

qPCR-NGS-2013.net

18th – 22nd March 2013

Symposium & Exhibition & Workshops

Next Generation Thinking in Molecular Diagnostics

TUM, Freising-Weihenstephan, Germany

qPCR & NGS 2013 Event Agenda

**6th international qPCR & NGS Symposium
Industrial Exhibition & Application Workshops**

Next Generation Thinking in Molecular Diagnostics

Scientific coordination: Michael W. Pfaffl
Physiology, Freising – Weihenstephan
Weihenstephaner Berg 3
Technical University Munich (TUM)
85354 Freising
Germany

www.qPCR-NGS-2013.net

qPCR & NGS 2013 Event Agenda Overview

online agenda HTML => <http://agendaHTML.qPCR-NGS-2013.net>

online agenda PDF => <http://agendaPDF.qPCR-NGS-2013.net>

	Lecture hall no. 14 (HS 14)	Lecture hall no. 15 (HS 15)	Foyer & Seminar rooms S1 & S2
Sunday 17 th March			12:00 – 18:00 Industrial Exhibition Built up
			15:00 – 18:00 Arrival & Registration
Monday 18 th March	10:00 – 10:15 Opening of the Symposium Welcome by Michael W. Pfaffl		8:00 – 10:00 Arrival & Registration
	10:15 – 13:00 Molecular Diagnostics 1		8:00 – 10:00 Poster Setup in Foyer lower level
	13:00 – 14:00 Lunch		10:00 – 21:00 Industrial Exhibition in Foyer
	14:00 – 18:00 Next Generation Sequencing 1		
	18:00 – 22:00 Reception in the Industrial Exhibition		18:00 – 22:00 Evening Poster Session in Foyer lower level
Tuesday 19 th March	8:30 – 12:30 Digital PCR	8:30 – 12:30 Next Generation Sequencing 2	8:30 – 14:00 Industrial Exhibition in Foyer
	12:30 – 14:00 Lunch		12:30 – 14:00 Lunch Poster Session in Foyer lower level
	13:00 – 14:00 Life Technologies: digital PCR lunch time seminar	13:00 – 14:00 Biogazelle: qbasePLUS data analysis lunch time seminar	
	14:00 – 18:30 Transcriptional Biomarkers	14:00 – 18:30 High Throughput Analysis & qPCR optimization	14:00 – 18:00 Industrial Exhibition in Foyer
19:30 – 24:00 Symposium Gala Dinner Location: Bräustüberl Weihenstephan, Freising International - Bavarian - European Buffet, Music & Dancing & Cocktails			
Wednesday 20 th March	8:30 – 13:00 MIQE & QC in qPCR	8:30 – 13:00 Non-coding RNAs	8:30 – 14:00 Industrial Exhibition in Foyer
	12:30 – 14:00 Lunch		12:30 – 14:00 Lunch Poster Session in Foyer lower level
	13:00 – 14:00 Genomatix: NGS data analysis lunch time seminar	13:00 – 14:00 MultiD: GenEx qPCP data analysis lunch time seminar	
	14:00 – 14:15 Best Academic Poster Award		14:00 – 16:30 Poster Take Down in Foyer lower level
	14:15 – 16:45 Single-Cell Diagnostics	14:15 – 16:45 Molecular Diagnostics 2	
16:45 – 17:00 Closing of the Symposium Michael W. Pfaffl			
Thursday 21 st March	Seminar rooms S1 - S3 & Computer seminar rooms PU26 and PU26A 9:00 - 17:00		
Friday 22 nd March	qPCR & NGS Application Workshops: <ul style="list-style-type: none"> • Basic real-time qPCR Application Workshop (2-days) hosted by TATAA Biocenter • Experimental design and statistical data analysis for qPCR (2-days) hosted by TATAA Biocenter • MIQE: Quality control of qPCR in Molecular diagnostics (2-days) hosted by TATAA Biocenter • digital PCR (2-days) hosted by Bio-Rad • NGS data analysis workshop (2-days) hosted by Genomatix 		

Agenda - qPCR & NGS 2013

Sunday 17th March 2013

- 12:00 – 18:00 Built-up for Industrial Exhibition
 15:00 – 18:00 Arrival & Registration
 Poster Setup

Monday 18th March 2013

Welcome & Opening of the Symposium **Lecture hall HS 14**

- 08:00 – 10:00 Built-up for Industrial Exhibition
 Arrival & Registration
 09:00 – 10:00 **Welcome Coffee & Tea**
 10:00 **Welcome & Opening of the Symposium**
 Michael W. Pfaffl
 Scientific coordinator of the qPCR & NGS Event

