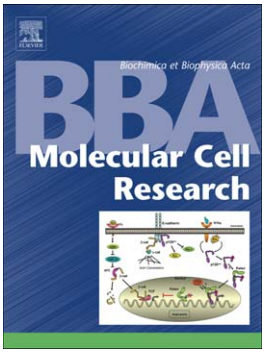

The shedding Protease ADAM17: Physiology and Pathophysiology

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The shedding Protease ADAM17: Physiology and Pathophysiology

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Abstract

The disintegrin metalloprotease ADAM17 has been a matter of intense studies aiming to unravel structure, function and regulation of protease expression, maturation and activity. In this review, we summarize data on the physiological role of ADAM17 in health and disease. Here we provide an overview of ADAM17 substrates, mouse models of ADAM17-deficiencies and discuss recent findings of ADAM17 function in the immune system and central nervous system as well as in cancer. Whereas ADAM17 function in EGF-R-, in Interleukin-6 (IL-6)- and in TNFα-biology has been shown to play a decisive role in regulation of the immune system as well as cancer development, the role of ADAM17 in the central nervous system and neurodegeneration still remains elusive. We show ADAM17 expression in human dopaminergic neurons derived from induced pluripotent stem cells and we discuss how this state-of-the-art technology can be further exploited to study the function of this important protease in the brain and other tissues.

Keywords: ADAM proteases, ADAM17, IL-6R, IL-6 trans-signaling, shedding, EGF receptor