

# *Cutibacterium acnes* et *Corynebacterium spp*: de vrais faux amis

Martin Rottman  
UVSQ, APHP-HUPIFO

## Déclaration d'intérêts de 2014 à 2018

- **Intérêts financiers :**

Fondateur d'*Antagonis*

- **Liens durables ou permanents :**

Membre du scientific advisory board de *Specific Diagnostics*

Consultant pour *Diaxonhit*

- **Interventions ponctuelles :**

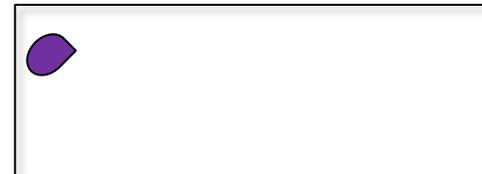
*Curetis, Cepheid, QIAGEN*

- **Intérêts indirects : non**

## Déclaration de liens d'intérêt avec les industries de santé en rapport avec le thème de la présentation (loi du 04/03/2002) :

**Intervenant :** ROTTMAN Martin

**Titre :** *Cutibacterium acnes* et *Corynebacterium spp.*: de vrais faux amis



-  Consultant ou membre d'un conseil scientifique
-  Conférencier ou auteur/rédacteur rémunéré d'articles ou documents
-  Prise en charge de frais de voyage, d'hébergement ou d'inscription à des congrès ou autres manifestations
-  Investigateur principal d'une recherche ou d'une étude clinique  
GENMARK Diagnostics

OUI  NON

OUI  NON

OUI  NON

OUI  NON

# La peau, parent pauvre du microbiome

- MeSH (microbiome) 24258
- MeSH (microbiome AND digestive) 7815
- MeSH (microbiome AND skin) 496

# *Corynebacterium* vs *Cutibacterium* : Points communs et différences

- Points communs

- Flore cutanée usuelle
- *Actinomycetales*
- Bacilles à C

- Différences

- ... aérobie
- ... mycoliques + vs -
- Palissade vs Branché

**PAS TRES INTERESSANTES**

# Sensibilité aux antibiotiques

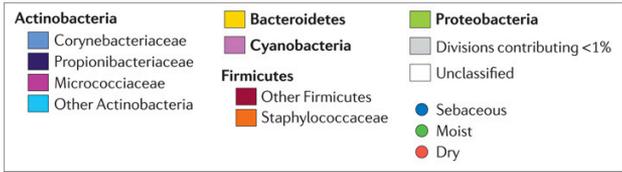
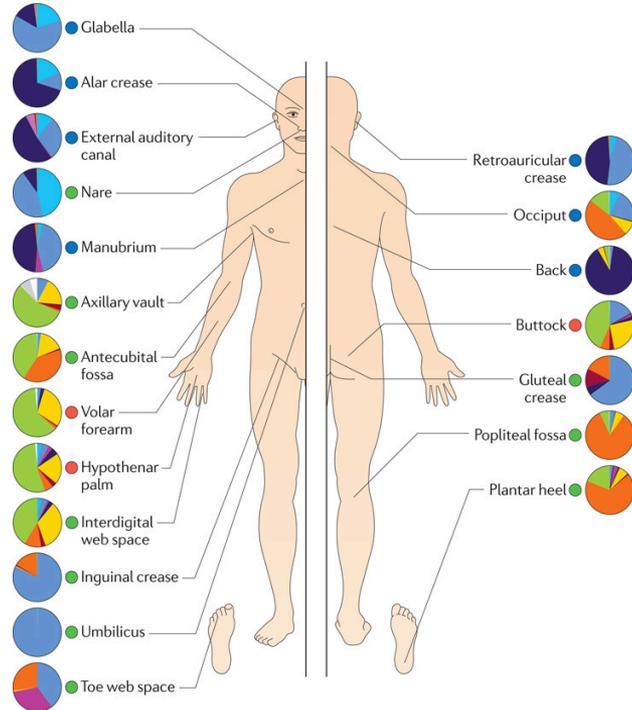
- *Cutibacterium*

- Anaérobies CA-SFM 2013
- Résistances naturelles
  - Fosfomycine
  - Metronidazole
- Résistances acquises (rares)
  - Macrolides
  - Rifampicine

