Recruitment event of IT-DED³

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[*ESR 9*]

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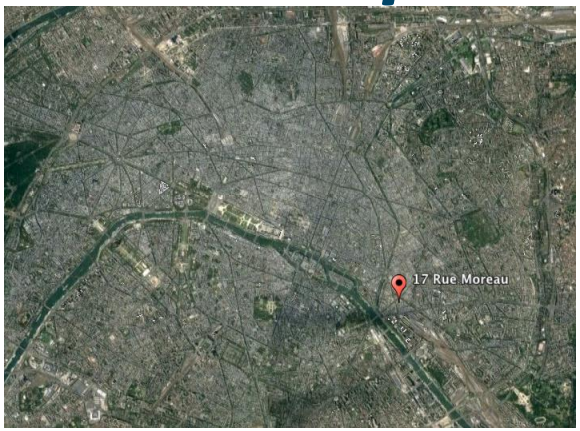
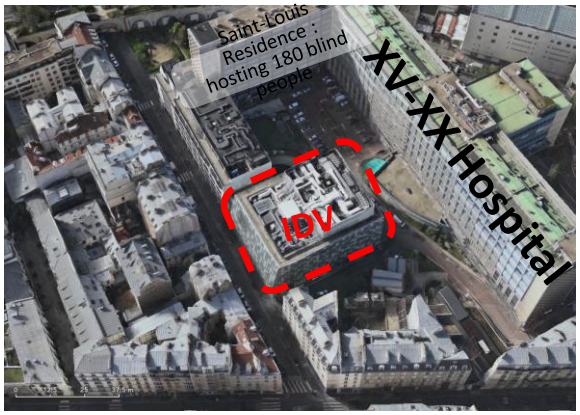
Lab description

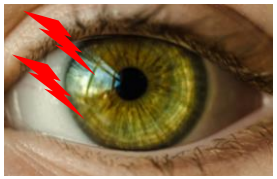




6000 m2 dedicated to translational researc
200 researchers, technicians and administrative staff
20 clinicians
40 industrial partnership
10 platforms

TEAM S12: Chemokines and physiopathology of the eye anterior segment

- Corneal pain has gained recognition as a public health problem given its prevalence and morbidity in dry eye patients *(Belmonte, Ocul Surf 2017)*



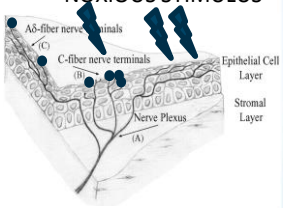
- **Prevalence of the DED** : affects 5-30% of the population older than 50 years.

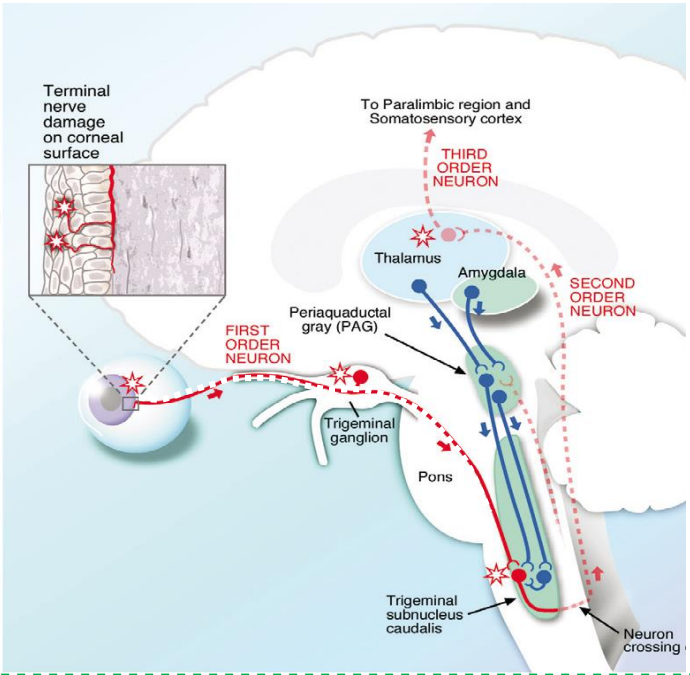
- Corneal pain is considered as a core symptom of inflammatory or traumatic disorders affecting the cornea.

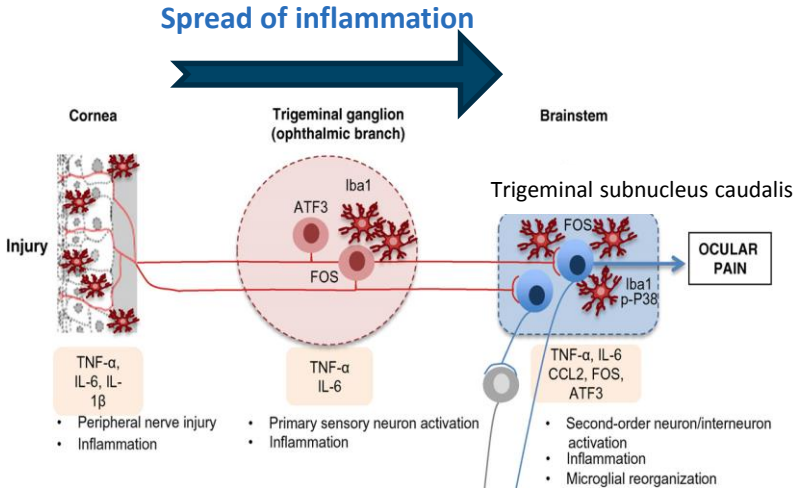
- **Ocular pain management:** a therapeutic challenge in ophthalmology !

