Our goal is to create a bandage, which inhibits *S. aureus* biofilm formation in wounds.

Such a bandage would improve the efficiency of conventional antibiotics.
The problem

Hospital acquired infections are a huge and growing problem.

They lead to prolonged illness and higher mortality among patients.

*S. aureus* is the leading cause of hospital-acquired infections.

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The problem

*S. aureus* often infects surgical wounds.

This disrupts the healing process, can cause sepsis and may require implanted devices to be removed.

The increased use of antibiotics promotes resistance as seen with MRSA.

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Biofilm formation

Biofilm is a layer of microbes embedded in extracellular slime.

Biofilm formation in wounds protects *S. aureus* from antibiotics.

Quorum sensing enables bacteria to form biofilms.
A bandage containing *E. coli* producing RIP, sealed in a semipermeable membrane.

The membrane prevents the bacteria from entering the blood, but allows RIP to diffuse into the wound and disrupt quorum sensing.

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**Our system**

**Constitutive promoter**  **RBS**  **RIP**  **Double terminator**

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**Results**

**DNA sequencing**

**Northern blot**

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Results

Biofilm assay

<table>
<thead>
<tr>
<th>Condition</th>
<th>Normalized absorbance</th>
</tr>
</thead>
<tbody>
<tr>
<td>MG1655 + RIP</td>
<td>0.60</td>
</tr>
<tr>
<td>MG1655</td>
<td>0.50</td>
</tr>
</tbody>
</table>

Cell culture | Supernatant | Lysate

In conclusion

What we achieved
- RIP submitted part
- RIP mRNA confirmed by Northern blot
- *S. aureus* biofilm formation reduced by RIP cell culture
- First expression of RIP outside original host

Acknowledgements

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