



IS3NA Virtual Symposium
Phosphates Run the World: Chemical Biology and
Applications of Nucleosides, Nucleotides and Nucleic Acids
August 26-27, 2021

All Times Listed in Eastern Time (ET)
as of August 10, 2021; agenda subject to change

Thursday, August 26 (Day ONE)

On Demand Poster Viewing – available 24 hours/day

9.00-9.30 Networking – Virtual Coffee Meetup

9:30-9:45 Welcome & Opening Remarks
Masad J. Damha, PhD, *McGill University*
Mano Manoharan, PhD, *Alnylam Pharmaceuticals*

9:45-10.15 Keynote Presentation:
Therapeutic Nucleosides and Evolution of Oligonucleotide Synthesis
Kelvin K. Ogilvie, PhD, *Acadia University*

10.15-11.15 Session I
Chair: Piet Herdewijn, PhD, *KU Leuven*

10.15-10.35 **Design and Therapeutic Potential of Purinergic Receptor Ligands**
Kenneth A. Jacobson, PhD, *National Institute of Health*

10.35-10.55 **Discovery of Remdesivir and Beyond**
Joy Feng, PhD, *Gilead*

10.55-11.15 **Rapidly Advancing Transformational Therapeutic Solutions for Patients with Severe Viral Diseases**
Jean-Pierre Sommadossi, PhD, *Atea Pharmaceuticals*

11.15-11.30 Break / Networking

11.30-12.30 Session II
Chair: Victor E. Marquez, PhD, *Chemical Biology Lab, NCI, NIH*

11.30-11.50 **The Second Dimension of the Genetic Code**
Thomas Carell, PhD, *Ludwig-Maximilians-Universität München*

11.50-12.10 **Synthesis of Novel 2'-disubstituted Ribonucleoside Analogs**
Franck Amblard, PhD, *Emory University*

12.10-12.30 **A de novo Nucleoside Synthesis: New Opportunities for Medicinal and Process Chemistry**
Robert Britton, PhD, *Simon Fraser University*

12.30-13.00 Discussion
Co-chairs: Victor E. Marquez, PhD, *Chemical Biology Lab, NCI, NIH*
Piet Herdewijn, PhD, *KU Leuven*

13.00-13.15 Break / Networking

13.15-14.25 Session III
Co-chairs: Suzanne Peyrottes, PhD, *Université de Montpellier*
Katherine Seley-Radtke, PhD, *University of Maryland, Baltimore County*

13.15-13.25 **Enantioselective organocatalytic synthesis of non natural nucleosides by cross aldol addition**
Leticia Lafuente, PhD, *Universidad Nacional de Quilmes*

13.25-13.35 **Triazolo nucleotide analogues as new chemotype for CD73 inhibition**
Rayane Ghoteimi, PhD, *Université de Montpellier*



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- 13.35-13.45 **Impact of Multivalency and Encapsulation of Affinity Reagents and Catalysts**
Brea Manuel, *Emory University*
- 13.45-13.55 **Biophysical and biological evaluations of G-quadruplex thrombin binding aptamers stabilized by charge-transfer interactions**
Kévan Pérez de Carvasal, *Université de Montpellier*
- 13.55-14.05 **2'-Fluoroarabincytosine substitutions promote the exclusive formation of a novel TC5 dimeric structure with i-motif characteristics**
Roberto El-Khoury, *McGill University*
- 14.05-14.15 **Investigating the impact of epitranscriptomic modifications on RNA ensembles**
Hala Abou Assi, PhD, *Duke University*
- 14.15-14.25 **Efficient Post-Synthetic Preparation of Oligonucleotide Conjugates via One-pot Diselenide-Selenoester Ligation-Deselenization/Alkylation**
Christopher Liczner, MSc., *Concordia University*

14.25-15.25 Session IV

Chair: Jean-Jacques Vasseur, PhD, *Université de Montpellier*

- 14.25-14.45 **Enzymatic Photocaging of Nucleic Acids: A Strategy for Controlling Methyltransferase Target Sites by Light**
Andrea Rentmeister, PhD, *University of Münster*
- 14.45-15.05 **Stealth Fluorescence Labeling for Live-Cell Imaging in RNA-based Therapeutics**
Marcus Wihelmsson, PhD, *Chalmers University Technology*
- 15.05-15.25 **Light as a Tool for Understanding Biological Processes**
Olalla Vázquez, PhD, *Philipps-Universität Marburg*

15.25-15.45 Closing Remarks: Nucleosides, Nucleotides and Human Health

Víctor E. Marquez, PhD, *Chemical Biology Lab, NCI, NIH*

15.45-16.45 Virtual Networking & Social Meetups

Friday, August 27 (Day TWO)

