University of Ioannina
Atherothrombosis
Research Center

EFFECT OF CIRCULATING ENDOTHELIAL PROGENITOR CELLS (EPCs) ON PLATELET ACTIVATION IN VITRO

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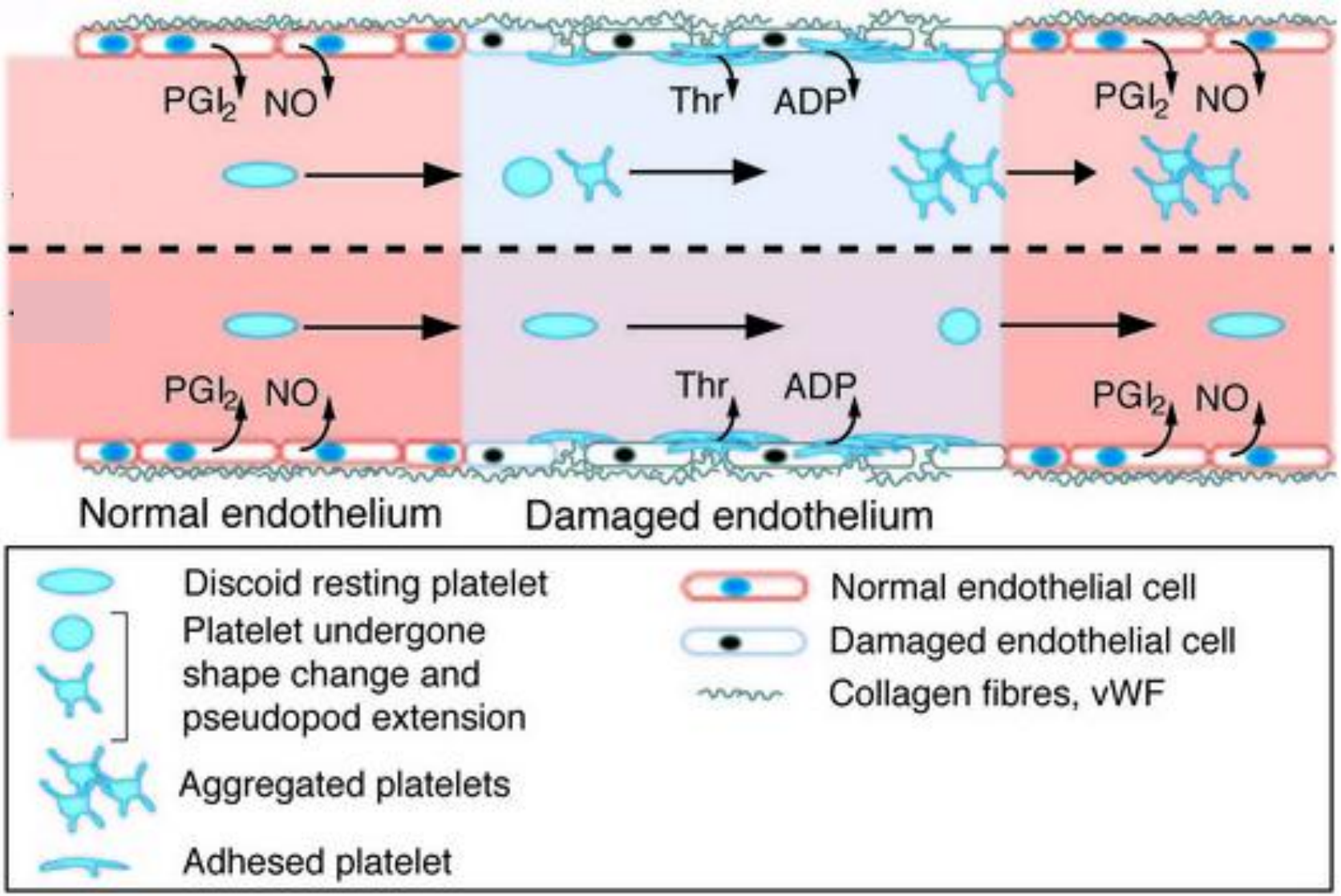
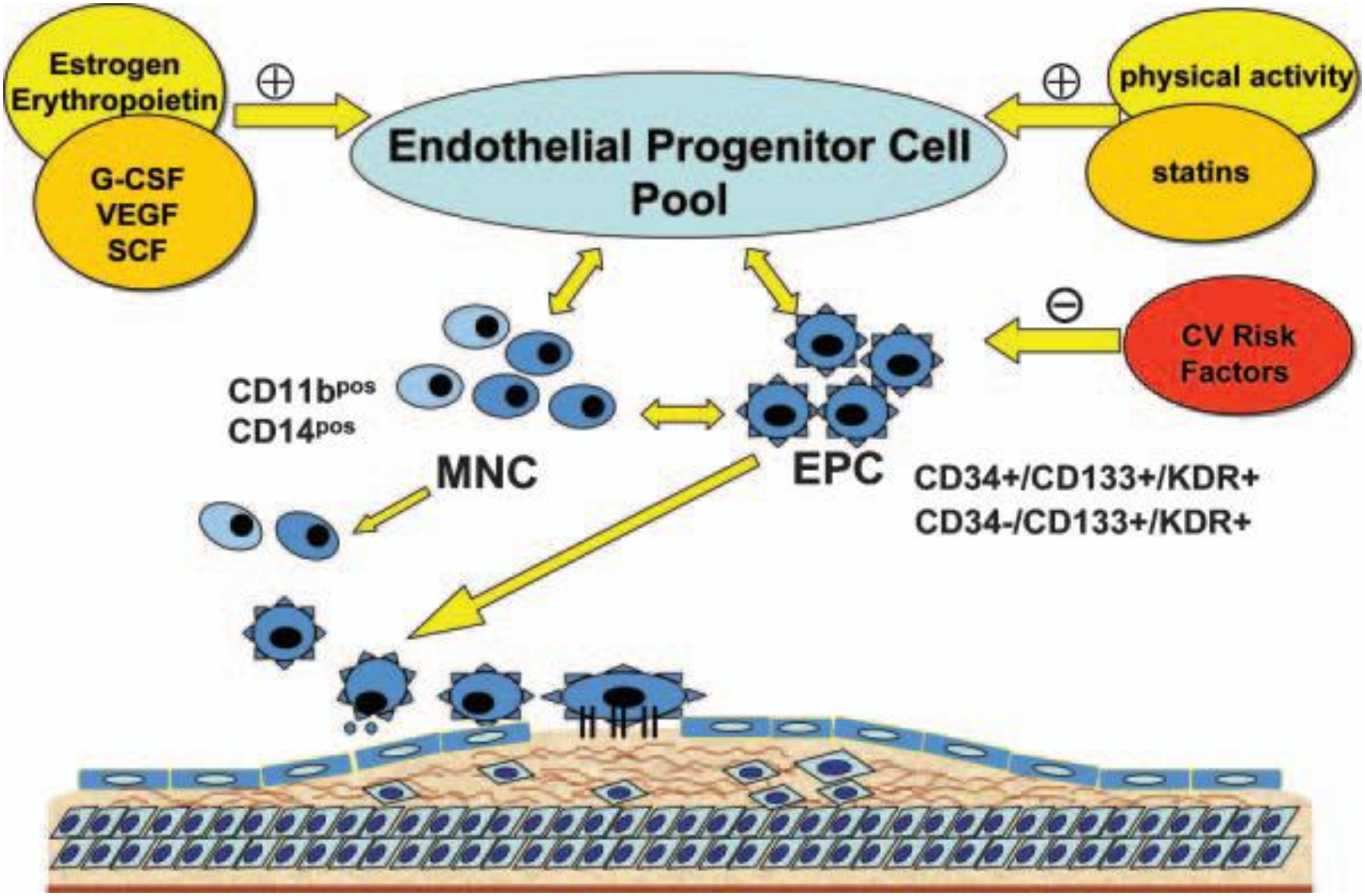
Introduction

