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Bridging Knowledge and the Economy

Plasma detection of circulating PCSK9 forms

Reference: VAL-578-IRCM

Keywords: Cholesterol, Lipid, diagnostic, PCSK9, cardiovascular diseases

Background

Proprotein Convertases (PCs) are responsible for the limited proteolysis of multiple polypeptide precursors, generating a large diversity of bioactive molecules in an organism. Further, PCs are involved in a large variety of biological processes and have been shown to be implicated in several human diseases. Some PCs, such as PCSK9 play critical roles in the regulation of lipid metabolism and cholesterol homeostasis through down regulation of the low density lipoprotein receptor (LDLR) at the cell surface and the subsequent increase of LDL-cholesterol in blood circulation. Other PCSK9-associated diseases include disorders related to VLDLR and ApoER2, two receptors also down regulated by PCSK9 activity.

Technology

Dr. Nabil Seidah from the I*nstitut de recherches cliniques de Montreal* has developed a method of measuring the level of circulating PCSK9 as well as measuring the ratio between its full-length active form and its inactive form (due to furin and/or PC5 activity) in plasma. The ratio varies between individuals, but a high ratio of active to inactive PCSK9 is indicative of a predisposition to hyper-cholesterolemia.

Applications

A **diagnostic tool** for PCSK9-associated diseases, mainly hypercholesterolemia.

Competitive Advantages

The measurement of circulating PCSK9 will enable a better characterization of PCSK9-associated diseases and will allow tailor-made therapeutic approaches. Furthermore, this method could be used to compare the PCSK9 profiles of different cohorts of, for example, patients treated with statins or novel compounds, patients with hyper and hypocholesterolemia, and those who are resistant to various lipid lowering treatments.

Patent Status

CA, US and EP pending applications filled (Q2/2007)

Business Opportunity

Univalor is seeking a licensing agreement with a commercial partner.

This specific technology is one of a comprehensive portfolio of technologies related to PCs, including:

- VAL-483-IRCM: A general cell-based screening assay platform adaptable and specific for each PCs
- VAL-503-IRCM: A cell-based assay for screening PCSK9 modulators
- VAL-508-539-IRCM: An in vitro assay specific for SKI-1 enzymatic activity.

All of these technologies are complementary and may allow for the identification, characterization, and validation of promising inhibitory compounds of PCs.

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