

# French Periprosthetic infection Network

## Referral Reference Centers for the management of BJI

Pr. Tristan Ferry, MD, PhD  
*[tristan.ferry@univ-lyon1.fr](mailto:tristan.ferry@univ-lyon1.fr)*

Infectious and Tropical Diseases Unit, Croix-Rousse Hospital , Hospices Civils de Lyon, Claude Bernard Lyon1 University, Lyon  
Centre International de Recherche en Infectiologie, CIRI, Inserm U1111, CNRS UMR5308, ENS de Lyon, UCBL1, Lyon, France  
Centre de Référence des IOA complexes de Lyon (CRIOAc Lyon)

# A reference center?

What is the “French” definition of “Reference (Referral) Center”?

Set up of CRIOAc(s) and CRIOAc network in France in 2008  
Funded by the French Health Ministry

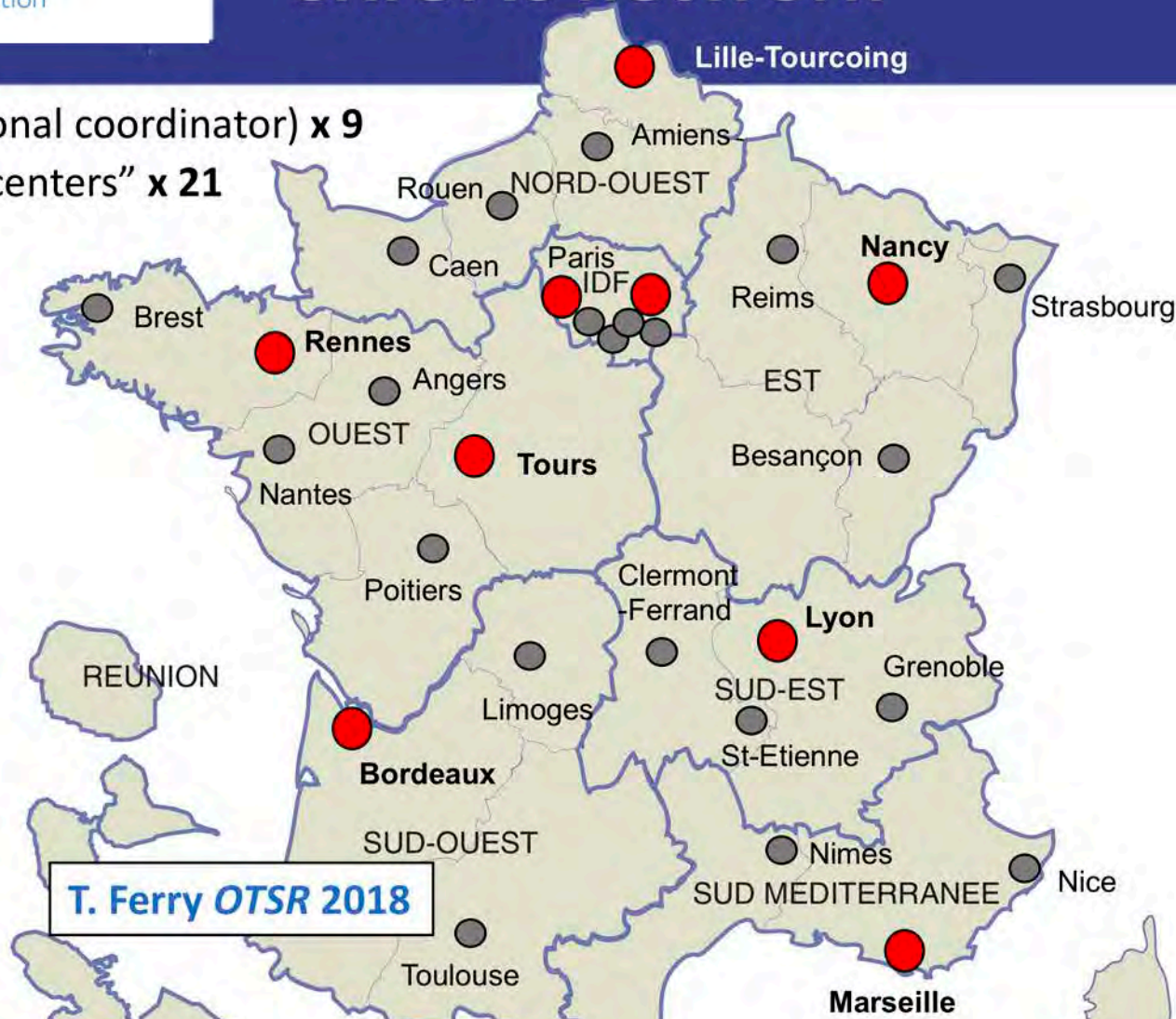


Centre de Reference des Infections Ostéo-Articulaires complexes  
Referral Center for the Management of Complex Bone and Joint Infection



# CRIOAc network

- CRIOAc (regional coordinator) x 9
- "Associated centers" x 21



**Labellisation by the  
French health ministry  
of Regional centers**

## CRIOAc

Centre de Référence  
des Infections Osteo-  
Articulaires complexes

# CRIOAc's Goals and duties

Based on instruction DGOS/PF2 n° 2010-466

- CRIOAc (regional coordinator) x 9
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- Reply to requests for advice
- Manage simple and complex BJI
- Organise multidisciplinary meetings
- Improve the care pathway

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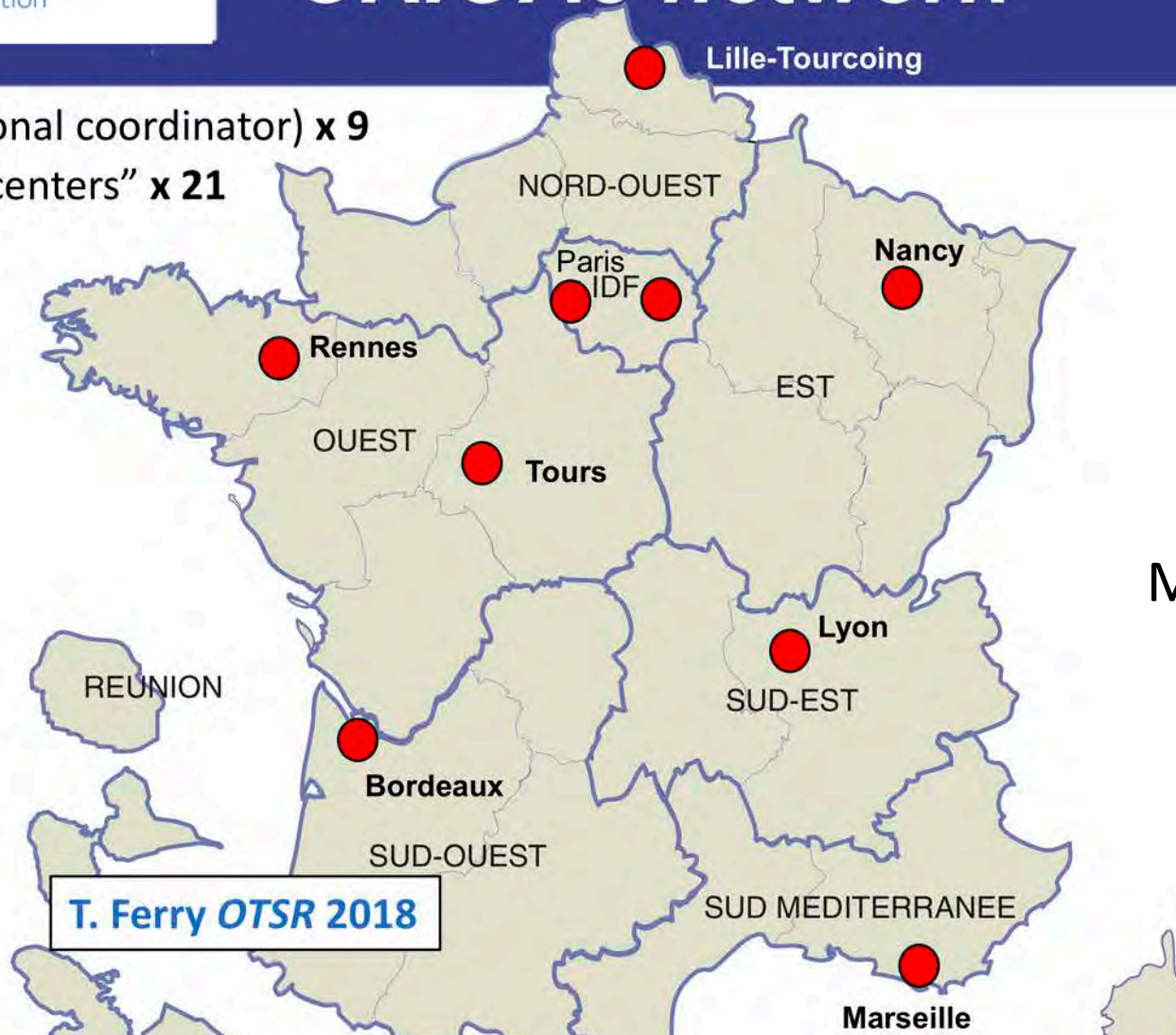
CRIOAc (regional coordinator) x 9  
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- Evaluate practices, produce recommendations for good practice
- Promote clinical **research**, innovation, but also translational research
- To **teach** at the regional and national levels, by participating directly in the organisation of the national diploma on BJI (set up in 2014)