- *Corynebacterium*

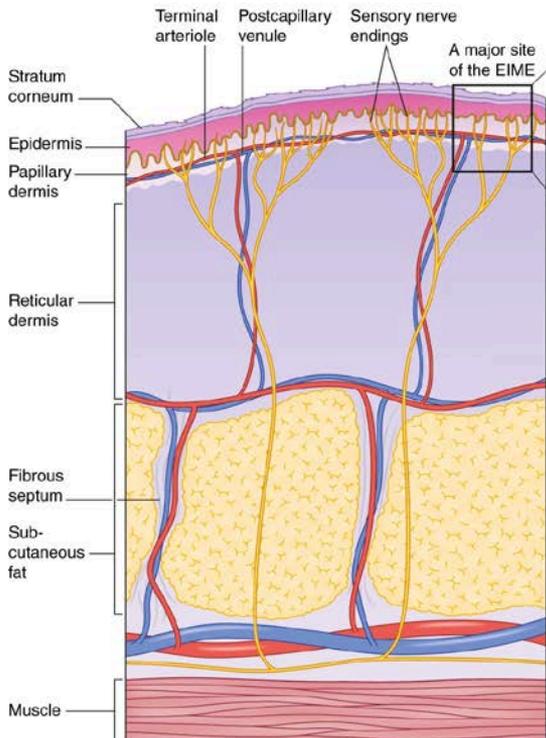
- Pas de concentration critiques pour
  - AMX
  - CTX/FEP
  - IMP/MEM
  - PIP/TZP
  - LVX
  - DAP

# Microbiome cutané humain



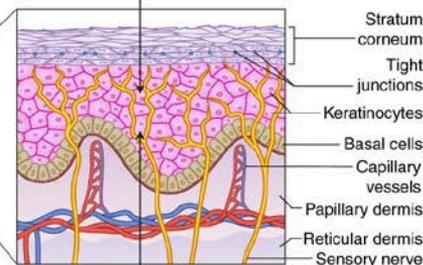
# La fonction de barrière

a



Primary triggers for the keratinocyte responses:

- Microorganisms
- Physical damage
- Proteases



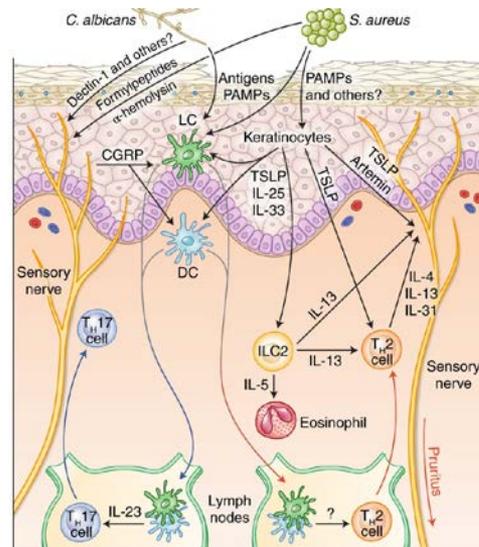
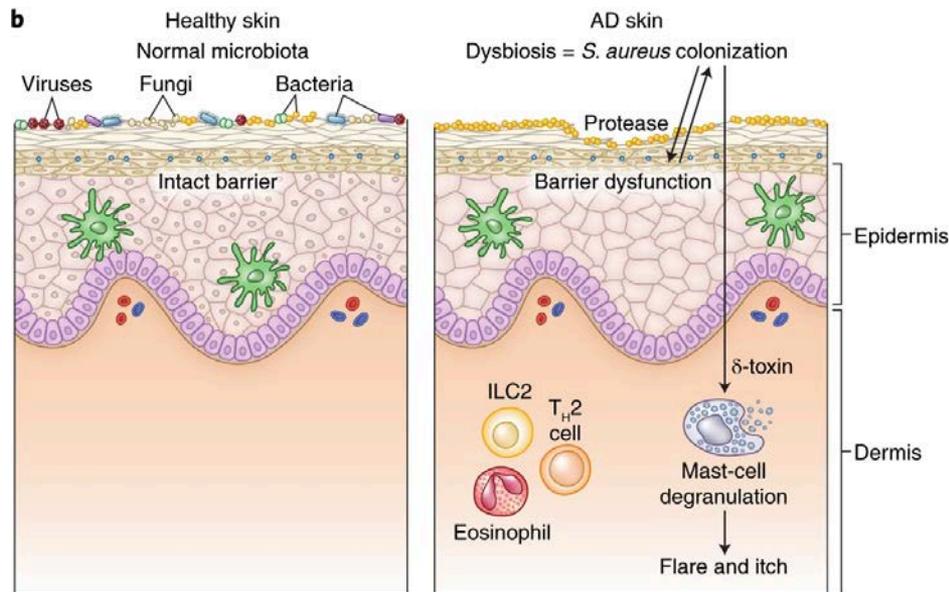
Secondary triggers for the keratinocyte responses:

