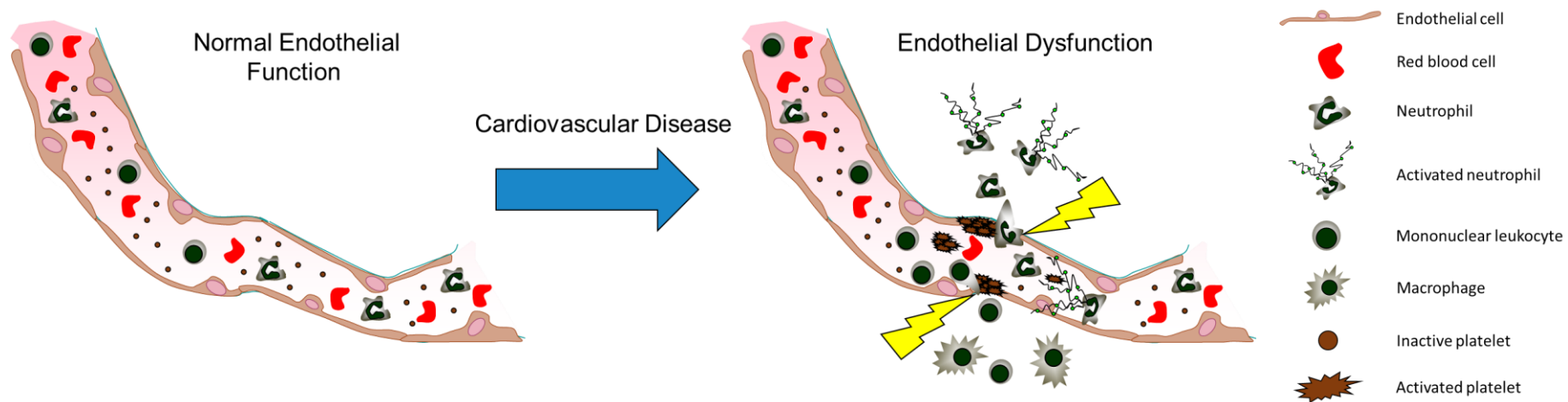


Differential Effects of HIV Antiretrovirals on Human Coronary Artery Endothelial Cells

Akif A. Khawaja

The Endothelium and Cardiovascular Disease



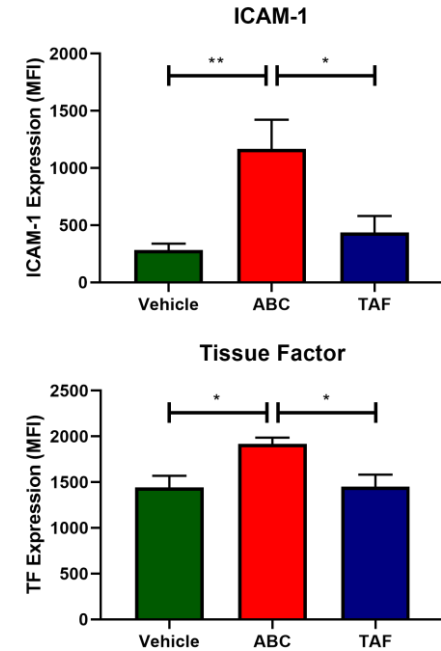
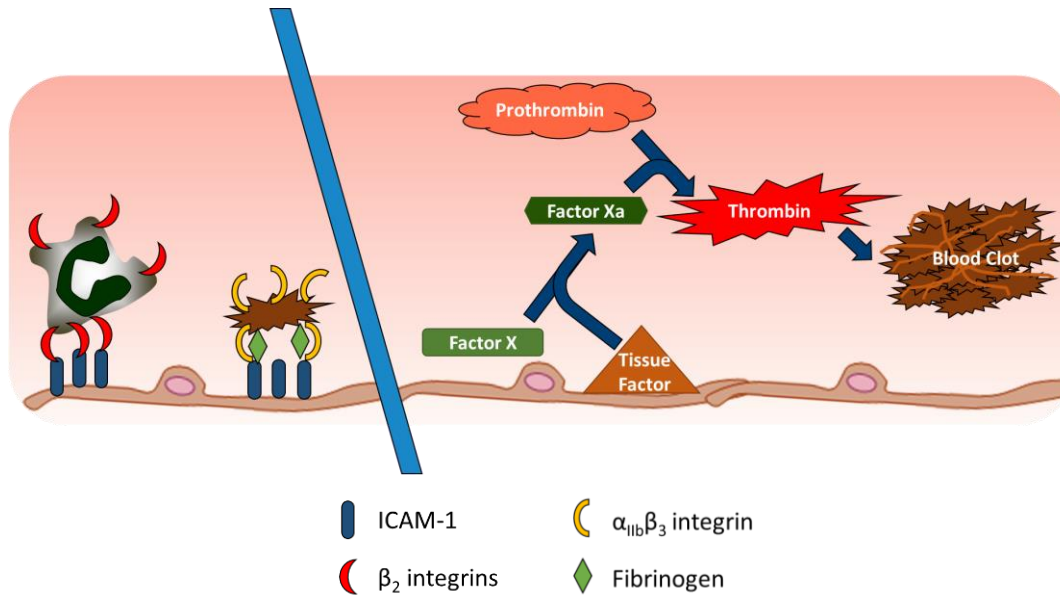
Hypothesis and Aims

