



La densité des groupements hydroxyles de surface est une des explications de la différence d'adhésion des bactéries sur les matériaux

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Conflit d'intérêt

- E.Denes, E. Poli, G. Barrière, G. Lévègue
 - Employés par I.Ceram
- TS. Ouk, D. Setton
 - Aucun

Contexte

- Taux d'infections différents selon les matériaux
- Plus faible pour les couples céramique-céramique ?

- Lenguerrand et al: Risk factors associated with revision for prosthetic joint infection after hip replacement: a prospective observational cohort study. *Lancet Infect Dis* 2018;18:1004–1014.
- Kurtz et al: Outcomes of Ceramic Bearings After Primary Total Hip Arthroplasty in the Medicare Population. *J Arthroplasty* 2017;32:743–749.

- Alumine poreuse (Al_2O_3)
- Hydroxyles de surface (OH)



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Physiopathologie

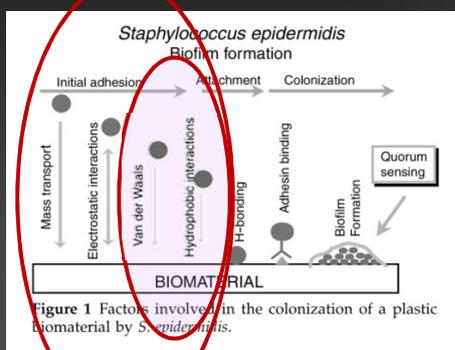


Figure 1 Factors involved in the colonization of a plastic biomaterial by *S. epidermidis*.

Pascual Clin Microbiol Infect 2002; 8: 256–264

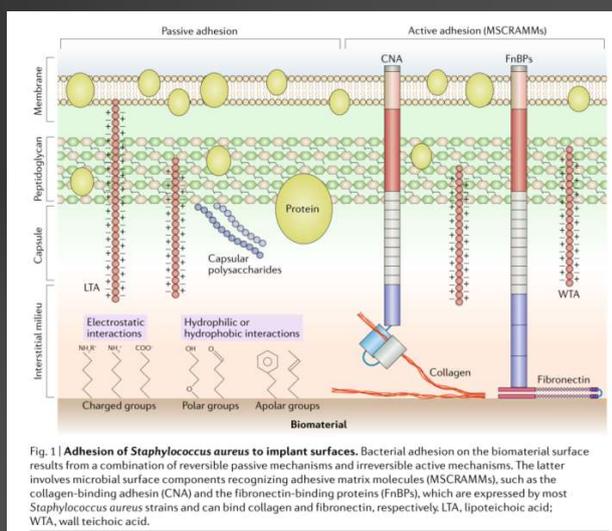
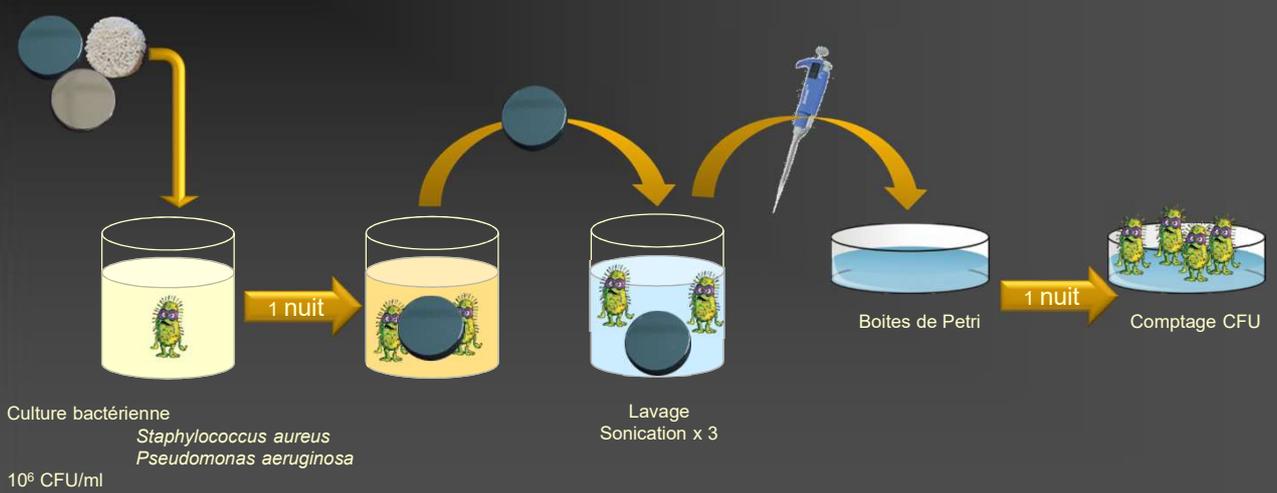