- IL-4, IL-13
- IL-17, IL-22

b

- Roles of keratinocytes**
- 1 Physical barrier
  - 2 Release of cellular contents:
    - DNA, RNA
    - ATP
  - 3 De novo production of epithelial cell mediator:
    - Cytokines
    - Chemokines
    - Lipid mediators

# Dysbiose, inflammation, dysfonction de barrière



# *Corynebacterium spp*

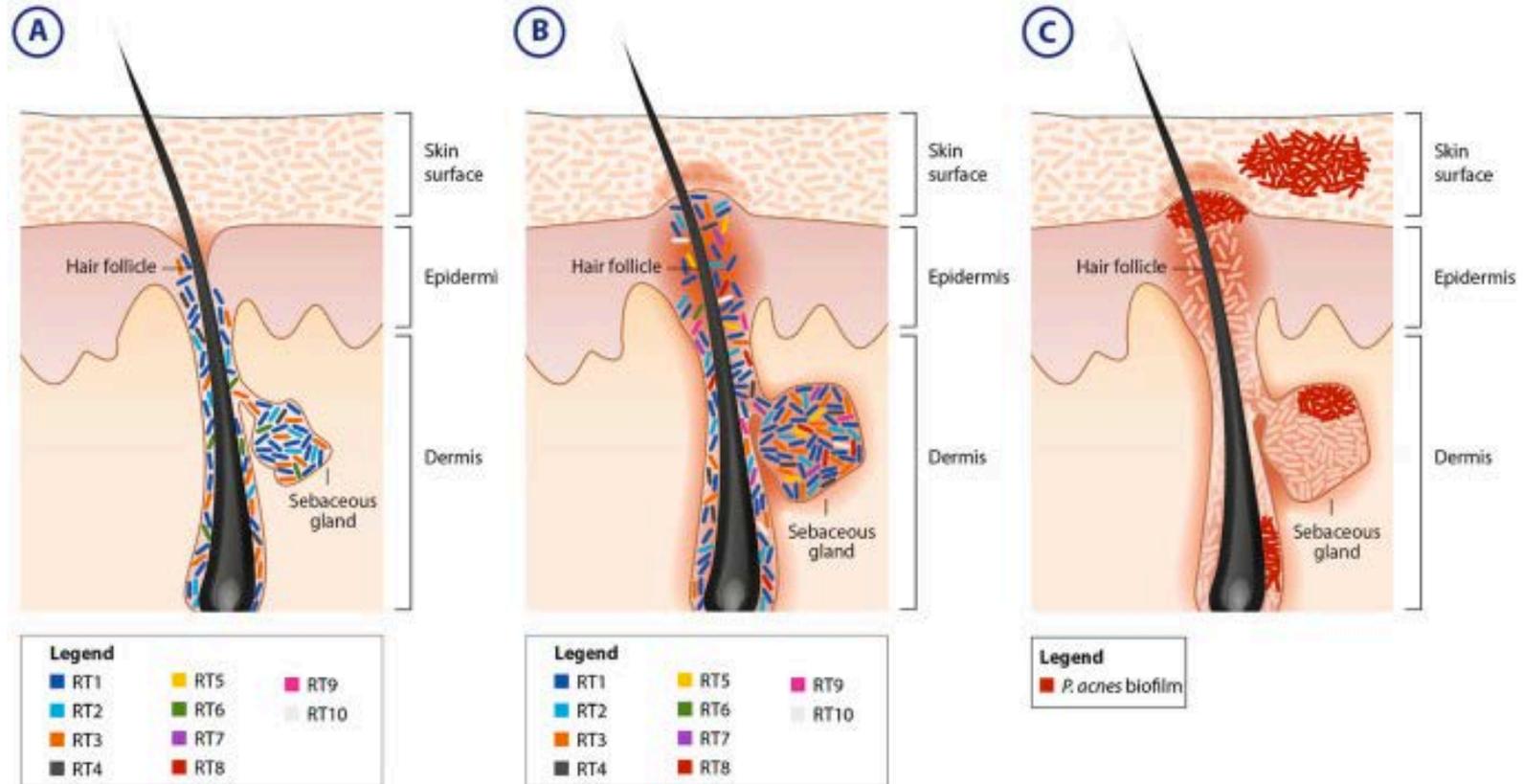
- *C. diphtheriae*
- *C. jeikeum* / *C. urealyticum*
- *C. striatum*
- *C. accolens*
- *C. glutamicum*
- *C. amycolatum*



