



Groupe d'Étude de la Thrombose
de Bretagne Occidentale

UMR I304



FACULTÉ
DE MÉDECINE &
SCIENCES DE LA SANTÉ

CONGRÈS DE LA SOCIÉTÉ FRANÇAISE
DE THROMBOSE ET D'HÉMOSTASE

Inserm

La science pour la santé
From science to health

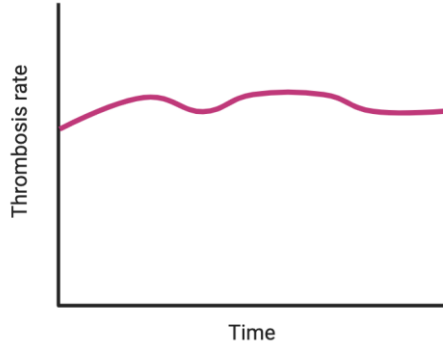
Thrombo-inflammation veineuse : Importance du phenotype cellulaire



Université de Bretagne Occidentale



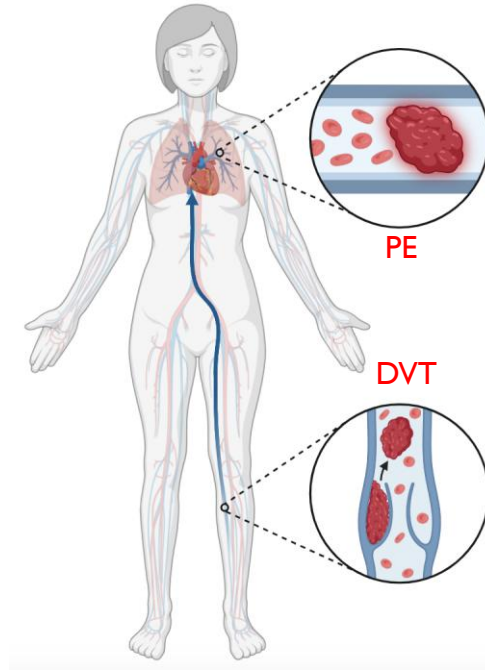
Venous thromboembolism – Major public health issue



Incidence rate: 1 to 2 / 1000-person years



In hospital cost: 240 Millions Euros/y in France



Unprovoked venous thromboembolism (VTE)

