HEART - LIVER - LUNG - KIDNEY
9TH CAPSO CONGRESS
ATELIERS PARRAINÉS / *SPONSORED WORKSHOPS*

10 Décembre 2021, bordeaux

LFB L'ENGAGEMENT ÉTHIQUE

Salles / Rooms Brasilia 1,2,3

Modifications de l'hémostase sous assistance circulatoire mécanique (ACM)

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Centre de Référence des Pathologies Plaquettaires
Inserm U1034, Biologie des Maladies Cardiovasculaires

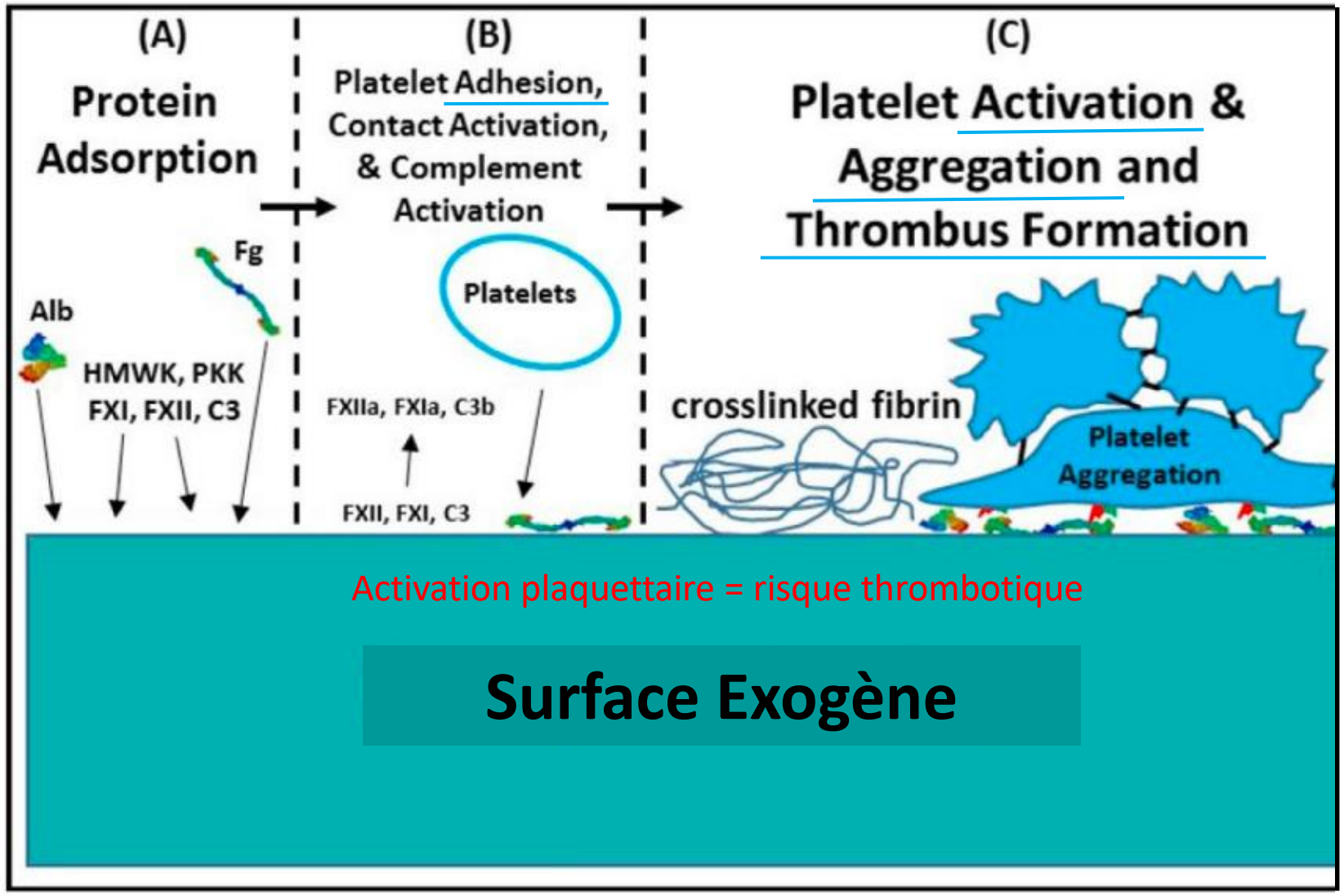
CRPP

Conflit d'intérêt

- Aucun

Adsorption protéique
favorisée par les interactions électrostatiques et hydrophobes:

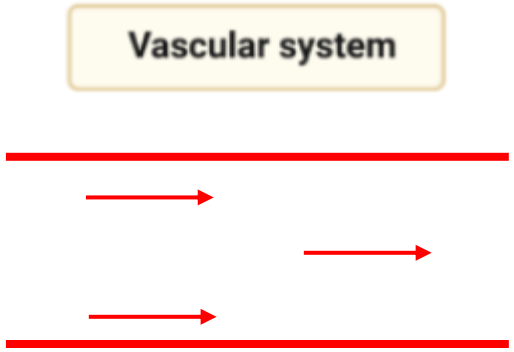
-**Fibrinogen**
-Fibronectin
-von Willebrand factor
-FXI-FXII
-Kininogen
-Prekallikrein



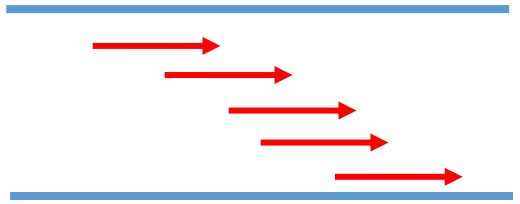
Brash JL, Acta Biomater, 2019

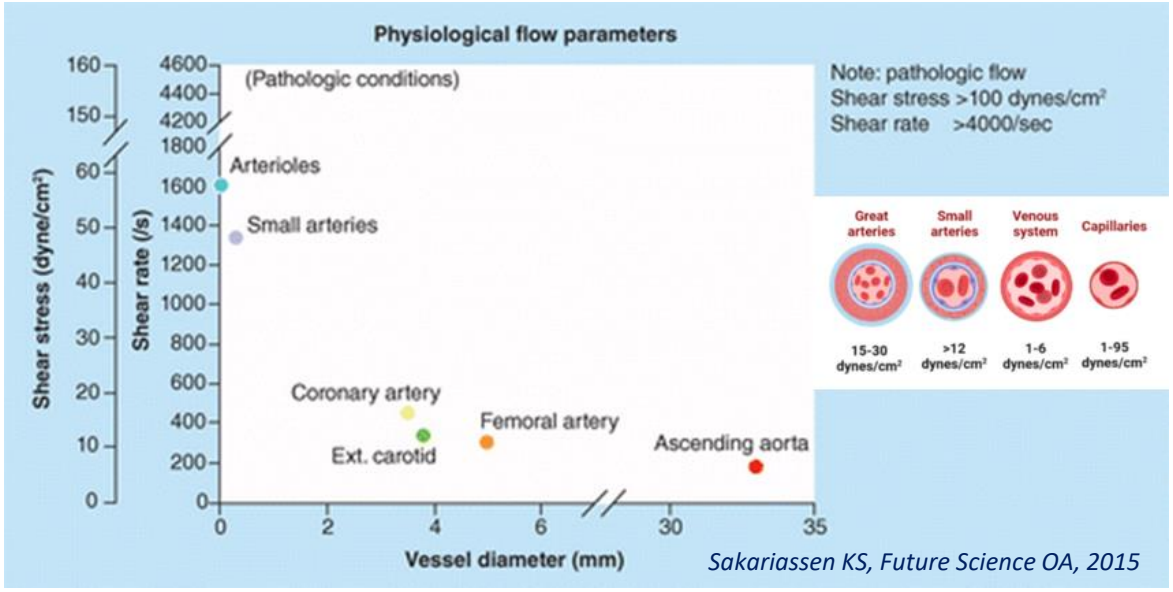
ASSISTANCE CIRCULATOIRE MÉCANIQUE ET CONTRAINTES DE CISAILLEMENT

Contrainte de cisaillement (shear stress): forces frictionnelles exercées par le flux sanguin contre la paroi vasculaire, déterminé par le **débit sanguin**, la **viscosité du sang** et le **diamètre du vaisseau**