## Monomicrobial bone and joint infection due to *Corynebacterium striatum*: literature review and amoxicillin-rifampin combination as treatment perspective

Latifa Noussair<sup>1</sup> • Elsa Salomon<sup>2</sup> • Faten El Sayed<sup>1,2,3</sup> • Clara Duran<sup>4</sup> • Frédérique Bouchand<sup>5</sup> • Anne-Laure Roux<sup>2</sup> • Jean-Louis Gaillard<sup>1,2</sup> • Thomas Bauer<sup>6</sup> • Martin Rottman<sup>1</sup> • Aurélien Dinh<sup>4</sup> 

# Le cas de *Cutibacterium acnes*



# Sarcoidose: infection à *C. acnes*?

## SCIENTIFIC REPORTS

OPEN

### Immunohistochemical Detection of *Propionibacterium acnes* in the Retinal Granulomas in Patients with Ocular Sarcoidosis

Received: 14 August 2017  
Accepted: 31 October 2017  
Published online: 09 November 2017

Kenji Nagata<sup>1</sup>, Yoshinobu Eishi<sup>2</sup>, Keisuke Uchida<sup>2</sup>, Kazuhito Yoneda<sup>1</sup>, Hiroki Hatanaka<sup>3</sup>, Toru Yasuhara<sup>1</sup>, Maho Nagata<sup>1</sup>, Chie Sotozono<sup>2</sup> & Shigeru Kinoshita<sup>3</sup>

Zhao et al. *Respiratory Research* (2017) 18:28  
DOI 10.1186/s12931-017-0515-z

Respiratory Research

RESEARCH

Open Access

### High throughput 16SrRNA gene sequencing reveals the correlation between *Propionibacterium acnes* and sarcoidosis

Meng-Meng Zhao<sup>†</sup>, Shan-Shan Du<sup>†</sup>, Qiu-Hong Li<sup>†</sup>, Tao Chen<sup>†</sup>, Hui Qiu, Qin Wu, Shan-Shan Chen, Ying Zhou, Yuan Zhang, Yang Hu, Yi-Liang Su, Li Shen, Fen Zhang, Dong Weng<sup>†</sup> and Hui-Ping Li<sup>†</sup>



JOURNAL OF CLINICAL MICROBIOLOGY, Jan. 2002, p. 198–204  
0095-1137/02/\$04.00+0 DOI: 10.1128/JCM.40.1.198-204.2002  
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Vol. 40, No. 1

RESEARCH ARTICLE

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### Is there any association between Sarcoidosis and infectious agents?: a systematic review and meta-analysis

Tiago Esteves<sup>1\*</sup>, Gloria Aparicio<sup>2</sup> and Vicente Garcia-Patos<sup>1,2</sup>

### Quantitative Analysis of Mycobacterial and Propionibacterial DNA in Lymph Nodes of Japanese and European Patients with Sarcoidosis

Yoshinobu Eishi,<sup>1\*</sup> Moritaka Suga,<sup>2</sup> Ikuo Ishige,<sup>1</sup> Daisuke Kobayashi,<sup>1</sup> Tetsuo Yamada,<sup>1</sup> Tamiko Takemura,<sup>3</sup> Touchiro Takizawa,<sup>1</sup> Morio Koike,<sup>1</sup> Shoji Kudoh,<sup>4</sup> Ulrich Costabel,<sup>5</sup> Josune Guzman,<sup>6</sup> Gianfranco Rizzato,<sup>7</sup> Marcello Gambacorta,<sup>8</sup> Ronald du Bois,<sup>9</sup> Andrew G. Nicholson,<sup>10</sup> Om P. Sharma,<sup>11</sup> and Masayuki Ando<sup>2</sup>

## Intracellular *Propionibacterium acnes* Infection in Glandular Epithelium and Stromal Macrophages of the Prostate with or without Cancer

Vol. 45, No. 11

JOURNAL OF CLINICAL MICROBIOLOGY, Nov. 2007, p. 3721–3728  
0095-1137/07/\$08.00+0 doi:10.1128/JCM.01543-07  
Copyright © 2007, American Society for Microbiology. All Rights Reserved.