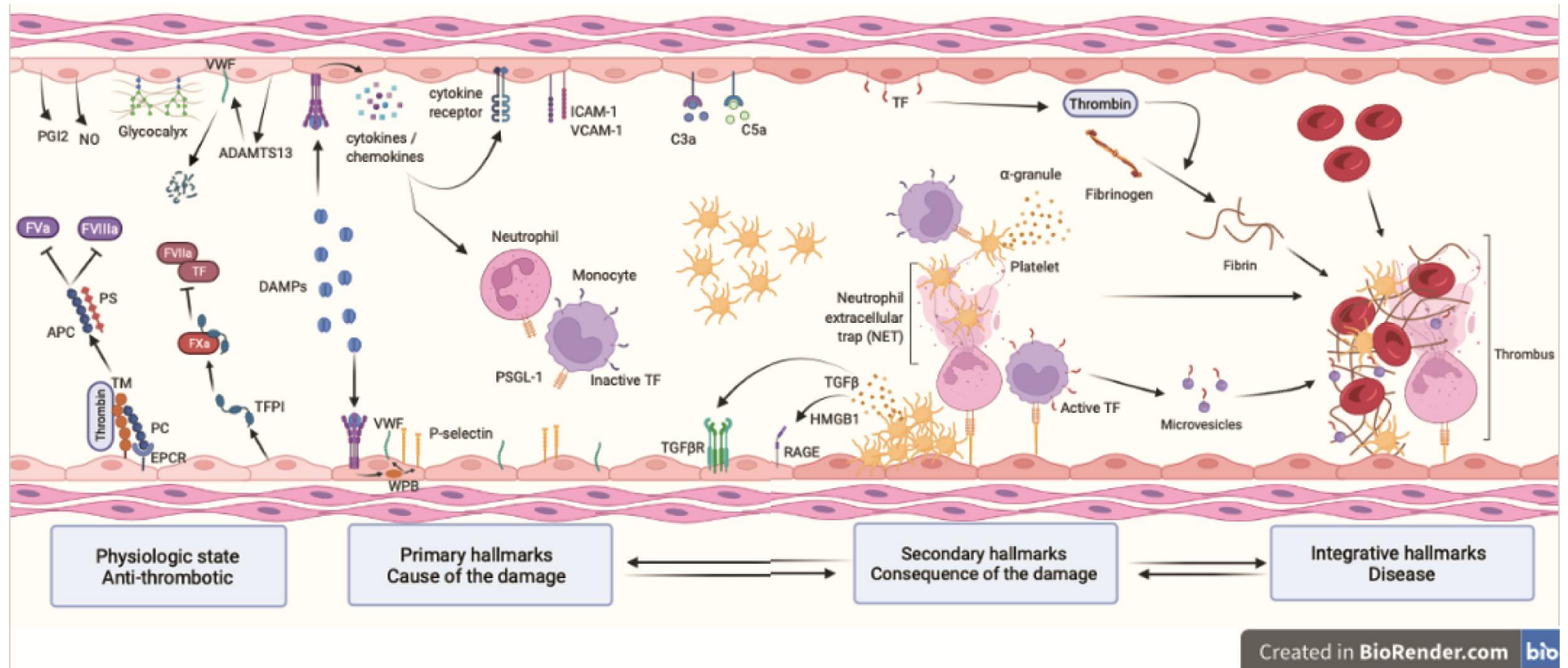


Recurrence rate: 5% to 40% at 5 years

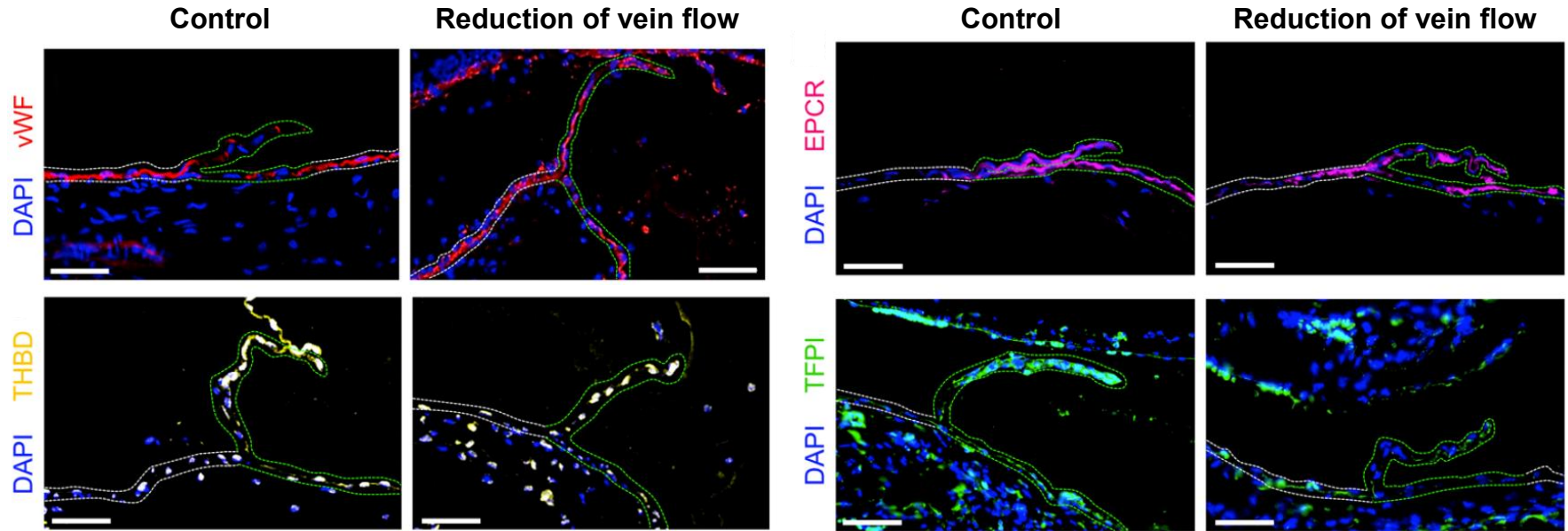


Post-thrombotic and post-PE syndrome

Thrombosis and inflammation

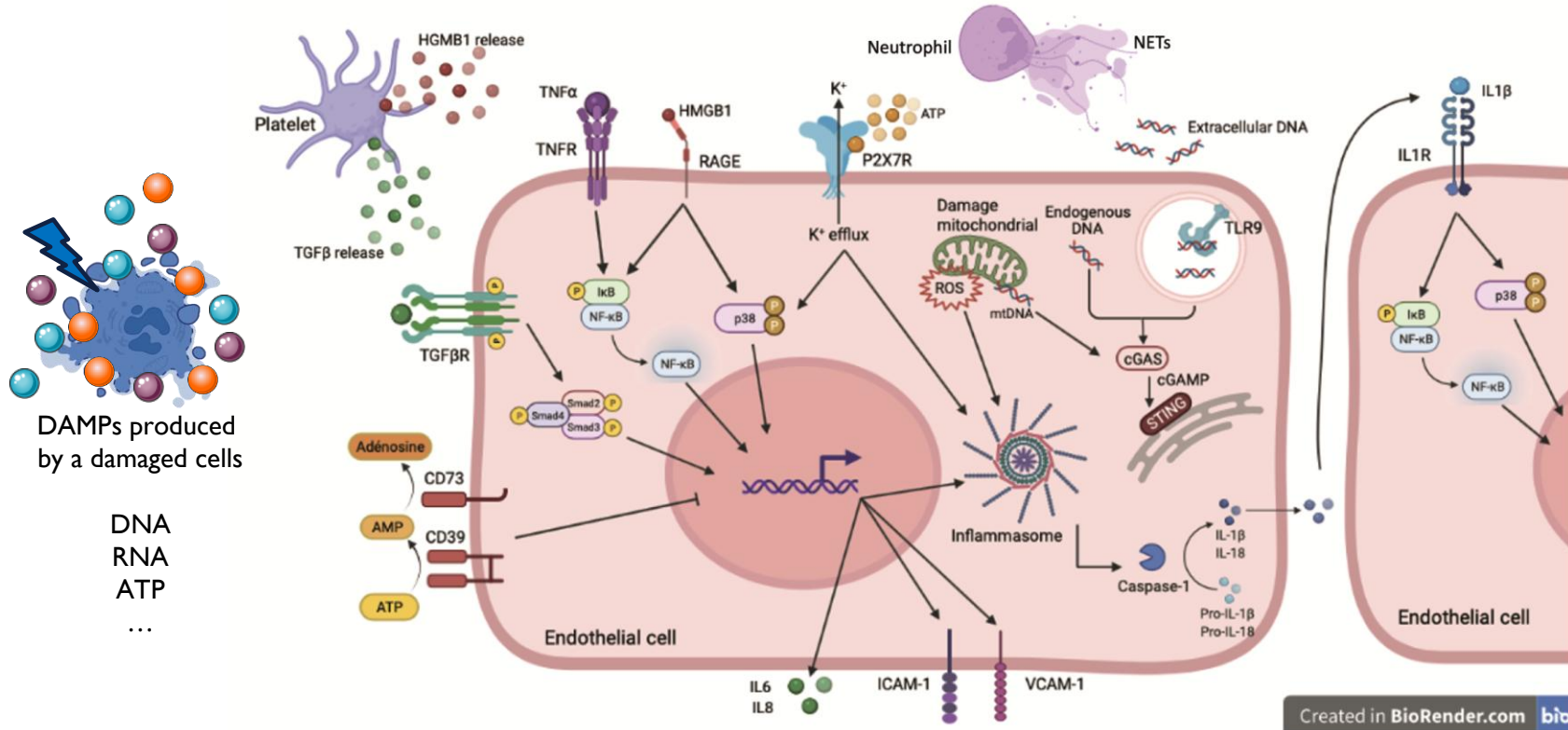


Endothelial phenotype in VTE

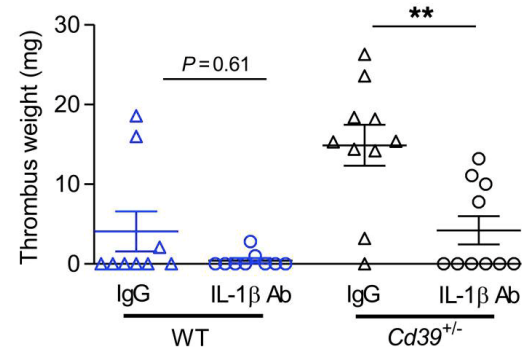
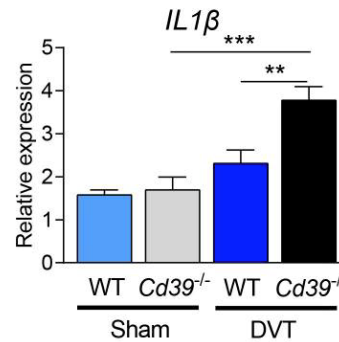
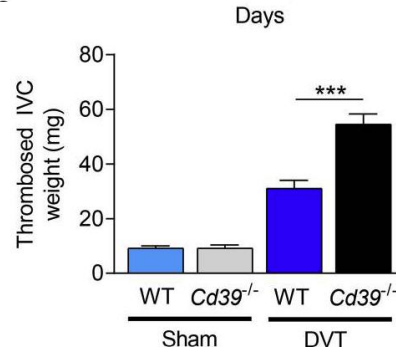
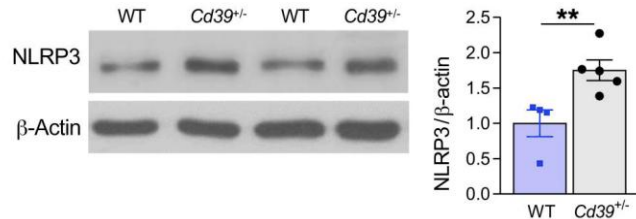
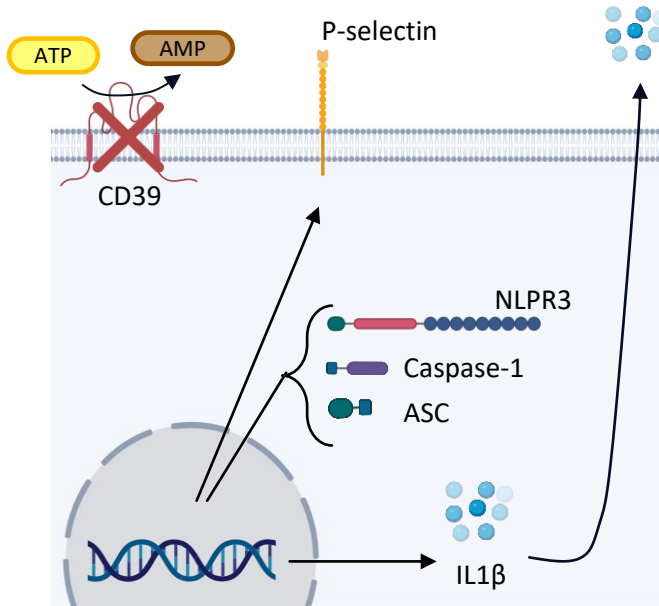