CRIOAc (regional coordinator) x 9

# CRIOAc network

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**100k€/year**  
To organize  
Multidisciplinary  
Meetings



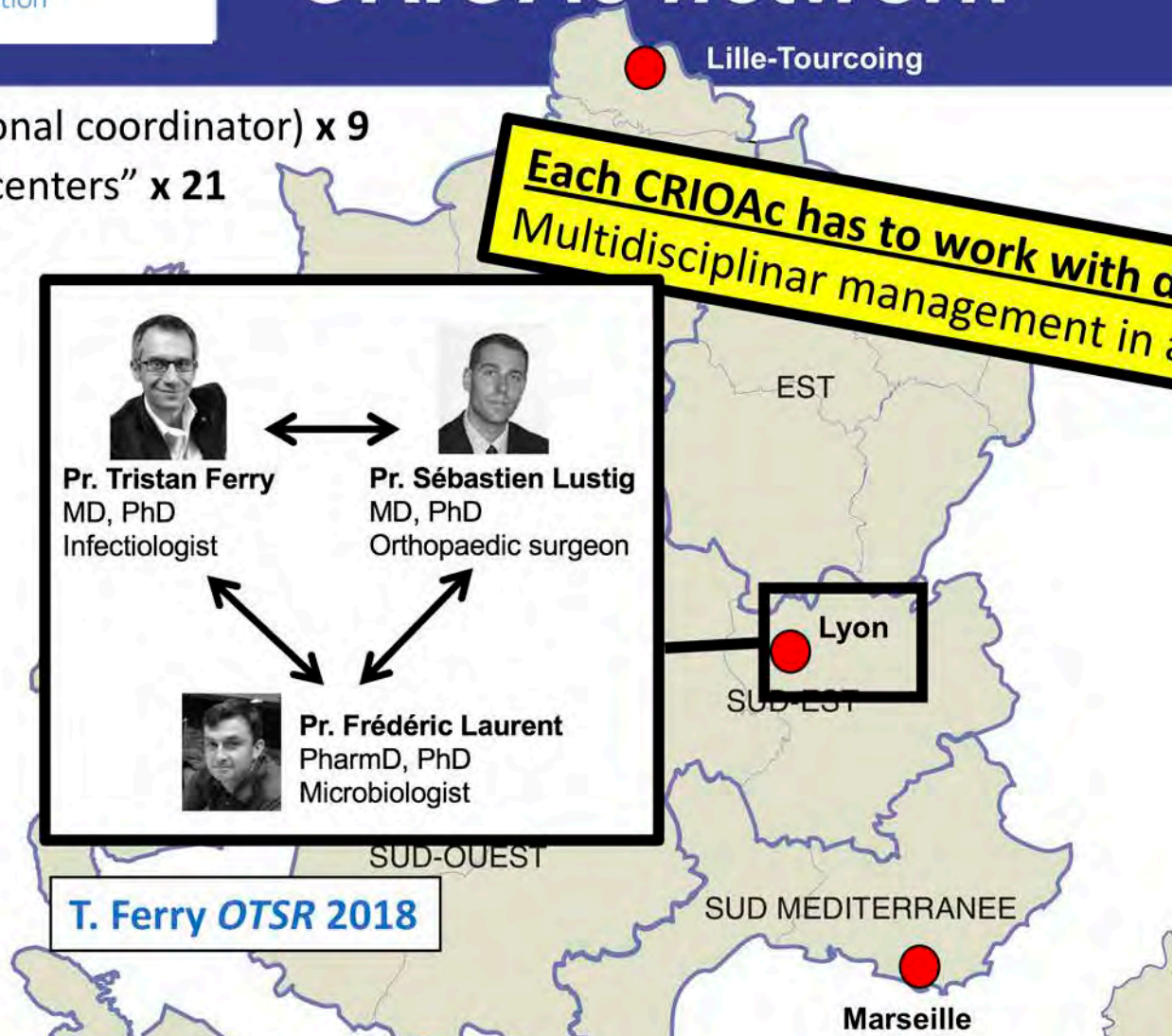
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**Each CRIOAc has to work with dedicated physicians**  
Multidisciplinary management in a dedicated hospital



**T. Ferry OTSR 2018**



Since  
2013

Sud-Est - CR - Hospices civils de Lyon - RCP Chirurgie Septique

MO  E, 72 ans

Contexte de la RCP

Synthèse clinique

Localisation/Microbiologie/Chirurgie

Antibiothérapie

Finalisation et validation de la RCP

Episode :

☐ Premier épisode

☒ Rechute

Motif :

☐ Stratégie médico-chirurgicale

☐ Bilan pré-thérapeutique

☒ Réévaluation en cours de traitement

☐ Deuxième temps de chirurgie après infection

- Pdf documents
- Incorporated in the patient's chart
- Medicolegal importance

Passage en recours/deuxième avis : ☒ Oui ☐ Non

Précédentes fiches RCP

Intitulé RCP	Date de passage	CR PDF
<input checked="" type="checkbox"/> HCL	15/05/2014	
<input checked="" type="checkbox"/> HCL	20/03/2014	
<input checked="" type="checkbox"/> HCL	16/01/2014	
<input checked="" type="checkbox"/> HCL	05/12/2013	





M0 [redacted], 72 ans

de la RCP Synthèse clinique Localisation/Microbiologie/Chirurgie Antibiothérapie Finalisation et validation de la RCP

72 Poids actuel : 89 kg Taille : 175 cm IMC : 29.06

Dosage CRP : 25 mg/L

Score ASA : 3 - Patient avec anomalie systémique sévère

Créatininémie : 120 µmol/L Clairance de la créatinine : 52,5 mL/min/1,73m<sup>2</sup>

