Biofilm formation on TMZF® and CrCo discs for architecture and antibiotic susceptibility tests.
Biofilms and Implant-related Infections

• It is well known that implant-related infection is difficult to treat, and curative therapy is still not available.
• The adhering bacteria involved can evade host defences by forming biofilms.
Objectives

• Cultivation of S. aureus biofilms in vitro over TMZF® (Ti-6Al-4V alloy) and CrCo discs for antibiotic susceptibility tests and architecture investigation by using SEM.

Establishment of a method for biofilm studies.
Methods

Falcon tubes + MH broth + S. aureus ATCC 29213 + Incubation 48 hours

Biofilm on discs

Antibiotic Susceptibility Tests

SEM
## Results – Susceptibility Tests

### Comparison between MIC and BIC (µg/ml)

<table>
<thead>
<tr>
<th>Method</th>
<th>TMZF®</th>
<th>CrCo</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MIC</td>
<td>BIC</td>
</tr>
<tr>
<td>Gentamicin</td>
<td>.25</td>
<td>&gt;36</td>
</tr>
<tr>
<td>Vancomycin</td>
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<td>&gt;256</td>
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<tr>
<td>Rifampicin</td>
<td>&lt;.016</td>
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<td>Fosfomycin</td>
<td>1</td>
<td>&gt;256</td>
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<tr>
<td>Clindamycin</td>
<td>.094</td>
<td>&gt;256</td>
</tr>
<tr>
<td>Linezolid</td>
<td>2</td>
<td>&gt;256</td>
</tr>
</tbody>
</table>

MIC = Minimal Inhibitory Concentration  
BIC = Biofilm Inhibitory Concentration
Results - SEM

TMZF®

CrCo
Conclusions

The method used in this study for the growth of bacterial biofilm in vitro is efficient and reproducible what allows further control of periprosthetic joint infection.

Why are they so resistant?

House (Protection) + Teamwork
Thank you for your attention!