Thromboinflammation ↔ Endothelial dysfunction

Endothelial response to inflammation



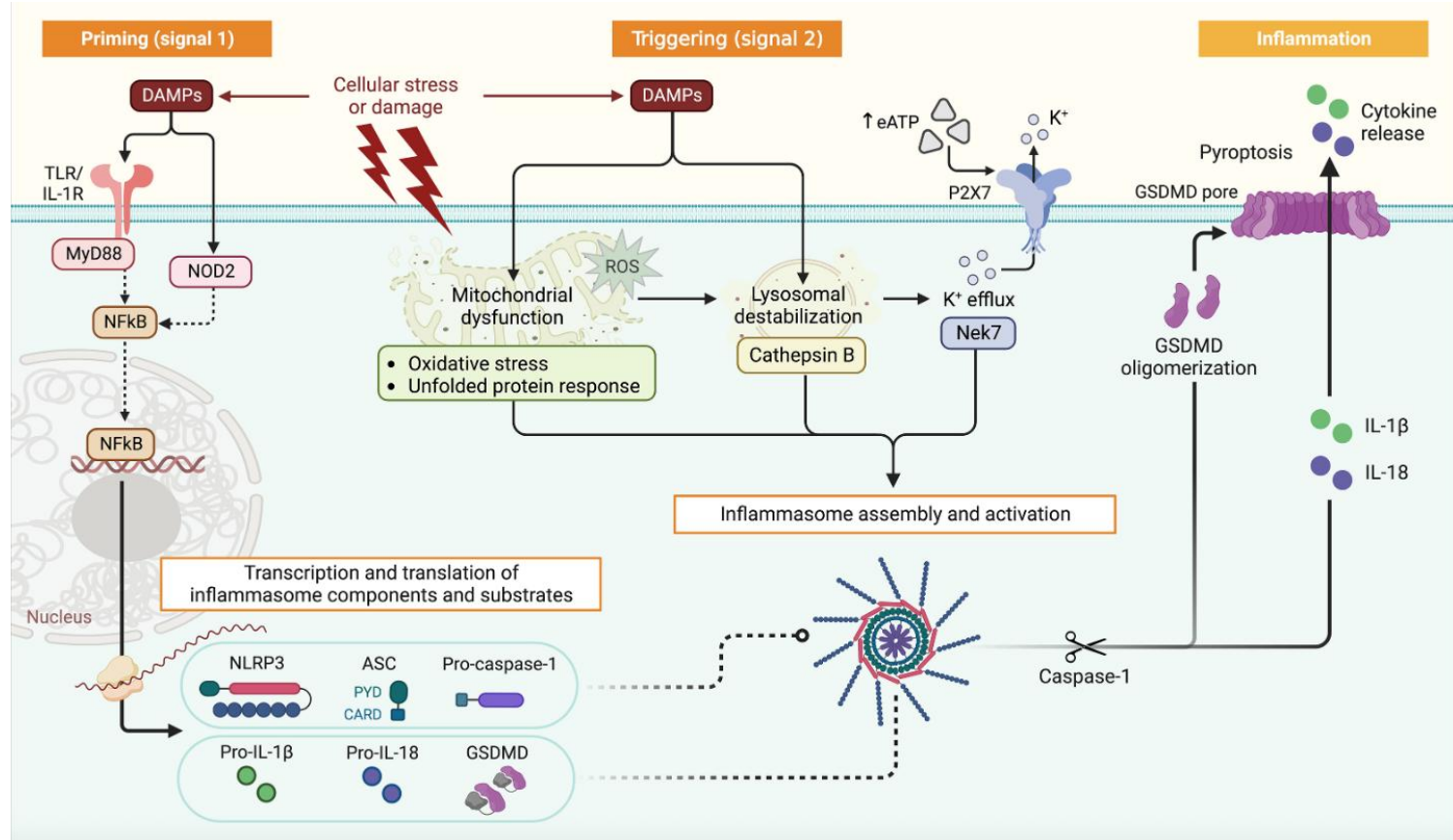
Extracellular ATP in VTE



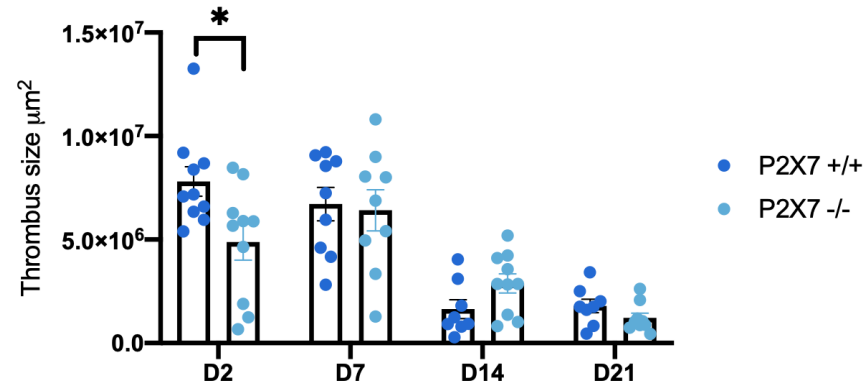
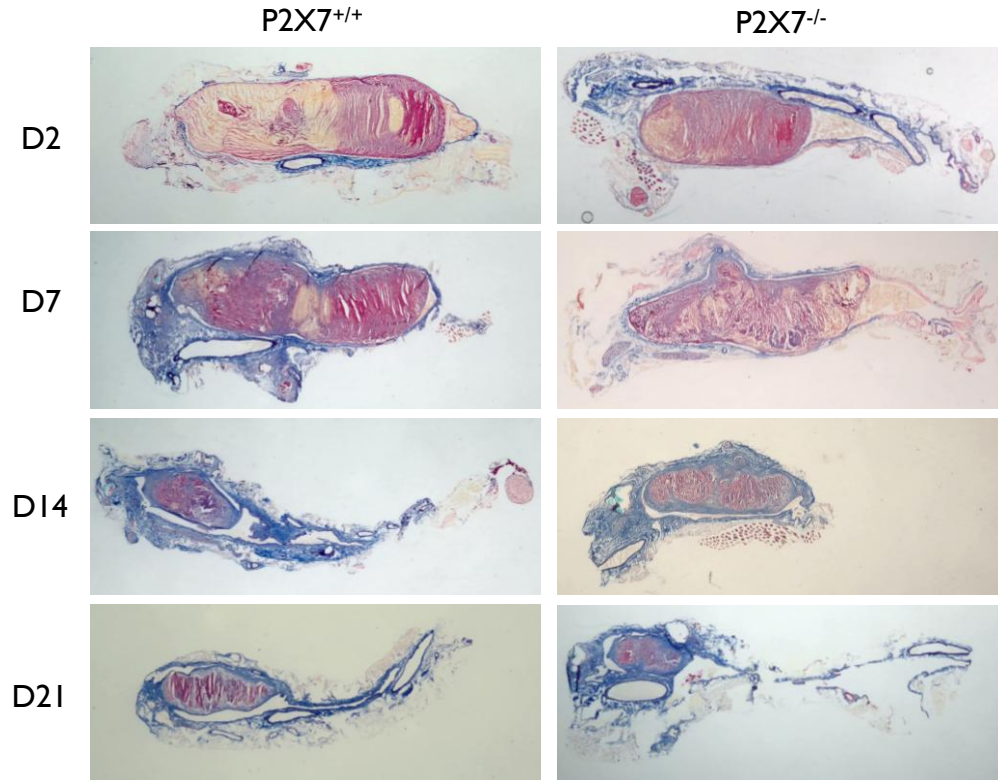
Anyanwu et al. *Arterioscler Thromb Vasc Biol.* 2019 Apr;39(4):e118-e129.

Yadav et al. *J Clin Invest.* 2019 129(7):2872-2877.

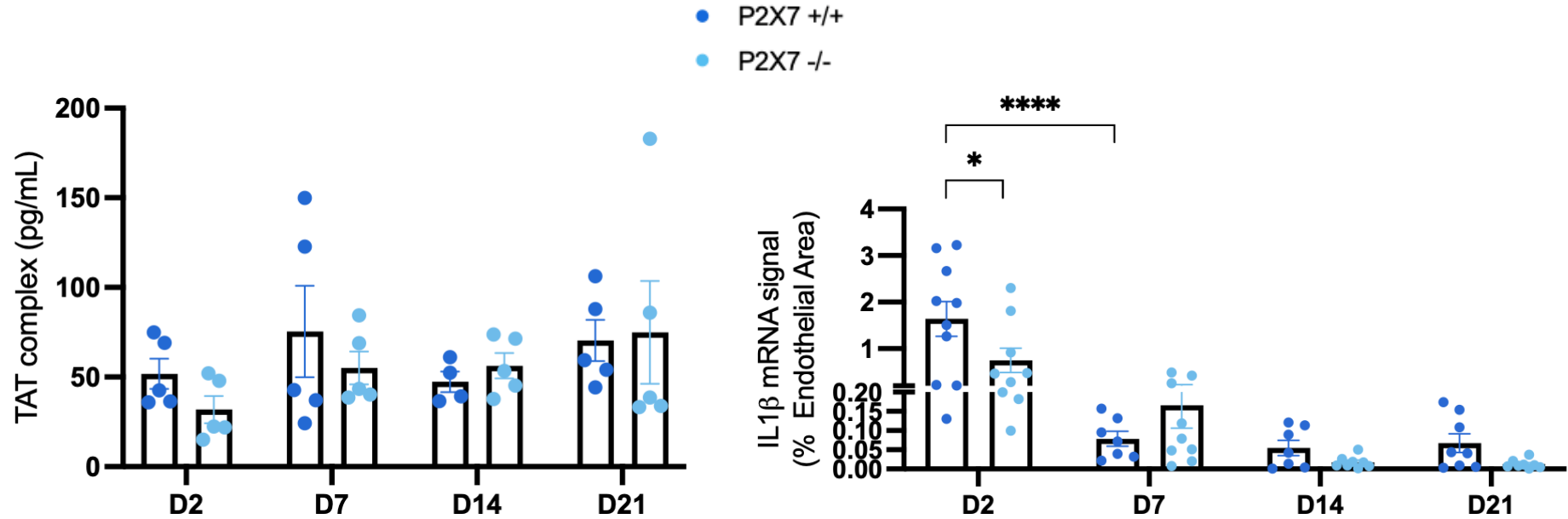
Extracellular ATP signaling



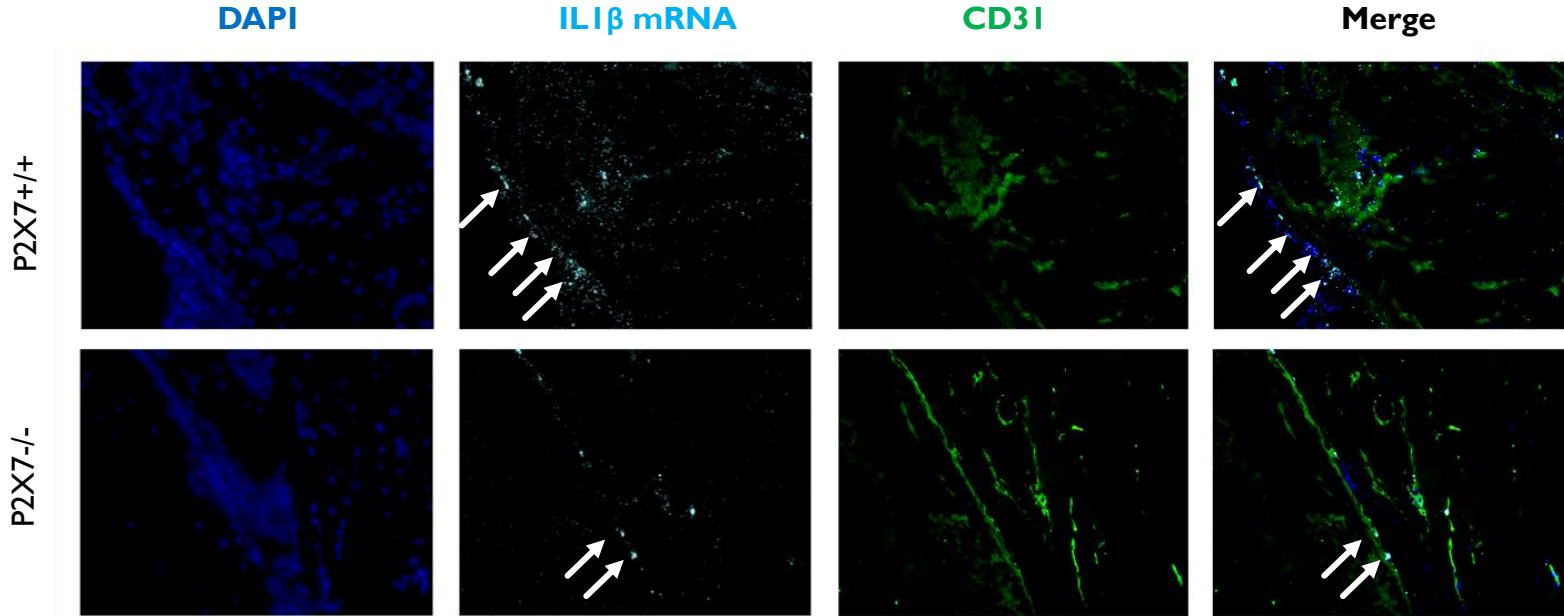
Role of extracellular ATP and P2X7R in VTE



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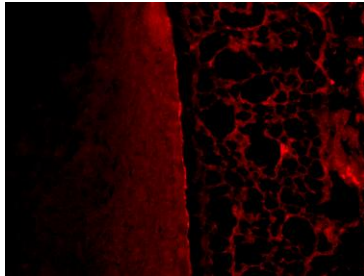
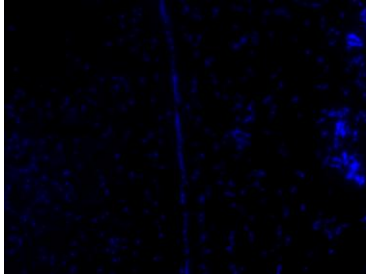


Role of extracellular ATP and P2X7R in VTE

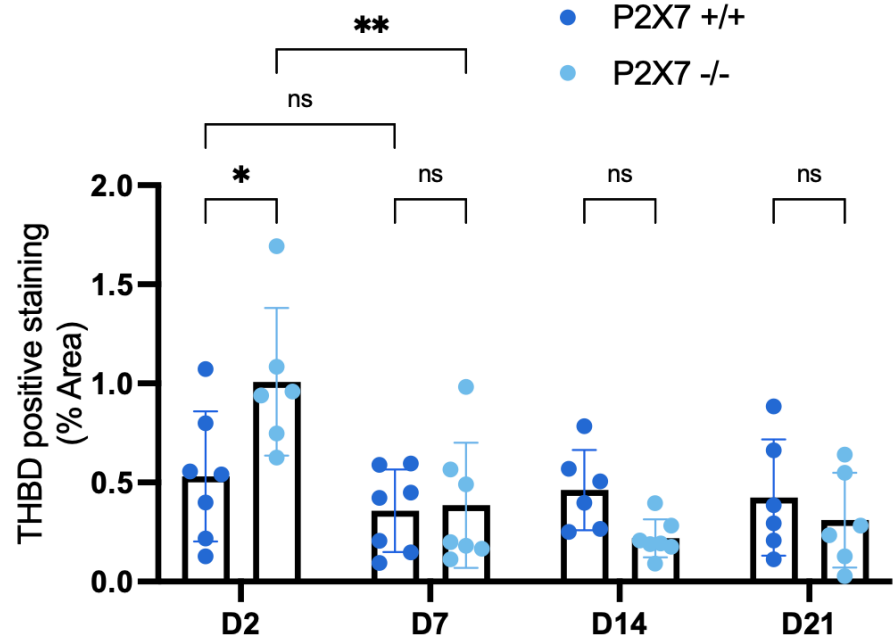
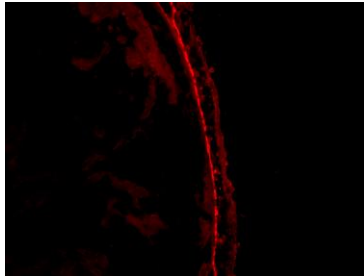
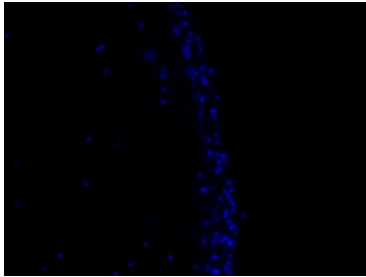
DAPI