Comorbidités ou terrains interférents :

☒ Insuffisance rénale ☐ Insuffisance hépatique ☐ Insuffisance cardiaque

☐ Polypathologie ☐ Immunodépression ☐ Diabète

Justification :

[redacted]

Facteurs de risque :

☒ Traitement immunosuppresseur ☐ Infection par le virus VIH ou par les virus des hépatites

☐ Cirrhose ☐ Néoplasie évolutive

☐ Chimiothérapie anti-cancéreuse ☐ Maladies auto-immunes et rhumatismes inflammatoires chroniques

☐ Rhumatisme inflammatoire chronique ☒ Drépanocytose

☒ Hémophile ☐ Transplantation d'organe

☐ Obésité morbide (IMC > 30) ☐ Tabagisme actif

☐ Diabète avec complication(s) ☐ Autre :

Si Autre, préciser :

Allergie connue aux antibiotiques : ☐



72 ans

RCP Synthèse clinique Localisation/Microbiologie/Chirurgie Antibiothérapie Finalisation et validation de la RCP

'Document site' créé le 09/12/2013 à 11:04 par Tristan FERRY

Ajouter

Site  
Genou

Site : Genou Côté : ☐ Gauche ☒ Droit

Cadre nosologique : ☒ Prothèse ☐ Ostéite  
☐ Pseudarthrose ☐ Arthrite  
☐ Matériel d'ostéosynthèse ☐ Autres

Microbiologie

Microbiologie : ☒ Documenté fiable ☐ Non documenté ☐ Non contributif

Germe(s)  
Staphylococcus epidermidis ☒ Avec résistance

Commentaire :

PEC Chirurgicale

Acte : -- Sélectionner --

Remarques : -- Sélectionner --

- Ablation de matériel
- Abstention chirurgicale contre indication
- Abstention chirurgicale non-indication
- Abstention chirurgicale refus du patient
- Amputation
- Arthrodèse

No surgery  
DAIR  
Explantation 1-stage exchange  
Explantation 1-stage exchange  
Reimplantation 2-stage exchange





MOR  72 ans

Contexte de la RCP Synthèse clinique Localisation/Microbiologie/Chirurgie Antibiothérapie Finalisation et validation de la RCP

IOA complexe : ☐ Non ☒ Oui Critères de complexité

Critères : ☒ Echec de traitement antérieur ☒ Programme chirurgical  
☒ Terrain ☒ Microbiologie

Etablissement de prise en charge :

## Criteria of complexity

- **Host :**
  - Patients with **severe comorbidities** that limit the therapeutic program
  - Patients with **severe allergy**
- **Microbiological criteria :**
  - **Difficult-to-treat** micro-organism with or without multidrug **resistance**
- **Surgical criteria :**
  - BJI requiring **bone resection** and bone and/or soft-tissue **reconstruction**
- **Relapse**



MOR  72 ans

Contexte de la RCP Synthèse clinique Localisation/Microbiologie/Chirurgie Antibiothérapie Finalisation et validation de la RCP

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Etablissement de prise en charge :

## Criteria of complexity

- **Host :**

- Patients with **severe comorbidities** that limit the therapeutic program
- Patients with **severe allergy**

- **Microbiological criteria :**

If the case is validated as “**complex**”  
The hospital stay **IN SURGERY** is paid +12% more

- **Surgical criteria :**

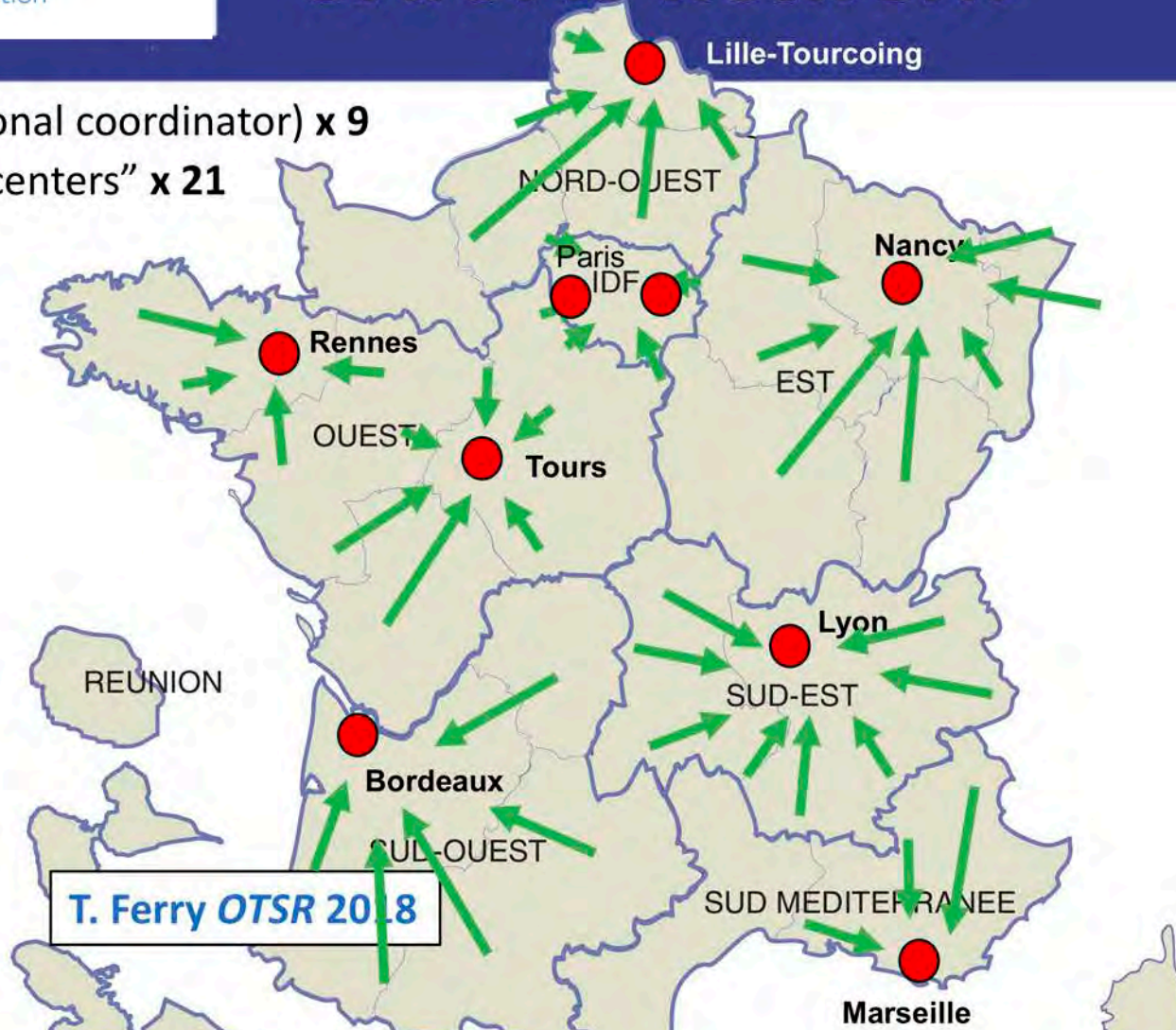
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# CRIOAc network

- CRIOAc (regional coordinator) x 9
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Recruitment of  
the most **complex**  
**patients**

In the **CRIOAc**  
**network**

To increase the  
**knowledge** and  
**skill** of dedicated  
surgeons and  
physicians