Fig. 1 Adhesion of *Staphylococcus aureus* to implant surfaces. Bacterial adhesion on the biomaterial surface results from a combination of reversible passive mechanisms and irreversible active mechanisms. The latter involves microbial surface components recognizing adhesive matrix molecules (MSCRAMMs), such as the collagen-binding adhesin (CNA) and the fibronectin-binding proteins (FnBPs), which are expressed by most *Staphylococcus aureus* strains and can bind collagen and fibronectin, respectively. LTA, lipoteichoic acid; WTA, wall teichoic acid.

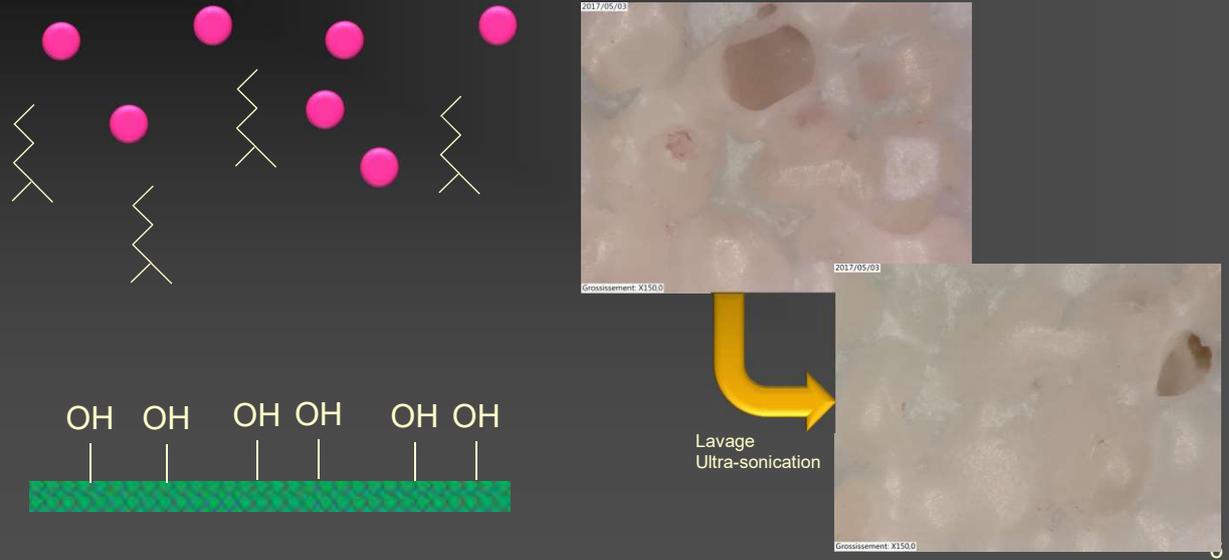
Ariciola CR et al Nature Reviews Microbiology. 2018 ; 16(7) : 397-409