Tenofovir-based therapeutics induce lower levels of endothelial dysfunction and have lower CVD risk compared to abacavir sulphate (ABC)-based therapeutics in coronary artery endothelial cells.

Determine the effects of ABC and tenofovir alafenamide (TAF) upon:

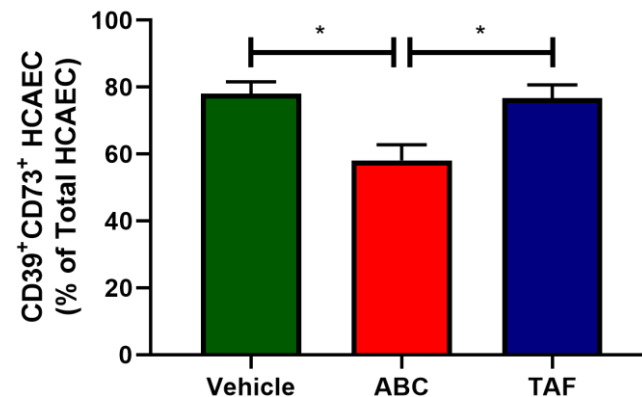
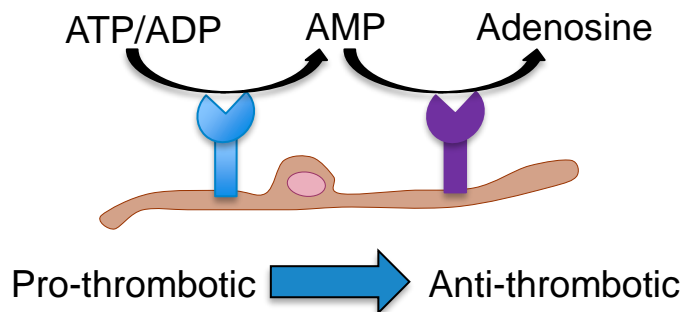
- Endothelial activation/dysfunction
 - Endothelial interactions with platelets
-

ABC Increases TNF- α Stimulated ICAM-1 and Tissue Factor Expression



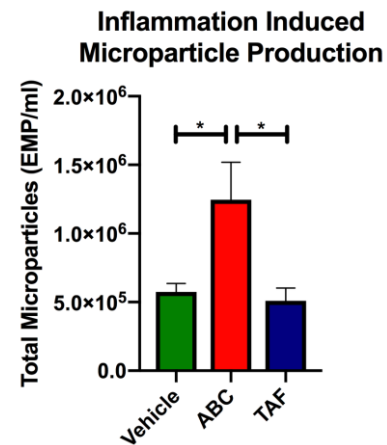
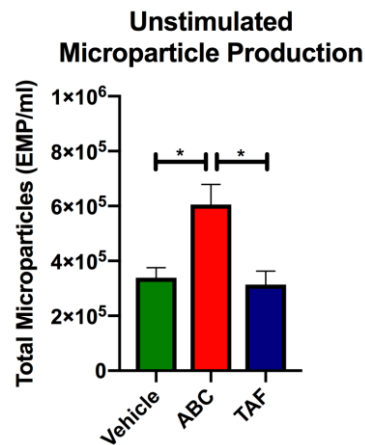
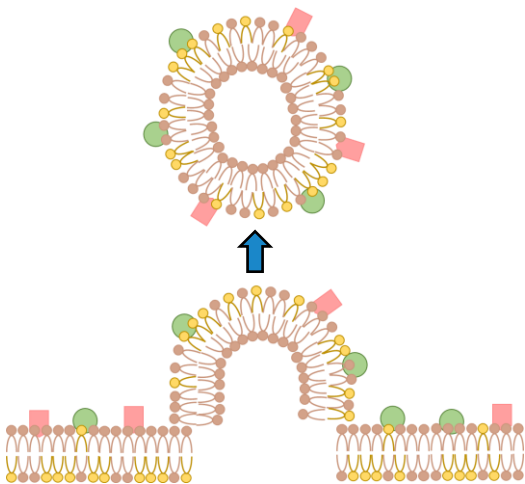
ABC Decreases CD39⁺CD73⁺ Endothelial Populations

