

MICROBIOLOGIE, INFECTIOLOGIE ET IMMUNOLOGIE

CONFERENCE

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2900 boul. Édouard Montpetit (Chemin de la tour), Montréal.

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Sticky Business: Rhodobacter's Unique Take on Polar Adhesion

Bacteria often attach to surfaces as biofilms, transitioning from motile to sessile states through flagellar loss and adhesin production. In Alphaproteobacteria, irreversible attachment typically relies on polar adhesins either the holdfast in Caulobacterales or the unipolar polysaccharide (UPP) in Rhizobiales.

To examine polar adhesion in other orders, we studied the photosynthetic model species *Rhodobacter capsulatus* (Rhodobacterales), known to form biofilms but with an unclear adhesion mechanism. Biofilm assays and microscopy confirmed polar adhesion despite the absence of holdfast or UPP biosynthesis genes, indicating a distinct adhesin.

Random transposon mutagenesis and targeted deletions identified key loci involved in adhesion. Three major gene clusters revealed that this adhesin involves sulfated polysaccharides, an ABC transporter-dependent capsular polysaccharide system, galactose-containing polymers (lectin staining), and preferential binding to hydrophobic surfaces.

We designate this novel polar adhesin "Rhodoglue." It appears unique to Rhodobacterales and distinct from holdfast and UPP, suggesting polar adhesion is more widespread than previously recognized.