THBD

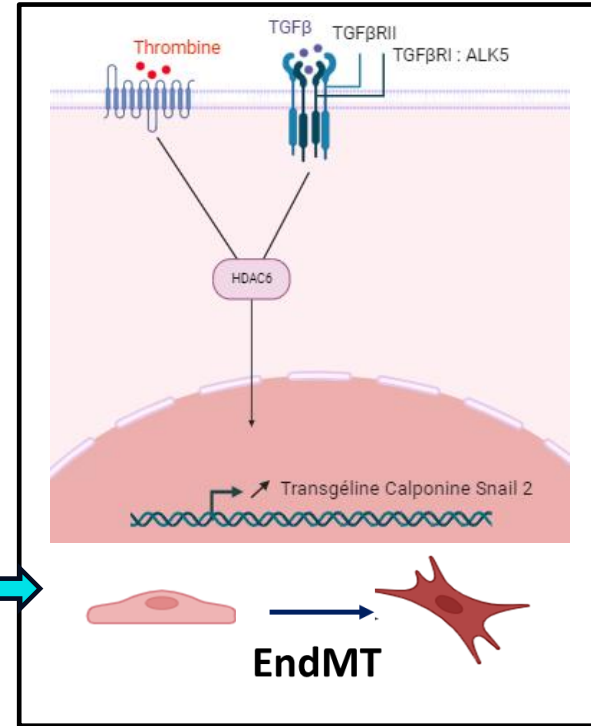
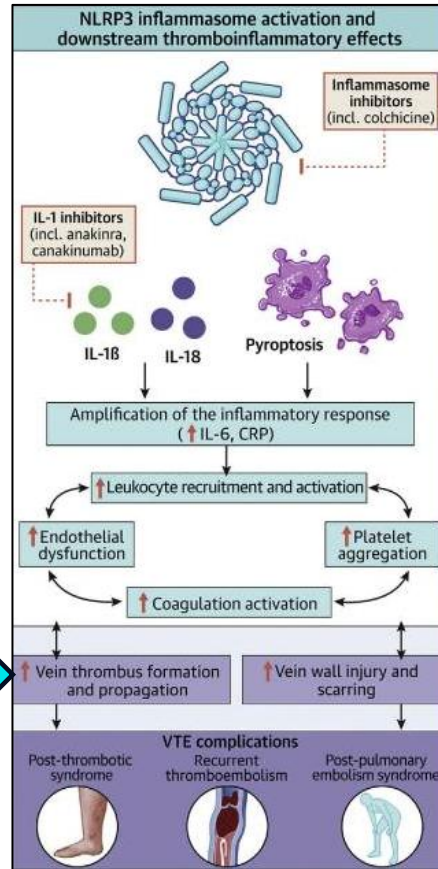
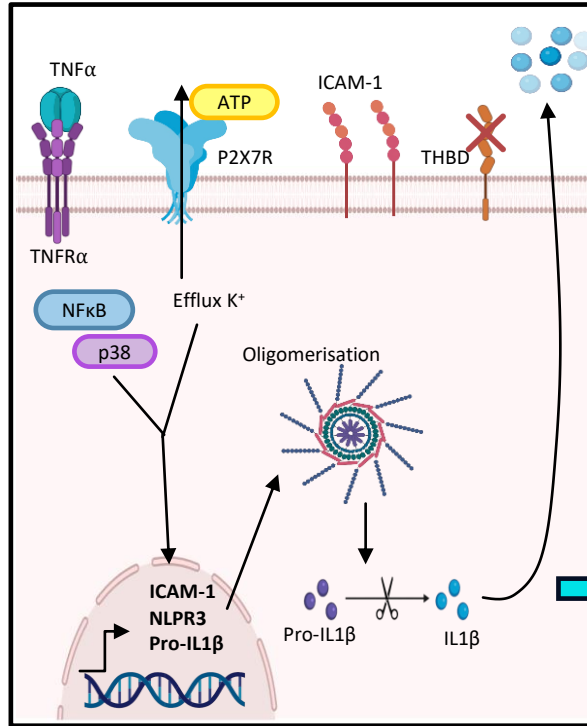
P2X7^{+/+}



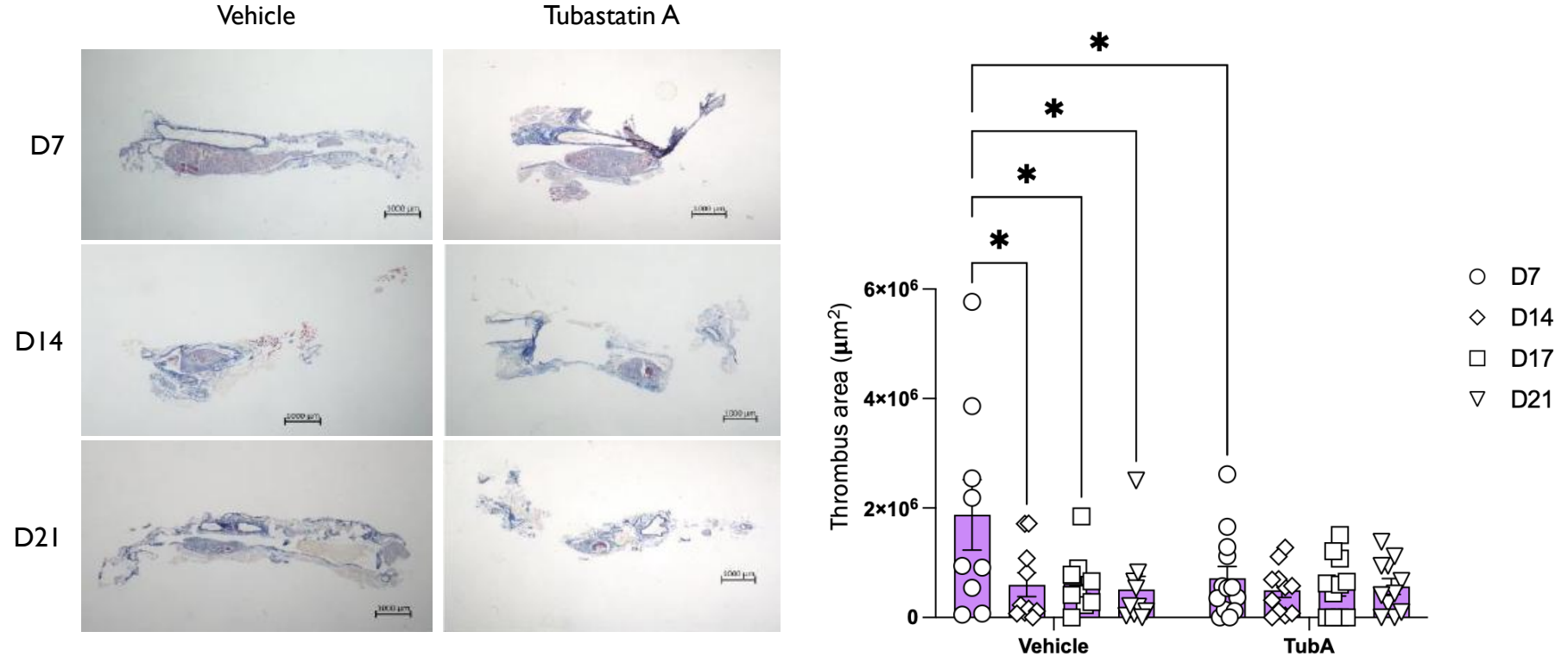
P2X7^{-/-}



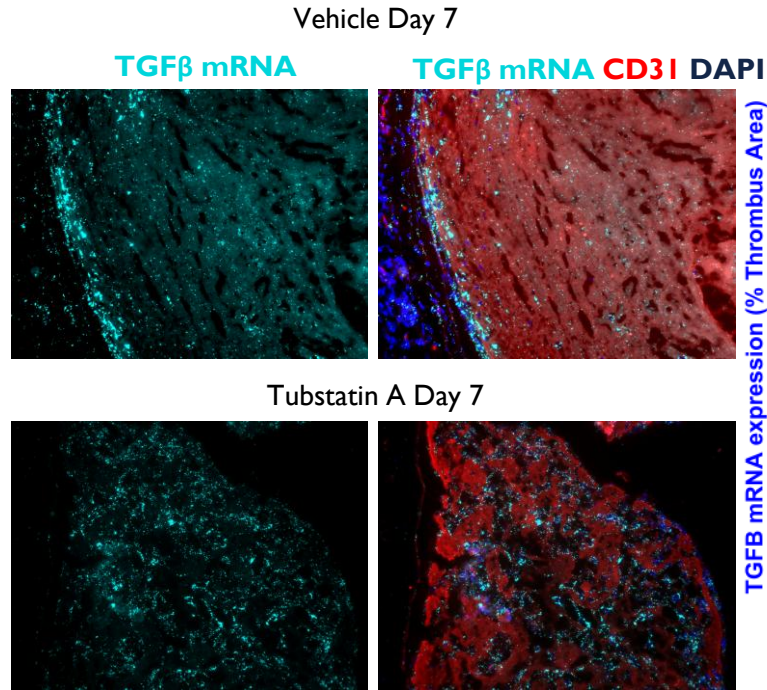
Endothelial contribution to VTE resolution



