

DUTCH BIOPHYSICS 2015

PROGRAMME MONDAY 28 SEPTEMBER

09.30 – 10.30 ARRIVAL / REGISTRATION / COFFEE & TEA ROOM **KEMPENZAAL**

10.35 – 10.45 OPENING ROOM **BRABANTZAAL**

10.45 – 11.15 I.1 **R04 BAR-ZIV** (Weizmann Institute of Science)
Programmable On-Chip DNA compartments as 'Artificial Cells' ROOM **BRABANTZAAL**

11.20 – 11.50 I.2 **MARTIN ZANNI** (University of Wisconsin-Madison)
An amyloid intermediate is discovered with 2D IR spectroscopy that helps explain fiber formation and can be targeted by a de novo inhibitor ROOM **BRABANTZAAL**

11.55 – 12.25 I.3 **DORIS HEINRICH** (Universiteit Leiden)
Controlling cellular dynamics by external cues ROOM **BRABANTZAAL**

12.30 – 13.25 LUNCH ROOM **KEMPENZAAL**

ROOM	BRABANTZAAL	BARONIEZAAL	GENDER FOYER	DIEZEZAAL	BENELUX FOYER
SESSION	SINGLE MOLECULE EXPERIMENTS I	NEW TECHNOLOGIES	SYNTHETIC CELLS	SUPERRESOLUTION MICROSCOPY	BIOMEDICAL ENGINEERING I

13.30 – 13.50	O.01 N. VTYURINA (TUD) Chromosome reorganization by the highly cooperative Dps protein	O.04 S. HA (TUD) Fabrication and surface functionalization of highly birefringent titanium dioxide nanocylinders for biomolecule studies in an optical torque wrench	O.07 Y. CASPI (TUD) Deciphering the discrepancy between in vitro versus in vivo behavior of Min proteins using enclosed microfluidic chambers	O.10 B. CLOIN (UU) 3D super-resolution imaging using adaptive optics	O.13 Winner Thesis award of the Dutch Society for Biophysics and Biomedical Engineering 2015
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13.50 – 14.10	O.02 J. CABANAS-DANES (VU) The binding dynamics of T7 single-stranded DNA-binding protein to single-stranded DNA are essential for its redistribution during DNA replication	O.05 E.C. PLOETZ (RUG) PIFE-ALEX: fluorescence observation of binding and associated conformational changes in unlabeled proteins	O.08 P. VAN NIES (TUD) Virus-inspired DNA replication in a minimal gene expression system for the construction of an artificial cell	O.11 K. VAN DEN DRIES (RIMLS) From nanoscale to mesoscale: integrating advanced microscopy techniques to reveal the ultrastructure and coordinated dynamics of mechanosensory podosomes	O.14 F. FEROLDI (VU) High-resolution imaging of the bronchi with optical coherence tomography for lung cancer diagnosis
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14.10 – 14.30	O.03 F.A. GUTIERREZ (TU/e) Magnetic torque tweezers quantify Ca2+ induced changes of cardiac Troponin	O.06 C. LABORDE (UT) Real-time imaging of microparticles and living cells with CMOS nanocapacitor arrays	O.09 W.E. VAN RIEL (UU) In vitro reconstitution of microtubule growth inhibition by kinesins KIF21A and KIF21B and their regulation by autoinhibition	O.12 T.A. HARTJES (EMC) Super-resolution imaging of exosomal transfer in prostate cancer	O.15 F.W. CORNELISSEN (UMCG) Cortico-cortical population receptive field maps derived from resting-state data
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14.30 – 14.55 COFFEE & TEA ROOM **KEMPENZAAL**

ROOM	BRABANTZAAL	BARONIEZAAL	GENDER FOYER	DIEZEZAAL	BENELUX FOYER
SESSION	MEMBRANE BIOPHYSICS I	CYTOSKELETAL & MATRIX PROTEINS	CELLULAR BIOPHYSICS	MICROSCOPY DEVELOPMENTS	BIOMEDICAL ENGINEERING II

