Program IRT 2022

Time	Sunday 28/8
08:00-	Registration
10:00-10:25	*Coffee, Tea*
10:25-10:35	Welcome address *Roger Strömberg, Edvard Smith*
10:35-10:50	Presidents Welcome - *Muthiah Manoharan*
	Session 1 – *Chair: Muthiah Manoharan*
10:45-11:30	Imbach-Townsend Award Lecture Jack Szostak, Harvard University: The emergence of RNA from heterogeneous prebiotic chemistry
11:40-12:05	IL – John McIntosh, MSD: Biocatalytic synthesis of nucleoside and nucleotide therapeutics
12:10-13:40	*Lunch* *Posters I*
	Session 2 – *Chair: Piet Herdewijn*
13:40-14:05	IL – David Smith, Aligos Therapeutics: Oligonucleotide based approaches to the treatment of chronic hepatitis B
14:10-14:25	OP - Byron Purse, San Diego State University: Fluorescent nucleoside analogues for single-molecule biophysics and for metabolic labeling of RNA
14:30-14:55	IL - Yitzhak Tor, University of California, San Diego: Expanding the landscape of bioactive isomorphic fluorescent nucleosides
15:00-15:30	*Coffee, tea*
	Session 3 – *Chair: Leonid Beigelman*
15:30-15:55	IL – Chris Meier, University of Hamburg: Membrane permeable Nucleotides for application in Medicinal Chemistry and Chemical Biology
16:00-16:15	OP – Samantha Kennelly, University of Minnesota, Minneapolis: Development of 3'-Deoxy-3',4'-didehydro-nucleoside Phosphoramidite Prodrugs as Novel Antiviral Agents
16:20-16:45	IL – Kathie Seley-Radtke, University of Maryland, Baltimore: Fleximers – a strategic approach to broad-spectrum antiviral therapeutics
16:50-17:10	*Chu Awards*
19:00	*Reception (Town Hall)*

Time	Monday 29/8
	Session 4 – *Chair: Jean-Jacques Vasseur*
08:30-08:55	IL – Ramon Eritja, Institute for Advanced Chemistry of Catalonia: Nanostructures for delivery of therapeutic oligonucleotides
09:00-09:15	OP – Sunit Kumar Jana, McGill University: Nucleoside analogues with a seven-membered sugar ring: synthesis and application in CRISPR-Cas gene editing systems
09:20-09:35	OP - Philippe Barthelemy, University of Bordeaux: Hydrogel based lipid-oligonucleotides: a new route to self-delivery of therapeutic sequences
09:40-09:55	OP – Pasi Virta, University of Turku: Decorated molecular spherical nucleic acids for the targeted delivery of oligonucleotides
10:00-10:30	*Coffee, tea*
	Session 5 – *Chair: Robert Hudson*
10:30-10:45	OP- Kira Astakhova, Technical University of Denmark: Enhanced specificity and uptake of lipid nanoparticles using novel RNA aptamers and peptides
10:50-11:05	OP - Thomas Edwardson: Engineering Nonviral Protein Cages for Oligonucleotide Delivery
11:10-11:25	OP – Francoise Debart, University of Montpellier: Potent Inhibition of SARS-CoV-2 cap N7- and 2'-O-methyltransferases (nsp14 & nsp16) by sulfonamide-based nucleoside analogues or 5'-cap modified RNAs
11:30-11:55	IL - Anastasia Khvorova, RNA institute, Worcester: Chemical Engineering of Therapeutic siRNAs for CNS
12:00-13:30	*Lunch,* *Posters II*
	Session 6 – *Chair: Ulf Tedebark*
13:30-13:55	IL – Satoshi Obika, Osaka University: Recent Progress in the Development of Bridged Nucleic Acids –Design, Synthesis and Properties of GuNA and BANA
14:00-14:15	OP – Andrei Guzaev, AM Chemicals: A Novel Type of Universal Solid Supports for Oligonucleotide Synthesis
14:20-14:35	OP - Luis Miguel Menéndez Méndez, Universidad de Oviedo: First time use of core-shell type PS-PEG resin for oligonucleotide synthesis
14:40-16:30	*Coffee, tea* *Recruitment/Discussion session*
	Session 7 – *Chair: Jacek Stawinski*
16:30-17:00	IL - Phil Baran, The Scripps Research Institute: Reinventing Oligonucleotide Synthesis

