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Introduction & Aim

C. acnes : **commensal** bacterium of skin microbiota, colonizer of pilosebaceous follicles

Insidious device-related infections : shoulder +++ with prosthesis loosening

In vitro models :

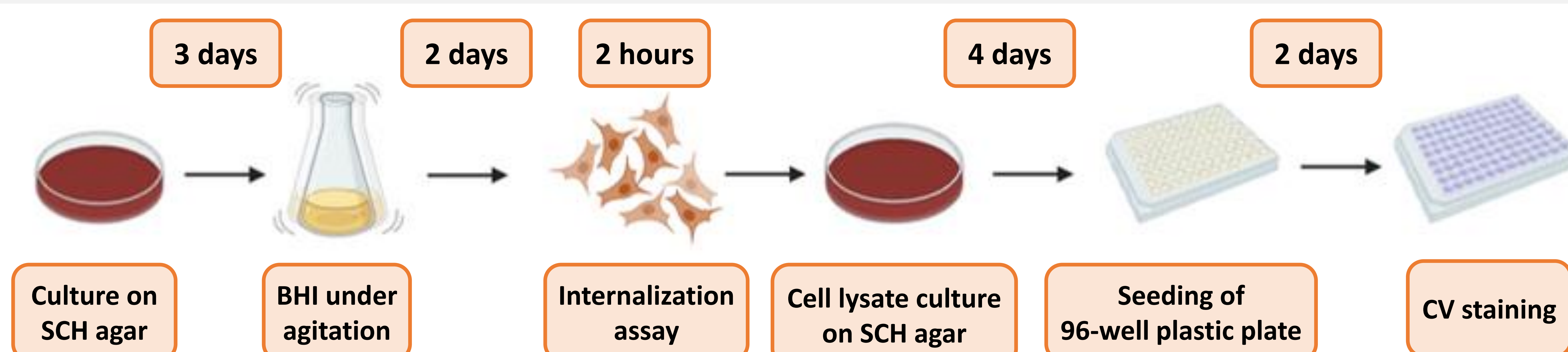
Ability to be **internalized in osteoblasts**

Ability to form **biofilm** on prosthetic material

Internalization : a stress factor that could alter the metabolic state of *C. acnes* and its ability to produce biofilm ?

Material & Methods

- ✓ **7 strains of different phylotypes** : 1 reference strain (ATCC6919), 1 shoulder prosthesis strain (P18), 1 hip prosthesis strain (P16), and 4 acne strains (A132, A85, A48, A104)
- ✓ **Internalization in murine osteoblasts** (protocol published by Aubin *et al. Scientific report 2017*)
- ✓ Crystal violet (CV) staining protocol (published by Ruffier d'Epenoux *et al. IJD 2024*) with SBF ratio as the amount of biofilm produced
- ✓ Control CV staining on strains that had not been internalized