British  
Orthopaedic  
Association

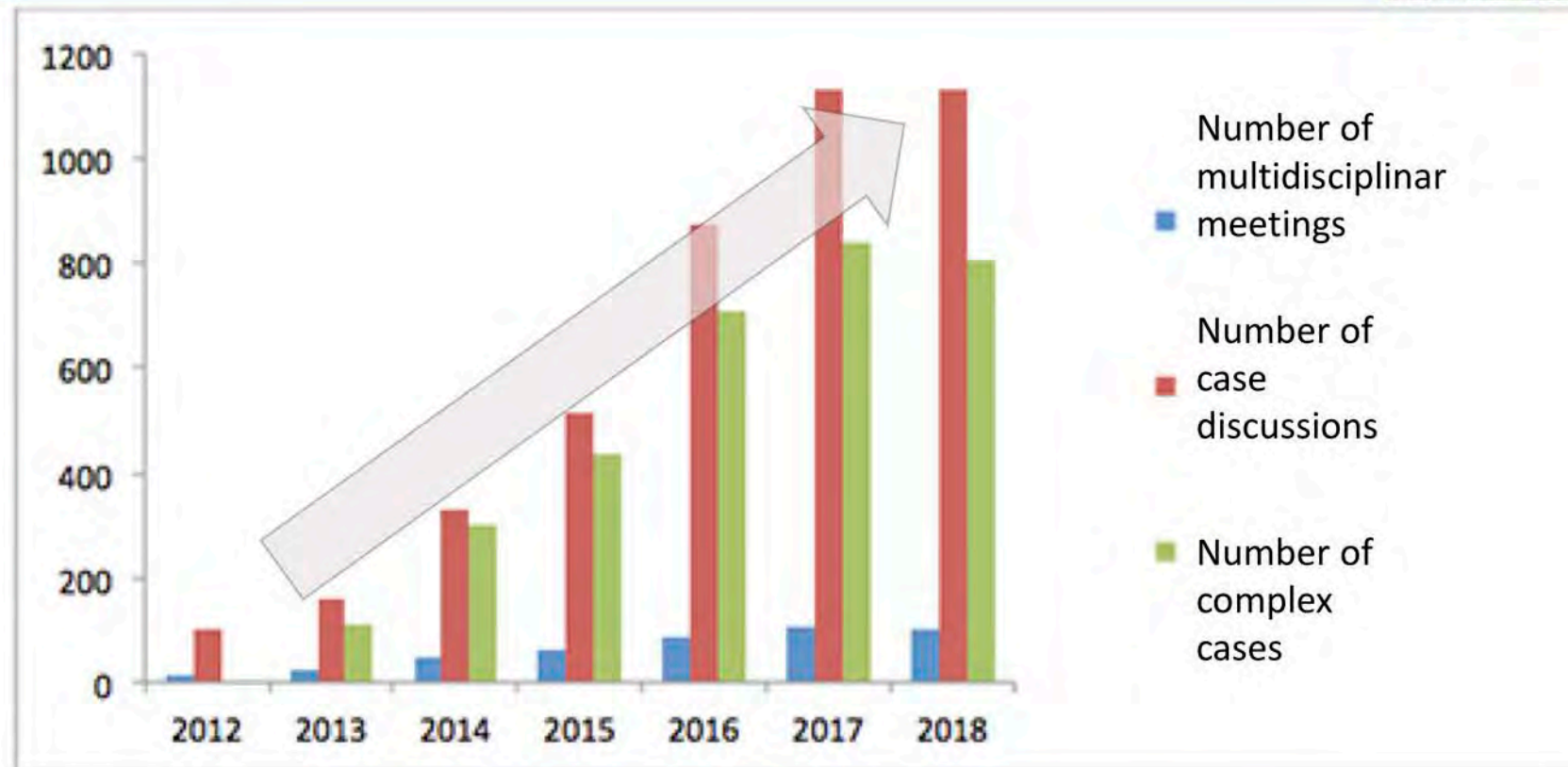
*Start in 2010/2013...*

**Does it work ?**





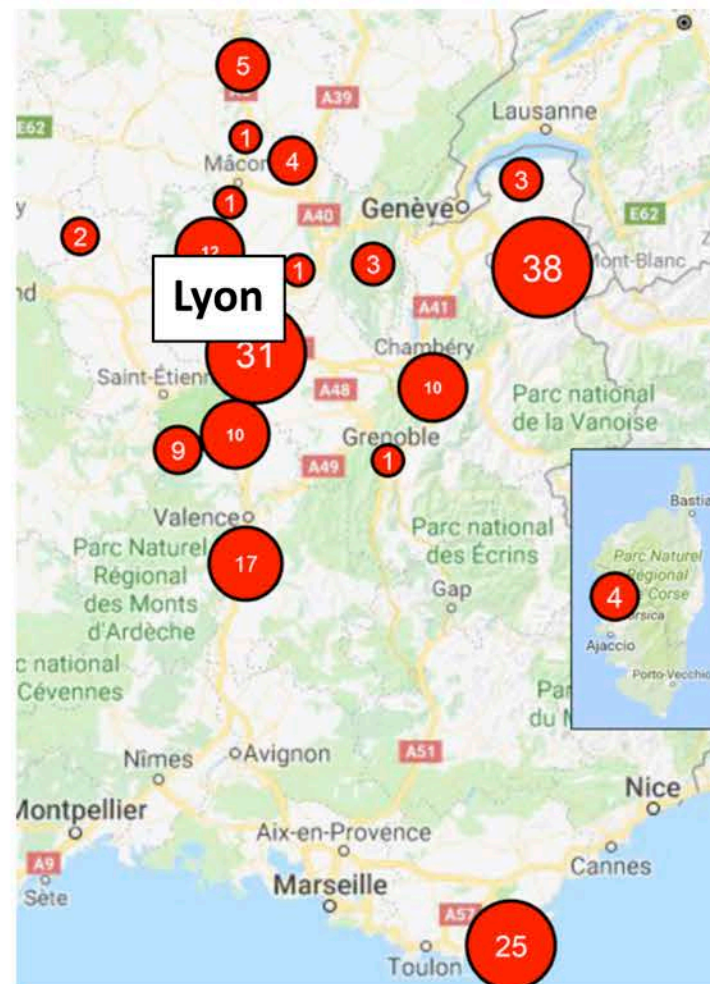
# Recruitment in CRIOAc Lyon



Nombre de dossiers discutés en réunions de concertations pluridisciplinaires (RCP) au CRIOAc de Lyon