Endothelial cells inhibit platelet activation



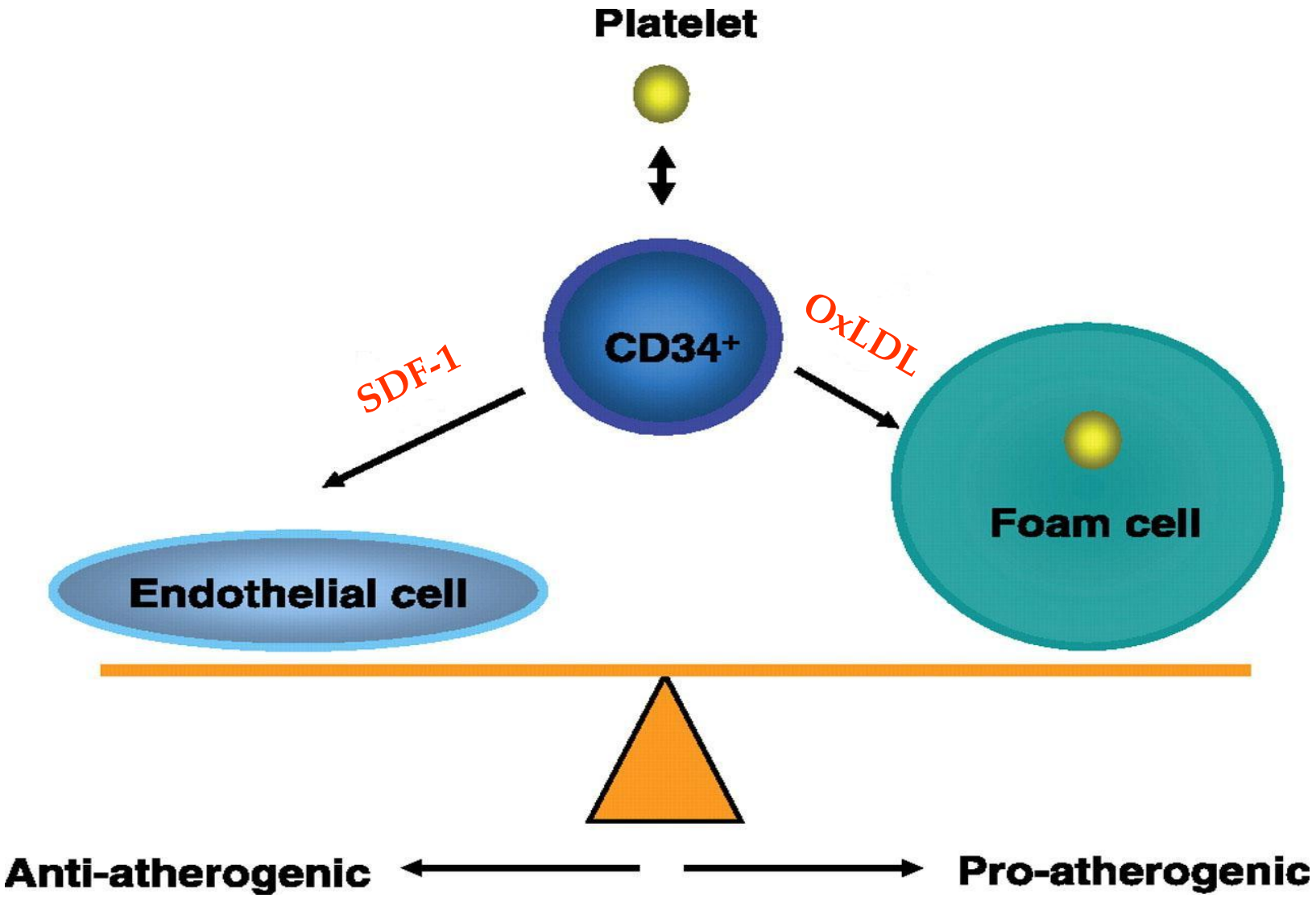
Reference, Adapted by www.uib.no

Contribution of EPCs to the regeneration of endothelium



Werner N, et al. Annals of Medicine. 2007;39:82-90.

Interaction of EPCs and platelets



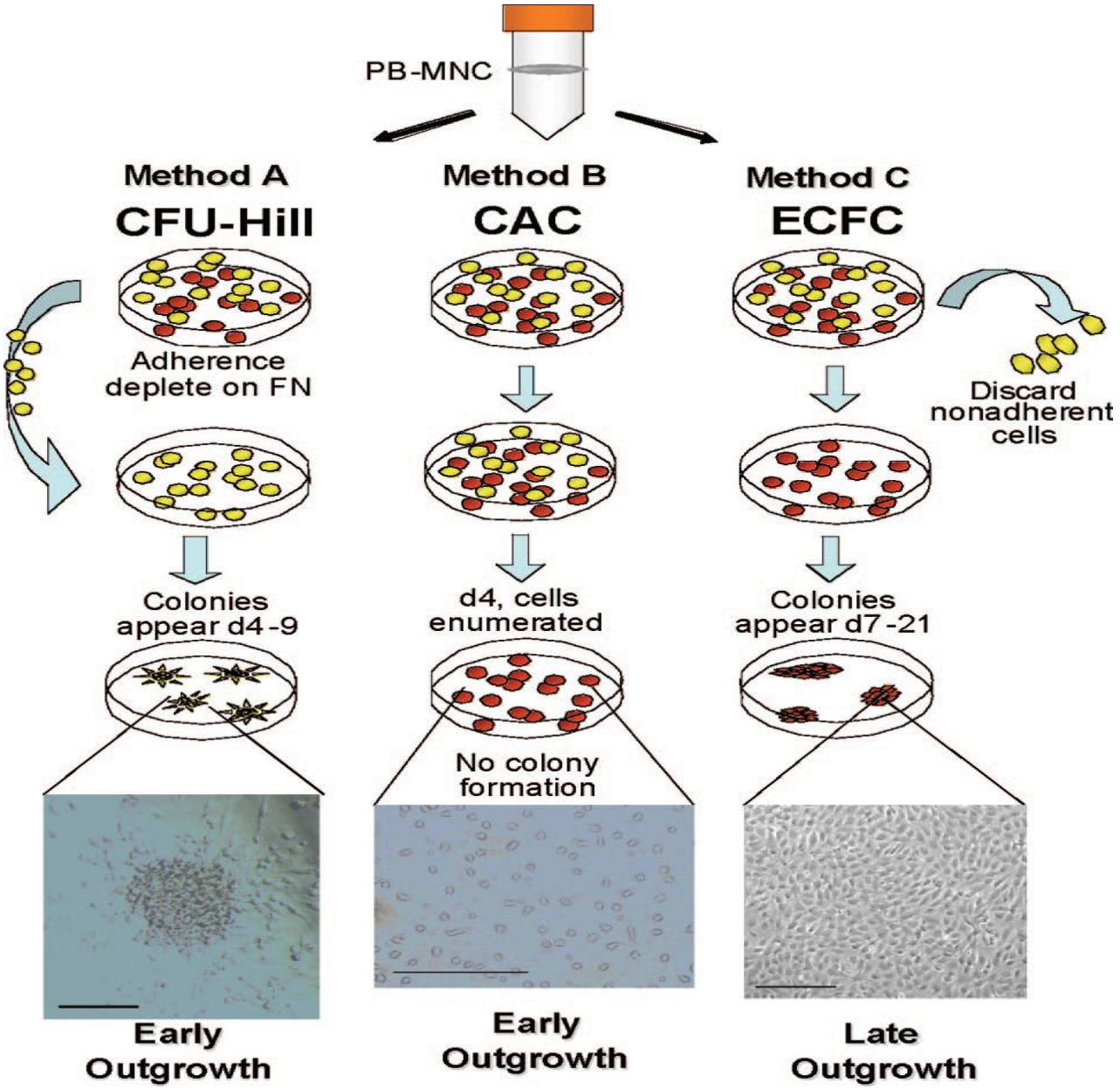
Daub K, et al. FASEB J. 2006;14:2559-2561.

Putative endothelial progenitor cell populations

a) CFU-Hill

b) Circulating angiogenic cells (CACs)

c) Endothelial colony forming cells (ECFCs) or BOECs or OECs



Hirschi, et al. Arterioscler. Thromb. Vasc. Biol. 2008;28:1584-1595.

Aim of the study

To investigate the effect of circulating endothelial progenitor cells (EPCs) as well as mature endothelial cells (ECs) on platelet activation in vitro.