### Direct Visualization of *Propionibacterium acnes* in Prostate Tissue by Multicolor Fluorescent In Situ Hybridization Assay<sup>∇</sup>

Oleg A. Alexeyev,<sup>1\*</sup> Ingrid Marklund,<sup>1</sup> Beverley Shannon,<sup>2</sup> Irina Golovleva,<sup>3</sup> Jan Olsson,<sup>1</sup> Charlotte Andersson,<sup>3</sup> Irene Eriksson,<sup>5</sup> Ronald Cohen,<sup>2,4</sup> and Fredrik Elgh<sup>1,5</sup>

Departments of Pathology,<sup>1</sup> Clinical Genetics,<sup>3</sup> and Virology,<sup>5</sup> Umeå University, Umeå, Sweden, and Tissuegen/Uropath Pty. Ltd.<sup>2</sup> and Faculty of Medicine, University of Western Australia,<sup>4</sup> Perth, Western Australia, Australia

Received 2 August 2007/Returned for modification 4 September 2007/Accepted 7 September 2007

to<sup>1</sup>, Tadatsune Iida<sup>1</sup>, Keisuke Uchida<sup>2</sup>, Masaki Sekine<sup>2</sup>, Yutaka Nakajima<sup>2</sup>, Iijima Yokoyama<sup>4</sup>, Hiroshi Kawachi<sup>1</sup>, Takumi Akashi<sup>2</sup>, Yoshinobu Eishi<sup>1,2\*</sup>

1 Tokyo Medical and Dental University Graduate School, Bunkyo-ku, Tokyo, Japan, 2 Division of Surgical Pathology, Tokyo Medical and Dental University, Bunkyo-ku, Tokyo, Japan, 3 Department of Pathology, Yokohama City Minato Red Cross Hospital, Yokohama, Kanagawa, Japan, 4 National Institute of Public Health, Wako, Saitama, Japan

Infectious Agents and Cancer

RESEARCH ARTICLE

Open Access



### Frequency and typing of *Propionibacterium acnes* in prostate tissue obtained from men with and without prostate cancer

Sabina Davidsson<sup>1,8,9\*</sup>, Paula Mölling<sup>2</sup>, Jennifer R. Rider<sup>3,4,8</sup>, Magnus Unemo<sup>2</sup>, Mats G. Karlsson<sup>5,7</sup>, Jessica Carlsson<sup>1,8</sup>, Swen-Olof Andersson<sup>1,8</sup>, Fredrik Elgh<sup>6</sup>, Bo Söderquist<sup>7</sup> and Ove Andréén<sup>1,8</sup>

# Lombalgie spondylodiscite

Eur Spine J (2018) 27:1013–1020  
https://doi.org/10.1007/s00586-017-5291-4



ORIGINAL ARTICLE

10.1111/j.1469-0691.2009.02801.x

ORIGINAL ARTICLE

## Inflammatory response of disc cells against *Propionibacterium acnes* depends on the presence of lumbar Modic changes

Stefan Dudli<sup>1,2</sup> · S. Miller<sup>3</sup> · S. Demir-Deviren<sup>4</sup> · J. C. Lotz<sup>1</sup>

Urquhart et al. *BMC Medicine* (2015) 13:13  
DOI 10.1186/s12916-015-0267-x

## Spondylodiscitis due to *Propionibacterium acnes*: report of twenty-nine cases and a review of the literature

I. Uçkay<sup>1,2</sup>, A. Dinh<sup>3</sup>, L. Vauthey<sup>1</sup>, N. Asseray<sup>4</sup>, N. Passuti<sup>5</sup>, M. Rottman<sup>3</sup>, J. Biziraguseniyuka<sup>6</sup>, A. Riché<sup>7</sup>, P. Rohner<sup>2</sup>, D. Wendling<sup>8</sup>, S. Mammou<sup>9</sup>, R. Stern<sup>1</sup>, P. Hoffmeyer<sup>1</sup> and L. Bernard<sup>1,2,3,10</sup>