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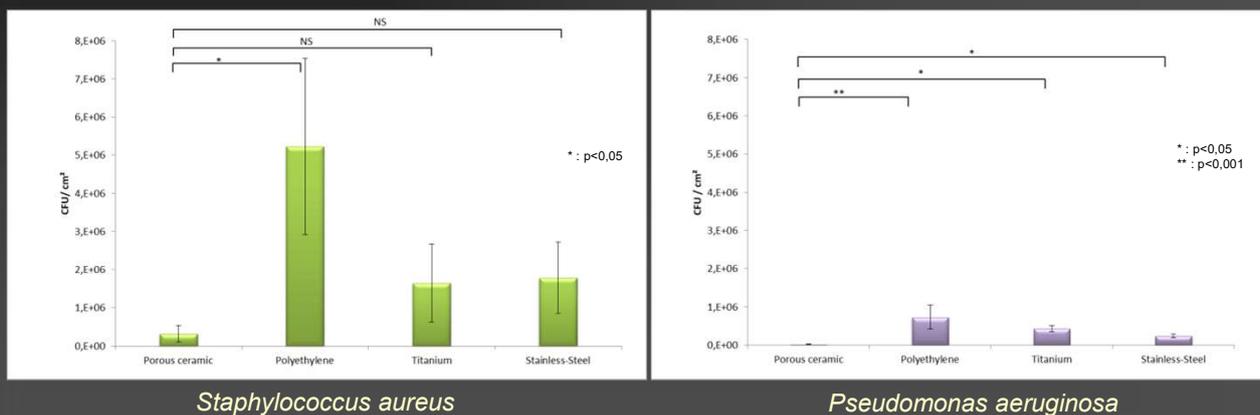
Matériel & Méthodes (1)



Matériel & Méthodes (2)



Adh sion bact rienne



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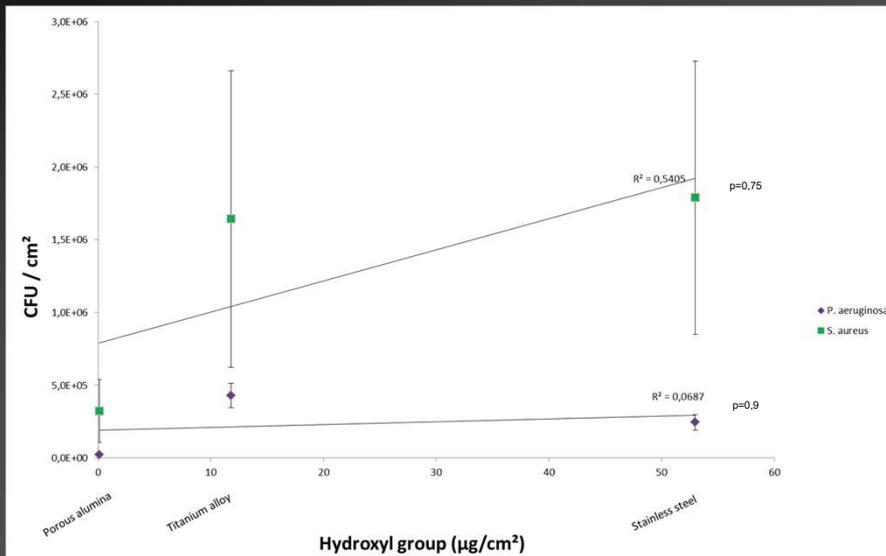
Densit  des hydroxyles

	Immobilisation du rouge neutre		
	Quantification par implant (�g/implant)	Densit� (�g/cm ²)	
Alumine poreuse	5,5	0,09	
Titane	43,0	11,80	p<0,0001
Acier inoxydable	193,0	53,10	p<0,01
Poly�thyl�ne*	39,0	4,50	p<0,01

Adsorption importante => R sultats non interpr tables

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Pas de corrélation



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Conclusion

- Alumine poreuse :
 - Densité des hydroxyles : plus faible
 - Adhésion bactérienne : plus faible
- Hydroxyles de surface :
 - Possiblement un des facteurs
 - Probablement d'autres facteurs

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