Method

Cell culture (ECs, EPCs)

Cells

Supernatant

Number of cells/mL

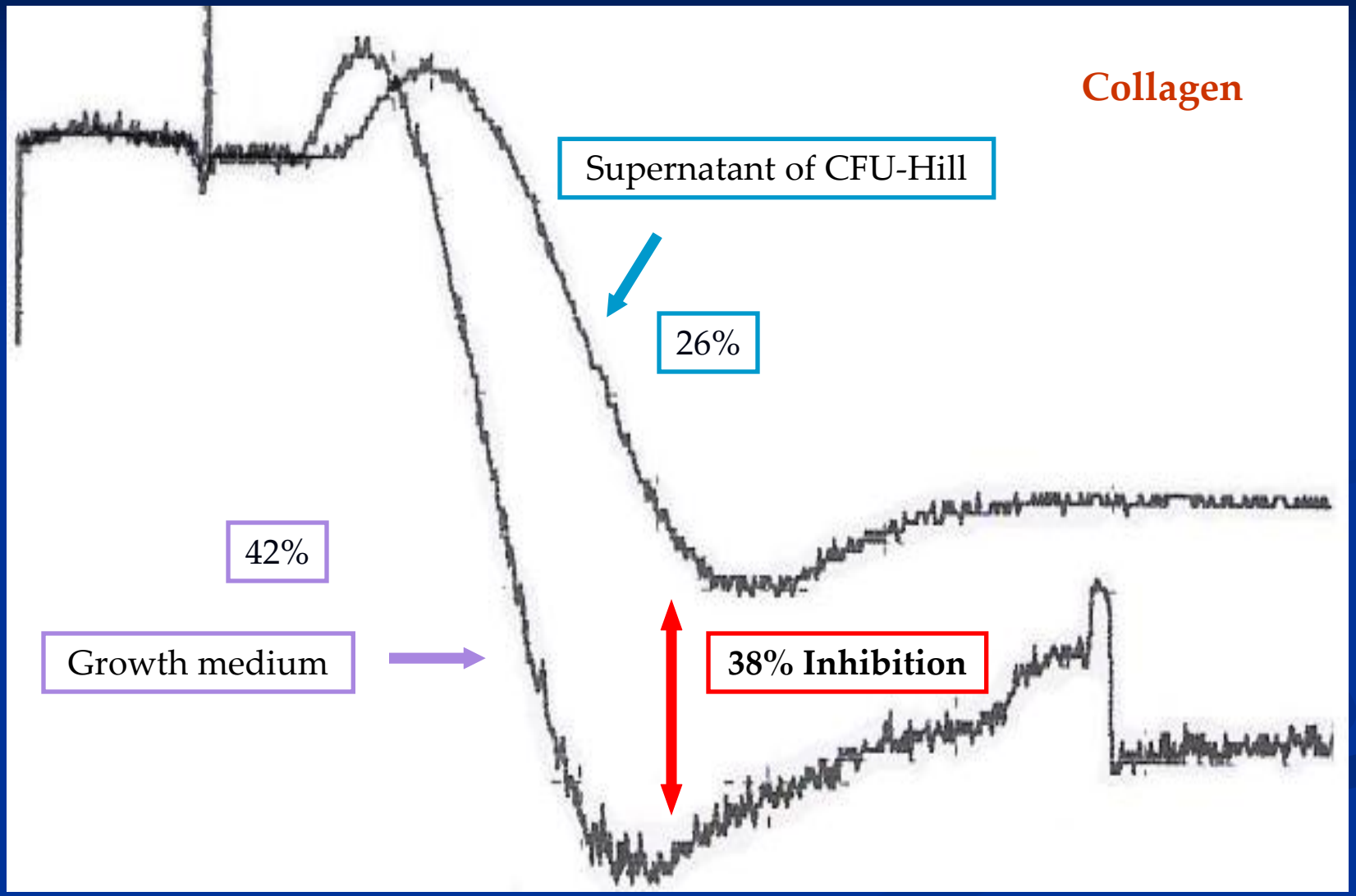
(range 0.2 x 10^5 – 5 x 10^6)

