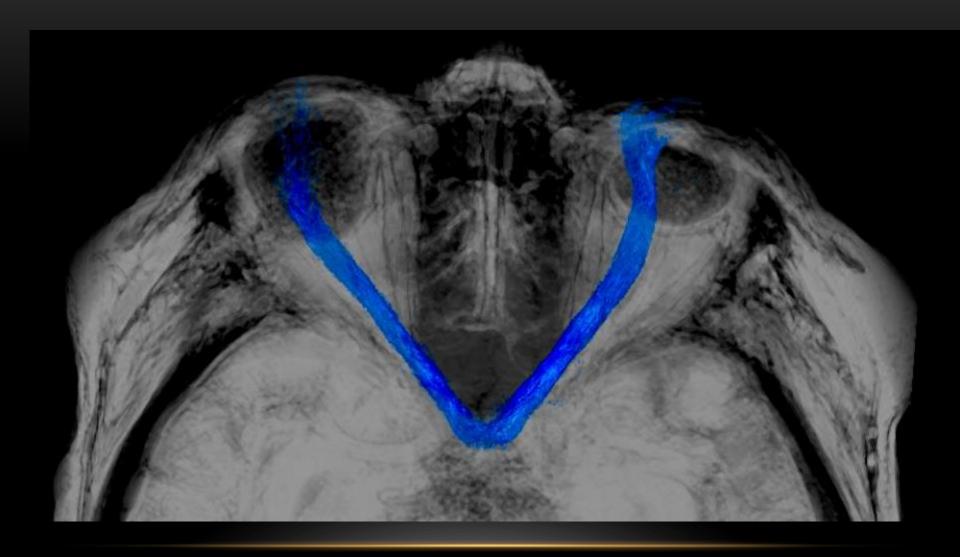
#### NOIAA artéritique



# PERSPECTIVE



## PERSPECTIVE



#### CONCLUSION

Méthode prometteuse pour la rétine...et le nerf optique

Quantification chronophage

Problème des NORB

Glaucome +++

#### REMERCIEMENTS

IRMaGe: Laurent Lamalle, Irène Troprès, Johan Pietras

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