



## PAPER OF THE MONTH • FEBRUARY 2020



### **Marina Bury, PhD**

Postdoctoral Fellow, Lady Davis Institute



### **James Saliba**

PhD Candidate

Department of Experimental Medicine, McGill University



### **Volker Blank, PhD**

Senior Investigator, Lady Davis Institute

Professor, Department of Medicine, McGill University

# Cell Reports

## NFE2L3 Controls Colon Cancer Cell Growth through Regulation of DUX4, a CDK1 Inhibitor

Marina Bury, Benjamin Le Calvé, Frédéric Lessard, Thomas Dal Maso, James Saliba, Carine Michiels, Gerardo Ferbeyre, Volker Blank

Dr. Volker Blank's lab has long been interested in the NFE2L3 transcription factor, which plays a fundamental role in colorectal cancer, the third most common cancer worldwide. NFE2L3 levels are elevated in colon cancer, while silencing this gene decreases colon cancer cell proliferation.

This paper elucidates a new pathway that controls colon cancer growth, identifying the protein DUX4 as a novel inhibitor of the cyclin-dependent kinase CDK1, a major cell cycle regulator that is critical for the proliferation of cancer cells. Aberrant high levels of DUX4 are known to be involved in the pathogenesis of muscular dystrophy, but its role in colon cancer was not previously recognized. Through the use of next generation sequencing and mass spectrometry technologies, Dr. Blank's team has revealed DUX4 as an NFE2L3 target, and showed that DUX4 is able to interact with CDK1 and suppress its activity. Using both human colorectal cancer cells and *in vivo* models, Dr. Blank and his collaborators showed that NFE2L3 knockdown significantly decreased cancer cell growth, marking DUX4 as a promising novel avenue for precision cancer therapeutics. This discovery represents an opportunity to inhibit the development of the cancer by different means than has heretofore been possible.