

Differential release of VWF and VWF-propeptide from platelet alpha-granules

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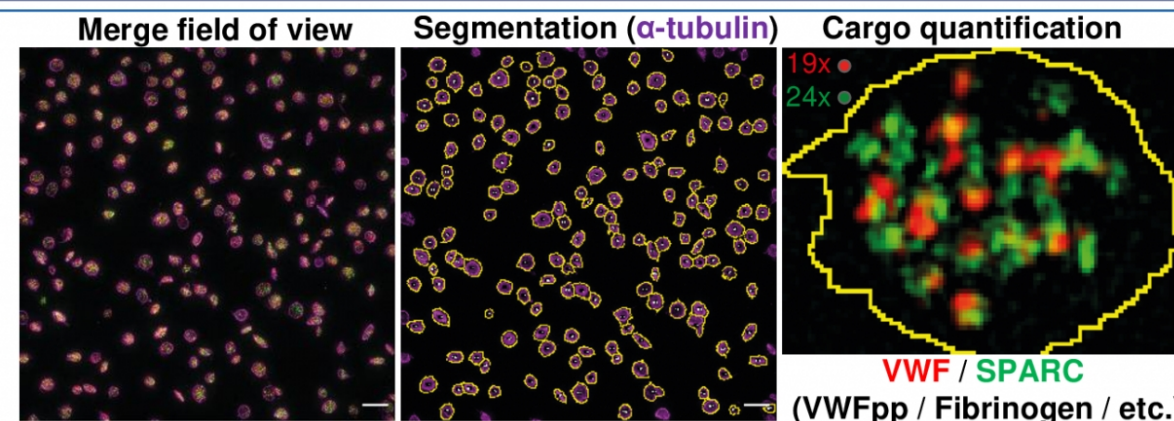
PURPOSE / OBJECTIVES

- Platelets contain a large set of hemostatic proteins in their alpha-granules, including Von Willebrand Factor (VWF) and VWF-propeptide (VWFpp)
- VWF/VWFpp storage and release is well studied in endothelial cells, but not in platelets
- We aim to quantify storage and release of VWF and VWFpp in platelets through quantitative super-resolution microscopy

MATERIALS & METHODS

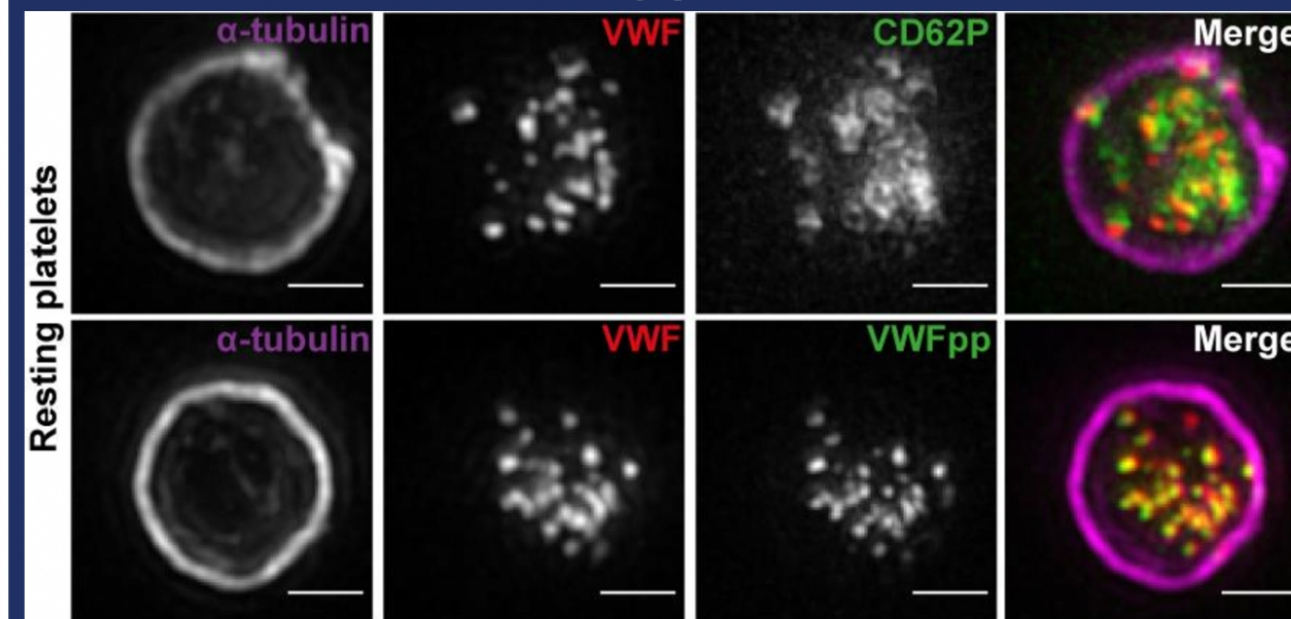
- Healthy platelets were washed and stimulated with serial doses of PAR-1 activating peptide (0-20 μ M)
- Platelets were then fixed, stained for VWF/VWFpp and imaged with Structured Illumination Microscopy (SIM)
- SIM images were processed and analyzed through ImageJ