**Each Monday**  
**Multidisciplinary meeting**  
*in visio*



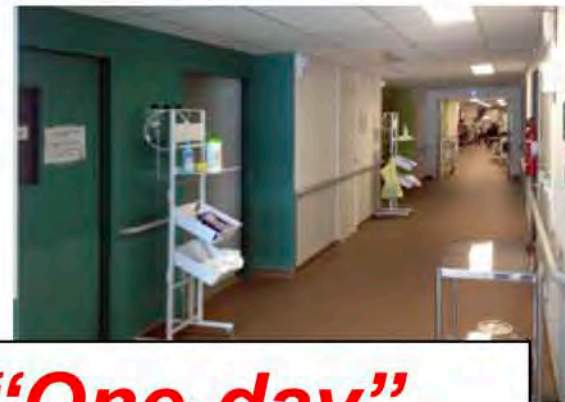


# Multidisciplinary meetings

Each Thursday  
Multidisciplinary meeting  
*in hospital*

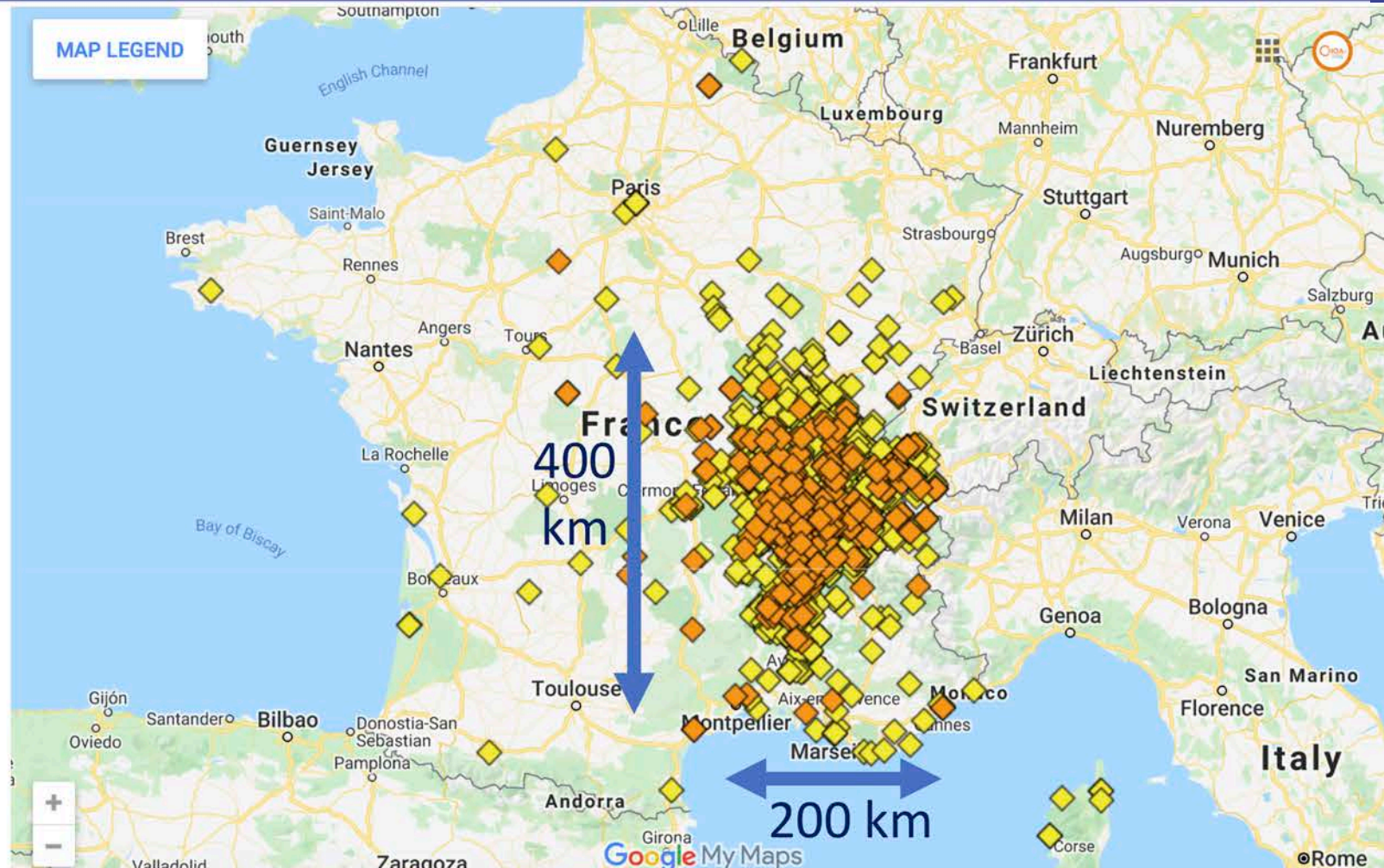


***“One-day”  
Hospital unit***





# Place of residence of patients managed in Lyon



2019

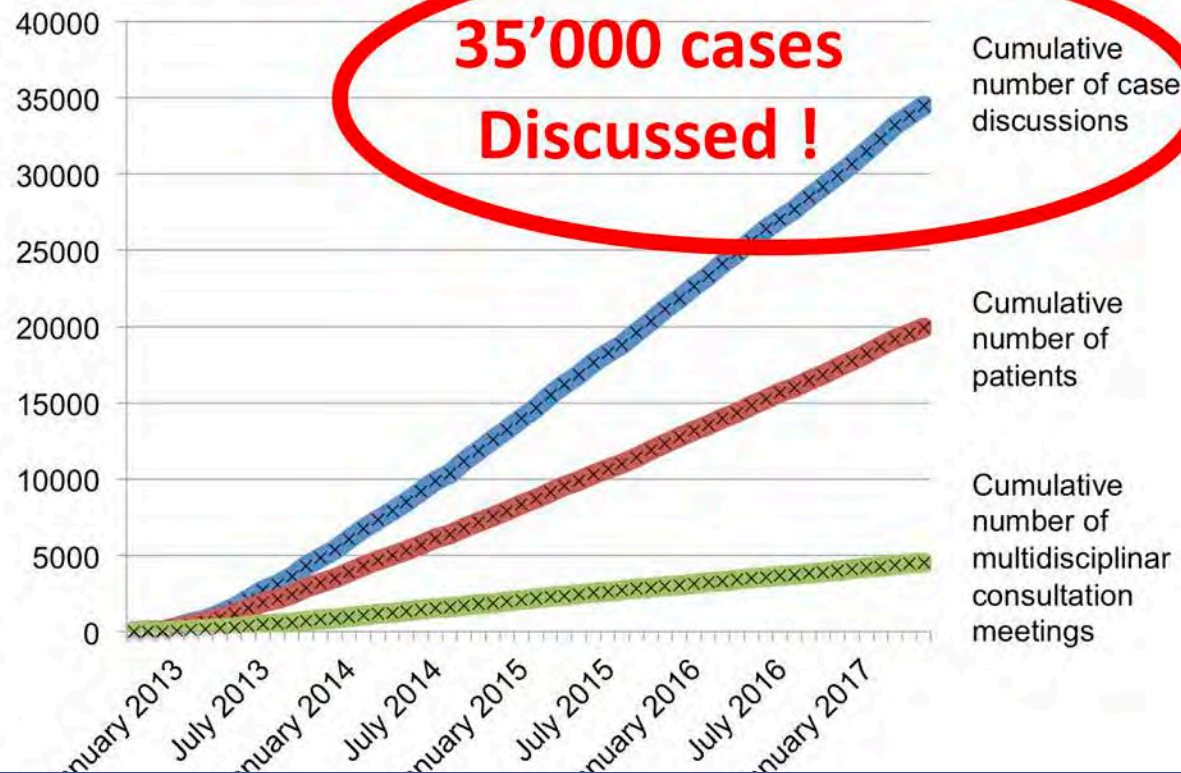
2020



# Activity at the national level

Original article

**The CRIOAc healthcare network in France: A nationwide Health Ministry program to improve the management of bone and joint infection**