Agonists: Collagen, Thrombin

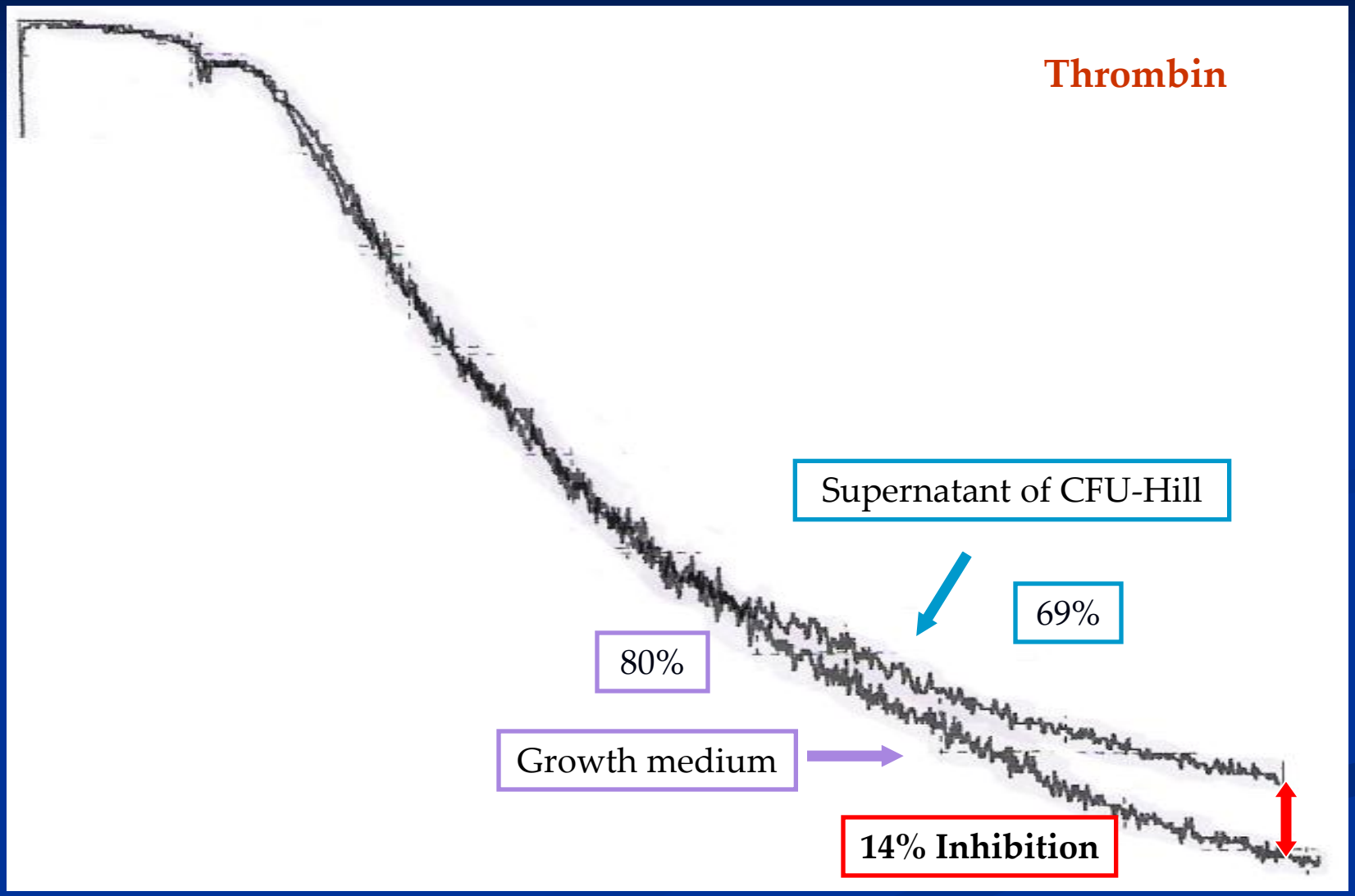
Washed platelet aggregation

Results

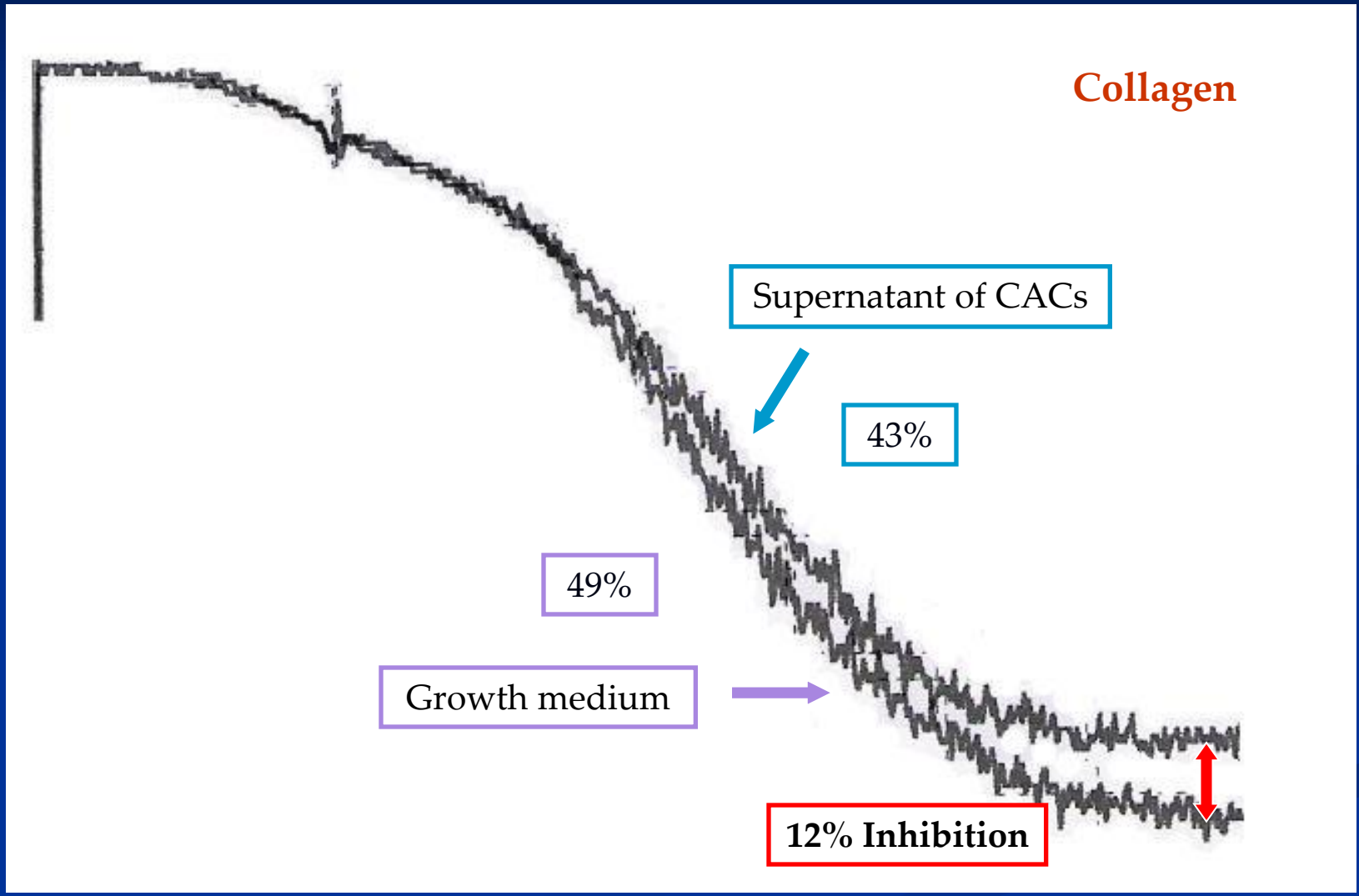
Effect of CFU-Hill on platelet aggregation (I)