  NO TOPICAL OCULAR ANALGESICS are available for the treatment of acute or chronic pain, only anesthetics which have many shortcomings.

Corneal nociceptive pathways







Launay … Réaux Le Goazigo, Exp Eye Res 2015
Launay … Réaux Le Goazigo, Neurobiol Dis 2016

Understanding of the circuitry of the corneal nociceptive pathways first in normal condition and then after corneal injury are still fairly limited.

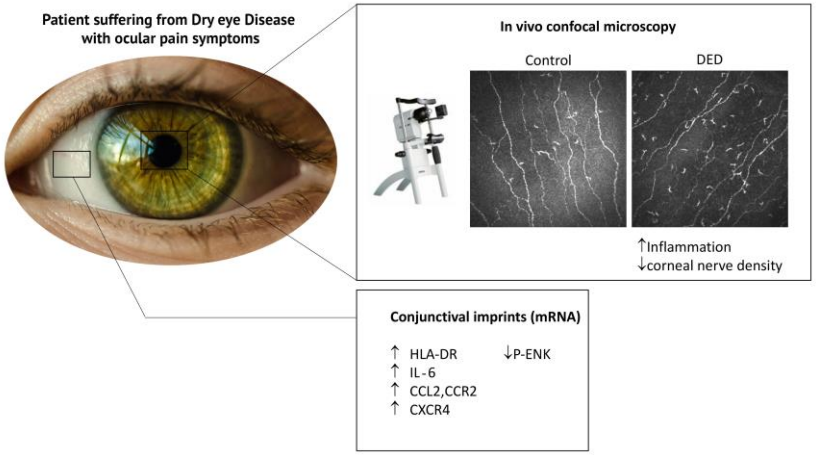
How these processing steps are changed during chronic dry eye disease?

State of art: chemokines, pain modulation and DED

Chemokine and their receptors are constitutively detected in the peripheral and central nervous system where they act as neuromodulators of brain functions.

CCL2/CCR2, CXCL12/CXCR4 play a major role in acute and chronic inflammatory pain.
Van Steenwinckel , J Neurosci. 2011, Rivat Brain Behav Imm 2015; Melik Parsadaniantz, Réaux -Le Goazigo Nat Rev Neurosci 2015

Inflammation is the core mechanism in the pathogenesis of DED.



Nicolle P… Réaux Le Goazigo, Int J Mol Sci., 2018

Currently the cellular and molecular mechanisms underlying DED are not fully understood.

The current application will improve our knowledge in the pathological role of chemokines during DED.

ESR9 Supervisor: Dr Annabelle Réaux - Le Goazigo

« Cytokine and chemokine receptors and relationship to ocular pain »

Objectives

- Analyses of chemokine (CXCL12/CCL2) and chemokine receptor (CXCR4,CCR2) localization in the cornea, trigeminal ganglion, and the sensory trigeminal complex during DED
- Time course of chemokine and chemokine receptor expression in ocular nociceptive pathways (cornea, TG, and sensory trigeminal complex) during DED.
- Does DED induce *in vivo* release of chemokines from trigeminal primary sensory neurons?

Methods

- Development of the preclinical model of DED in mice
- Clinical evaluation of the ocular surface (slit lamp, *in vivo* confocal microscopy)
- RNA extraction, qPCR, Western blot
- Neuranatomical studies : tissue sections, immunofluorescence, microscopy
- ELISA, multiplex
- Statistical analysis

Planned secondments

Clinical Center of Investigation (CIC) (CHNO des Quinze-Vingts – INSERM 1423)
Supervision: Prof. Antoine Labbé (M15-17)

Horus Pharma (supervision: Dr. Carole Gard): 3 months, training in development activities, scientific communication, clinical evaluation and regulatory strategy as part of the developments necessary to obtain marketing authorizations (M30-32)

Laboratoires Horus Pharma
148 avenue Guynemer, Cap Var
06700 Saint-Laurent du Var
http://www.horus-pharma.com/

Horus Pharma is an independent French laboratory specialised in ophthalmology
Founded in 2003, Horus Pharma develops, patents and markets products designed to facilitate eye and eyelid health.

4. Doctoral school linked to the beneficiary and offering training on transferable skills

ED394 : http://www.ed394.upmc.fr/fr/index.html

In consultation with its supervisor, each doctoral student develops a plan for continuing education.

This plan is in support of the research project and supports the professional project. It is part of a process of professionalization and openness.

The PhD student chooses courses from the list of modules approved by the Doctoral School.

Each doctoral student **in the first and second year must take courses for an hourly volume of about 60 to 80 hours a year** (15 days). He must have his training plan validated by the Doctoral School before enrolling in the different modules, respecting the registration procedures specific to each organization that provides the training chosen.

Thanks for your attention