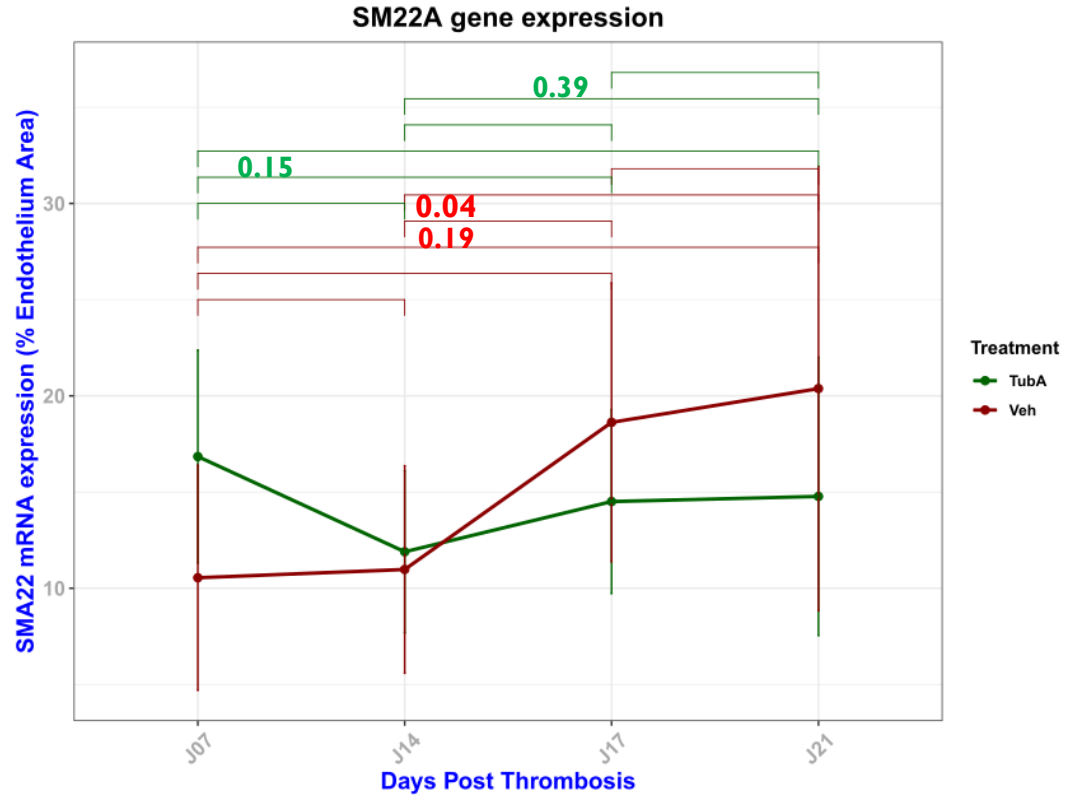
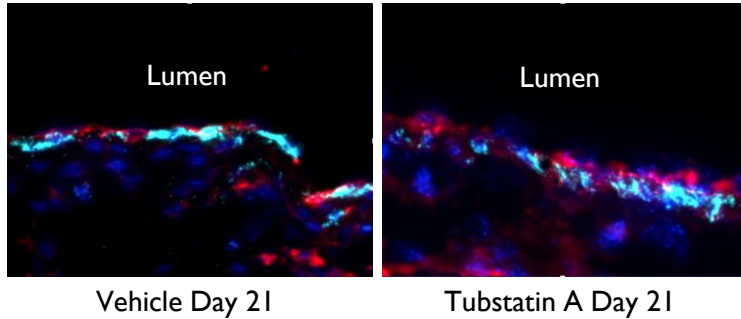
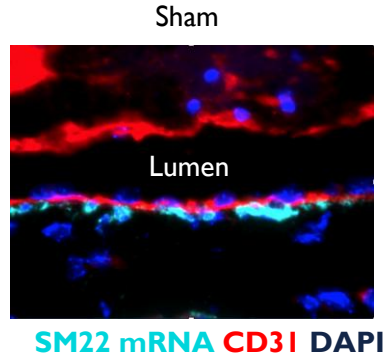
Importance of endothelial phenotype in VTE resolution



Importance of endothelial phenotype in VTE resolution

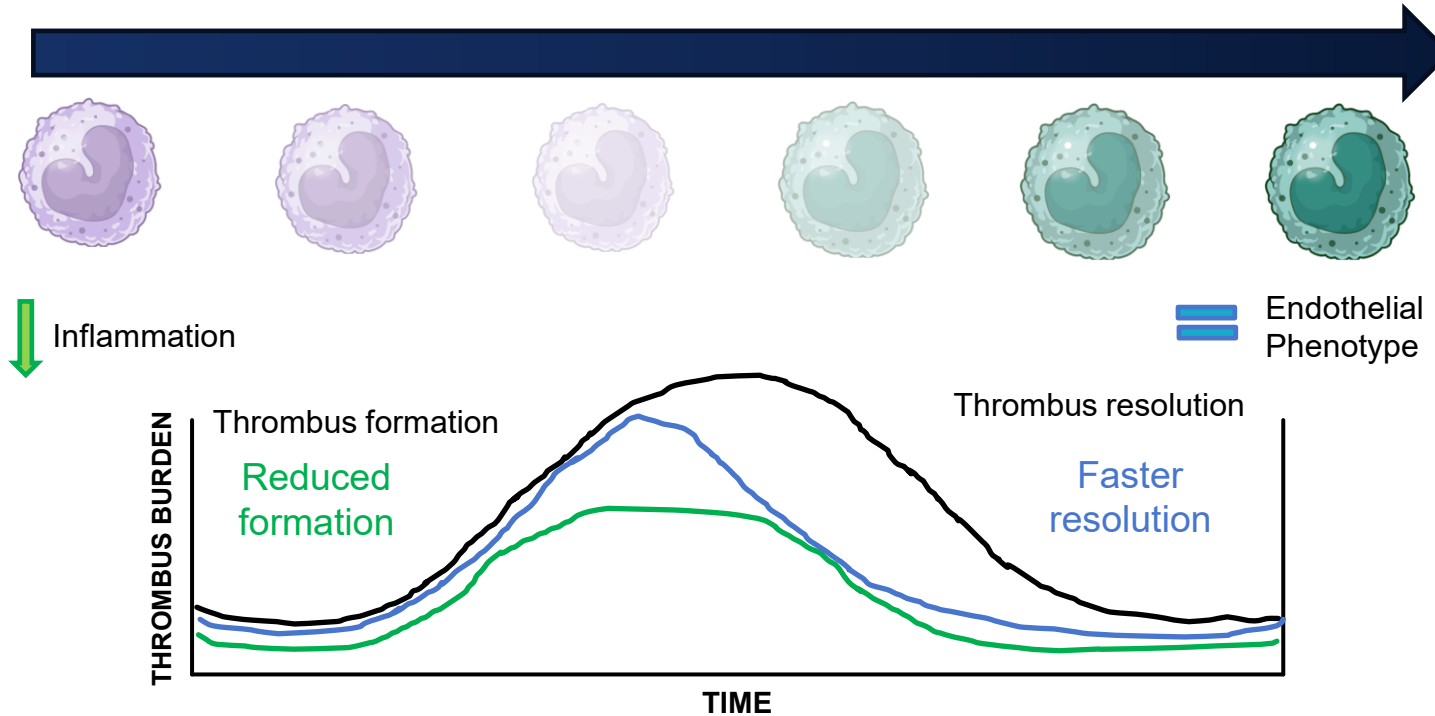


Importance of endothelial phenotype in VTE resolution

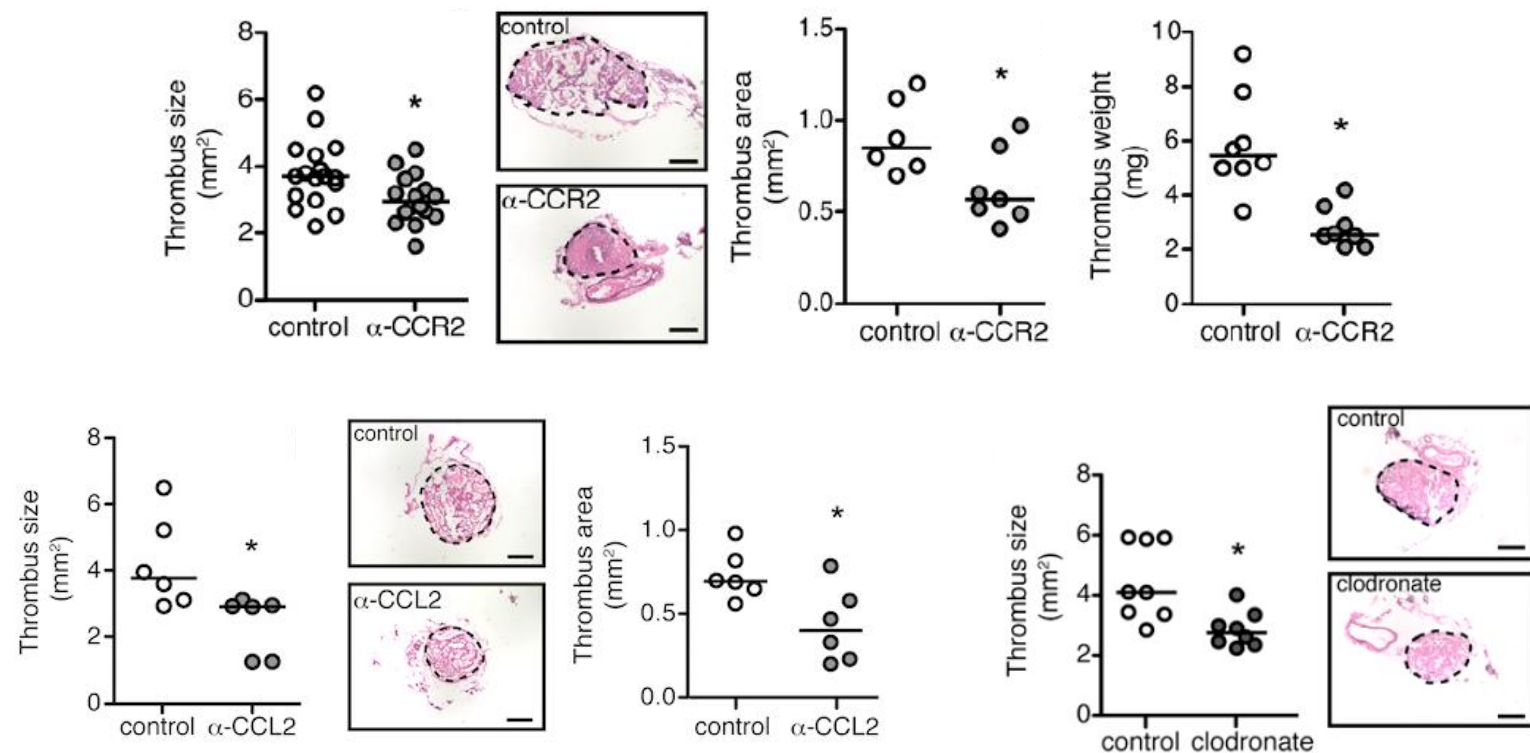


Venous thromboembolism – Monocytes

Continuum of leukocyte activities in thrombus formation and resolution



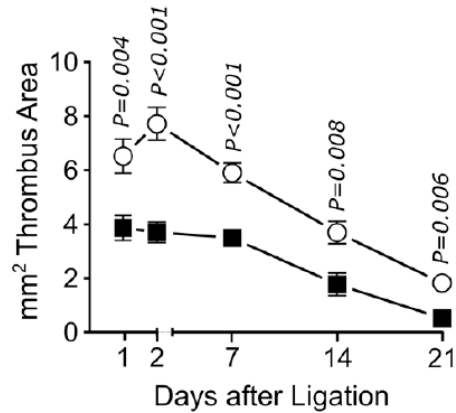
Contribution of monocytes to thrombus formation



