



Vabilo na Preglov kolokvij / Invitation to the Pregl colloquium

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Great Lecture Hall

National Institute of Chemistry

Hajdrihova 19, Ljubljana, Slovenia

Deciphering the intricate role of intrinsically disordered regions in transcription factor regulation

Here, I will present our recent published and unpublished work on the regulation and cross-talk of Wnt/ β -catenin signaling with p53 and FOXO signaling using and integration of NMR spectroscopy and complementary biophysical/computational approaches. I will present our recent results related to this major effort, and more specifically related to i) the interplay of FOXO4 and TCF/LEF/ β -catenin [1], ii) structural and dynamic investigation of the TF DNA-binding domains (unpublished and [2]), iii) the interplay of p53 and FOXO4 [3, 4], and vi) the interplay of p53 and TCF/LEF/ β -catenin (unpublished). In all of these links, disordered regions play a key role. Our recent data illustrate how the interplay of IDRs, DNA-binding domains, posttranslational modifications, and co-factor/ β -binding contribute to transcription factor function.

[1] B. Bourgeois, T. Gui, D. Hoogeboom, H.G. Hocking, G. Richter, E. Spreitzer, M. Viertler, K. Richter, T. Madl, B.M.T. Burgering, Multiple regulatory intrinsically disordered motifs control FOXO4 transcription factor binding and function, *Cell Rep*, 36 (2021) 109446.

[2] E. Spreitzer, T.R. Alderson, B. Bourgeois, L. Eggenreich, H. Habacher, G. Brahmersdorfer, I. Pritisanac, P.A. Sanchez-Murcia, T. Madl, FOXO transcription factors differ in their dynamics and intra/intermolecular interactions, *Curr Res Struct Biol*, 4 (2022) 118-133.

[3] M.P. Baar, R.M.C. Brandt, D.A. Putavet, J.D.D. Klein, K.W.J. Derks, B.R.M. Bourgeois, S. Stryeck, Y. Rijksen, H. van Willigenburg, D.A. Feijtel, I. van der Pluijm, J. Essers, W.A. van Cappellen, I.W.F. van, A.B. Houtsmuller, J. Pothof, R.W.F. de Bruin, T. Madl, J.H.J. Hoeijmakers, J. Campisi, P.L.J. de Keizer, Targeted Apoptosis of Senescent Cells Restores Tissue Homeostasis in Response to Chemotoxicity and Aging, *Cell*, 169 (2017) 132-147 e116.

[4] B. Bourgeois, T. Madl, Regulation of cellular senescence via the FOXO4-p53 axis, *FEBS Lett*, 592 (2018) 2083-2097.



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Vljudno vabljeni / Kindly invited