Activity report at the  
national level  
of the dedicated  
**Secured website**

**Ferry T. et al.**  
**Orthopaedics & Traumatology:  
Surgery & Research (OTSR) 2018**

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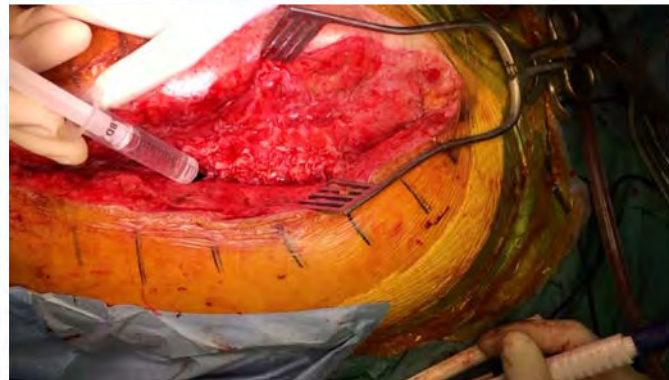
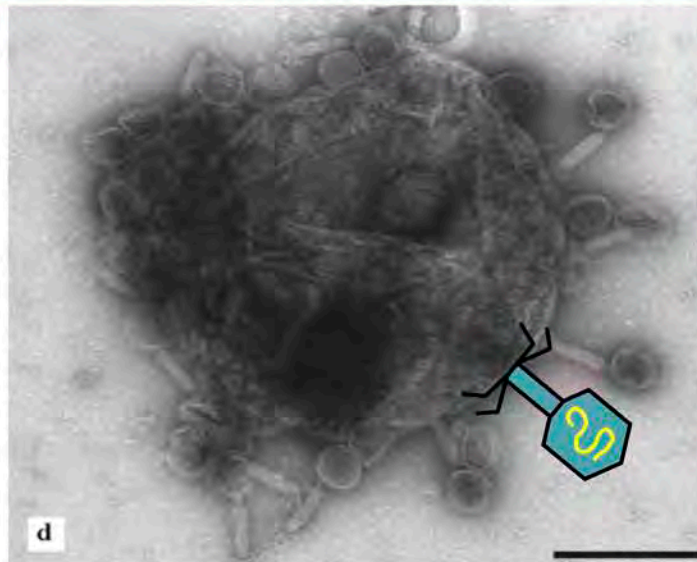
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CRIOAc (regional coordinator) x 9





FERRY T. OFID 2018

## Phage Therapy as Adjuvant to Conservative Surgery and Antibiotics to Salvage Patients With Relapsing *S. aureus* Prosthetic Knee Infection

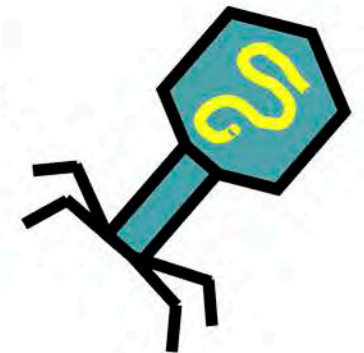
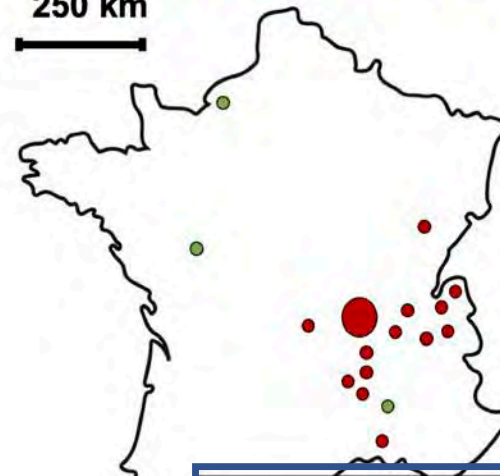
Tristan Ferry<sup>1,2,3,4\*</sup>, Camille Kolenda<sup>2,3,4,5</sup>, Cécile Batailler<sup>2,3,6</sup>, Claude-Alexandre Gustave<sup>2,3,4,5</sup>, Sébastien Lustig<sup>2,3,6</sup>, Matthieu Malatray<sup>3,6</sup>, Cindy Fevre<sup>7</sup>, Jérôme Josse<sup>2,3,4,5</sup>, Charlotte Petitjean<sup>7</sup>, Christian Chidiac<sup>1,2,3,4</sup>, Gilles Leboucher<sup>8</sup> and Frédéric Laurent<sup>2,3,4,5</sup> on behalf of the Lyon BJI Study group



# PHAGE<sup>in</sup>LYON

## PHAG-one

250 km



Purified academic phages  
Usable in the next 5 years



MINISTÈRE  
DE L'ENSEIGNEMENT  
SUPÉRIEUR,  
DE LA RECHERCHE  
ET DE L'INNOVATION



# CRIOAc's Goals and duties

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## CRIOAc Scientific committee 2019-2022

- Rep
- Mar
- Org
- Imp

President: Pr. T. Ferry (Infectiologist; Lyon)  
 Pr. E. Senneville (Infectiologist; Lille-Tourcoing)  
 Pr. A. Stein (Infectiologist; Marseille)  
 Dr. S. Marmor (Orthopaedic Surgeon, Paris)  
 Pr. E. Steindel (Orthopaedic Surgeon; Brest)  
 Pr. D. Meynard (Orthopaedic Surgeon; Nancy)  
 Dr. P. Bemer (Microbiologist; Nantes)  
 Pr. V. Dubois (Microbiologist; Bordeaux)

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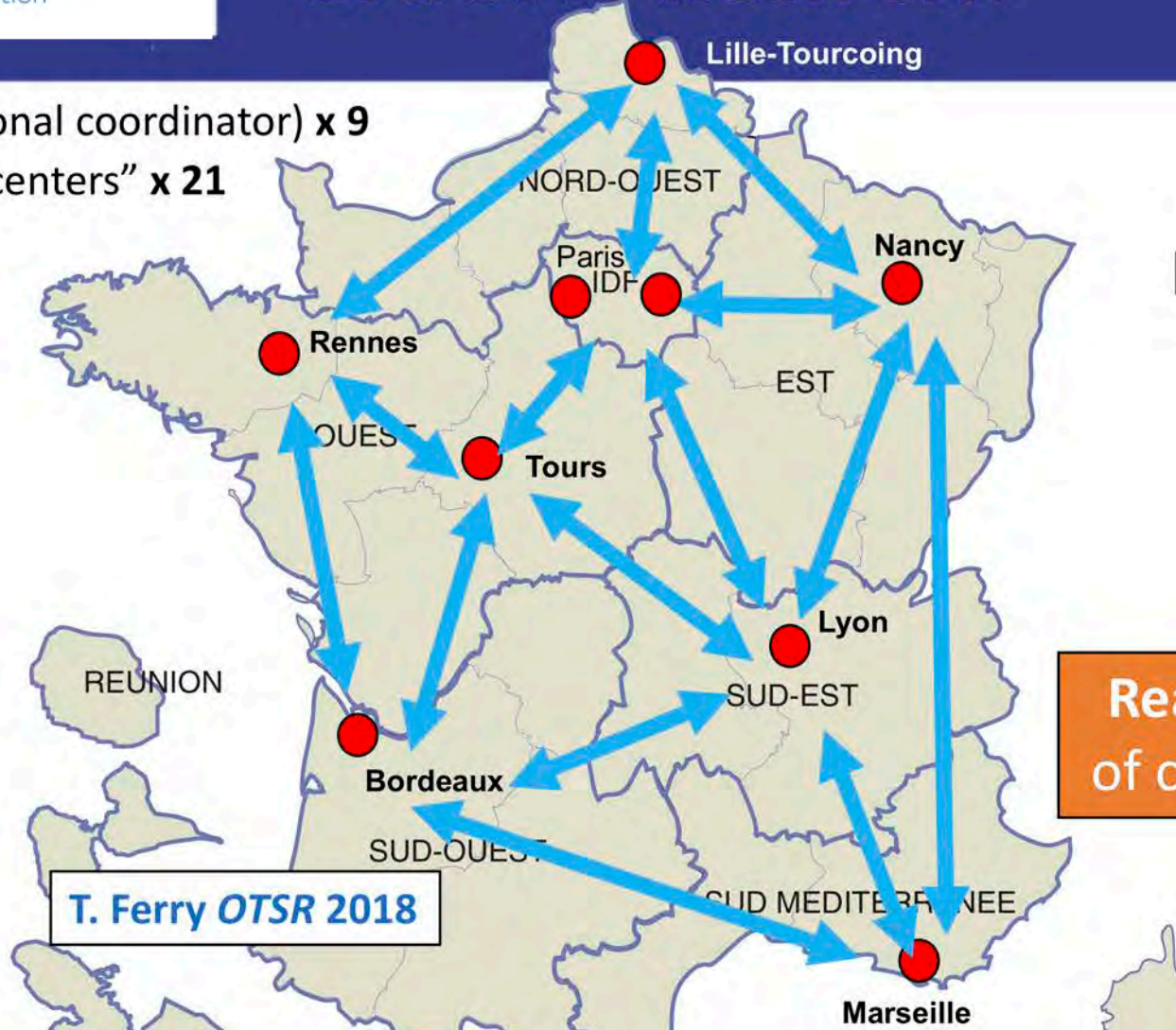
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CRIOAc (regional coordinator) x 9



