

Caveolin protein

[Science](#), [Biology](#)



ID Number & Caveolin Protein As a good example of scaffolding protein, the caveolin is considered as the principal marker of the caveolae (Gussak and Antezelevitch 234). Since the caveolin serve as the caveolae coat protein, the caveolin is considered as a major element of the caveolae which represents as the foundation of the lipid rafts (Jasmin, Frank and Lisanti 6). Commonly found in the caveolae, caveolins play a significant role in the process of receptor-independent endocytosis (Williams and Lisanti; Tang, Scherer and Okamoto; Jasmin, Frank and Lisanti 6).

Caveolin has a total of three (3) variants known as the caveolin-1 (CAV-1), caveolin-2 (CAV-2), and caveolin-3 (CAV-3) (Gussak and Antezelevitch 234; Williams and Lisanti). CAV-1 and CAV-2 can be found in most cells whereas CAV-3 can be found in muscle cells of the heart (Yuan, Garcia and Hales 275).

Having a complete sequence status, the size of amino acid length of CAV-1 is 178 (UniProtKB). As a 21- to 24-kDa protein, CAV-1 is composed of 16 amino acids longer than CAV-2 and additional N-terminal 27 amino acids as compared to CAV-3 (Fielding 177). CAV-1 has two variants known as CAV-1 α (contains amino acid tyrosin 14) and CAV-1 β (does not contain the “ first 31 amino acid present in CAV 1 α) (Mercier, Jasmin and Lisanti 18). Both CAV-1 α and 1 β can be found in the lungs whereas CAV-1 β can be found in the epithelial cells (Yuan, Garcia and Hales 275).

With regards to internalization of the material, Garcia and Hales (275) explained that CAV-1 can be phosphorylated in “ Rab4-labelled, Rab5-labelled or the early endosome antigen-1-labelled compartments which then subsequently move to the Rab11-associated compartment”.

References

Fielding, Christopher J. Lipid Rafts and Caveolae. San Francisco, CA: Wiley-VCH, 2006.

Gussak, Ihor and Charles Antezolevitch. Electrical Diseases of the Heart: Genetics, Mechanisms, Treatment, Prevention. London: Springer, 2008.

Jasmin, Jean-Francois, Philippe G. Frank and Michael P. Lisanti. Caveolins and Caveolae: Roles in Signaling and Disease Mechanisms. New York: Springer, 2012.

Mercier, Isabelle, Jean-Francois Jasmin and Michael P. Lisanti. Caveolins in Cancer Pathogenesis, Prevention and Therapy. London: Springer, 2012.

Tang, ZhaoLan, Philipp E. Scherer, Takashi Okamoto, et al. " Molecular cloning of caveolin-3, a novel member of the caveolin gene family expressed predominantly in muscle." Journal of Biological Chemistry 271. 4 (1996): 2255–1561.

UniProtKB. " Q03135 (CAV1_HUMAN) Reviewed." UniProtKB/Swiss-Prot. 31 October 2012. Web. 25 November 2012 .

Williams, Terence M. and Michael P. Lisanti. " The caveolin proteins." Genome Biology 5. 3 (2004): 214.

Yuan, Jason X-J., et al. Textbook of Pulmonary Vascular Disease. London: Springer, 2011.