ACM





Sakariassen KS, Future Science OA, 2015

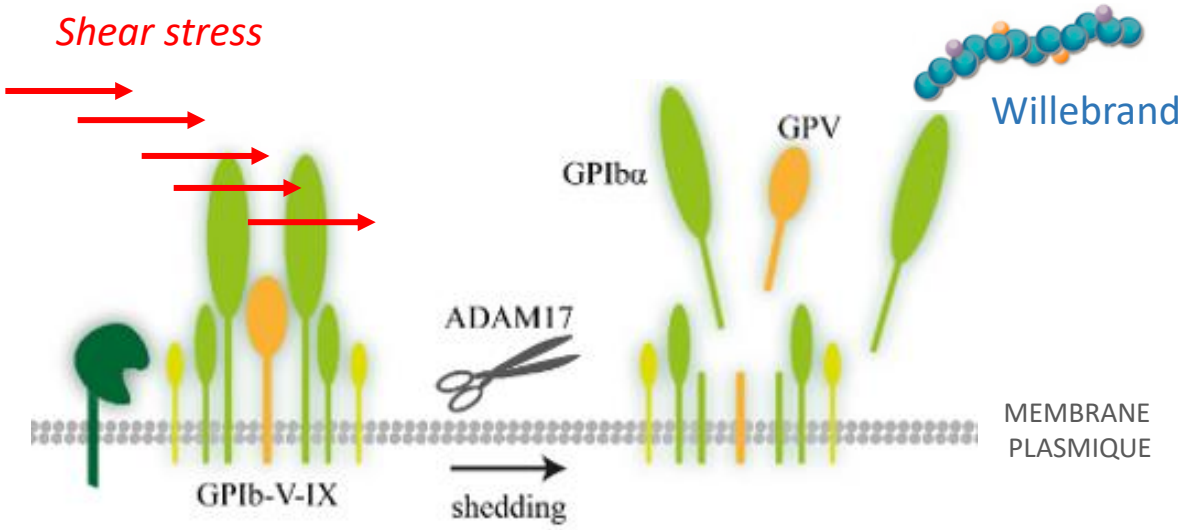
Table 1. Typical range of wall shear rates and stresses in blood vessels

Blood vessel	Shear rate (/s)	Shear stress (Pa)
Large arteries*	300-800	1.4-3.6
Arterioles*	450-1600	2-7.2
Veins*	15-200	0.07-0.9
Stenotic vessels*	800-10 000	3.6-45
Axial flow LVAD†	—	600
Centrifugal flow LVAD†	—	150-230