1) Orthopaedic Surgery Service, University Hospital of Geneva, 2) Division of Infectious Diseases, University Hospital of Geneva, Geneva, Switzerland, 3) Division of Infectious Diseases, R. Poincaré University Hospital, APHP, Garches, 4) Division of Infectious Diseases, Hotel Dieu Hospital, Nantes, 5) Orthopaedic Surgery Service, Hotel Dieu University Hospital, Nantes, 6) Division of Infectious Diseases, University Hospital of Rennes, Rennes, 7) Division of Infectious Diseases, Hospital of Angoulême, Angoulême, 8) Division of Rheumatology, University Hospital of Besançon, Besançon, 9) Division of Rheumatology and 10) Division of Infectious Diseases, University Hospital of Tours, Tours, France



RESEARCH ARTICLE

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## Could low grade bacterial infection contribute to low back pain? A systematic review

Donna M Urquhart<sup>1\*</sup>, Yiliang Zheng<sup>1</sup>, Allen C Cheng<sup>1</sup>, Jeffrey V Rosenfeld<sup>2,3</sup>, Patrick Chan<sup>2,3</sup>, Susan Liew<sup>2,4</sup>, Sultana Monira Hussain<sup>1</sup> and Flavia M Cicuttini<sup>1</sup>



20<sup>es</sup> JNI, Lyon du 5 au 7 juin 2019



Clinical Microbiology and Infection 23 (2017) 396–399



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Contents lists available at ScienceDirect

Clinical Microbiology and Infection

journal homepage: [www.clinicalmicrobiologyandinfection.com](http://www.clinicalmicrobiologyandinfection.com)



Original article

*Propionibacterium acnes* endocarditis: a case series

J.M. Banzon<sup>1,\*</sup>, S.J. Rehm<sup>1</sup>, S.M. Gordon<sup>1</sup>, S.T. Hussain<sup>2</sup>, G.B. Pettersson<sup>2</sup>,  
N.K. Shrestha<sup>1,\*</sup>

<sup>1</sup> Department of Infectious Disease, Cleveland Clinic, Cleveland, OH, USA

<sup>2</sup> Department of Thoracic and Cardiovascular Surgery, Cleveland Clinic, Cleveland, OH, USA

Original article

## Bacterial biofilms and capsular contracture in patients with breast implants

U. M. Rieger<sup>1,2</sup>, J. Mesina<sup>3</sup>, D. F. Kalbermatten<sup>2,6</sup>, M. Haug<sup>2</sup>, H. P. Frey<sup>8</sup>, R. Pico<sup>9</sup>, R. Frei<sup>4</sup>,  
G. Pierer<sup>1</sup>, N. J. Lüscher<sup>5</sup> and A. Trampuz<sup>7,10</sup>

## The Composition and Structure of Biofilms Developed by *Propionibacterium acnes* Isolated from Cardiac Pacemaker Devices

Ken-ichi Okuda<sup>1,2\*</sup>, Ryuichi Nagahori<sup>3</sup>, Satomi Yamada<sup>1</sup>, Shinya Sugimoto<sup>1,2</sup>,  
Chikara Sato<sup>4</sup>, Mari Sato<sup>4</sup>, Tadayuki Iwase<sup>1,2</sup>, Kazuhiro Hashimoto<sup>3</sup> and  
Yoshitaka Mizuno<sup>1,2</sup>

# Infections sur matériel orthopédique

Journal of Infection (2007) 55, 119–124



[www.elsevierhealth.com/journals/jinf](http://www.elsevierhealth.com/journals/jinf)

## *Propionibacterium acnes*: An agent of prosthetic joint infection and colonization

Valérie Zeller <sup>a,\*</sup>, Ali Ghorbani <sup>a</sup>, Christophe Strady <sup>b</sup>, Philippe Leonard <sup>a</sup>, Patrick Mamoudy <sup>a</sup>, Nicole Desplaces <sup>a,c</sup>



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The Bone & Joint Journal, VOL. 99-B, NO. 11 | Arthroplasty

 normal

The unsuspected prosthetic joint infection incidence and consequences of positive intra-operative cultures in presumed aseptic knee and hip revisions