Molecular diagnostics session 1

Time: Monday, 18/03/2013: 10:15am – 13:15pm
Location: Lecture hall 14
Session Chair: Michael W Pfaffl, Mikael Kubista

- 10:15 **Near-Oncology Patient (and Near-Oncology Health Care Provider) Molecular Testing on the GeneXpert**
Russell Higuchi
 Cepheid Fellow R&D, Cepheid, Sunnyvale, CA, USA
- 10:45 **High throughput mRNA and protein expression profiling by qPCR**
Mikael Kubista^{1,2}, **Robert Sjöback**¹, **Jens Björkman**¹, **David Svec**¹, **Anders Stahlberg**^{1,4}, **Vendula Rusnakova**², **Miroslava Anderova**³
¹TATAA Biocenter, Sweden; ²Institute of Biotechnology, Czech Academy of Sciences; ³Institute of Experimental Medicine, Czech Academy of Sciences; ⁴Cancer center, University of Gothenburg
- 11:15 **Sequence, Shape, Function: Synthetic Biology by DNA**
Hendrik Dietz
 Technische Universität München, Germany
- 11:45 **The New LightCycler® 96 System: It Is So Easy To Be A Lab Hero**
Ralf Peter Mauritz
 Roche Diagnostics GmbH, Germany
- 12:15 **A Molecular Assay With Laser-heated Nanoparticles**
Lars Ullrich
 GNA Biosolutions GmbH, Germany
- 12:45 **Going to the limits of Multiplex Real-time PCR**
Olfert Landt¹, **Ulrich Lass**¹, **Matthias Ballhause**¹, **Johannes Kusters**², **Pranav Patel**³
¹Tib Molbiol Syntheselabor GmbH, Berlin, Germany; ²Medical Microbiology, University Medical Center Utrecht, The Netherlands; ³Robert-Koch-Institut, Berlin, Germany

13:00 – 14:00 **Lunch in the student cafeteria**

NGS 1 - Next Generation Sequencing session 1

Time: Monday, 18/03/2013: 2:00pm - 6:00pm
Location: Lecture hall 14
Session Chair: Vladimir Benes, Alexander Schramm

- 14:00 **RNA-Seq: opportunities, limitations and applications in cancer research**
Alexander Schramm¹, **Marcel Martin**², **Johannes H. Schulte**¹, **Johannes Köster**², **Pieter Mestdagh**³, **Jo Vandesompele**³, **Sven Rahmann**^{2,4}
¹University Hospital Essen, Pediatric Oncology, Germany; ²TU Dortmund, Dept. of Computer Science, LS11, Germany; ³Center for Medical Genetics Ghent, Belgium; ⁴University Hospital Essen, Genome Informatics, Germany
- 14:30 **Advancements in Ion Torrent RNA Sequencing: More and Less**
Richard Fekete, **Kelli Bramlett**, **Yongming Sun**, **Jeff Schageman**, **Luming Qu**, **Ross Hershorn**, **Charmaine San Jose Hinahon**, **Brian Sanderson**, **Angie Cheng**, **Bob Setterquist**
 Life Technologies, United States of America
- 15:00 **The Potential for Next Generation Sequencing in Forensics**
Nicola Oldroyd
 R&D, Illumina, United Kingdom
- 15:30 – 16:00 **Coffee break & Networking**
- 16:00 **Advances in NGS library preparation – the devil is in the detail**
Bianka Baying, **Bettina Haase**, **Jonathon Blake**, **Dinko Pavlinic**, **Jürgen Zimmermann**, **Vladimir Benes**
 EMBL-GeneCore, Meyerhofstr. 1, Heidelberg, Germany
- 16:30 **The NeXT generation Variant annotation Tracker: a one stop cloud solution to exome sequencing data analysis**
Bram De Wilde, **Tom Sante**, **Jasper Anckaert**, **Jan Hellemans**, **Frank Speleman**, **Björn Menten**, **Jo Vandesompele**
 Center for Medical Genetics, Ghent University, De Pintelaan, Gent, Belgium
- 17:00 **Transforming NGS for clinical research and diagnostics**
Erik Söderbäck
 Market Development Manager, Qiagen, Germany
- 17:30 **New developments in NGS target enrichment**
Götz Frommer
 Sales Manager Genomics Germany, Agilent Technologies Diagnostics and Genomics Group, Germany
- 18:00 – 22:00 **Evening Poster Session**
- 18:00 – 22:00 **Networking Reception in Industrial Exhibition**