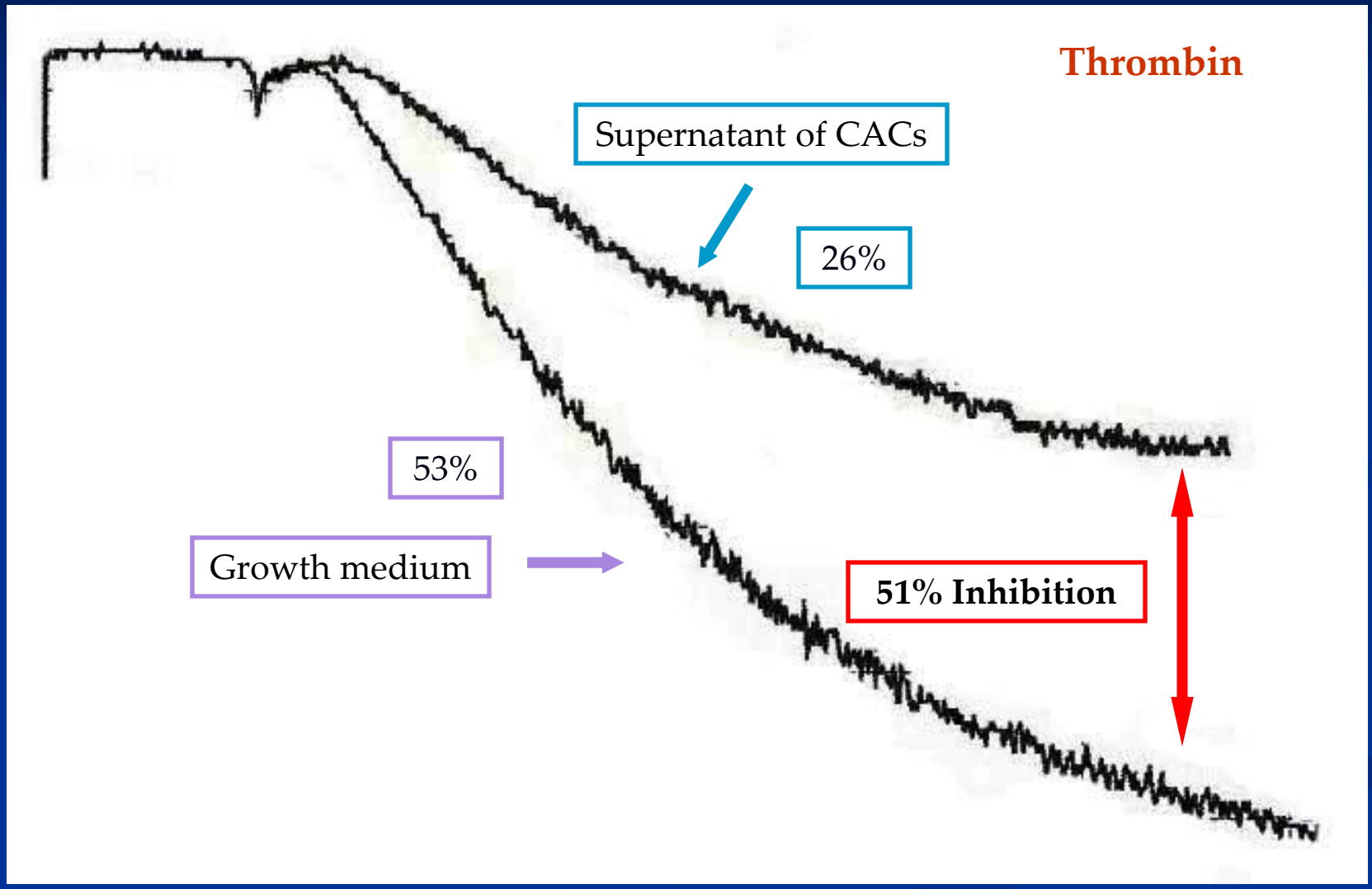
Effect of CFU-Hill on platelet aggregation (II)