- CD39 and CD73 are molecules that remove phosphate from ATP, ADP and AMP
- Endothelial CD39/CD73 activity thought to be vital in thromboregulation

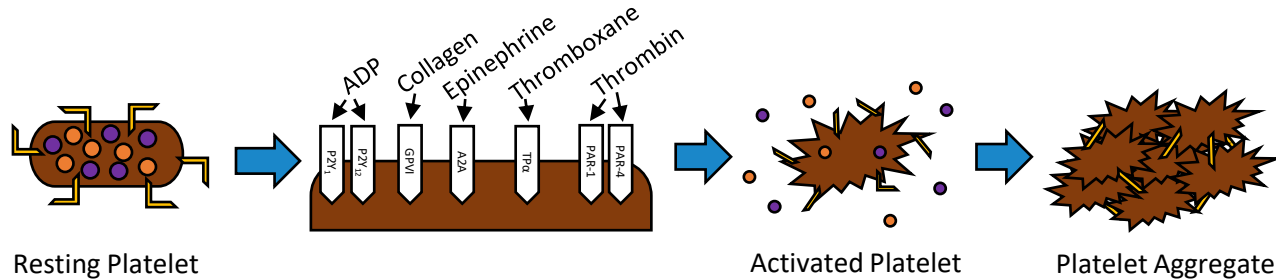


ABC Enhances HCAEC EMP Release

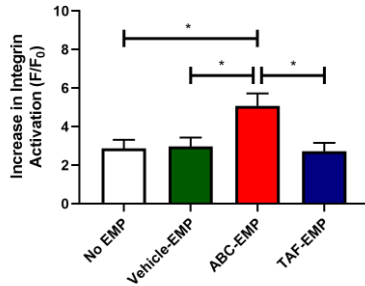
- Microparticles are small (0.1-1.0 μm) vesicles produced by cells
- Aberrant microparticle production has been linked to cardiovascular disease



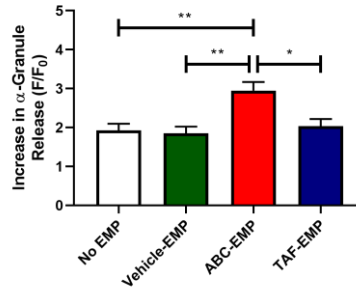
ABC-EMP Increase Integrin Activation and α -Granule Release



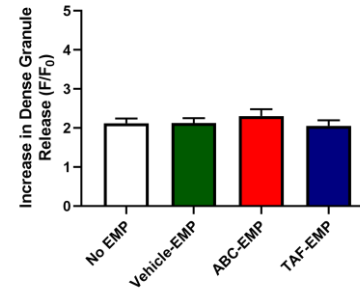
Platelet $\alpha_{IIb}\beta_3$ Integrin Activation



Platelet α -Granule Release



Platelet Dense Granule Release



Conclusions

- ABC augments endothelial expression of inflammatory (ICAM-1) and pro-thrombotic (tissue factor) molecules
 - ABC enhances endothelial-platelet crosstalk
 - ABC increases thrombotic properties of endothelial cells independent of confounding factors of earlier clinical cohort studies
 - Use of *in vitro* endothelial assays could determine off-target vascular impact of new and emerging ARVs
-

Acknowledgements

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- Kirk Taylor
- Andrew Lovell

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- Marta Boffito

Blood donors!

Read More About Endothelial Cells

HIV Antivirals Affect Endothelial Activation and Endothelial-Platelet Crosstalk

Akif A Khawaja, Kirk A Taylor, Andrew O Lovell,
Mark Nelson, Brian Gazzard, Marta Boffito and
Michael Emerson

Circulation Research

See Poster P070 for our next steps!

Modelling endothelial function in vitro and via blood sampling to evaluate cardiovascular risk in people living with HIV

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Background

Aim

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