# CRIOAc network

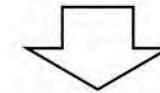
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**CRIOAc**

**National scientific committee**

*Promotes the research*



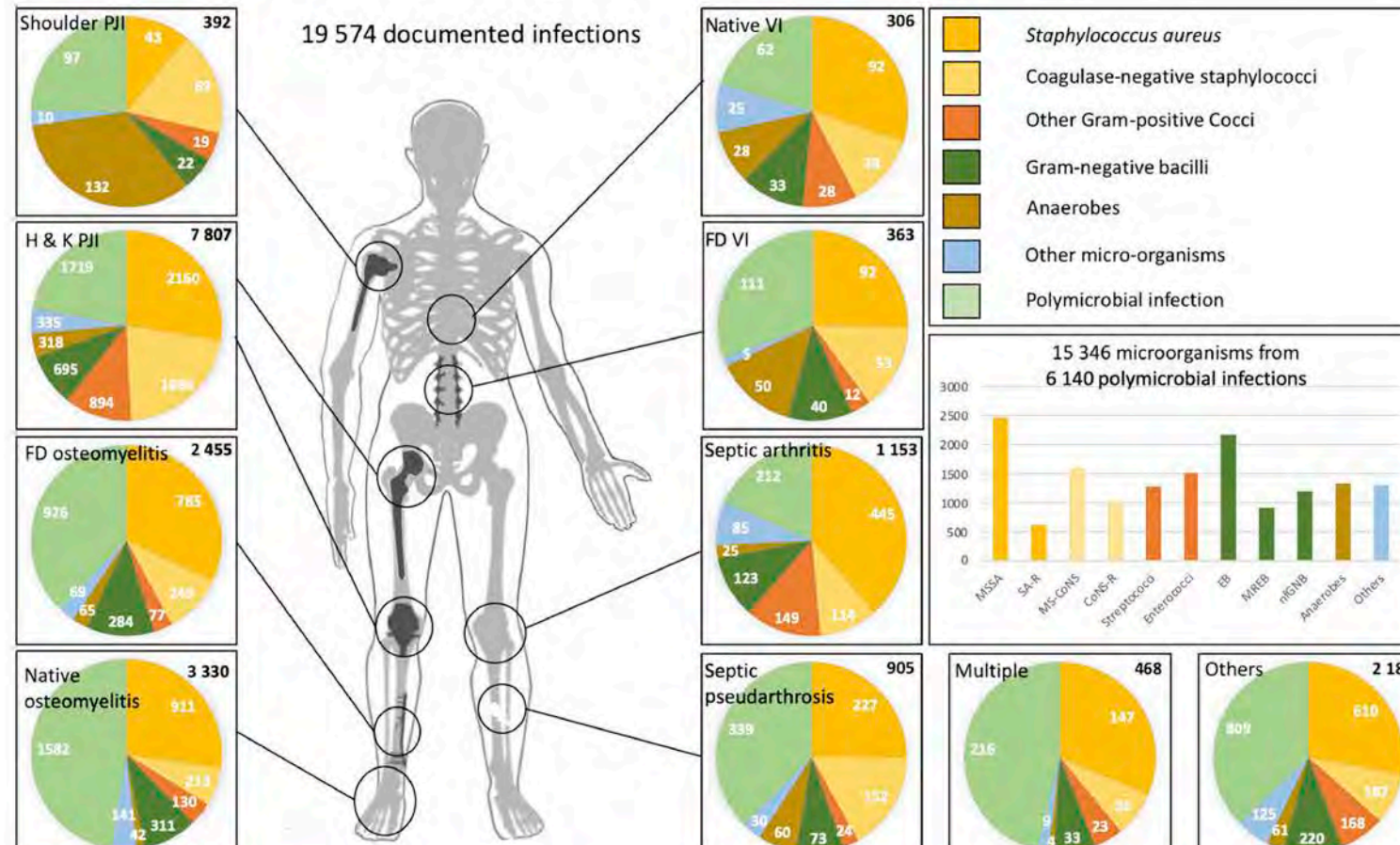
Website data extraction

**Real life epidemiology  
of complex BJI in France**



# Epidemiology of complex bone and joint infections in France using a national registry: The CRIOAc network

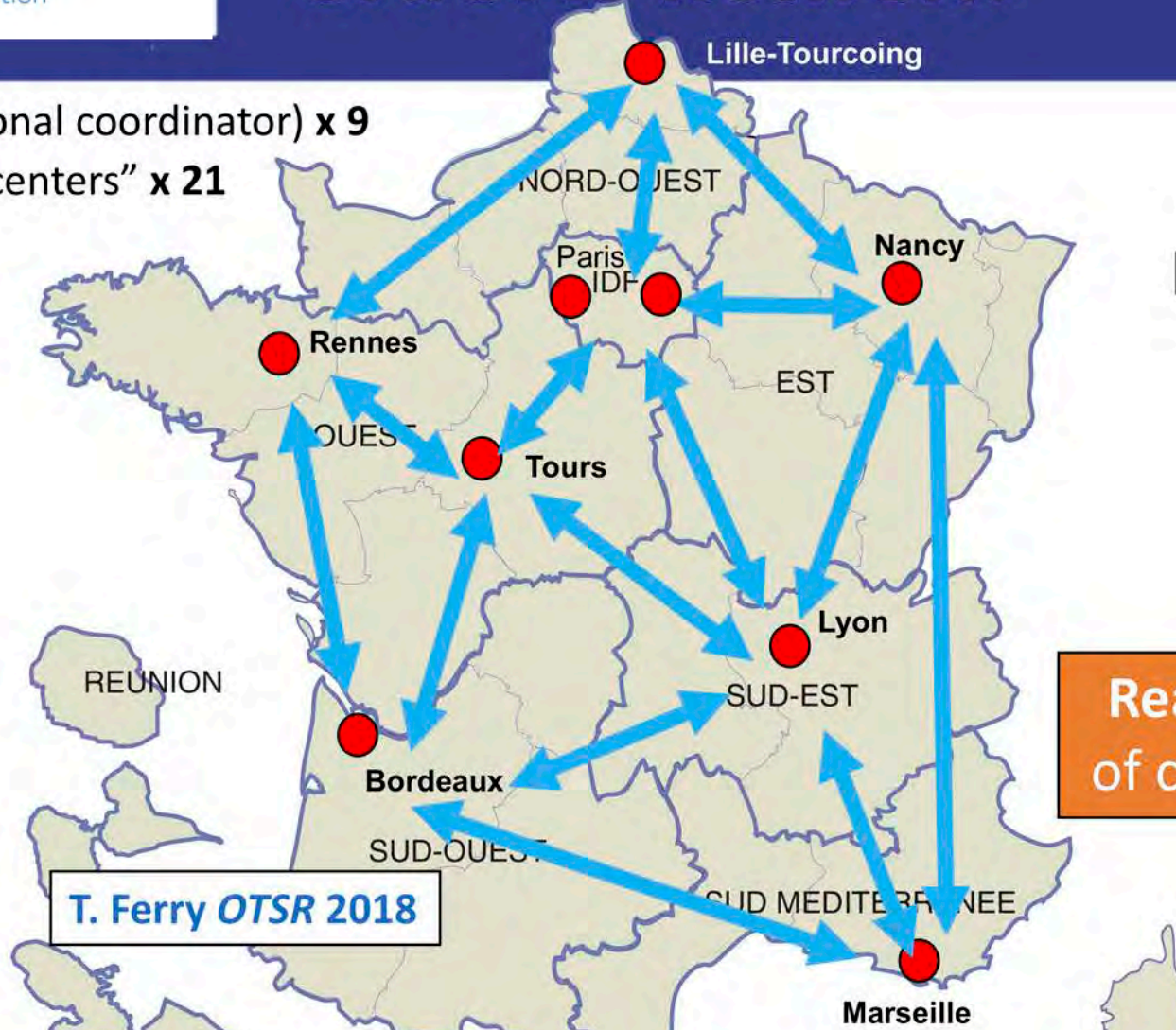
Lemaignen et al. J Infect 2021





# CRIOAc network

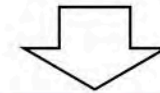
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## CRIOAc

### National scientific committee

*Promotes the research*



Website data extraction

Real life epidemiology  
of complex BJI in France

Feasability analysis  
(clinical trials)



- Centre de Reference des Infections Ostéo-Articulaires complexes  
Referral Center for the Management of Complex Bone and Joint Infection
- Several goals and duties that are well defined
- Funded by the French Health Ministry
- Definitely improves care, education and research



Protheseninfekte

Brauchen wir **spezielle Revisionszentren** für Protheseninfekte nach dem Vorbild Frankreichs?

BERLIN Periprotetische Infektionen sind eine der schwerwiegendsten Komplikationen in der Endoprothetik mit nachhaltigen Auswirkungen für den Patienten, das behandelnde Team und das Gesundheitssystem. Einen relevanten Einfluss auf den Therapieerfolg haben unter anderem die Wahl eines adäquaten Therapiekonzeptes, die Expertise des behandelnden Teams und die Expertise des behandelnden Teams und die Expertise des behandelnden Teams.

Zusätzlich werden in die Behandlung auch Radiologen, Anästhesisten, Rheumatologen und Physiotherapeuten mit einbezogen.

Michael Müller

Neben der Behandlung von Komplikationen ist eine weitere Aufgabe der Referenzzentren die Schulung der Ärzte.