ANALYSIS WORKFLOW



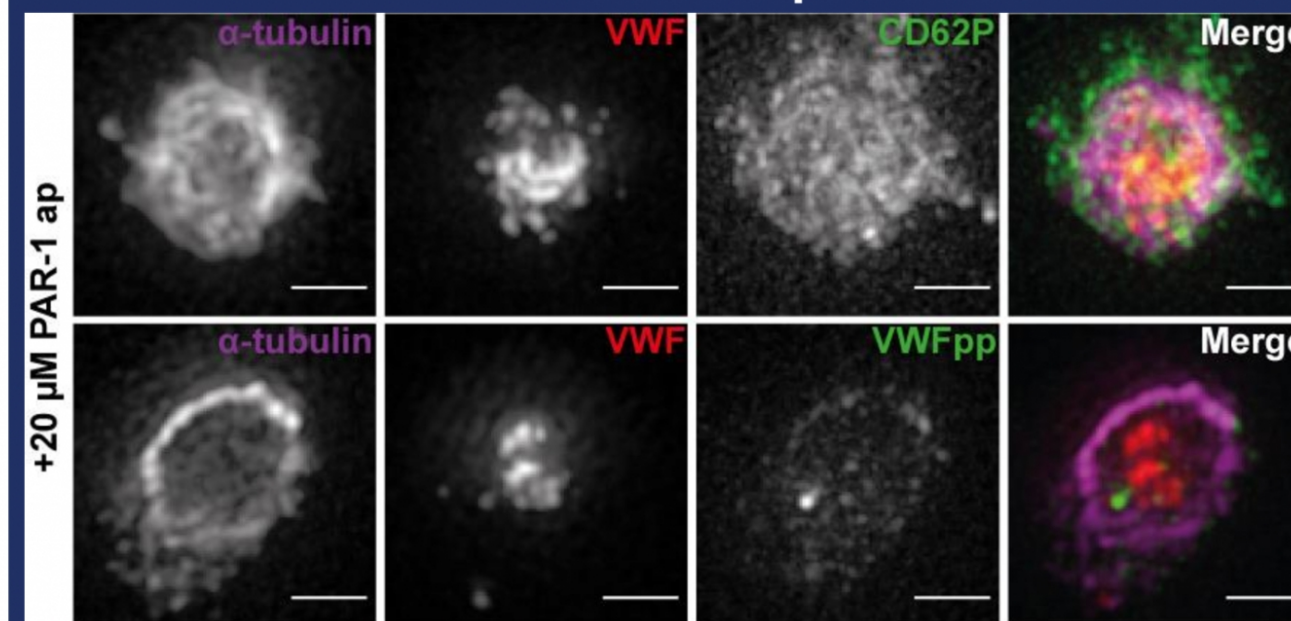
Adapted from Swinkels et al. (in revision); scale bar = 1 μ m

Resting platelets



→ VWF can be mapped to CD62P pockets and co-localizes with VWFpp

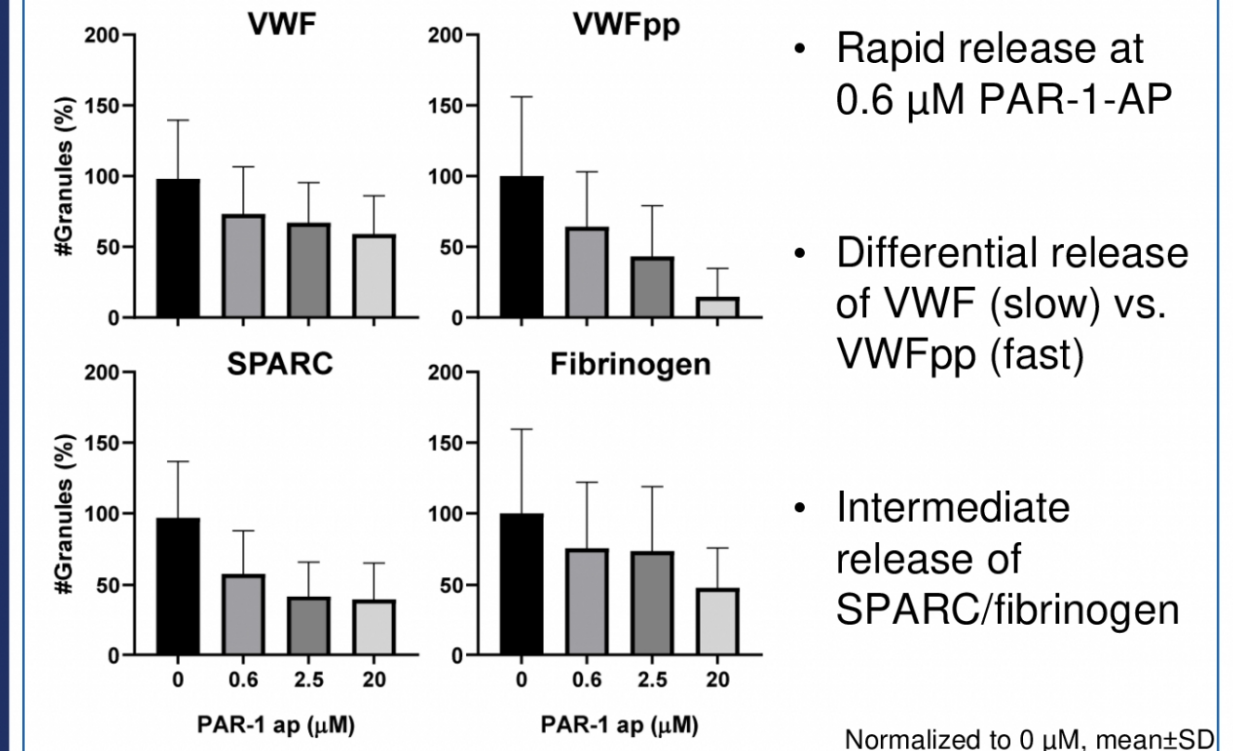
PAR-1 stimulated platelets



→ VWFpp is released while VWF is partially contained at high doses

Scale bar = 1 μ m

RESULTS



MODEL



SUMMARY/CONCLUSION

- VWF and VWFpp are highly co-localized in platelets
- Differential release of VWF and VWFpp from the same organelles
- Potential for precise delivery of platelet content