Tuesday 19th March 2013

Digital PCR

Time: Tuesday, 19/03/2013: 8:30am - 12:30pm
Location: Lecture hall 14
Session Chair: Jim Francis Huggett, Jo Vandesompele

- 8:30 **An introduction to digital PCR**
Jim Francis Huggett
 LGC, United Kingdom
- 9:00 **Performance Of A Next Generation Fixed Microwell Platform For Digital PCR**
David N. Keys
 Life Technologies, United States of America
- 9:30 **Quantitative Detection of Cancer Biomarkers in Picoliter Droplets.**
Valerie Taly¹, Deniz Pekin^{1,3}, Corinne Normand¹, Zakaria El Harrak¹, Theyv Hor¹, Li Xinyu², Ivan Atochin², Steve Kotsopoulos², Delphine Le Corre¹, Leonor Benhaim¹, J. Brian Hutchison², Darren R. Link², Helene Blons¹, Philippe Nizard¹, Pierre Laurent-Puig¹
¹Université Paris Descartes; INSERM UMR-S775; Centre Universitaire des Saints-Pères, 45 rue des Saints-Pères, 75270 Paris Cedex 06, France; ²RainDance Technologies, Lexington, MA 02421, Massachusetts, USA; ³Université de Strasbourg; CNRS UMR 7006, 8 allée Gaspard Monge, BP 70028, F-67083 Strasbourg Cedex, France
- 10:00 – 10:30 **Coffee break & Networking**
- 10:30 **Enhanced Resolution of Copy Number Variants in Domestic Animal Species**
Jennifer Meadows
 Uppsala University, Sweden
- 11:00 **RainDrop Digital PCR: Single Molecule Counting With A Droplet Digital PCR Platform**
Adam Corner
 RainDance Technologies, United States of America
- 11:30 **Use Of Digital PCR For Improved Copy Number Quantification**
Ariane De Ganck¹, Annelies Dheedene², Björn Menten², Jan Hellemans¹, Jo Vandesompele¹
¹Biogazelle, Zwijnaarde, Belgium; ²Center for Medical Genetics, Ghent University, Ghent, Belgium
- 12:00 **Droplet Digital PCR For Free Fetal DNA Analysis: Statistical Modelling And Evaluation For Non-Invasive Prenatal Diagnosis Of An X-linked Deletion.**
Emmanuel Debrand¹, Michael Samuels², Sarah Clinton¹, Stephanie Allen¹
¹Birmingham Women's Hospital, United Kingdom; ²RainDance Technologies
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- 12:30 – 14:00 **Lunch in the student cafeteria**
- 12:30 – 14:00 **Lunch Poster Session**
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Life Technologies: digital PCR lunch time seminar

Time: Tuesday, 19/03/2013: 1:00pm - 2:00pm
Location: Lecture hall 14

- 13:00 **Digital PCR Workshop with the QuantStudio 3D**
David Keys
 Life Technologies, United States of America

Transcriptional Biomarkers

Time: Tuesday, 19/03/2013: 2:00pm - 6:30pm
Location: Lecture hall 14
Session Chair: Stephen Bustin, Massimo Bionaz

- 14:00 **Systems Physiology in Cattle: Transcriptome Dynamics and Beyond**
Massimo Bionaz¹, Juan J Looz²
¹Oregon State University, United States of America; ²University of Illinois at Urbana-Champaign
- 14:30 **An organotypic culture model for the study of colorectal cancer**
Stephen Bustin
 Postgraduate Medical Institute, Anglia Ruskin University, Chelmsford, UK
- 15:00 **Ion AmpliSeq™ Technology: A Tool For Biomarker Discovery And Beyond**
David Ruff
 Life Technologies, United States of America
- 15:30 **A Kinetic PCR Model Function and its Application on the LightCycler® 96**
Rolf Knobel
 Roche Diagnostics International, Switzerland
- 16:00 – 16:30 **Coffee break & Networking**
- 16:30 **Transcriptional Profiling To Address Molecular Determinants Of Endometrial Receptivity – Lessons From Studies In Livestock Species**
Susanne E. Ulbrich¹, Anna E. Groebner¹, Stefan Bauersachs²
¹Physiology Weihenstephan, Technische Universität München, Freising, Germany; ²Laboratory for Functional Genome Analysis (LAFUGA), Gene Center, LMU Munich, Munich, Germany
- 17:00 **Candidate Blood Transcriptomic Markers of Early Onset Major Depression Derived from Etiological Animal Models of Depression**
Eva E. Rede¹, William Gardner^{2,3}, Andrea Luis², Brandon Strange³, Kathleen Pajer²
¹Northwestern University Feinberg School of Medicine, United States of America; ²Department of Psychiatry, Dalhousie University Faculty of Medicine, Canada; ³Department of Pediatrics, Ohio State University College of Medicine, Columbus, OH, USA
- 17:30 **Novel Solution Enables Automation of Data Analysis and QC of Real-Time PCR Diagnostics**
Aron Cohen, Ze'ev Russak, Martine Bernstein
 Azure PCR, United Kingdom