Abb. 1: Organisation und Ablauf der Behandlung von Patienten mit Gelenk- oder Knocheninfektion in Frankreich. Vorstellung der Patienten am Referenzzentrum erfolgt entweder direkt ambulant oder über eine staatlich geführte Webseite.

Do we need special centers for prosthesis infections based on the French model?



# ***Lyon BJI Study group***

## **Coordinator: Tristan Ferry**

**Infectious Diseases Specialists – Tristan Ferry**, Florent Valour, Thomas Perpoint, Florence Ader, Sandrine Roux, Agathe Becker, Claire Triffault-Fillit, Anne Conrad, Cécile Pouderoux, Pierre Chauvelot, Paul Chabert, Johanna Lippman, Evelyne Braun

**Surgeons – Sébastien Lustig**, Elvire Servien, Cécile Batailler, Stanislas Gunst, Axel Schmidt, Elliott Sappey-Marinier, Quentin Ode, Michel-Henry Fessy, Anthony Viste, Jean-Luc Besse, Philippe Chaudier, Lucie Louboutin, Adrien Van Haecke, Marcelle Mercier, Vincent Belgaid, Aram Gazarian, Arnaud Walch, Antoine Bertani, Frédéric Rongieras, Sébastien Martres, Franck Trouillet, Cédric Barrey, Ali Mojallal, Sophie Brosset, Camille Hanriat, Hélène Person, Philippe Céruse, Carine Fuchsmann, Arnaud Gleizal;

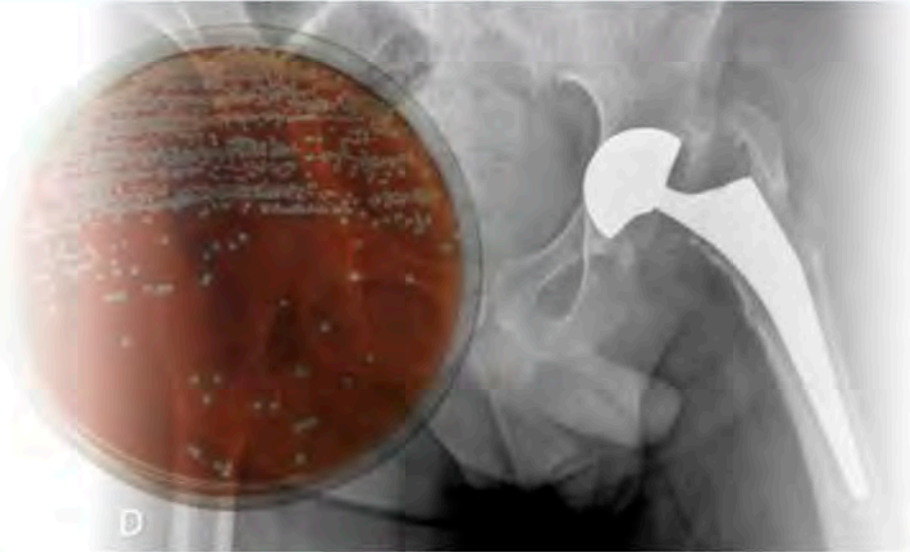
**Anesthesiologists** – Frédéric Aubrun, Mikhail Dziadzko, Caroline Macabéo, Dana Patrascu;

**Microbiologists – Frederic Laurent**, Laetitia Beraud, Tiphaine Roussel-Gaillard, Céline Dupieux, Camille Kolenda, Jérôme Josse;

**Imaging** – Fabien Craighero, Loic Boussel, Jean-Baptiste Pialat, Isabelle Morelec;

**PK/PD specialists** – Michel Tod, Marie-Claude Gagnieu, Sylvain Goutelle;

**Clinical research assistant and database manager**– Eugénie Mabrut



- Published cases
- Open acces studies in pdf
- All thesis in pdf
- All recommendations
- Newsletter



Centre  
International  
de Recherche  
en Infectiologie



[@CrioacLyon](https://twitter.com/CrioacLyon)



## Vème Congrès CRIOAc National



DIRECTION  
GÉNÉRALE  
DE L'OFFRE  
DE SOINS

21 et 22 octobre 2021  
à l'ENS Lyon

PRÉSENTIEL  
& VIRTUEL

Hybrid



<http://crioac2021.univ-lyon1.fr>