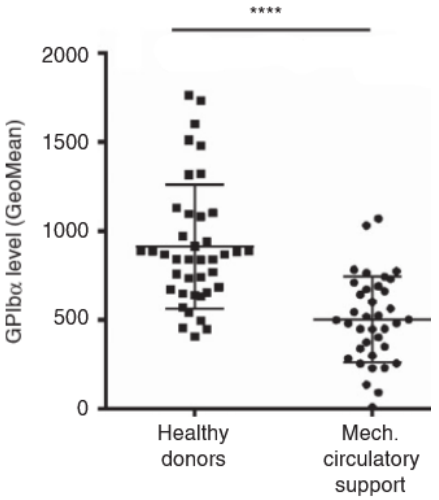
X100
X20-30

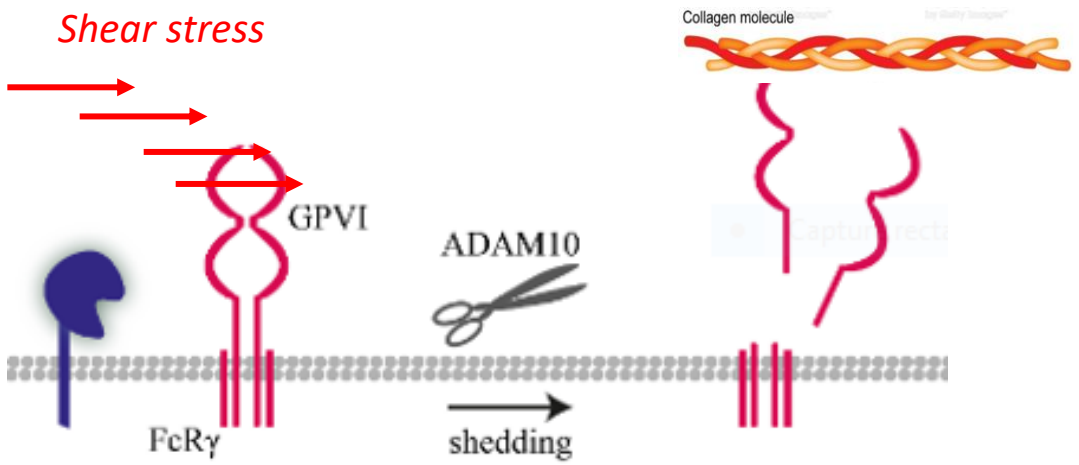
Nascimbene A, Blood, 2016

TAUX DE CISAILLEMENT ÉLEVÉS ET PERTE DES RÉCEPTEURS PLAQUETTAIRES

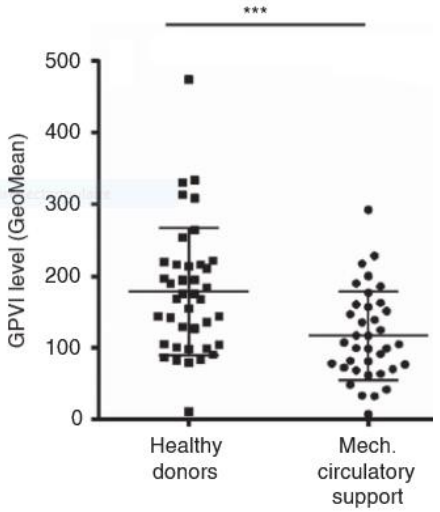


Récepteur
Willebrand





Récepteur
collagène

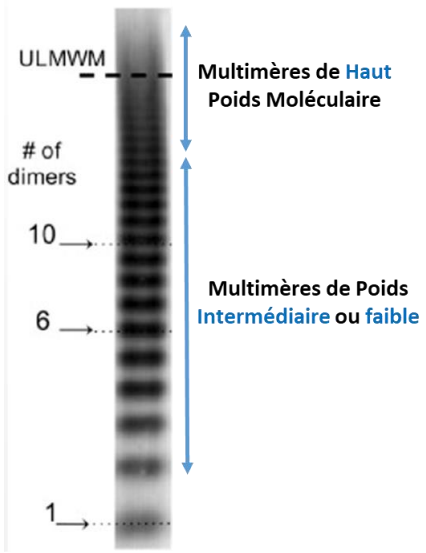


Wu J, Front. Cardiovasc. Med., 2021

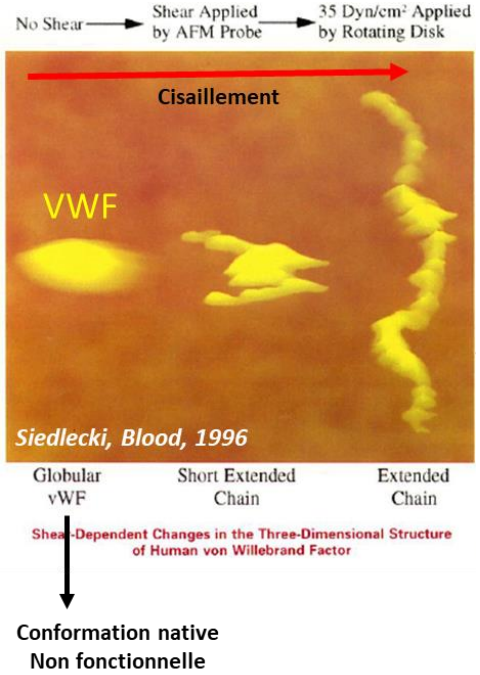
Défaut de fonction PLT = risque hémorragique