15.00 – 15.20	O.16 J. YANG (LEI) Peptide induced membrane fusion between liposomes and live cells	O.19 B.E. VOS (AMOLF) Remodeling of fibrin networks by cyclic mechanical deformation	O.22 R.A. VAN DER VALK (LEI) Modulation of E. coli genome organization in response to environmental cues	O.25 D.E. BOONZAJER FLAES (VU) Single-shot quantitative lensless phase contrast microscopy using IR illumination on an RGB detector	O.28 F. CAMPBELL (LEI) (Spatio)temporal control of membrane fusion in model systems and beyond
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15.20 – 15.40	O.17 W. POMP (LEI) Single molecule microscopy in a giant liposome based system reveals dynamics in the brain at a molecular level	O.20 V.S. KUSHWAHA (VU) How kinesin motor proteins deal with traffic jams	O.23 L. DIRIX (KU Leuven) A single-virus study of HIV-1 nuclear import	O.26 G.M.R. DE LUCA (UvA) Re-scan confocal microscopy: scanning twice for extra resolution and extra sensitivity	O.29 S.R. DESHPANDE (RU) Smart tunable DNA crosslinked PIC hydrogel
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15.40 – 16.00	O.18 A. KOCER (UMCG) Following the global and local conformational changes of ion channels in action	O.21 S. VAN BEUNINGEN (UU) Uniform microtubule plus-end out orientation formed by TRIM46 is required for neuronal polarity and axon specification	O.24 J.T. KEVENAAR (UU) Goldberg-Shprintzen syndrome protein KBP is a specific kinesin inhibitor that controls cargo transport and microtubule dynamics during neuronal development	O.27 V.I.P. KEIZER (LEI) Particle image correlation spectroscopy using 3D correction reveals DNA-binding dynamics of the glucocorticoid receptor	O.30 J. LUMENS (UMC Maastricht) Fast simulation of cardiovascular system dynamics on tissue, organ and system level: applications of the CircAdapt model
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16.00 – 18.00 POSTERSESSION 1 (ODD NUMBERS) ROOM **KEMPENZAAL**

18.00 – 19.30 DINNER ROOM **BENELUXHAL**

19.30 – 19.50 COFFEE & TEA ROOM **KEMPENZAAL**

19.50 – 20.00 THESIS AWARD CEREMONY OF THE DUTCH SOCIETY FOR BIOPHYSICS AND BIOMEDICAL ENGINEERING ROOM **BRABANTZAAL**

20.00 – 21.00 I.4 **WILLIAM E. MOERNER** (Stanford University)
The Story of Single Molecules, from Early Spectroscopy in Solids, to Super-Resolution Nanoscopy in Cells and Beyond ROOM **BRABANTZAAL**

PROGRAMME TUESDAY 29 SEPTEMBER

09.00 – 09.30 I.5 **TAKANARI INOUE** (Johns Hopkins Medicine)
Total synthesis of cell functions: deconstructing and constructing chemotaxis and phagocytosis ROOM **BRABANTZAAL**

09.35 – 10.05 I.6 **ILJA VOETS** (Eindhoven University of Technology)
Control over cool crystals with ice-binding proteins ROOM **BRABANTZAAL**

10.10 – 10.25 COFFEE & TEA ROOM **KEMPENZAAL**

ROOM	BRABANTZAAL	BARONIEZAAL	GENDER FOYER	DIEZEZAAL
SESSION	SINGLE MOLECULE EXPERIMENTS II	MODELLING	SPECTROSCOPY	MICROSCOPY OF CELLS

