

# Chronic enteroviral infection modifies broadly pancreatic cellular functions

September 10 2019

---



Using immunoelectron microscopic technique, one is able to discern the morphologic traits of the Coxsackie B4 virus virions. Credit: Centers for Disease Control and Prevention

Enteroviral infections are common viral infections with usually rather few symptoms, and they are also believed to be linked to the onset of

type 1 diabetes. Type 1 diabetes is a disorder in which the pancreatic insulin-producing beta-cells are destroyed, and it is more common in Finland than anywhere else in the world. A new study by the University of Turku and Tampere University supports the link between enteroviral infections and type 1 diabetes.

The goal of the new study by the research groups of Academy Professor at Turku Bioscience Centre Riitta Lahesmaa and Professor at Tampere University Heikki Hyöty was to understand the mechanisms that control the development of chronic enteroviral [infection](#) in the pancreas. The study also aimed at creating a comprehensive picture on the alterations caused by enteroviral infection that could possibly have adverse health effects.

In the study, cutting-edge proteomic methods were utilised to measure how the infection influences the expression and secretion of thousands of different proteins in the cellular models of chronic pancreatic enteroviral infection.

Having persisted for almost a year, the chronic enteroviral infections modified the cellular expression of numerous proteins that are key to cellular functions, such as proteins regulating energy metabolism. The infections also caused alterations in the secretion of several proteins.

"For example, the levels of proteins in the regulated [secretory pathway](#) participating in the secretion of hormones such as insulin in the beta-cells decreased with the chronic infection. The infections also clearly affected the levels of other proteins that are involved in the function and survival of beta-cells," says Dr. Niina Lietzén from the Turku Bioscience Centre.

"Interestingly, [chronic infections](#) that had been developed by using two different virus strains triggered partly very different responses. For

example, major differences in the activation of immune responses were discovered between these two models. This indicates that the viruses have different kinds of abilities to manipulate the cellular defense systems," adds Hyöty.

Published in the *iScience* journal, the study revealed several mechanisms through which chronic enteroviral infections can impact pancreatic functioning and possibly the development of type 1 diabetes. The report is part of the ongoing doctoral studies of Doctoral Candidates Anni Honkimaa from Tampere University and Karoliina Hirvonen from the University of Turku.

**More information:** Niina Lietzén et al. Coxsackievirus B Persistence Modifies the Proteome and the Secretome of Pancreatic Ductal Cells, *iScience* (2019). [DOI: 10.1016/j.isci.2019.07.040](https://doi.org/10.1016/j.isci.2019.07.040)

Provided by University of Turku

Citation: Chronic enteroviral infection modifies broadly pancreatic cellular functions (2019, September 10) retrieved 2 May 2024 from <https://medicalxpress.com/news/2019-09-chronic-enteroviral-infection-broadly-pancreatic.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--