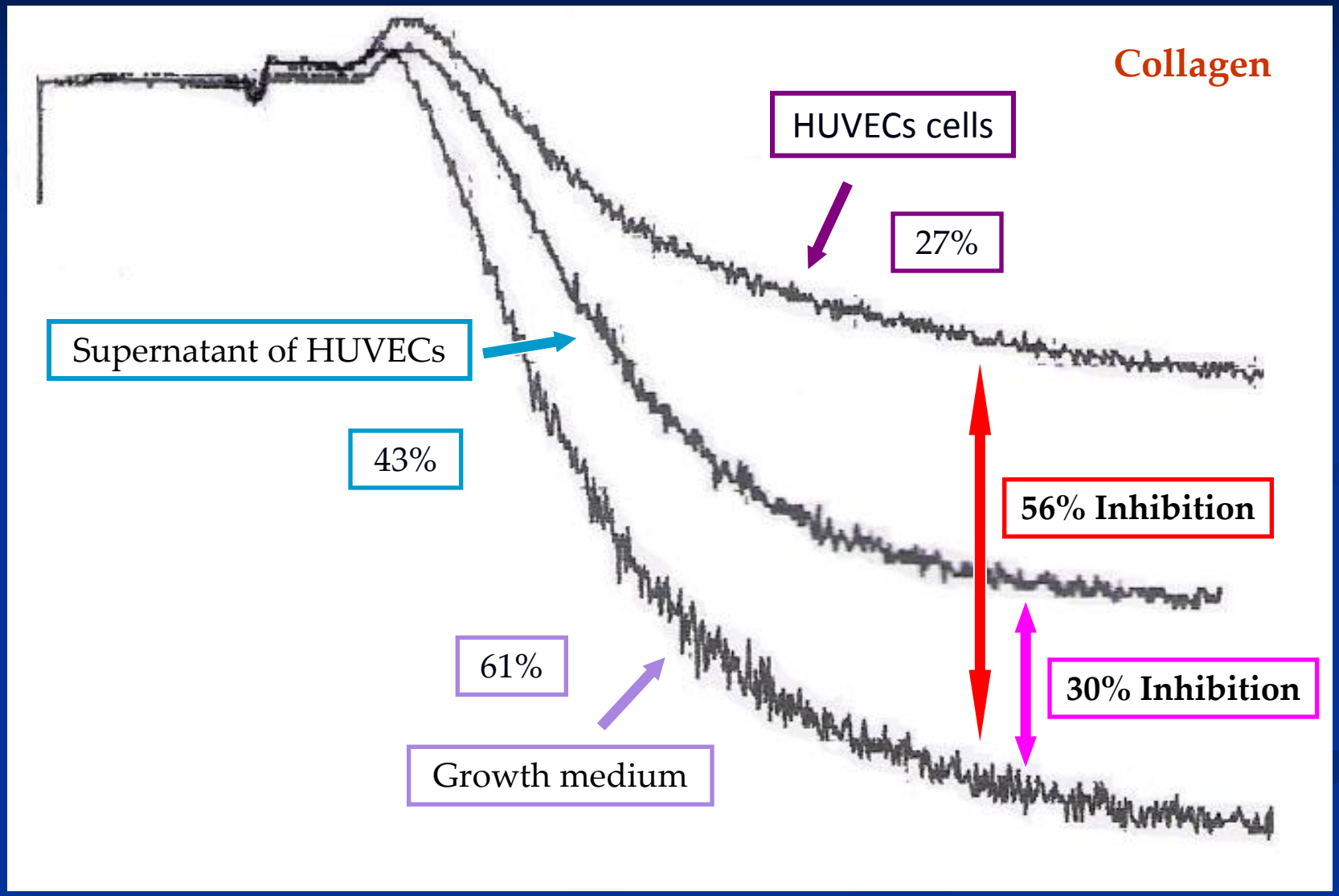
Effect of CACs on platelet aggregation (I)



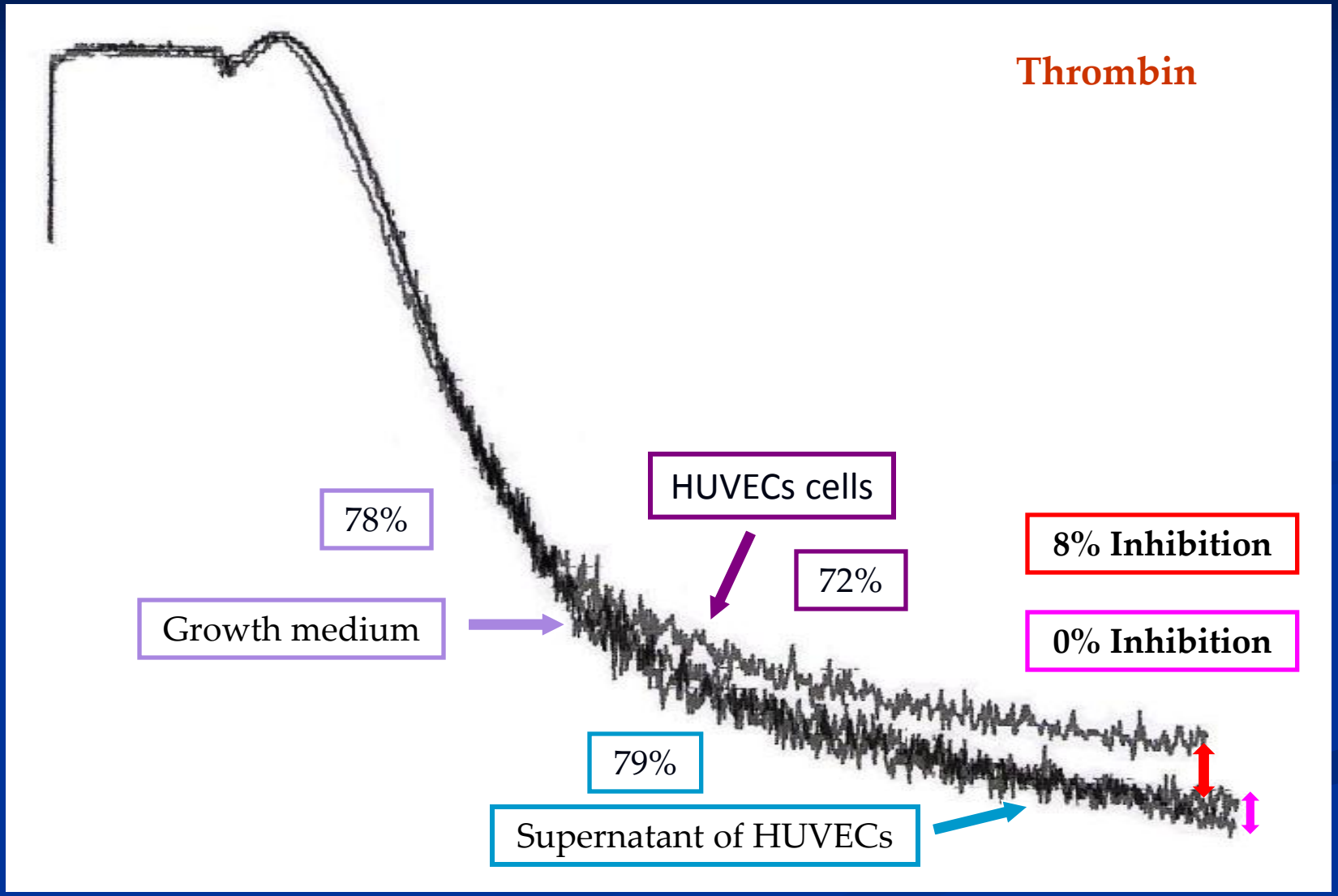
Effect of CACs on platelet aggregation (II)



