

The Apolipoprotein E (APOE)/Triggering Receptor Expressed on Myeloid Cells (TREM) Like Transcript-1 (TLT-1)/P-Selectin Triple Null mouse as a Model for Atherosclerosis

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Atherosclerosis is a chronic disease in which inflammation underlies the accumulation of plaque on the artery cell walls. Plaques have a lipid-rich core that may rupture, causing thrombosis in the site of injury. If not controlled, arteries occlusion may lead to cardiovascular diseases (CVD), such as heart attacks, stroke, angina, or coronary heart disease. Research is still ongoing to find different options of treatment to reduce arterial occlusion without compromising the patient's ability to clot. One of the receptors found in platelets is P-Selectin. Upon platelet activation, P-Selectin mediates the interactions between leukocytes and platelets to the sites of injury. Deletion of P-Selectin affects the leukocyte-platelet interaction during inflammatory responses. The Apolipoprotein E (APOE) has an important role in lipoprotein metabolism and it has been associated with a protective role in atherosclerosis. APOE deficient (APOE^{-/-}) mice model has been used to study atherosclerosis. One of the most abundant receptors in platelets called the Triggering Receptor Expressed on Myeloid cells (TREM) Like Transcript-1 (TLT-1) was discovered to have a major role in hemostasis. It has been shown in previous studies that deletion of TLT-1, results in decreased platelet aggregation. P-Selectin null mice and TLT-1 null mice have been associated with similar phenotypes including prolonged bleeding time and delayed neutrophil migration. To evaluate TLT-1 and P-Selectin and its role in atherosclerosis, the project is aimed to develop an APOE/TLT-1/P-Selectin triple null mice to observe how the lesions in the aortic sinus is reduced or exacerbated compared to controls.