Contribution of monocytes to thrombus formation and resolution

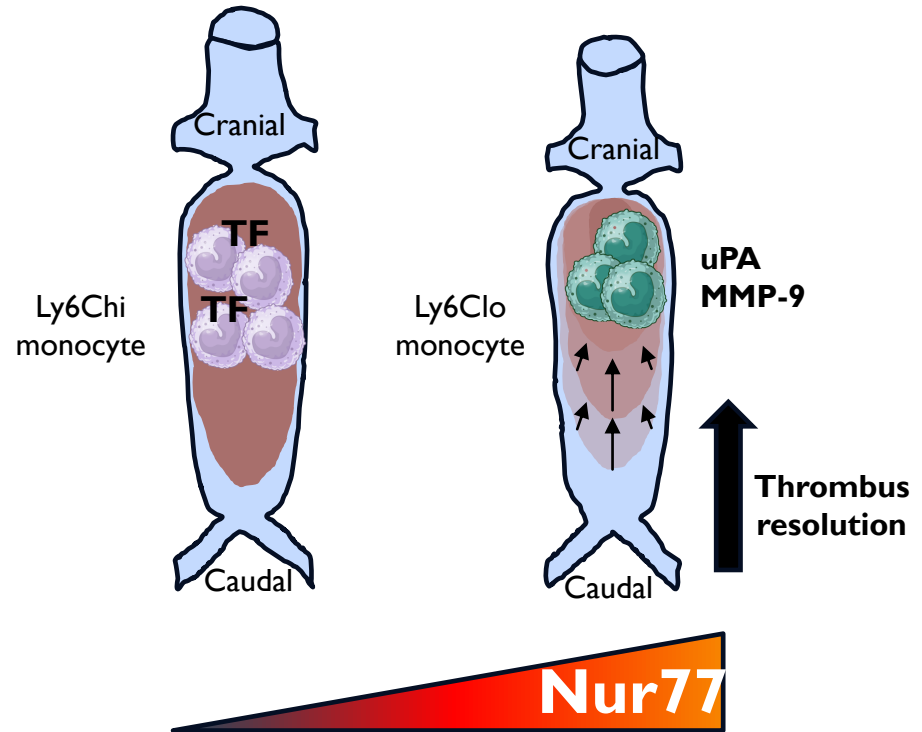
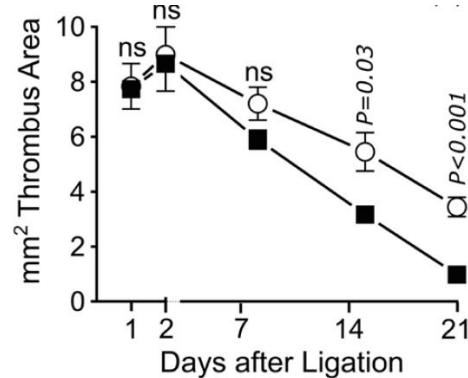
Thrombus Formation

○ Solvent
■ CsnB d-1

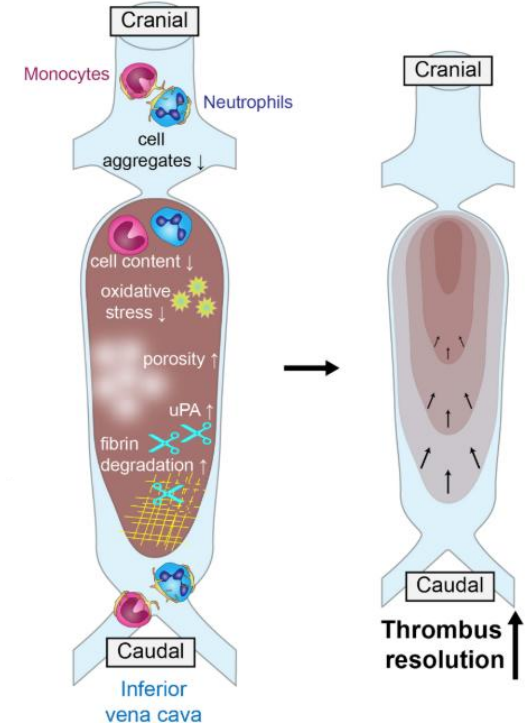
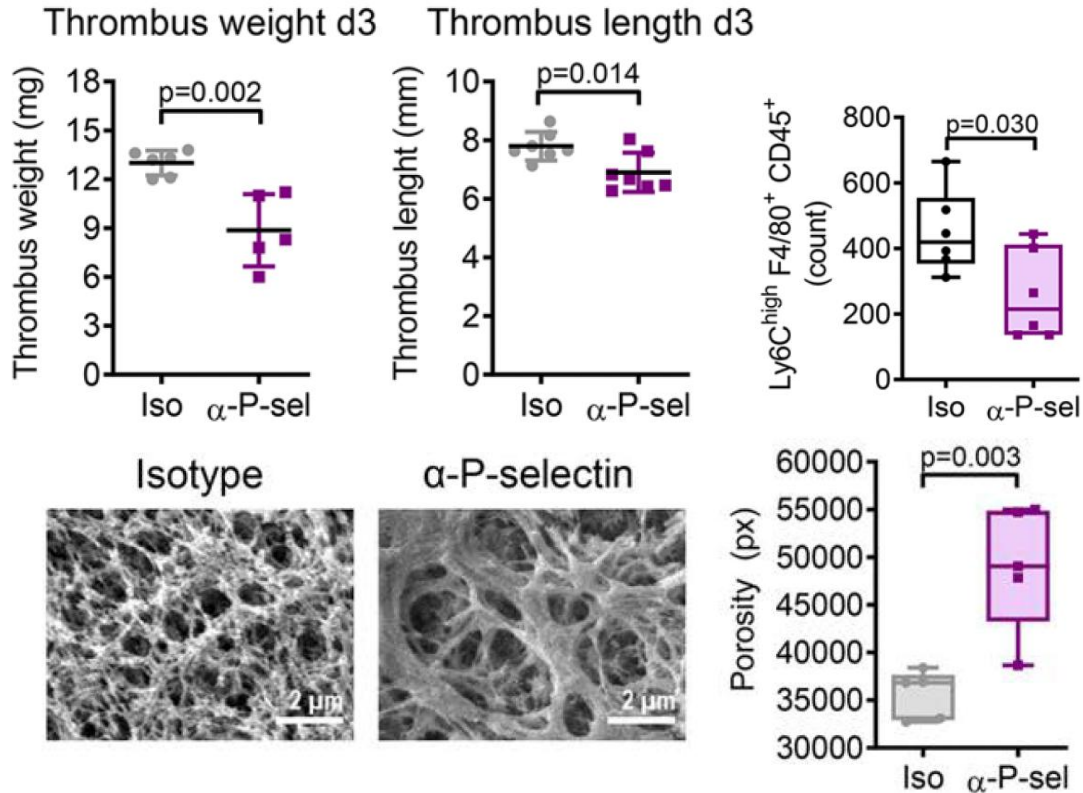