Lukito P, JTH, 2016

HÉMOSTASE, FACTEUR WILLEBRAND ET CONTRAINTES DE CISAILLEMENT (SHEAR STRESS)

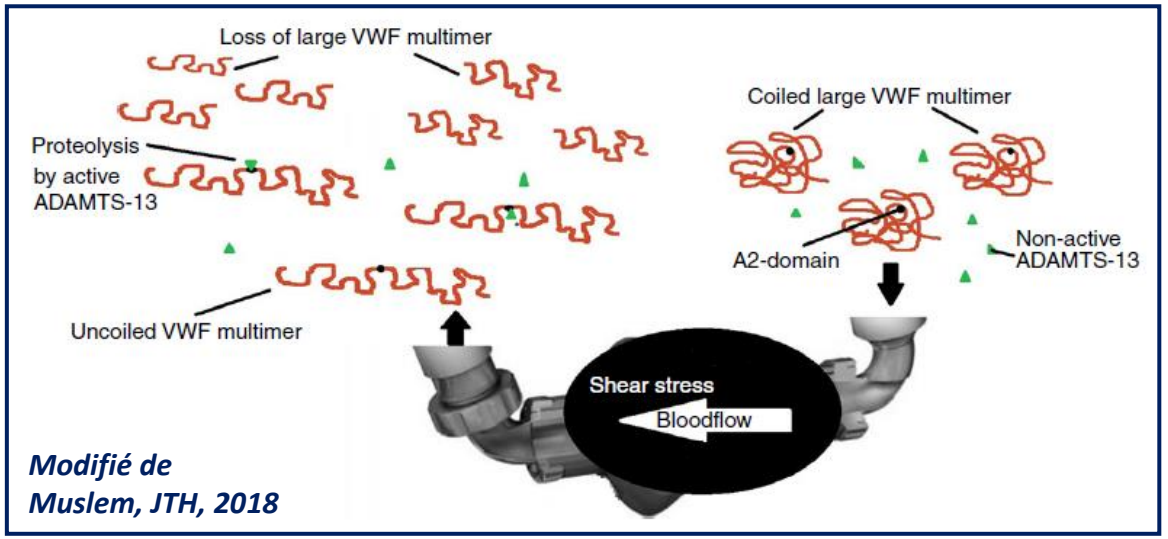


Gel d'agarose

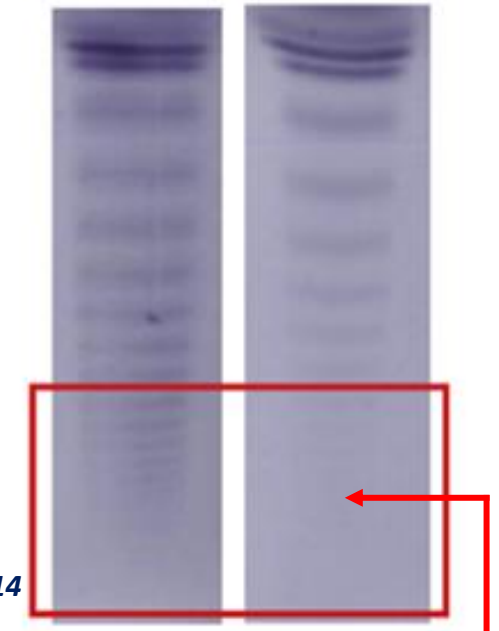


Conformation native
Non fonctionnelle

ACM



