

From invention to innovation

## SCIENTIFIC EXPERTISE

- Normal and pathological red blood cell behavior
- Adhesion mechanisms in dynamic flow conditions
- Dynamic microscopy
- Cell culture in microfluidic biochips

## APPLICATIONS

- Blood diseases
- Inflammation
- Oncology
- Screening of adhesion molecules

## TRACK RECORD

- Research collaborations (Necker Hospital, HEGP, Cochin Institute, etc.)
- Ongoing service for a Swedish pharmaceutical company
- Patent application for a blood disease diagnosis method

## PUBLICATIONS

De Grandis M. et al., Blood 2013.  
 Franco M. et al., Blood 2013.  
 Kobari L. et al., Haematologica 2012.  
 El Nemer W. et al., Blood 2007.

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## CELL ADHESION IN DYNAMIC FLOW CONDITIONS

The platform capitalizes on recent improvements in microfluidics, which provide new tools able to model the capillary network.

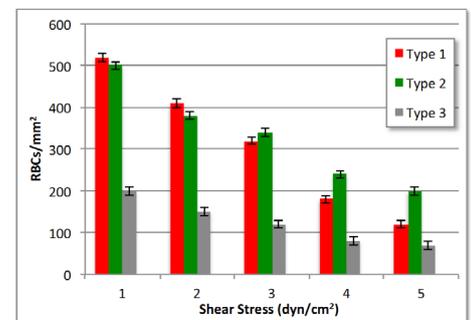
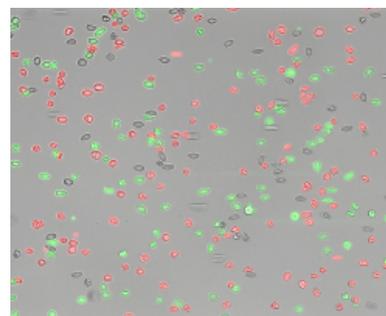
Hematology ■ Cell adhesion ■ Microfluidics ■ Blood ■  
 Nanomaterials ■ Red cell ■ Clinical Studies ■ Inflammation ■  
 Oncology ■ Flow Cytometry

## SERVICE DESCRIPTION

While many cell types, notably blood cells, are naturally submitted to flow and mechanical constraints, blood circulation remains difficult to model in vitro. This severely limits the relevance of studies concerning adhesion mechanisms and behavior of cells and layers (eg. endothelia) subjected to a flow.

Based on a set of microfluidic chips combined with microscopy, the platform enables the study of circulating cell behavior, cell adhesion to different substrates and cell layers, and effects of a shear stress in various conditions (normal or pathological).

Localized in the French institute for blood transfusion (INTS), the scientific staff process an extensive know-how and all the accreditation needs for human blood samples manipulation.



Adhesion of three different types of pathological red blood cells to immobilized substrate © W. El Nemer

## OFFER

- Behavior of cells and cell layers subjected to a flow
- Adhesion of circulating cells to a cell layer or to immobilized substrates (proteins, lipids, sugars) and resistance to a shear stress
- Screening of anti-adhesive molecules....