Emerging Crimean-Congo Haemorrhagic Fever Virus: JLP Health Discovery Enables Novel Treatment Options

With the help of JLP Health's screening technology, scientists discovered that impairing LDLR decreased disease symptoms in mice infected with CCHF virus.

VIENNA, AUSTRIA, March 28, 2024 /EINPresswire.com/ -- A study published today in Nature Microbiology, carried out by scientists from JLP Health GmbH in collaboration with researchers from the Institute of Molecular Biotechnology of the Austrian Academy of Sciences (IMBA), both in Vienna, Austria, as well as Karolinska Institute and the Karolinska University Hospital in Stockholm, Sweden, reveal a new cell entry receptor for the Crimean-Congo haemorrhagic fever (CCHF) virus. Through unbiased mining of the host cell genome, this interdisciplinary study identified that Low Density Lipoprotein Receptor (LDLR) directly interacts with proteins on the virus envelope. The receptor mediates virus entry into human cells, which are then hijacked for virus replication and spreading. Likewise, impairing LDLR expression results in a decrease of disease symptoms in mice infected with the CCHF virus.

The CCHF virus causes serious life-threatening symptoms and is transmitted by hyalomma ticks. With 10.000 to 15.000 infections globally every year and 500 of them reported as fatal, CCHF virus is ranked second on the World Health Organization (WHO) blueprint list of emerging viruses with pandemic potential. This particular virus is prominent in regions such as the Balkans, Middle East, Africa and Asia. Now, changes in climate expand the hyalomma tick habitat having already brought the virus to EU countries such as Spain, France, Greece and Bulgaria. To date, no specific medication or vaccine exist, leaving the patient with only symptomatic care.

Vanessa Monteil, virologist and lead author of the study, emphasises that "CCHF virus poses a major threat to human-wellbeing and this study provides key insights into the interaction of the virus with our body". LDLR is a highly studied receptor, mostly recognised for its pivotal role in cholesterol homeostasis. The researchers in this study tested the potential of utilising soluble LDLR variants as a decoy to trap the virus and thereby successfully hindered CCHF virus from entering the cells.

"Climate changes drive dramatic spreading of CCHF virus infections in Europe. This new understanding of the virus entry into our cells equips us with a key knowledge for the development of rational CCHF virus-specific treatments" states Moritz Horn, Chief Scientific Officer of JLP Health.

JLP Health, together with its collaborators, continues to explore the potential of LDLR as a possible future treatment for CCHF virus infections.
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About JLP Health

JLP Health is a privately held biotech company based in Vienna, Austria, founded by Prof. Josef Penninger and colleagues, focused on the discovery of new drug target structures to develop innovative therapies for diseases with high unmet medical need. JLP Health has developed unique and unbiased screening approaches at unprecedented single amino resolution (structural biology by genetics) to identify molecular modes of action required for the activity of anti-cancer drugs. Besides the oncology focus, this platform technology is applied to uncover host cell factors essential for viral infections. Moreover, JLP Health continues to uncover molecular mechanisms of natural substances via its genetic screening capabilities with the goal to develop rational treatment options based on fundamental understanding of drug actions.

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Information set forth in this press release contains forward-looking statements, which involve a number of risks and uncertainties. The forward-looking statements contained herein represent the judgement of JLP Health as of the date of this press release. Such forward-looking statements are neither promises nor guarantees but are subject to a variety of risks and uncertainties, many of which are beyond our control, and which could cause actual results to differ materially from those contemplated in these forward-looking statements. JLP Health assumes no obligation to update forward-looking statements contained in this press release as the result of new information or future events or developments.

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