A. M. E. Jacobs, M. Bénard, J. F. Meis, G. van Hellemond, J. H. M. Goosen

Published Online: 1 Nov 2017 | <https://doi.org/10.1302/0301-620X.99B11.BJJ-2016-0655.R2>



20<sup>es</sup> JNI, Lyon du 5 au 7 juin 2019

## Molecular Typing of Multiple Isolates Is Essential to Diagnose *Cutibacterium acnes* Orthopedic Device–related Infection

Faten El Sayed,<sup>1,2,☉</sup> Anne-Laure Roux,<sup>1,2</sup> Guillaume Sapriel,<sup>3,4</sup> Elsa Salomon,<sup>1,2</sup>  
Thomas Bauer,<sup>3,5</sup> Jean-Louis Gaillard,<sup>1,2</sup> and Martin Rottman<sup>2,6</sup>

<sup>1</sup>Department of Microbiology, Hôpital Ambroise Paré, Boulogne-Billancourt, <sup>2</sup>Unité mixte de recherche 1173, Inserm, and <sup>3</sup>Faculté Des Sciences de la Santé Simone Veil, University of Versailles Saint-Quentin, Montigny-le-Bretonneux, <sup>4</sup>Atelier de Bioinformatique, Paris <sup>5</sup>Orthopedic Surgery Department, Hôpital Ambroise Paré, Boulogne-Billancourt, and <sup>6</sup>Microbiology Department, Hôpital Raymond Poincaré, Garches, France

# Définitions de l'infection sur PTA

Délai	0-3 Mois	3-24 Mois	>2 ans
Mécanisme	Périopératoire précoce	Périopératoire tardif	Secondaire
Pathogène	Virulent: <i>S. aureus</i> , BGN	Peu virulent: <i>S. epidermidis</i>	Hématogène: <i>S. gallolyticus</i>

# Distribution temporelle des ODRI à *C. acnes*

	All Cases
N cases (%)	34
Median age, in years [IQR]	54 [28.75–69]
Sex ratio (M/F)	26/8
Median time since prosthesis insertion, in years [IQR]	1.9 [0.6–6.1]
Previous revision, no. [%]	11 [32.4%]



ORIGINAL PAPER

## C-reactive protein may misdiagnose prosthetic joint infections, particularly chronic and low-grade infections

Daniel Pérez-Prieto<sup>1,2</sup> · María E. Portillo<sup>3</sup> · L Santos Martínez<sup>1</sup> · Lluisa Sorlí<sup>4</sup> · Juan P. Ho