Modifié de Muslem, JTH, 2018



Fiore, JTCS, 2014

C Contrôle **P** LVAD

Perte des multimères de haut poids moléculaires et de fct du VWF

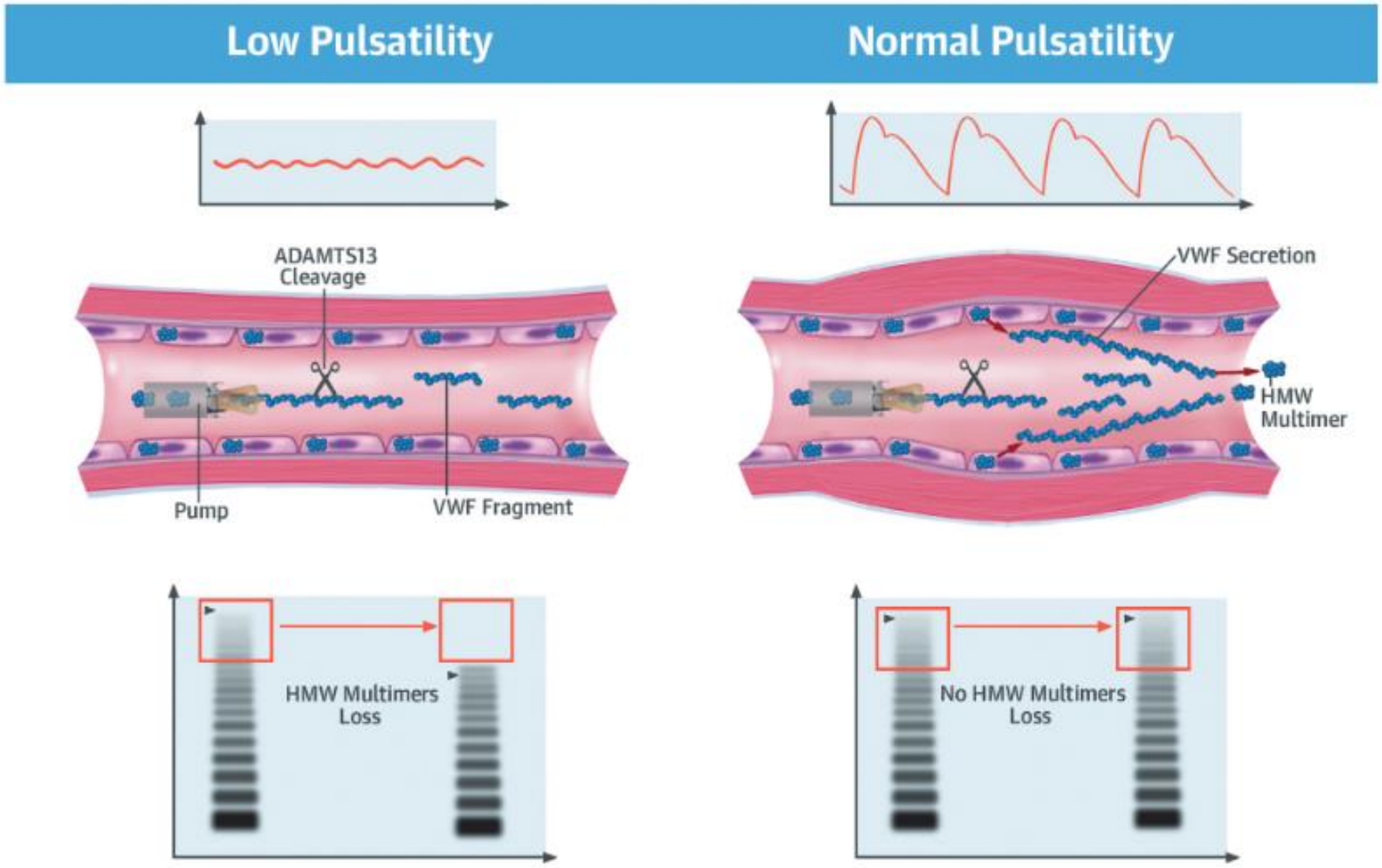
=

Maladie de Willebrand Acquise

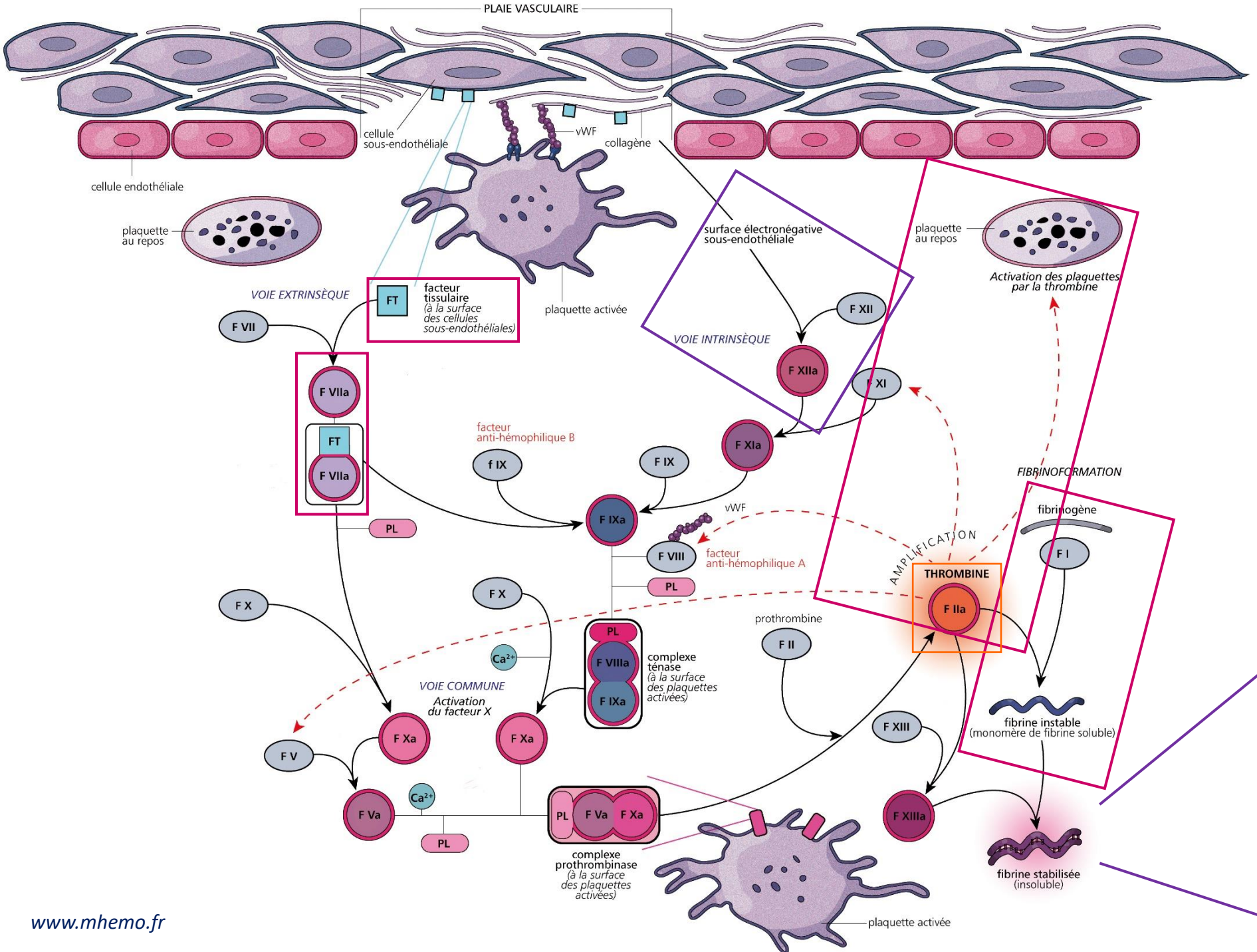
=