Thrombus resolution

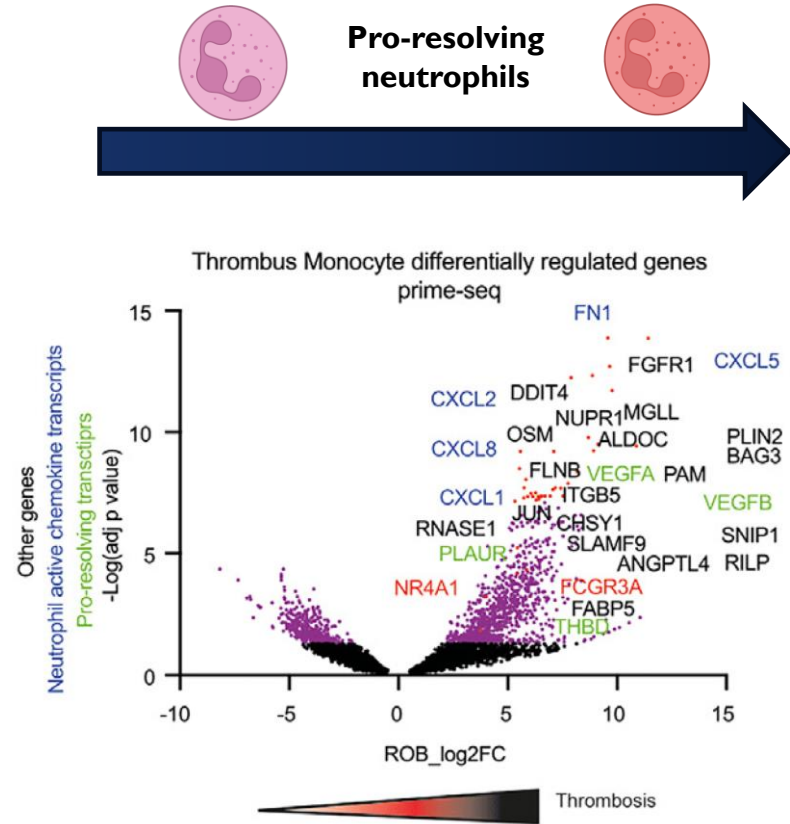
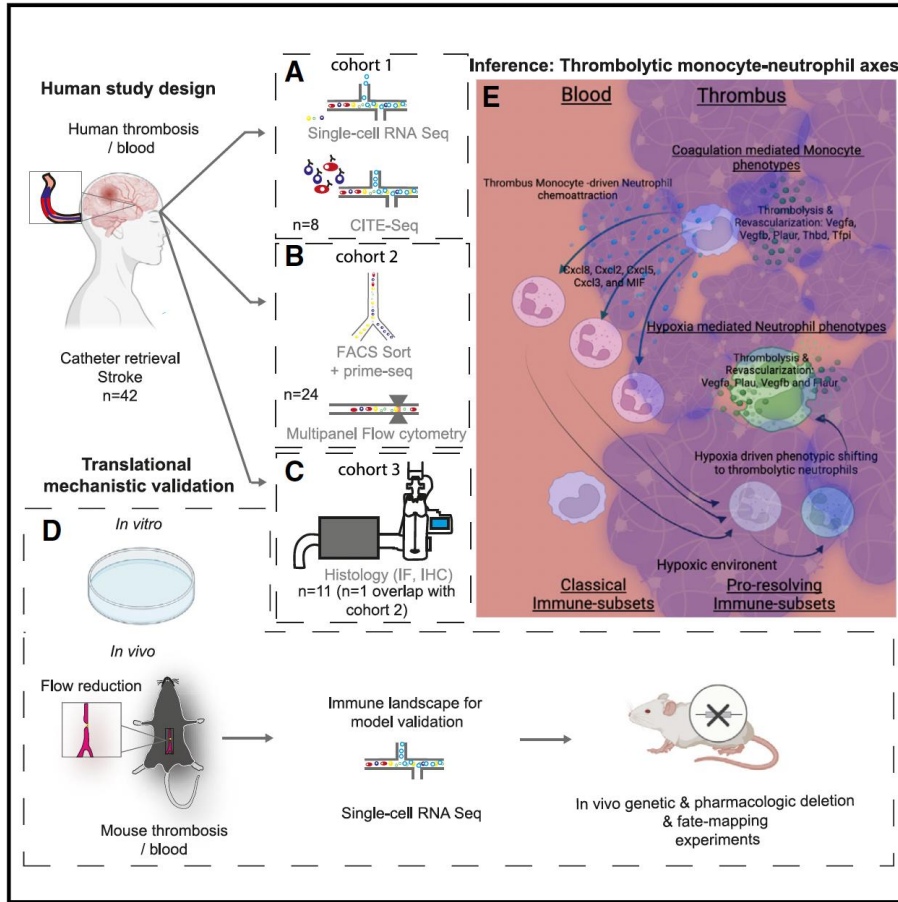
○ Solvent
■ CsnB d 4,8,12,16



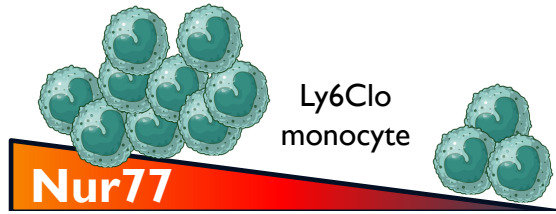
Contribution of monocytes to thrombus formation and resolution



Contribution of neutrophils to thrombus resolution

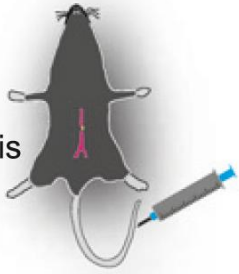


Contribution of neutrophils to thrombus resolution

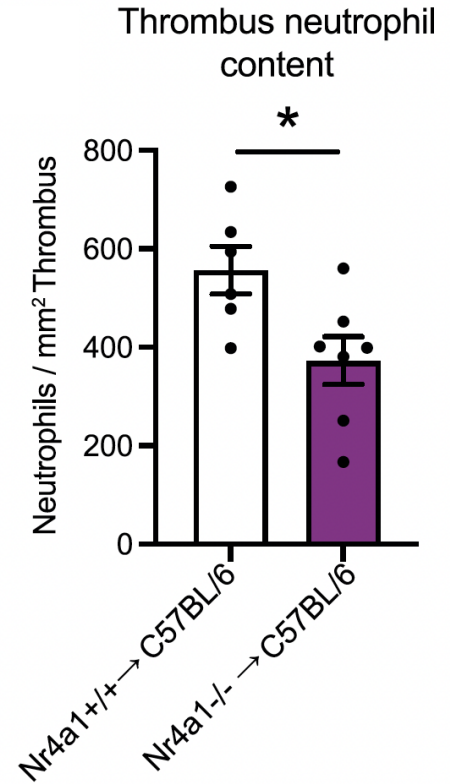
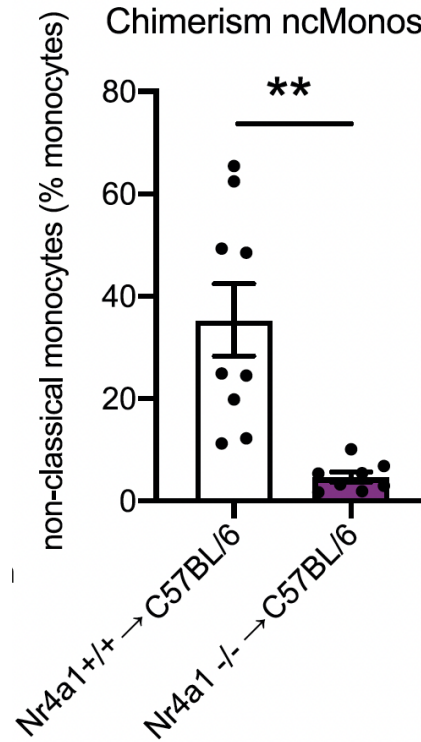
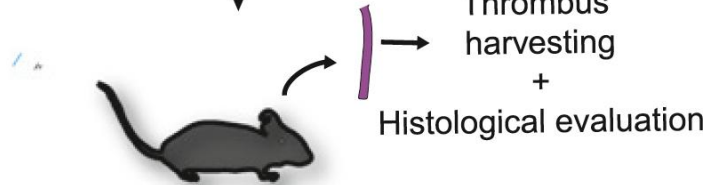


Nr4a1^{-/-} and Nr4a1^{+/+} BM chimeras

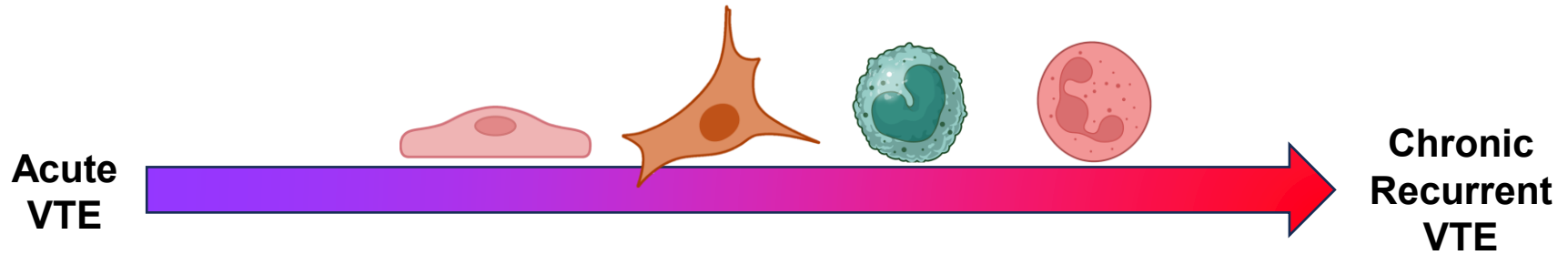
Cava inferior ligation
Low shear thrombosis



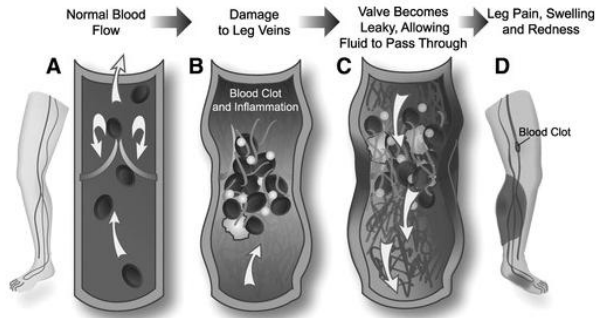
48 h



Dynamic of venous thromboembolism

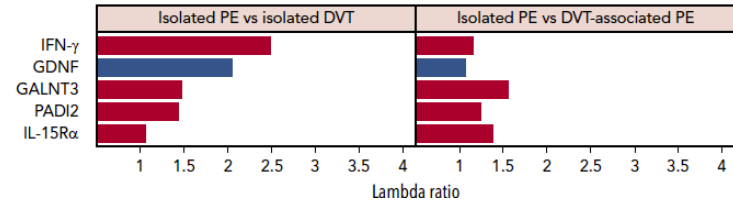


Post-thrombotic syndrome



Post-PE syndrome (residual vascular obstruction, dyspnea, CTEPH..)