The Journal of Bone & Joint Surgery. 96(6):442–447, MAR 2014

DOI: 10.2106/JBJS.M.00258, PMID: 24647499

Issn Print: 0021-9355

Publication Date: 2014/03/01

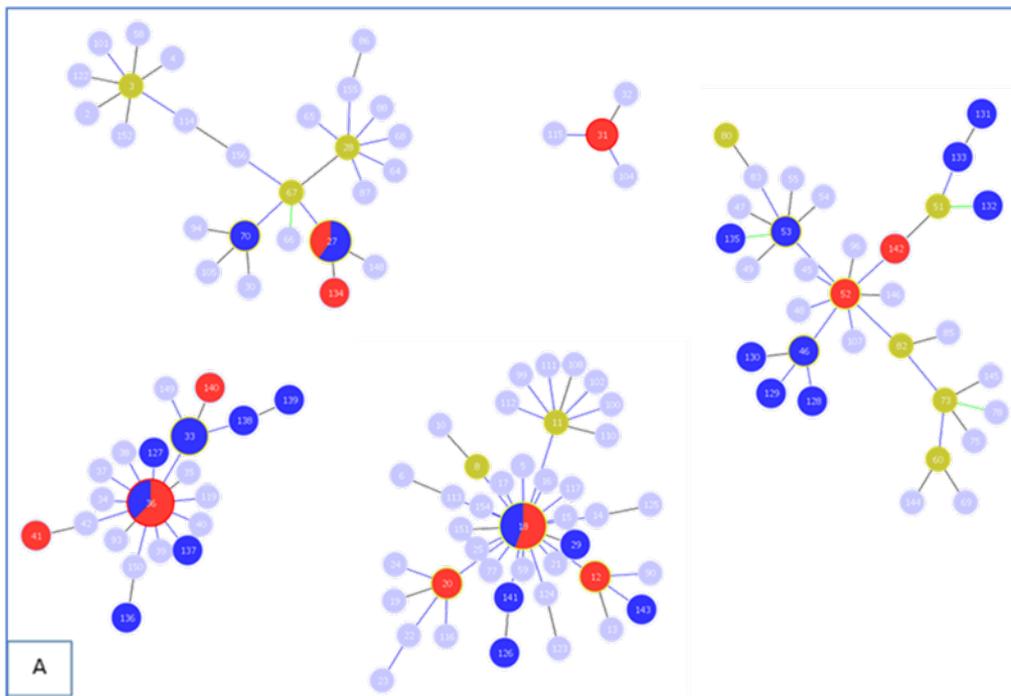


□ Print

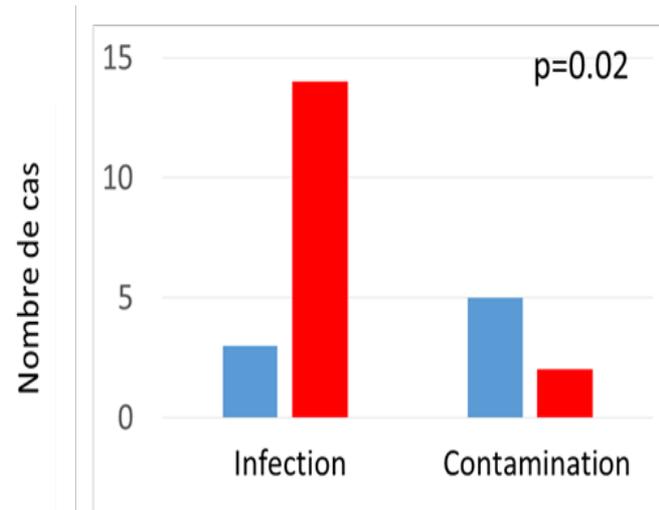
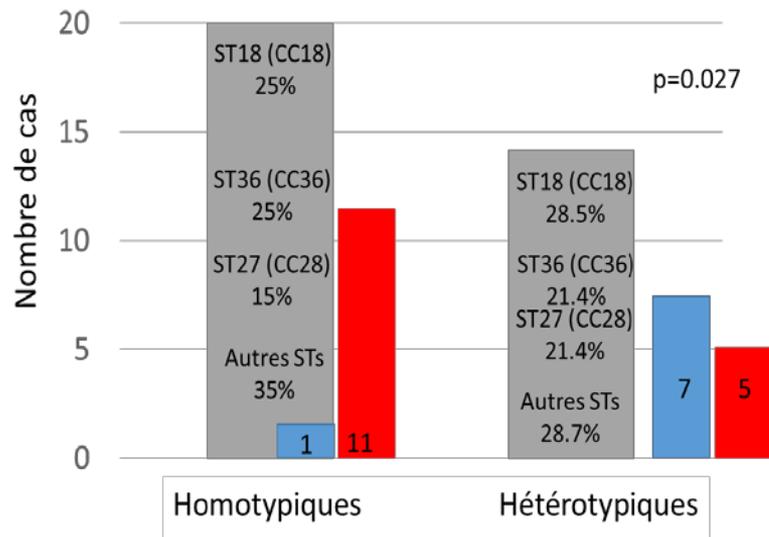
## Sensitivity of Frozen Section Histology for Identifying *Propionibacterium acnes* Infections in Revision Shoulder Arthroplasty

Matthew Grosso;Salvatore Frangiamore;Eric Ricchetti;Thomas Bauer;Joseph Iannotti;





- ST isolé d'infections homotypiques
- ST isolé d'infections hétérotypiques



- valeur pré-opératoire de la CRP ≤ 10 mg/L
- Valeur pré-opératoire de la CRP > 10 mg/L

- Si ça n'évoque pas une infection
- Si tous les biomarqueurs sont négatifs
- Si le même clone n'est jamais isolé deux fois

Peut-être que ce n'est pas une infection

Réinventons la colonisation asymptomatique

# Remerciements

- **HUPIFO Microbiology lab**

- Jean-Louis Gaillard
- Jean-Louis Herrmann
- Anne Laure Roux
- Faten El-Sayed
- Latifa Noussair

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- Prof. Alain Lortat Jacob
- Prof. Thierry Judet
- Dr. Simon Marmor

- **Infectious Diseases**

- Dr Aurelien Dinh
- Dr Benjamin Davido