ON DEMAND Poster Viewing – available 24 hours/day

9.00-9.30 Networking – Virtual Coffee Meetup

9.30-12.00 Session V

Co-chairs: Steve Dowdy, PhD, *UCSD School of Medicine*
Laura Sepp-Lorenzino, PhD, *Intellia Therapeutics*

- 9.30-9.50 **Development of Sugar-modified Oligonucleotides with Higher Enzymatic Stability Than PS Oligonucleotides**
Satoshi Obika, PhD, *Osaka University*
- 9.50-10.10 **PNAs with Double Face: Bimodal PNAs as Templates for Supramolecular Assemblies of Nucleic Acids**
Krishna N. Ganesh, FNA, FASc, FTWAS, *Indian Institute of Science Education and Research*
- 10.10-10.30 **Novel DNA-boron Cluster Conjugates with Two Faces**
Barbara Nawrot, PhD, *Polish Academy of Sciences*
- 10.30-10.50 **Improved Specificity of Conjugate siRNAs Through Chemical Modification**
Mark K. Schlegel, PhD, *Alnylam Pharmaceuticals*



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10.50-11.00 Break / Networking

- 11.00-11.20 **New Backbone Chemistry Enhances the Drug-like Properties of Stereopure Oligonucleotides in Preclinical Studies**
Pachamuthu Kandasamy, PhD, *Wave Life Sciences*
- 11.20-11.40 ***In Vivo* Therapeutic Genome Editing via Transient Expression of CRISPR/Cas9**
Rubina Parmar, PhD, *Intellia Therapeutics*
- 11.40-12.00 **Oligonucleotides Based Approaches for Treatment of Chronic Hepatitis B**
Leonid Beigelman, PhD, *Aligos Therapeutics*

12.00-12.30 Discussion

Co-chairs: Steve Dowdy, PhD, *UCSD School of Medicine*
Laura Sepp-Lorenzino, PhD, *Intellia Therapeutics*

12.30-12.45 Break / Networking

12.45-13.55 Session VI

Co-chairs: Yitzhak Tor, PhD, *University of California, San Diego*
Jean-Jacques Vasseur, PhD, *Université de Montpellier*

- 12.45-12.55 **Lipid-oligonucleotide conjugates incorporating long-chain sulfonyl phosphoramidate groups: synthesis and biological properties**
Alina Derzhalova, MSc., *Novosibirsk State University*
- 12.55-13.05 **Regulation of circRNA expression in cell via RNA binding small molecule**
Takeshi Yamada, PhD, *Osaka University*
- 13.05-13.15 **5'-cap modified oligoribonucleotides with S-adenosyl-L-methionine analogs mimicking RNA 2'-O-methylation transition state as original inhibitors against Dengue**
Rostom Ahmed-Belkacem, PhD, *Université de Montpellier*
- 13.15-13.25 **Simple chemical approaches to introduce 2,6-diaminopurine and 2-aminoadenine conjugates into oligonucleotides**
Mimouna Madaoui, PhD, *Alnylam Pharmaceuticals*
- 13.25-13.35 **Multi-functionalized gold nanoparticles for the delivery of gapmer oligonucleotides to target mutant p53 cancer cells**
Eduardo García-Garrido, *IMDEA Nanociencia*
- 13.35-13.45 **Promoter Recognition and Processive RNA Polymerization by a Clamping RNA Polymerase Ribozyme**
Razvan Cojocaru, PhD, *Simon Fraser University*
- 13.45-13.55 **Click and cut: Enzymatic production of targeted DNA scissors**
Brionna McGorman, *Dublin City University*

13.55-14.10 Break / Networking

14.10-15.30 Session VII

Chair: Yitzhak Tor, PhD, *University of California, San Diego*

- 14.10-14.30 **A Natural Riboswitch Scaffold with Methyltransferase Activity**
Ronald Micura, PhD, *University of Innsbruck*
- 14.30-14.50 **RNA Functionalization via an Expanded Genetic Alphabet**
Stephanie Kath-Schorr, PhD, *University of Cologne*



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14.50-15.10 Ribozyme Gene Switches for Biosensing and Regeneration Studies

Maureen McKeague, PhD, *McGill University*

15.10-15.30 Rapid Synthesis and Delivery of Antisense Oligonucleotides Enabled by Machine Learning

Bradley L. Pentelute, PhD, *Massachusetts Institute of Technology*

15.30-16.00 Discussion Session

Chair: Yitzhak Tor, PhD, *University of California, San Diego*

16.00-16.20 Closing Remarks: Triumph of Nucleic Acids

David Corey, PhD, *UT Southwestern*

16.20-16.30 Symposium Closing

Masad J. Damha, PhD, *McGill University*

Mano Manoharan, PhD, *Alnylam Pharmaceuticals*

16.30-17.30 Virtual Networking & Social Meetups