Center SynGen

RNA Organization & Engineering WORKSHOP 2026

Opatija, Croatia
15 – 17 October 2026

FROM RNA PRINCIPLES TO BIOLOGICAL SOLUTIONS

A U G C U A C G G

MOLECULES
CELLS
IDEAS
TOGETHER

ABOUT THE WORKSHOP

RNA is increasingly recognized not only as a carrier of genetic information, but as an active organizer of cellular processes through its sequence, structure, molecular interactions and ability to form higher-order assemblies. At the same time, advances in spatial and proximity mapping, proteomics, biophysics and AI-based sequence modelling now make it possible to investigate these principles systematically and begin translating them into predictive and engineering frameworks. The RNA Organization & Engineering workshop brings together researchers from collaborating laboratories with complementary expertise in RNA biology, RNA–RNA and RNA–protein interactions, condensates, RNA structure and biophysics, proteomics, and machine learning. Through scientific presentations and interdisciplinary working sessions, the workshop will connect experimental and computational approaches and identify new collaborative directions. Key themes include AI and RNA sequence-to-function modelling, mapping RNP and subcellular RNA microenvironments, RNA–RNA interaction networks and cellular organization, and the sequence grammar underlying higher-order RNA properties. The workshop aims to update us on recent projects, generate concrete joint research projects, methodological synergies and opportunities for future collaborative funding.

Thursday 15 October — From RNA sequence to structure, physics & predictive models

TIME	SPEAKER	AFFILIATION	TALK
09:30–10:10	**Utkarsh Upadhyay**	Forschungszentrum Jülich	*Learning RNA sequence–function relationships with diffusion models*
10:10–10:50	**Alex Schug**	Forschungszentrum Jülich / KIT	*NucleicBERT: learning RNA sequence, structure and function from sparse data*
10:50–11:20	COFFEE BREAK		
11:20–12:00	**Alexander Sasse**	Heidelberg University	*Sequence-to-function models for decoding regulatory grammar*
12:00–12:40	**Domen Vaupotič**	Jožef Stefan Institute	*From sequence to topology: RNA as a branched polymer*

Thursday 15 October

From RNA sequence to structure, physics & predictive models

TIME	SPEAKER	AFFILIATION	TALK
12:40–14:10	LUNCH		
14:10–14:50	**Anže Božič**	Jožef Stefan Institute	*Physical principles of multivalent RNA–RNA and RNA–protein interactions*
14:50–15:30	**Anita Kotar**	National Institute of Chemistry, Ljubljana	*NMR reveals functional states within RNA conformational ensembles*
15:30–16:10	**Vojč Kocman**	National Institute of Chemistry, Ljubljana	*Nucleic-acid structure and dynamics: from non-canonical folds to RNA function*
16:10–16:40	COFFEE BREAK		
16:40–17:10	**Flora Lee**	King's College London	*Learning diversity of alternative polyadenylation from single-cell data in models of autism spectrum disorder*
17:10–17:40	**Valter Bergant**	National Institute of Chemistry, Ljubljana	*ARTIvir: machine learning predictions of virus host factors*
17:40–18:10	**Stéphane Jedele**	Jožef Stefan Institute, Ljubljana	*Decoding RNA-driven condensation through multiscale modelling*

Friday 16 October

RNA regulation, organization & cellular mechanisms

TIME	SPEAKER	AFFILIATION	TALK
09:30–10:10	**Miha Modic**	KIT & NIC	*Decoding and re-engineering the RNA coordinate system*
10:10–10:50	**Jona Novljan**	KIT & NIC	*Predicting and engineering RNP organization and RNA fate from sequence*
10:50–11:20	COFFEE BREAK		
11:20–12:00	**Anja Trupej & Nina Oven**	NIC, Ljubljana	*Molecular Grammar of toxic RNA repeat expansions in ribonucleoprotein condensates in myotonic dystrophy*
12:00–12:40	**Maksimiljan Adamek**	NIC, Ljubljana	*Signalling-dependent reading of RNA structural ensembles*
12:40–14:10	LUNCH		
14:10–14:50	**Jure Rebselj**	KIT	*The hidden grammar of RNA: from low complexity to molecular organization*
14:50–15:30	**Saurabh Dey**	KIT	*Decoding RNA-driven organization principles regulating mitosis*

Friday 16 October

RNA regulation, organization & cellular mechanisms

TIME	SPEAKER	AFFILIATION	TALK
15:30–16:00	**Aayushi Mittal**	IIT India	*From previous work to a new postdoctoral project: questions at the RNA–gene regulation interface*
16:00–16:30	COFFEE BREAK		
16:30–17:00	**Jannis Kaiber**	KIT	*P-bodies as regulators of LIN28A-mediated mRNA decay*
17:00–17:30	**Dominik Rihar**	Uni Ljubljana	*Engineering RNA condensates: towards programmable sequestration of endogenous transcripts*
17:30–18:00	**Centine Rapp**	KIT	*ATP-dependent control of RNA interactions and nucleolar material properties*
18:00–18:30	**Kristin Straub & Luana Weiler**	KIT	*Platforms, workflows and experimental development*

Saturday 17 October

Emerging Directions in RNA Organization & Engineering

09:30–09:45 Introduction & interest-group assignment

09:45–12:15 Parallel interest groups

	GROUP	THEME	FOCUS
1	**Learning the language of RNA**	AI, deep learning & sequence-to-function modelling	*Connecting sequence models with RNA structure, interactions, localization, stability and RNP assembly; moving from prediction towards RNA design*
2	**Mapping the RNP microenvironment**	RBPs, proteomics & spatial/proximity mapping	*Integrating HCR-Proxy, RBP-centric proteomics and complementary approaches to define dynamic RNA molecular neighbourhoods*
3	**Cartography of the RNA cell**	RNA–RNA interactions, spatial organization & condensates	*Using RRI networks to map higher-order RNA organization and connect RNA interactions with localization, translation and condensate formation*
4	**The hidden grammar of RNA**	Low-complexity regions, sequence grammar & emergent properties	*Understanding how sequence encodes multivalency, topology, condensation and higher-order RNA organization*
	12:15–13:35	LUNCH	
	13:35–14:35	Interest-group presentations 15 minutes per group: key questions, opportunities and 1–2 concrete collaborative project ideas.	
	14:35–16:00	Closing discussion