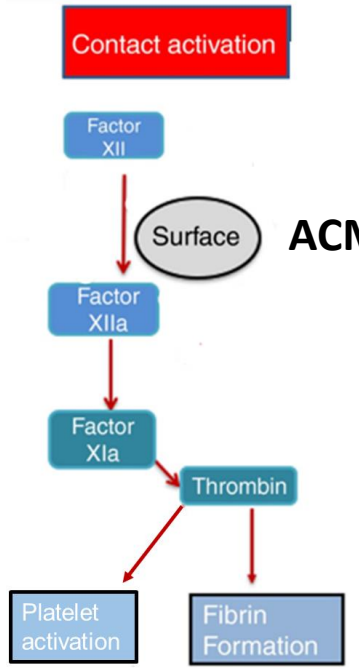
Risque hémorragique

PULSATILITÉ ET WILLEBRAND ACQUIS



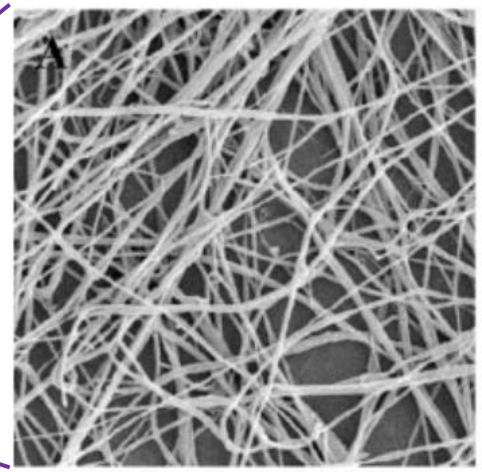
Vincent, F. et al. J Am Coll Cardiol. 2018;71(19):2106-18.





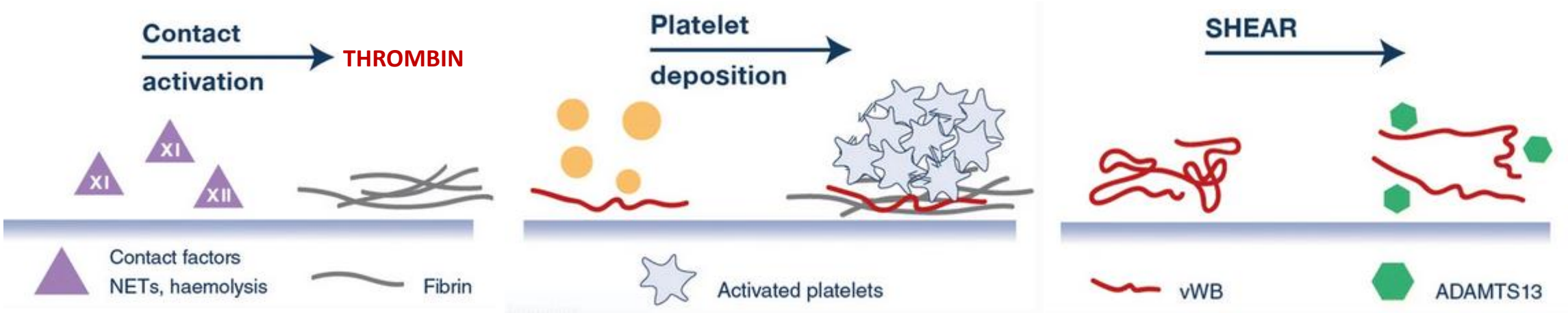
ACM

HEMOSTASE:
GENERATION DE THROMBINE



www.mhemo.fr

MODIFICATIONS DE L'HÉMOSTASE SOUS ACM



Fibrino-formation

Activation PLT

Perte des récepteurs PLT

Willebrand acquis

⬆ Thrombosis

Anticoagulant
Anti-agrégant

⬆ Bleeding

Vandenbriele C, Intensive Care Medicine, 2020