Logo/names of your institution

National Institute of Chemistry

Description of the group

Slovenian NMR Centre at the National Institute of Chemistry (NIC) is led by Prof. Janez Plavec. Slovenian NMR Centre is a national facility that offers infrastructure and expertise in the field of NMR spectroscopy to scientists and researchers in academic and industrial institutions. The group expertise is in various topic of structure and dynamics of bio-macromolecular systems by NMR, particularly in structural and dynamics aspects of nucleic acids and proteins. More recent interest focus is on the non-canonical DNA and RNA structures and conformational changes in building blocks of DNA/RNA upon interaction with small molecule ligands and metal ions.

The personnel involved (or to be involved) in the project

Title/Name/Surname	Email	Role	Reference Identifier	Type of Identifier
Prof. Janez Plavec	janez.plavec@ki.si	Leading	0000-0003-1570-8602	Orcid ID
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Dr. Jasna Brčić	jasna.brcic@ki.si	Team member	0000-0001-5278-0369	Orcid ID

Infrastructure available

https://www.slonmr.si/sub_sites/instruments.php

Available research equipment at the Slovenian NMR Center:

- DNA/RNA synthesizer (H8, K&A Labs GMBH)
- HPLC chromatography (Waters), FPLC gel chromatography

- NanoDrop™ One Microvolume UV-Vis Spectrophotometer
- UV-VIS spectrometer (JACSO)
- Bruker Avance Neo 800 MHz NMR spectrometer equipped with 5 mm TCI triple resonance ($^{1}H/^{13}C/^{15}N$) cryo probe
- Bruker AVANCE NEO 600 MHz NMR spectrometer equipped with 5 mm quadruple resonance cryo-probe and BBO probe
- Bruker AVANCE NEO 600 MHz NMR spectrometer equipped with 5 mm ($^{1}H/^{13}C/^{15}N$) triple resonance cryo-probe
- Bruker AVANCE NEO 600 MHz NMR spectrometer (BBFO probe, BBI, TXI MicroProbe, TXI hr-MAS probe)
- Bruker AVANCE NEO 400 MHz NMR spectrometer (BBFO, BBI, DUL, CP-MAS probe)

Representative publications

1. S. Hadži, Z. Živič, M. Kovačič, U. Zavrtanik, S. Haeserts, D. Charlier, J. Plavec, A. N. Volkov, J. Lah and R. Loris. Fuzzy recognition by the prokaryotic transcription factor HigA2 from Vibrio cholerae*. Nat. Commun*., **2024**, 15, article number: 3105.
2. M. Trajkovski, A. Pastore and J. Plavec. Dimeric structures of DNA ATTTC repeats promoted by divalent cations. *Nucleic Acids Res.,* **2024**, 52(4), 1591-1601.
3. A. Novotny, J. Plavec and V. Kocman. Structural polymorphism driven by a register shift in a CGAG-rich region found in the promoter of the neurodevelopmental regulator AUTS2 gene. *Nucleic Acids Res*., **2023**, 51(6), 2602–2613.
4. D. Pavc, N. Sebastian, L. Spindler, I. Drevenšek-Olenik, G. Koderman Podboršek, J. Plavec and P. Šket. Understanding self-assembly at molecular level enables controlled design of DNA G-wires of different properties. *Nat. Commun*., **2022**, 13, article number: 1062.
5. Ghosh, M. Trajkovski, M.-P. Teulade-Fichou, V. Gabelica, J. Plavec. Phen-DC3 Induces Refolding of Human Telomeric DNA into a Chair-Type Antiparallel G-Quadruplex through Ligand Intercalation. *Angew. Chem. Int. Ed.*, **2022**, 61, e202207384; *Angew. Chem*., **2022**, 134, e202207384.