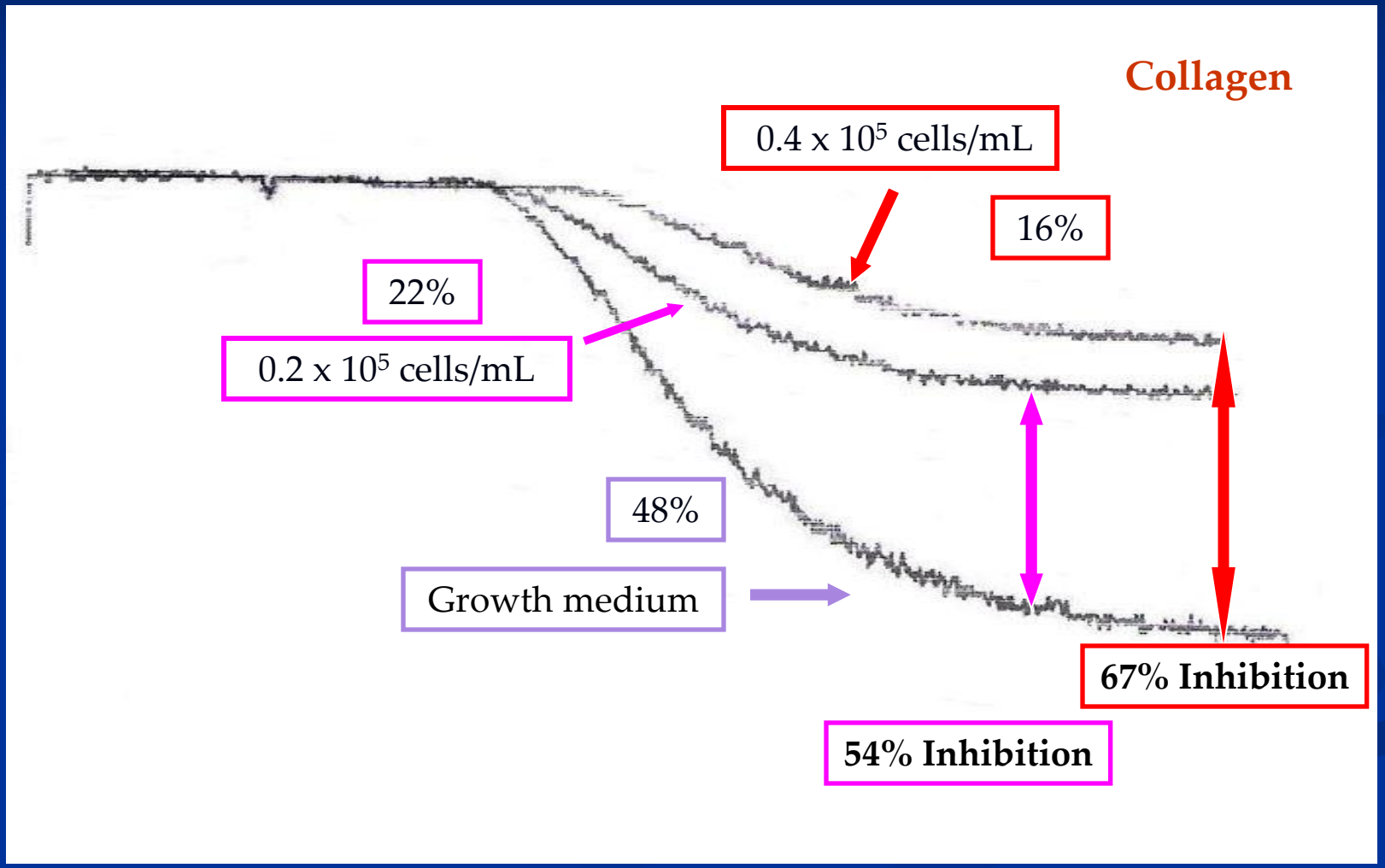
Effect of HUVECs on platelet aggregation (I)



Effect of HUVECs on platelet aggregation (II)



Dose-dependent effect of HUVECs cells on platelet aggregation



Conclusions

- The supernatant of CFU-Hill inhibits platelet aggregation, induced by collagen and to a lower percentage by thrombin.
- The supernatant of CACs inhibits platelet aggregation, induced by thrombin and to a lower percentage by collagen.
- The supernatant of HUVECs inhibits platelet aggregation, induced by collagen but not by thrombin.
- The HUVECs cells potently inhibit platelet aggregation, induced by collagen but not by thrombin.
- The mechanisms underlying the above effects are under investigation.

Thank you for your attention!