

Human Protein Atlas

The objective of a study was to discover new proteins of the human cerebrovascular system using expression data from the Human Protein Atlas, a large-scale project which allows public access to immunohistochemical analysis of human tissues. We screened 20,158 proteins in the HPA and identified 346 expression patterns correlating to blood vessels in human brain. Independent experiments showed that 51/52 of these distributions could be experimentally replicated across different brain samples. Some proteins (40%) demonstrated endothelial cell (EC)-enriched expression, while others were expressed primarily in vascular smooth muscle cells (VSMC; 18%); 39% of these proteins were expressed in both cell types. Most brain EC markers were tissue oligospecific; that is, they were expressed in endothelia in an average of 4.8 out of 9 organs examined. Although most markers expressed in endothelial cells of the brain were present in all cerebral capillaries, a significant number (21%) were expressed only in a fraction of brain capillaries within each brain sample. Among proteins found in cerebral VSMC, virtually all were also expressed in peripheral VSMC and in non-vascular smooth muscle cells (SMC). Only one was potentially brain specific: VHL (Von Hippel-Lindau tumor suppressor). HRC (histidine rich calcium binding protein) and VHL were restricted to VSMC and not found in non-vascular tissues such as uterus or gut. In conclusion, we define a set of brain vascular proteins that could be relevant to understanding the unique physiology and pathophysiology of the human cerebrovasculature. This set of proteins defines inter-organ molecular differences in the vasculature and confirms the broad heterogeneity of vascular cells within the brain

1)

1)

Lee SJ, Kwon S, Gatti JR, Korcari E, Gresser TE, Felix PC, Keep SG, Pasquale KC, Bai T, Blanchett-Anderson SA, Wu NW, Obeng-Nyarko C, Senagbe KM, Young KC, Maripudi S, Yalavarthi BC, Korcari D, Liu AY, Schaffler BC, Keep RF, Wang MM. Large-scale identification of human cerebrovascular proteins: Inter-tissue and intracerebral vascular protein diversity. PLoS One. 2017 Nov 30;12(11):e0188540. doi: 10.1371/journal.pone.0188540. eCollection 2017. PubMed PMID: 29190776.

From:

<https://neurosurgerywiki.com/wiki/> - **Neurosurgery Wiki**

Permanent link:

https://neurosurgerywiki.com/wiki/doku.php?id=human_protein_atlas

Last update: **2024/06/07 02:56**

