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La physique à l'échelle de la cellule Physics at the scale of the cell

## Bioadhesion and the dewetting transition Transition de demouillage et bioadhesion

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### Abstract

The article discusses interferometric experiments carried out on a number of receptor/ligand (linker<sup>TM</sup>) based bioadhesion systems. The aim was to quantitatively test the applicability of wetting theory to bioadhesion. In all cases phase-separation phenomena were observed, with highly heterogeneous adhesion disks, which is not consistent with a simple equilibrium wetting description. We present both theoretical and experimental evidence that these phenomena can be best understood in terms of two concepts: (I) a membrane-mediated linker-linker attraction, and (II) a linker-controlled dewetting transition.

### Résumé

Dans cet article nous décrivons des expériences interférométriques effectuées sur un certain nombre de systèmes récepteurs/liants (connecteurs)

connecteurs sur un certain nombre de systèmes récepteurs/ligands (connecteurs). Le but était de tester quantitativement la possibilité d'appliquer les théories du mouillage à la bioadhésion. Dans tous les cas des phénomènes de séparation de phase, inconsistants avec une simple description de démoillage à l'équilibre, ont été observés sous forme de disques d'adhésion hétérogènes. Des arguments théoriques ainsi que des données expérimentales nous conduisent à proposer que la compréhension de ces observations requière l'introduction de deux concepts : (I) une attraction connecteur-connecteur générée par la membrane, (II) une transition de démoillage contrôlée par les connecteurs



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## Keywords

biophysics; bioadhesion; ligand-receptor; wetting; phase separation

## Mots-clés

biophysique; bioadhésion; récepteur-ligand; mouillage; séparation de phase

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