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VRIJE UNIVERSITEIT BRUSSEL

PhD in Medical Sciences
2020-2021

INVITATION to the Public defence of

Jonathan BALDAN

To obtain the academic degree of **'DOCTOR OF MEDICAL SCIENCES'**

Human Pancreatic Acinar Cell Plasticity.

The defence will take place on **Monday, 28th September 2020 at 5 p.m.**

and will be organised **online** via Zoom meeting

accessible through the following link:

https://vub-gf.zoom.us/j/98559189304?pwd=OHNKZ1dhSnqxUExPdE9BZkkwdlQzUT09

Meeting ID: 985 5918 9304
Password: 807919

Summary of the dissertation

Rodent pancreatic acinar cells were shown to retain inherent plastic capacities and capable to reprogram towards various cell types under specific physiological conditions. Recently, Mills et al elegantly observed a common regenerative process across various murine epithelial tissues termed "paligenosis", i.e. differentiated cells retaining potential to dedifferentiate, proliferate and redifferentiate to restore damaged tissue. Acinar cells in the pancreas, showed to retain this paligenotic potential crucial for tissue regeneration upon caerulein-induced pancreatitis. However, persistent inflammation and/or mutagenesis can lead to neoplastic transformation of acinar cells stressing the need to molecularly define and control transitional phases. Understanding how the process of dedifferentiation is initiated, proliferation is regulated and redifferentiation is governed could allow regeneration of the (inflamed) pancreatic parenchyma and concomitantly minimizing the risk for pancreatic cancer development. Some efforts have been undertaken in murine models, however translation to human remains poor due to lack of human acinar cell lines, organoids or primary exocrine tissue. Setting up a collaboration with the islet isolation units in Brussels, Milan and Oxford allowed us to investigate acinar plasticity on human primary exocrine cells in vitro.

Curriculum Vitae

Baldan J, Houbracken I, Rooman I, Bouwens L. Adult human pancreatic acinar cells dedifferentiate into an embryonic progenitor-like state in 3D suspension culture. Scientific Reports, 2019 Mar: 9(1) 4040. IF2019: 4.0, Q1.

Baldan J, Himpe E, Spiers R, Johnson P, Dugnani E Piemonti L, Bouwens L. Transcriptome analysis and regulation of human pancreatic exocrine cell plasticity by TGF-beta, BMP, Akt and Wnt signalling. Cell Death and Differentiation, submitted. IF2020: 8.3, Q1.

Also co-author of the following paper:

Mfopou JK, Houbracken I, Wauters E, Mathijs I, Song I, Himpe E, **Baldan J,** Heimberg H, Bouwens L. Acinar phenotype is preserved in human exocrine pancreas cells cultured at low temperature: implications for lineage-tracing of ß-cell neogenesis. Biosci Rep. 2016 May: 36(3) e00329. IF2016: 2.8.