10.30 – 10.50	O.31 T.L. LENSTRA (NKI) Single-molecule imaging of transcriptional regulation by noncoding RNA in living yeast cells	O.34 M. VAHABI (VU) Nonlinear elasticity of extracellular networks: softening under compression and stiffening under extension	O.37 M. GWIZDALA (VU) Individual phycobilisomes reveal a new energy dissipation mechanism activated in response to high light intensities	O.40 J. VAN UNEN (UvA) Plasma membrane restricted RhoGEF activity is sufficient for RhoA-mediated actin polymerization
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10.50 – 11.10	O.32 H.G.T.M. VAN GINKEL (TUD) Toward single-molecule protein sequencing	O.35 C.H.M.P. VRUSCH (TU/e) Cross-helical order in curved collagen networks	O.38 H. MEUZELAAR (UvA) Guanidinium induces denaturation by breaking salt bridges	O.41 I. NOORDSTRA (UU) Microtubule growth controls cell protrusion and invasion in 3D
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11.10 – 11.30	O.33 A. BIESEMANS (KU Leuven) Engineering biological nanopores as nanoscopic anti-Brownian traps for single-protein studies	O.36 J. PAIJMANS (AMOLF) Discrete gene replication events drive coupling between the cell cycle and circadian clocks	O.39 V. FRIEBE (VU) Plasmonic enhancement of photocurrents and stability of bio-hybrid nanostructured photoprotein silver electrodes	O.42 H. MIZUNO (KU Leuven) Feedback monomerization of receptor as a negative regulator of EGF signaling revealed by raster image correlation microscopy (RICS)
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11.30 – 13.25 POSTERSESSION 2 (EVEN NUMBERS) AND LUNCH ROOM **KEMPENZAAL**

NVVM PROGRAMME:

11.45 – 12.15 - NVVM GENERAL ASSEMBLY ROOM **DIEZEZAAL**

12.30 – 13.00 - NL-BIOMAGING ADVANCED MICROSCOPY MEETING ROOM **DIEZEZAAL**

ROOM	BRABANTZAAL	BARONIEZAAL	GENDER FOYER	DIEZEZAAL
SESSION	MEMBRANE BIOPHYSICS II	SYSTEMS BIOPHYSICS	PROTEIN BIOPHYSICS	ELECTRON MICROSCOPY

13.30 – 13.50	O.43 A. VARADARAJAN (VU) Diffusion of transmembrane proteins in the crowded and heterogeneous inner membrane of Escherichia coli	O.46 H. QOUK (TUD) Reconstructing multicellular behaviours step-by-step with engineered yeast cells	O.49 A. SIDHU (UT) Understanding structural polymorphism in a-synuclein fibrils: aggregation and ageing	O.52 D.A. SEMCHONOK (RUG) Cryo-EM structure of tetrameric Photosystem I from Chroococcidiopsis sp TS-821
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13.50 – 14.10	O.44 A. CAMBI (RUMC) N-glycan-mediated interactions regulate membrane pathogen receptor function affecting lateral mobility patterns, binding strength and endocytic capacity	O.47 N. GRITTI (AMOLF) Quantitative time-lapse microscopy of C. elegans development	O.50 A.R.D. VOET (RIKEN) RE3volutionary computational design of symmetric proteins	O.53 P. DE BOER (UMCG) Identification and quantitation of targets in large-scale electron microscopy with CLEM
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14.10 – 14.30	O.45 M.A. ABOLGHASSEMI FAKHREE (UT) Cytosolic puncta of alpha-synuclein: aggregation number and membrane co-localization	O.48 S. SEMRAU (LEI) Early lineage bifurcation during differentiation of embryonic stem cells revealed by single-cell transcriptomics	O.51 R.W.L. VAN VLIEMBERGEN (TU/e) Measuring molecular distances in a protein detection assay	O.54 F.J. TIMMERMANS (UT) Integrated correlative optical Raman micro-spectroscopy in a focused ion beam scanning electron microscope
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14.35 – 15.05 I.7 **SJORS SCHERES** (MRC Laboratory of Molecular Biology)
How cryo-EM is revolutionizing structural biology ROOM **BRABANTZAAL**

15.10 – 15.40 I.8 **STAN BROUNS** (Wageningen UR)
How Bacteria do not forget their enemies ROOM **BRABANTZAAL**

15.45 – 15.55 CLOSING REMARKS & POSTER PRIZE AWARD ROOM **BRABANTZAAL**