Time	Tuesday 30/8
	Session 8 – *Chair: Shalini Andersson*
08:30-08:55	IL – Eric Swayze, Ionis Pharmaceuticals: Use of the mesylphosphoramidate (MsPA) linkage to control of phosphorothioate (PS) content and improve the profile of antisense oligonucleotides
09:00-09:25	IL – Ivan Zlatev, Alnylam Pharmaceuticals: Spatial architectures for therapeutic small interfering RNAs
09:30-09:55	IL – Nanna Albaek, Roche Innovation Center Copenhagen: Exploring various aspects for developing nucleic acid based medicines for CNS disorders
10:00-10:30	*Coffee, tea*
	Session 9 – *Chair: Yogesh Sanghvi*
10:30-10:45	OP – Lucas Bethge, Silence Therapeutics: Metabolic stabilization of GalNAc-conjugated siRNA: application of phosphorodithioates allow for a stereo defined mRNAi trigger
10:50-11:05	OP - Pachamuthu Kandasamy, Wave life sciences: Synthesis and application of stereopure guanidine-containing backbone to multiple oligonucleotide modalities in preclinical studies
11:10-11:35	IL – Peter Neubauer, Technische Universität Berlin: Enzymatic routes for the cascade synthesis of natural and modified nucleosides
11:40-11:55	OP – Tom Brown, Oxford University: An LNA-amide modification that enhances the cell uptake and activity of phosphorothioate exon-skipping oligonucleotides
12:00-13:40	*Lunch* *Posters III,*
	Session 10 – *Chair: Lennart Nilsson*
13:40-13:55	OP - Eriks Rozners, Binghamton University: Sequence selective recognition of double-stranded RNA by cationic nucleobase and backbone-modified peptide nucleic acids
14:00-14:25	IL - Leemor Joshua-Tor, Cold Spring Harbor Laboratories: A shape-shifting nuclease unravels structured RNA
14:40-14:55	OP- Sergei Gryaznov, Maia Biotechnology: Telomerase-Driven Telomeric DNA Modification in Cancer Cells Leads to Efficient Induction of cGAS-mediated Innate and Adoptive Immune Responses
14:55-15:30	*Coffee, tea*
	Session 11 – *Chair: Rula Zain*
15:30-15:55	IL – Sergei Mirkin, Tufts University: Mechanisms of DNA Repeat Expansions: From Yeast to Human Cells
16:00-16:40	IL - Carol Greider, University of California, Santa Cruz: Nanopore sequencing reveals chromosome-specific telomere lengths
(18:00 tbc)	*Boat trip*
19:00	*Banquet, Vinterviken*

Time	Wednesday 31/8
	Session 12 – *Chair: Samir El-Andaloussi*
08:30-09:00	IL - Matthew Wood, Oxford University: Challenge and opportunities in targeted delivery and distribution
09:05-09:30	IL - Aurelie Goyenvalle, Université de Versailles Saint Quentin en Yvelines: Tricyclo-DNA: promising antisense oligonucleotides for the treatment of neuromuscular diseases
09:35-09:50	OP – Joel Nordin, National Center of Neurology and Psychiatry, Tokyo and Karolinska Institutet: A Phase I/II study of NS-089/NCNP-02, Exon 44 skipping drug, in patients with Duchenne muscular dystrophy
09:55-10:25	*Coffee, Tea*
	Session 13 – *Chair: Edvard Smith*
10:25-10:40	OP- Anders Dahlén, AstraZeneca AB: Hit finding and optimization of antisense oligonucleotide therapeutics – How can me make this process more precise and efficient?
10:45-11:10	IL - Martin Egli, Vanderbilt University: Crystallographic studies and modeling of RNA structure and siRNA-protein interactions
11:15-11:30	OP – Annemieke Madder, Ghent University: Photo-induced Precision Ligations with Nucleic Acids Through Tailored Singlet Oxygen Generation
11:35-12:05	IL - Ugur Sahin, BioNTech SE: mRNA Vaccines and Immunotherapies
12:10-13:40	*Lunch* *Posters IV*
13:40-13:50	*Poster Awards*
13:55-14:15	*Presentation of IS3NA and the next IRT* in Tokyo, 2024
	Session 14 – *Chair: Naoki Sugimoto*
14:20-14:45	IL - Katja Petzold, Karolinska Institutet: RNA structural changes regulate function by NMR
14:50-15:05	OP - John Chaput, University of California Irvine: Evolution of Functionally Enhanced TNA Aptamers
15:10-15:25	OP – Jeremy Lackey, Twist Bioscience: DNA Data Storage: Writing the Future, Saving the Past
15:30	*Closing remarks*

Time	Thursday 1/9
	Young Researchers Symposium (separate schedule)