New tools and insights in physiology and chromosome dynamics of Clostridioides difficile

Oliveira Paiva, A.M.

List of publications

(in chronological order)

Pereira AC, Paiva A, Saraiva IH, Costa T, Henriques AO, Matzapetakis M. Chemical shift assignments and secondary structure determination of the ectodomain of *Bacillus subtilis* morphogenic protein RodZ. *Biomol NMR Assign* 2015. 9(2): 285-288. doi: 10.1007/s12104-014-9593-8

Oliveira Paiva AM, Friggen AH, Hossein-Javaheri S, Smits WK. The Signal Sequence of the Abundant Extracellular Metalloprotease PPEP-1 Can Be Used to Secrete Synthetic Reporter Proteins in *Clostridium difficile. ACS Synth Biol*. 2016. 5(12):1376-1382. doi: 10.1021/acssynbio.6b00104

van Leeuwen PT, van der Peet JM, Bikker FJ, Hoogenkamp MA, Oliveira Paiva AM, Kostidis S, Mayboroda OA, Smits WK, Krom BP. Interspecies Interactions between *Clostridium difficile* and *Candida albicans. mSphere* 2016. 1(6). doi: 10.1128/mSphere.00187-16

Oliveira Paiva AM, Friggen AH, Qin L, Douwes R, Dame RT, Smits WK. The Bacterial Chromatin Protein HupA Can Remodel DNA and Associates with the Nucleoid in *Clostridium difficile. J Mol Biol* 2019. 431(4): 653-672. doi: 10.1016/j.jmb.2019.01.001

Oliveira Paiva AM, de Jong L, Friggen AH, Smits WK, Corver J. The C-terminal domain of *Clostridioides difficile* TcdC is exposed on the bacterial cell surface*. J.Bact* 2020. 202:e00771-19. doi: 10.1128/JB.00771-19.

Oliveira Paiva AM, van Eijk E, Friggen AH, Weigel C, Smits WK. Identification of the unwinding region in the *Clostridioides difficile* chromosomal origin of replication. *Front. Microbiol.* 2020. 11: 2331. doi: 10.3389/fmicb.2020.581401

Curriculum Vitae

Ana Margarida Oliveira Paiva was born on the 12th of September 1988 in Leiria, Portugal. She is the daughter of António Gaspar Paiva and Ana Paula Ventura Oliveira, and the elder sister of Sara and António. In 2006, she started her bachelor in Bioscience with a specialization in Microbiology at the Escola Superior de Biotecnologia in Caldas da Rainha, Portugal, obtaining the bachelor's degree in 2009. In October 2009 she started her Masters in Medical Microbiology at the Faculdade de Ciências Médicas at the Universidade Nova de Lisboa, in Portugal. She did her Masters internship at the Instituto de Tecnologia Química e Biológica (ITQB-UNL), in Oeiras, Portugal, at the Microbial Development Laboratory under the supervision of Dr. Teresa Costa and Prof. Dr. Adriano Henriques, concluding the Masters in 2012. The internship involved the *in vivo* and *in vitro* characterisation of the RodZ protein, a morphogenetic protein in *Bacillus subtilis*. She continued to work on the project in the Microbial Development group at ITQB-UNL until 2014 after obtaining her degree, through two research scholarships (027/BI-BI/2012 and 083/BI-BI/2013). In 2015, she started her PhD studentship in the laboratory of Experimental Bacteriology, at the Department of Medical Microbiology of Leiden University Medical Centre, under the supervision of Dr. Wiep Klaas Smits and Prof. Dr. Ed J. Kuijper. Her research has focused on the initiation of replication and chromosome remodelling as well as aspects of toxin regulation in *C. difficile*. During her PhD research, she developed new tools and methodologies for *C. difficile* studies to answer her research questions dealing with toxin regulation and DNA transactions. Upon conclusion of the PhD she will pursue postdoctoral research in the field of microbiology.

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The work developed during this thesis would not be possible without the infrastructure, knowledge and outstanding personnel from the Leiden University Medical Center, that not only provided excellent working conditions but also collaborations during my research projects. In particular, I would like to thank the LUMC Light and Electron Microscopy Facility Microscopy department, by Joop Wiegant, Annelies Boonzaaier-van der Laan and Lennard Voortman, for all the help and continuous availability.

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