

# RSC-NAG 8th Cambridge Symposium on Nucleic Acids Chemistry and Biology

17–20 September 2024

Queen's College, Cambridge, UK



RSC INTEREST GROUP  
NUCLEIC ACIDS

## Programme (P – Principal Speaker, S – Short talk speaker)

### Tuesday 17<sup>th</sup> September

10.00 onwards Registration

14.00 Opening and announcements

#### Session 1

Chair: ZOE WALLER

14.15 **JASON CHIN (P1)**

Reprogramming the Genetic Code

14.55 **KATHARINA HOEFER (S1)**

Expanding Therapeutic Horizons: The Power of RNAylation to Shape Cellular Processes

15.20 **YANJIE CHAO (S2)**

In vivo RNA-RNA interactome profiling unveils key regulatory hub and small RNA regulator of bacterial virulence

15.45 **TAE SEOK MOON (S3)**

Engineering RNA Tools to Control Individual Microbes and Microbiota without Antibiotic Resistance Genes at a Single Strain Level

16.10 **Refreshments**

16.40 **Session 2**

Chair: PHIL HOLLIGER

16.40 **JACK SZOSTAK (P2)**

Aminoacylation-enhanced ribozyme assembly

17.20 **DAVID LILLEY (S4)**

The highly sophisticated catalytic mechanism of an alkyl transferase ribozyme

17.45 **ALEX TAYLOR (P3)**

Engineering biology with a new twist: tools and technologies composed of biostable XNA analogues

18.30 **Dinner**

19.45 **Poster session 1**

with even first hour, odd second hour

Sponsored by



21.45 Close

### Wednesday 18<sup>th</sup> September

#### Session 3

Chair: KATHARINA HOEFER

**RSC-NAG 8th Cambridge  
Symposium on Nucleic  
Acids Chemistry and Biology**

17–20 September 2024

Queen's College, Cambridge, UK



- 08.45** **SUYANG ZHANG (P4)**  
Structural insights into co-transcriptional splicing
- 09.25** **GUIFENG WEI (S5)**  
N6-methyladenosine and the NEXT complex direct Xist RNA turnover and X inactivation dynamics
- 09.50** **PENG WU (S6)**  
RNA-protein interaction modulation via small-molecule inhibitors of RNA-binding proteins
- 10.15** **YORGO MODIS (S7)**  
Variants in the RNA sensor MDA5 trade antiviral activity for autoimmune protection
- 10.40** **Refreshments**
- Session 4**  
Chair: MICHAEL BOOTH
- 11.10** **EDOARDO GIANNI (S8)**  
In vitro evolution of ribozymes for self-synthesis
- 11.35** **JOSEPH VYLE (S9)**  
Synthesis and anticancer activity of selenium-substituted dinucleoside pyrophosphate analogues
- 12.00** **KELLY NGUYEN (P5)**  
Visualisation of human telomeric complexes by cryo-electron microscopy
- 12.40** **Lunch**
- Session 5**  
Chair: Yamuna Krishnan
- 14.15** **MARINA RODNINA (P6)**  
Non-canonical mRNA translation
- 14.55** **Dilek Guneri (S10)**  
Modulation of insulin expression is independent of G-quadruplex stability but correlates positively with i-motif stability in reporter gene assays
- 15.20** **CHUN YIN CHAN (S11)**  
RNA geranylating liposomes establish a membrane-associated translation system
- 15.45** **Jonathan Price (P7)**  
Improving the Infrastructure of RNA structure prediction *in vivo* through experiment and analysis
- 16.25** **Refreshments**
- Session 6**  
Chair: DAVID LILLEY
- 17.15** Introduction by DAVID LILLEY
- 17.20** The Michael J. Gait Award lecture: **ADRIAN KRAINER (P8)**

# RSC-NAG 8th Cambridge Symposium on Nucleic Acids Chemistry and Biology

17–20 September 2024

Queen's College, Cambridge, UK



RSC INTEREST GROUP  
NUCLEIC ACIDS

Antisense Therapy for Diffuse Midline Glioma

**18.30 Dinner**

**19.45 Poster session 2**

with odd first hour, even second hour

**21.45 Close**

## Thursday 19<sup>th</sup> September

### Session 7

Chair: MARCO DI ANTONIO

**08.45 YAMUNA KRISHNAN (P9)**

Intracellular Electrophysiology

**09.25 FILIP BOSKOVIC (S12)**

Transmembrane RNAs as enzymes and channels of primordial cells

**09.50 MICHAEL BOOTH (S13)**

Remote-controlled nucleic acids for biology and medicine

**10.15 XIWEN JIA (S14)**

Potential Role of 2-Thiocytidine in Nonenzymatic RNA Replication

**10.40 Refreshments**

### Session 8

Chair: Shankar Balasubramanian

**11.10 CHUAN HE (P10)**

Chromatin regulation by reversible RNA methylation

**11.50 JACK HARDWICK (S15)**

Uncovering a new layer of epigenetic information in double-stranded DNA

**12.15 EWELINA MALECKA (S16)**

How one protein accommodates two RNAs: a dynamic assembly of RNA targeting complexes in bacteria

**12.40 NEV GILHOOLY (S17)**

Towards direct detection of nucleic acid secondary structures during nanopore sequencing

**13.05 Lunch**

### Session 9

Chair: JOHN KNIGHT

**14.15 CLAUDIA HÖBARTNER (P11)**

Molecular evolution of RNA-modifying ribozymes

**14.55 Free afternoon**

**19.00 Drinks reception**

# RSC-NAG 8th Cambridge Symposium on Nucleic Acids Chemistry and Biology

17–20 September 2024

Queen's College, Cambridge, UK



RSC INTEREST GROUP  
NUCLEIC ACIDS

**19.30** Conference dinner, including  
poster prizes, thanks and short speeches

Sponsored by



## Friday 20<sup>th</sup> September

Session 10

Chair: MICHAEL GAIT

**08.45** **ALICE COLLINS (S18)**

RNA-mediated regulation during T2 phage development in Escherichia coli

**09.10** **BRIONNA MCGORMAN (S19)**

The Design and Development of Targeted Artificial Metallo-RNases

**09.35** **JULIAN TANNER (S20)**

Molecular Recognition, Biosensing and Diagnostics using Nucleic Acid  
Aptamers with Unusual Base Chemistries

**10.00** **THOMAS CARELL (P12)**

The chemistry behind the second dimension of the genetic code

**10.40** **Refreshments**

Session 11

Chair: RITWICK SAWARKAR

**11.10** **LUCA PELLEGRINI (P13)**

Structure and function of the RAD51 monomer and filament

**11.50** **JONAS ROSKE (S21)**

Molecular snapshots of daughter strand synthesis and proofreading by the  
human leading-strand DNA polymerase Pol  $\epsilon$

**12.15** **AMANDA CHAPLIN (S22)**

Redefining Non-Homologous End Joining DNA-repair using Cryo-electron  
Microscopy

**12.40** **Symposium close, lunch and depart**