Mechanisms in Thrombosis and Hemostasis

Prof. Yona Nadir Lab

Coagulation – a physiological system interfacing all other body systems

The coagulation system is a rapidly advancing area of clinical and basic research. Extensive research in the challenging field of thrombosis and bleeding is ongoing and has already resulted in new pharmacological modalities such as siRNA technology based drugs. There is a vicious cycle between the coagulation system and infection, inflammation, cancer and angiogenesis. The well-established strong association between coagulation and cancer provides a solid incentive for developing drugs capable to interfere with the coagulation system to attenuate tumor growth.

We are looking for talented motivated students for MSc, PhD positions

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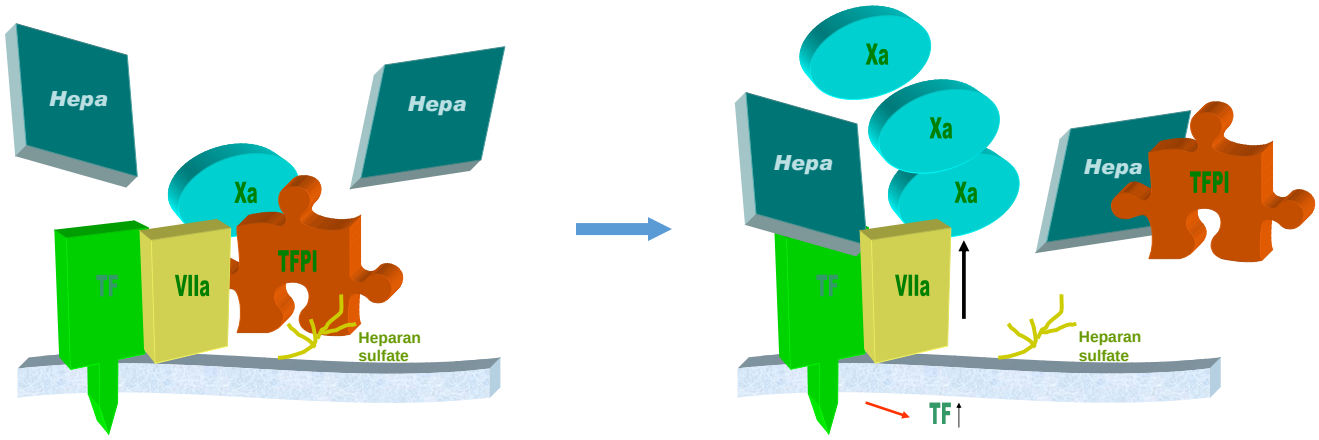
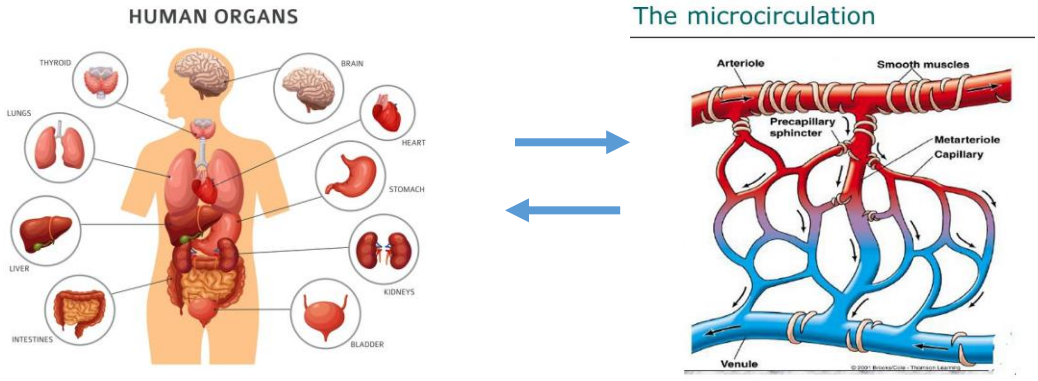


A model of the interaction between heparanase (Hepa), TF, and TFPI. Heparanase interacts with tissue factor (TF) resulting in increased generation of factor Xa and enhancement of the coagulation system. Heparanase also up-regulates TF expression and releases tissue factor pathway inhibitor (TFPI) from the cell surface, rendering the cell surface highly pro-coagulant. TFPI and heparanase may circulate as a complex in the plasma.



Organs microcirculation hemostatic niche. Reciprocal effect of the microcirculation hemostasis in the specific organ.

Main topics in recent years:

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Y. Crispel, E. Axelman, M. Tatour, I. Kogan, N. Nevo, B. Brenner, **Y. Nadir**. Peptides inhibiting heparanase procoagulant activity significantly reduce tumor growth and vascularization in a mouse model. Thromb Haemost. 2016, 116:669-78.

M. Tatour, M. Shapira, E. Axelman, A. Keren-Politansky, L. Bonstein, B. Brenner, **Y. Nadir**. Thrombin is a selective inducer of heparanase release from platelets and granulocytes via protease activated receptor-1. Thromb Haemost, 2017, 117: 1391-1401.

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N. Nevo, S. Ghanem, Y. Crispel, M. Tatour, I. Kogan, M. Ben-Harush, **Y. Nadir**. Heparanase level in the microcirculation as a possible modulator of the metastatic process. Am J Pathol, 2019, 189:1654-1663.

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H. Ghoti, S. Ackerman, S. Rivella, C. Casu, **Y. Nadir**. Heparanase level and procoagulant activity are increased in thalassemia major and attenuated by JAK-2 inhibition. Am J Pathol, 2020, 190:2146- 2154.