Programme – Nucleic Acid Nanotechnology: from algorithmic design to biochemical applications

Invited talk: **25 min** + 5 min questions/discussion
Contributed talk: **15 min** + 5 min questions/discussion

Location: Lecture hall *"Jeti"* in the "*A Grid"* hub, Aalto University, Otakaari 5, Espoo

Monday 27.05.

08:15 *Registration opens*
09:15-09:30 **Organisation and programme committee** — *Opening of NANTECH 2019*

-- **Session 1. Chair: Philip Tinnefeld** --

09:30-10:00 **Tim Liedl** — Ludwig Maximilian University of Munich, Germany
Tools and materials assembled from DNA

10:00-10:20 **Thorsten Schmidt** — Kent State University, USA
DNA-assembled plasmonic waveguides for nanoscale light propagation to a fluorescent nanodiamond

10:20-10:40 **Jussi Toppari** — University of Jyväskylä, Finland
DALI: DNA-assisted lithography for plasmonic nanostructures

10:40-11:30 *Coffee break*

-- **Session 2. Chair: Tim Liedl** --

11:30-12:00 **Ralf Jungmann** — Max Planck Institute of Biochemistry and LMU Munich, Germany
Super-resolution microscopy with DNA molecules: Towards localizomics

12:00-12:30 **Philip Tinnefeld** — Ludwig Maximilian University of Munich, Germany
Sensing enhanced by DNA nanotech

12:30-12:50 **Ilko Bald** — University of Potsdam, Germany
FRET nanoarrays in DNA origami platforms and their application as ratiometric sensor

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12:50-14:30 *Lunch (at your own cost)*

-- **Session 3. Chair: Jonathan Doye** --

14:30-15:00 **Damien Woods** — Maynooth University, Ireland
Diverse and robust molecular algorithms using reprogrammable DNA self-assembly

15:00-15:30 **Luca Cardelli** — University of Oxford, UK
Sequenceable DNA algorithms

15:30-15:50 **Carlo Spaccasassi —** Microsoft, UK
A logic programming language for computational nucleic acid devices

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15:50-16:30 *Coffee break*

-- **Session 4. Chair: Damien Woods** --

16:30-17:00 **Roman Jerala** — National Institute of Chemistry, Slovenia
Designed coiled-coil protein origami nanostructures

17:00-17:30 **Jonathan Doye** — University of Oxford, UK
Coarse-grained modelling for DNA nanotechnology with oxDNA

17:30-17:50 **Eugen Czeizler** — Åbo Akademi University, Finland
Rule-based modeling of DNA multi-strand dynamics

17:50-19:30 **Poster session 1**, discussions, *refreshments*

Tuesday 28.05.

-- **Session 5. Chair: Björn Högberg** --

09:00-09:30 **Kurt Gothelf —** Aarhus University, Denmark
Self-assembly and optical properties of single molecule polymers on DNA origami

09:30-10:00 **Hendrik Dietz —** Technical University of Munich, Germany
Designing biomolecular devices and machines

10:00-10:20 **Masayuki Endo —** Kyoto University, Japan
Characterization of DNA origami nanospace using G-quadruplex and i-motif structure as a molecular probe

10:20-10:40 **Adrian Keller —** University of Paderborn, Germany
Real-time observation of superstructure-dependent DNA origami digestion by DNase I using high-speed AFM

10:40-11:30 *Coffee break*

-- **Session 6. Chair: Kurt Gothelf** --

11:30-12:00 **Björn Högberg —** Karolinska Institutet, Sweden
DNA origami reveals the spatial tolerance of antibodies

12:00-12:20 **Jørgen Kjems —** Aarhus University, Denmark
APTA-SHAPE technology – an unbiased identification of disease biomarkers in biofluids

12:20-12:40 **Michael Mertig —** Technical University of Dresden, Germany
DNA origami-based nanostructures in stable motion

12:40-14:30 *Lunch (at your own cost)*

-- **Session 7. Chair: Hendrik Dietz** --

14:30-15:00 **Francesco Ricci —** University of Rome Tor Vergata, Italy
DNA-based nanodevices controlled by purely entropic domains

15:00-15:30 **Stefan Howorka —** University College London, UK
Crossing boundaries with DNA: Sequencing and biosensing with nanopores

15:30-15:50 **Caroline Rossi-Gendron —** Ecole Normale Supérieure, France
Isothermal formation of DNA origamis at room temperature in a saline buffer going through multiple folding pathway

15:50-16:10 **Ralf Strasser —** Dynamic Biosensors GmbH, Germany
Preparation of well-defined protein-DNA conjugates

16:10-16:20 ***Group photo***

16:20-18:00 **Poster session 2**, discussions, *refreshments*

19:00- ***Conference dinner***, *poster prizes*
"Restaurant Kaarre", Kaivokatu 3, Helsinki

Wednesday 29.05.

-- **Session 8. Chair: Friedrich Simmel** --

09:00-09:30 **Barbara Saccà** — University Duisburg-Essen, Germany
DNA origami tools to explore biological processes

09:30-10:00 **Ebbe Andersen —** Aarhus University, Denmark
Towards RNA origami devices in cells

10:00-10:20 **Matteo Castronovo —** University of Leeds, UK
DNA origami-protein interactions and steric hindrance control

10:20-10:40 **Peter Unrau —** Simon Fraser University, Canada
Accurate reporting of relative orientations using FRET and rigid fluorogenic RNA aptamers

10:40-11:00 **Ivan Barisic —** AIT Austrian Institute of Technology, Austria
An approach towards catalytic DNA nanostructures

11:00-11:30 *Coffee break*

-- **Session 9. Chair: Barbara Saccà** --

11:30-12:00 **Friedrich Simmel** — Technical University of Munich, Germany
Using strand displacement in RNA-based gene circuits

12:00-12:20 **Si-Ping Han —** City of Hope and California Institute of Technology, USA
Development and optimization of strand displacement based conditional small interfering RNAs for operation inside mammalian cells

12:20-12:40 **Leo Chou —** University of Toronto, Canada
A composable cell-free gene regulatory architecture using nucleic acid transcription factors and semi-synthetic RNA polymerase

12:40-13:00 **Organisation and programme committee** — *Closing remarks*

13:00 *Lunch (at your own cost)*