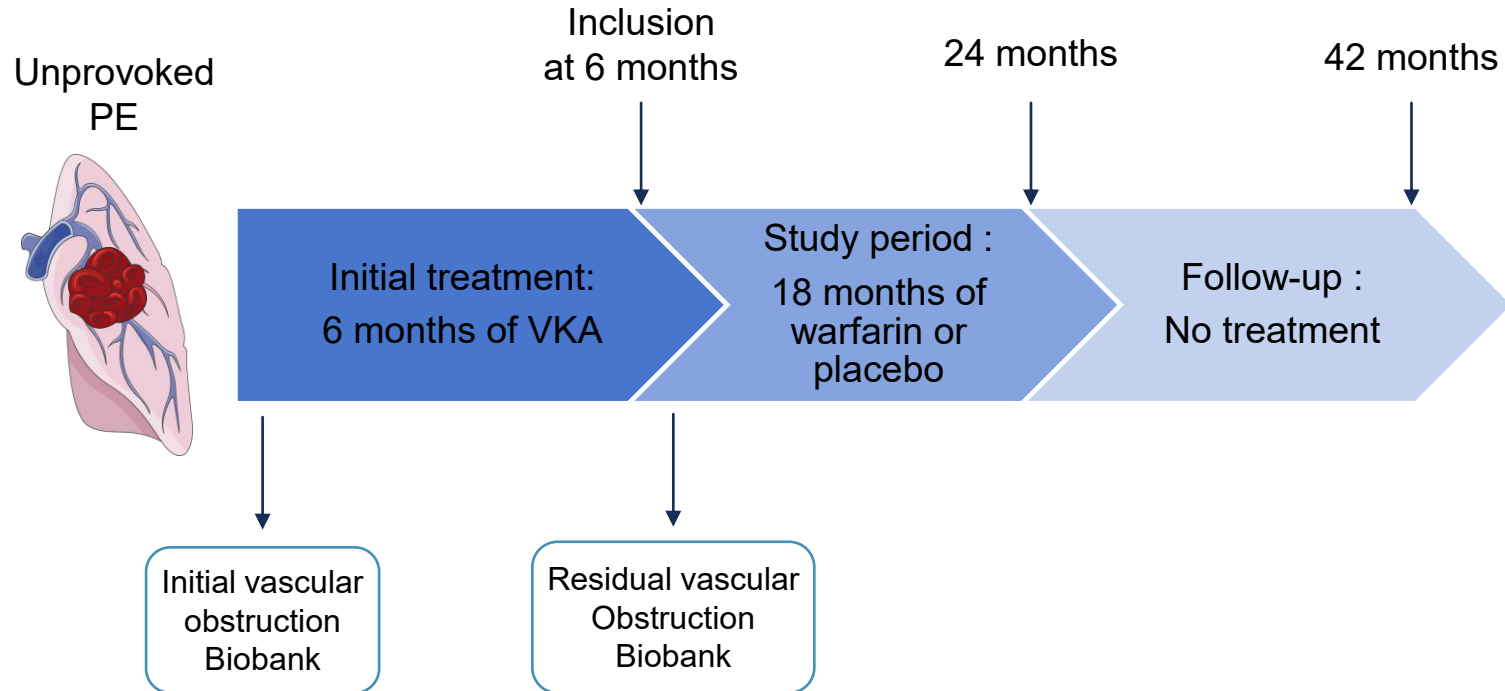
Signature specific
to isolated PE
phenotype

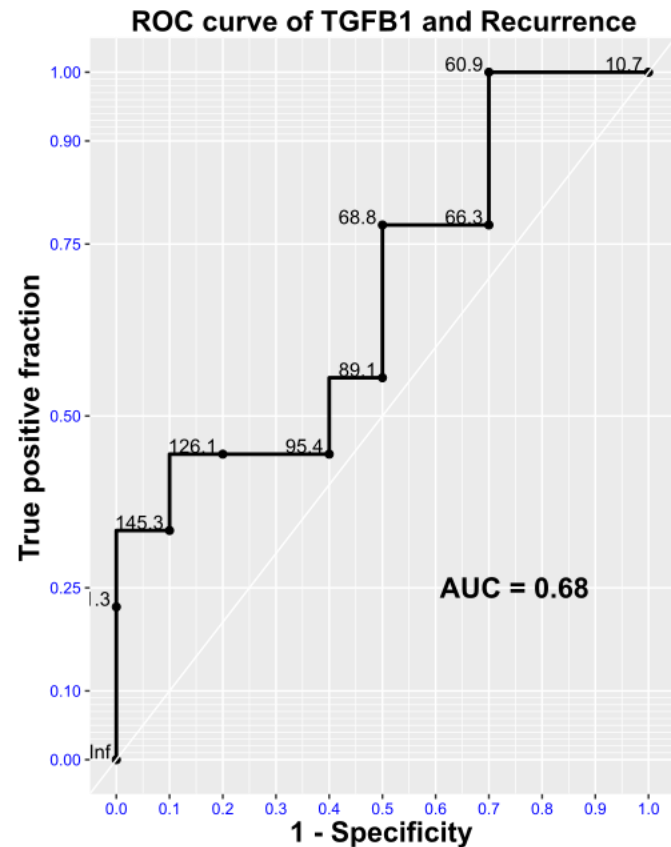
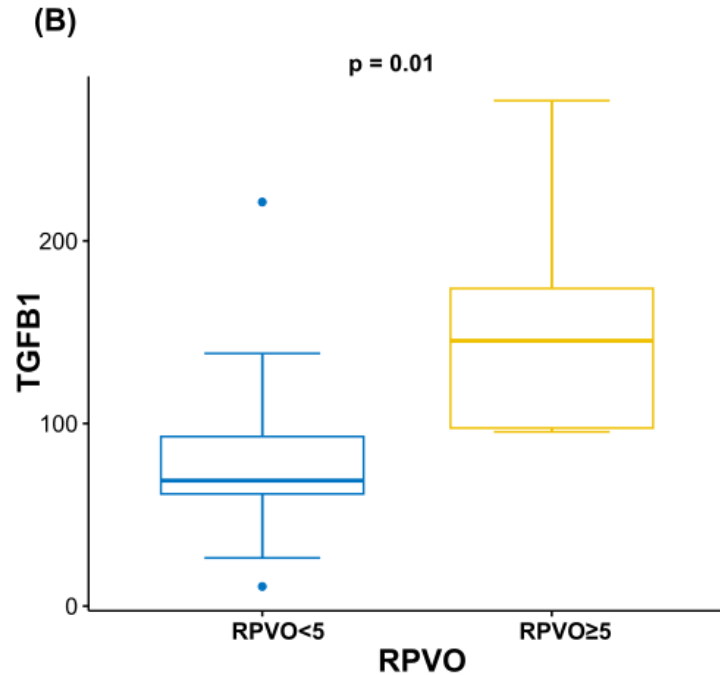


Vasquez and Kahn *Circulation*. 2010;121:e217–e219.

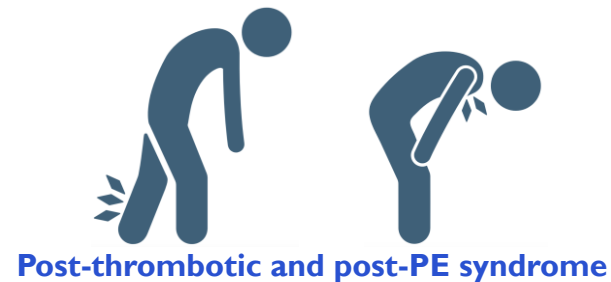
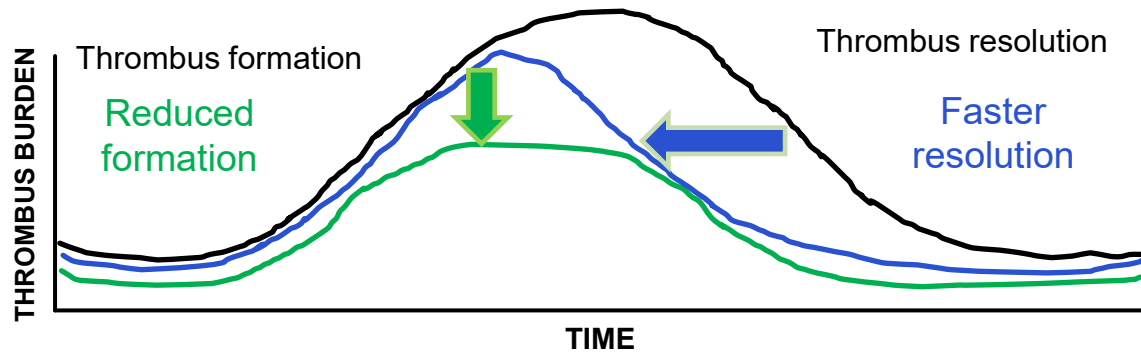
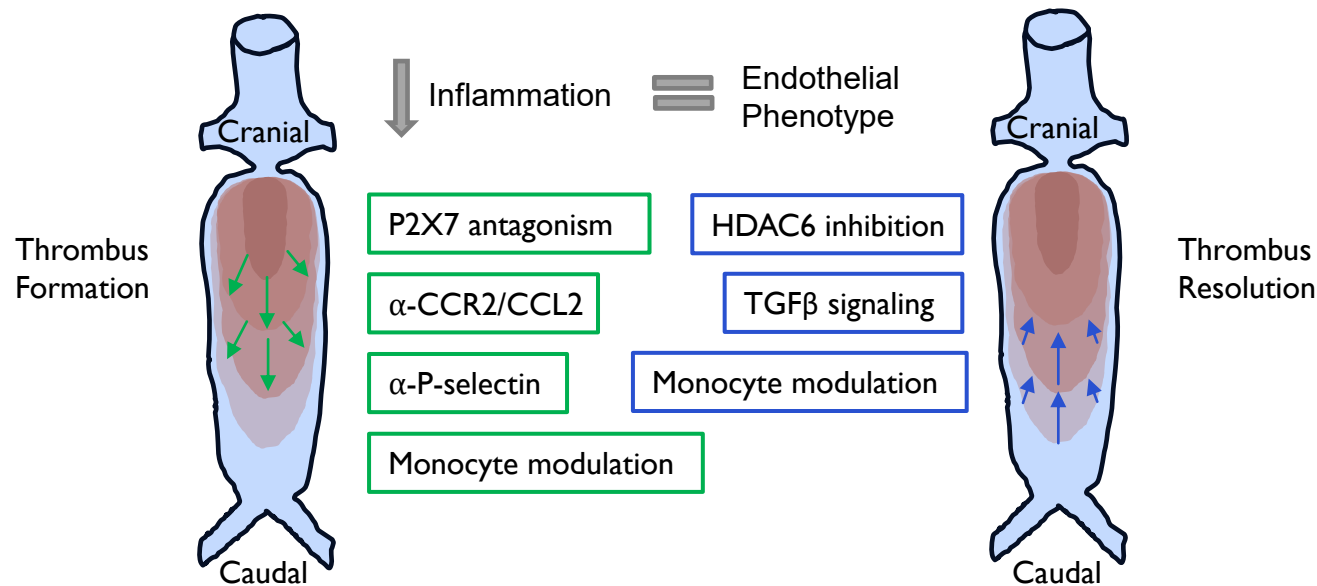
Cate et al. *Blood*. 2021;137:2681–2693.

PADIS-PE clinical study – Pr Francis Couturaud





Inflammation and thrombosis : conclusion





» Lab members

- Pr Francis Couturaud
- Jamal Elhasnaoui, PhD, postdoctoral fellow
- Marion Pilard, PhD
- Marc Danguy des Déserts, PhD
- Estelle Ollivier, PhD
- Jennifer Le Mac, PhD student
- Bachir Ly, PhD student
- Danaé Picaud, M2
- Thibaut Riou, M2
- Lénaïck Gourhant, IGE
- Virginie Gourdou-Latyszenok, IGE
- Léna Bicrel, ASI