Results

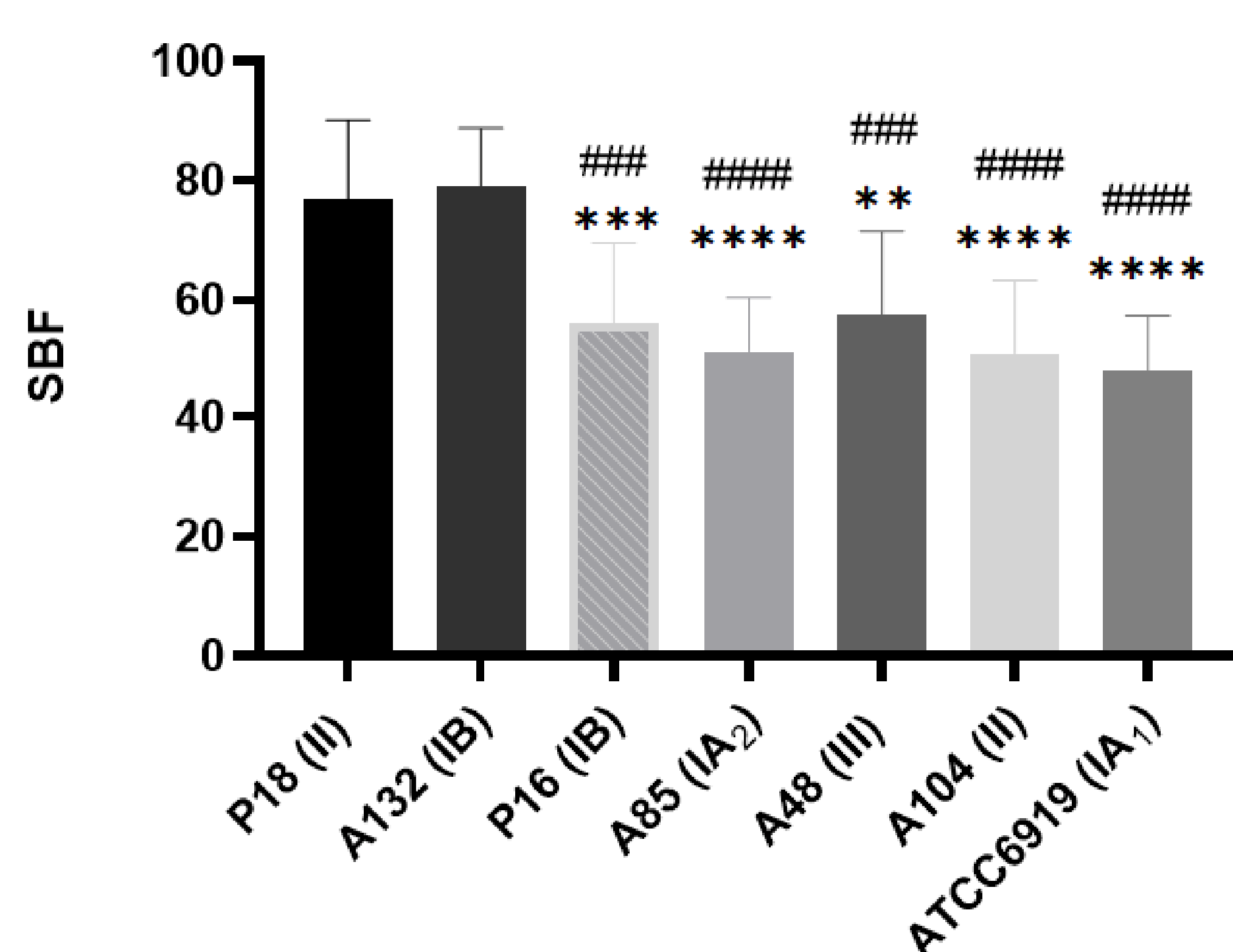


Figure 1 : Biofilm-forming capacity of *C. acnes* strains, prior to cellular internalization, ** p < 0,01 ; *** p < 0,001, **** p < 0,0001 (vs P18) ; #### p < 0,001, ##### p < 0,0001 (vs A132) Kruskal Wallis test. n=3

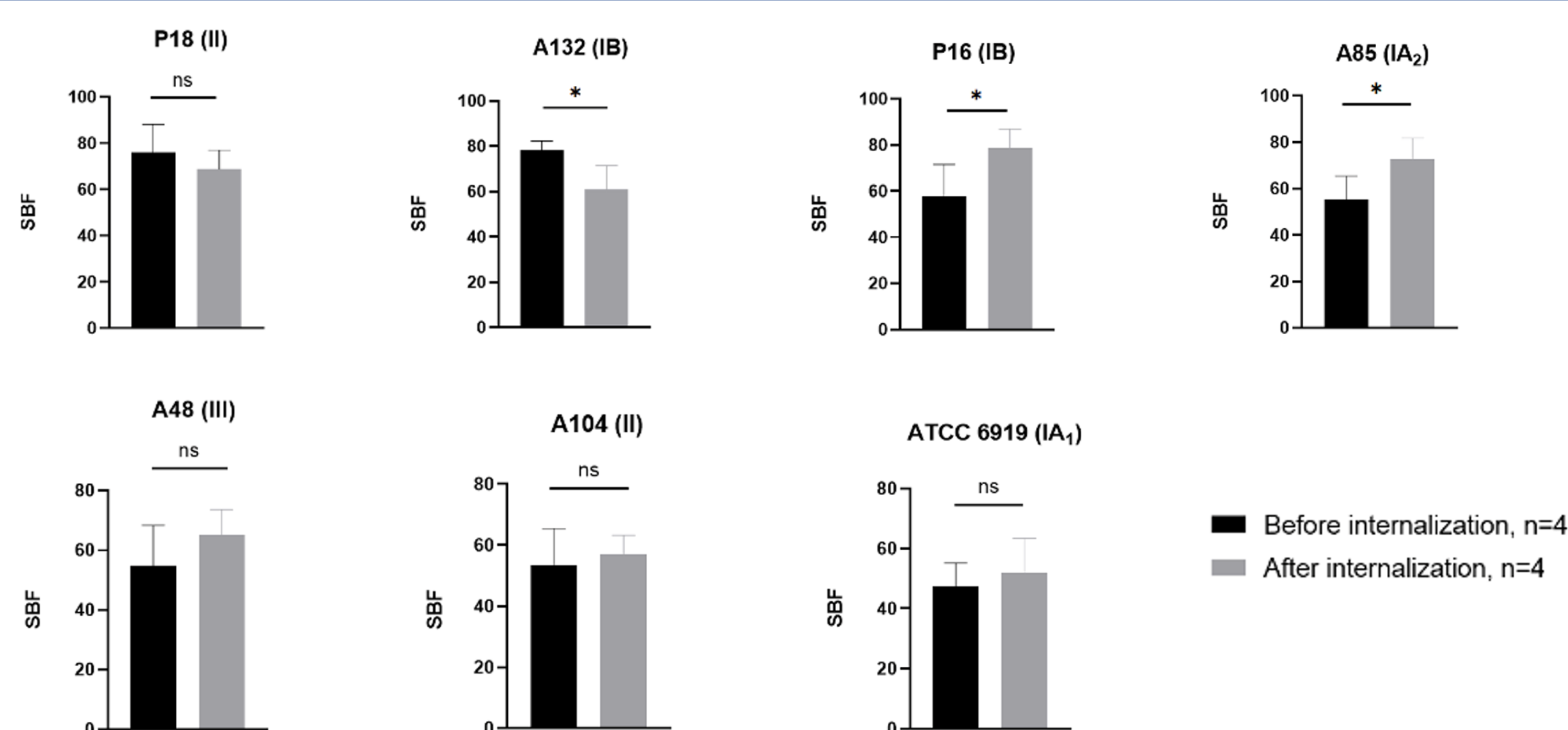


Figure 2 : Biofilm-forming capacity of *C. acnes* strains before and after internalization. ns : not significant, * p < 0.05, according to the Mann-Whitney test

Conclusion

- ✓ Strain-dependent biofilm production regardless of phylotype
- ✓ Intra-osteoblastic internalization influences biofilm production but with an unpredictable strain-dependent impact
- ✓ Limits of our model : use of plastic plates and a murine osteoblast line
- ✓ Future work : use of prosthetic surgery material, human osteoblast cell line and study of biofilm composition