18:00 **A workflow for the isolation and molecular characterization of Individual Circulating Tumor Cells (CTCs) to enable cell heterogeneity analysis and personalized therapy**
Gianni Medoro, Francesca Fontana, Alex Calanca, Chiara Bolognesi, Stefano Gianni, Maximilian Sergio, Giulia Bregola, Anna Doffini, Giulio Signorini, Antonino Catania, Manuela Banzi, Elena Peruzzi, Giuseppe Giorgini, Nicolò Manaresi
 Silicon Biosystems, Italy

19:30 – 24:00 **Symposium Gala Dinner**

Location: Bräustüberl Weihenstephan, Freising
 International – Bavarian - European- Buffet
 Music & Dancing & Cocktails



NGS 2 - Next Generation Sequencing session 2

Time: Tuesday, 19/03/2013: 8:30am - 12:30pm
Location: Lecture hall 15
Session Chair: Robert P. Loewe, Michael W Pfaffl

8:30 **The Road to Genomic Medicine is Paved with Data and Information**
John Quackenbush
 Dana-Farber Cancer Institute, United States of America

9:00 **Sequencing the “Unsequenceable” Single-Molecule, Real-Time (SMRT™) DNA Sequencing: Technology Overview and Recent Applications**
Ralph Vogelsang
 Pacific Biosciences, United States of America

9:30 **Droplet Digital PCR and Next Gen Sequencing: Digital Biology in High Definition**
Svilen Tzonev
 Bio-Rad, United States of America

10:00 **The WaferGen's SmartChip System: “Cycling in the world of high- throughput qPCR and target enrichment”**
Stefaan Derveaux
 WaferGen Biosystems Europe S.à r.l., Luxembourg

10:30 – 11:00 **Coffee break & Networking**

11:00 **The distribution of small RNAs in milk and their functional relation to mammary gland physiology**
Michael W Pfaffl¹, Benedikt Kirchner¹, Alexander Hahn², Vladimir Benes³
¹Physiology Weihenstephan, Technical University Munich, Germany; ²Genomatix Software GmbH, Munich, Germany; ³EMBL Genomics Core Facility (GeneCore), Heidelberg, Germany

11:30 **Engineered Enzymes and Optimized Workflows for Next Generation Sequencing**
Eric van der Walt, Maryke Appel, Gavin Rush, John Foskett, Paul McEwan
 Kapa Biosystems, Woburn, MA, USA

12:00 **Comprehensive Biomarker Approach By Utilizing qPCR, NGS, in situ PCR: A Tool Box To Decipher Cancer**
Robert P. Loewe
 GeneWake GmbH, Germany

12:30 **Less Than 80% Consensus On The Same Data - Comparative Variant Calling Of Pipelines And Replicates**
Lu Zhang¹, Milena Kovacevic², Milos Popovic¹, Sebastian Wernicke¹
¹Seven Bridges Genomics, Cambridge, MA, USA; ²Seven Bridges Genomics, Belgrade, Serbia

12:30 – 14:00 **Lunch in the student cafeteria**

12:30 – 14:00 **Lunch Poster Session**

Biogazelle qbasePLUS: data analysis lunch time seminar

Time: Tuesday, 19/03/2013: 1:00pm - 2:00pm
Location: Lecture hall 15

13:00 **qbasePLUS speeds up the analysis of your qPCR data and improves the accuracy of your results**
Barbara D'haene
 Biogazelle, Ghent, Belgium

High Throughput Analysis & qPCR Optimisation

Time: Tuesday, 19/03/2013: 2:00pm - 6:30pm
Location: Lecture hall 15
Session Chair: Jan Hellemans, Patricia de Winter

14:00 **Insights from the first RT-qPCR based human transcriptome profiling based on wet lab validated assays.**
Jan Hellemans, Pieter Mestdagh, Barbara D'haene, Ariane Deganck, Jo Vandesompele
 Biogazelle, Belgium

14:30 **Overcoming PCR inhibition: Next Generation qPCR and RT-qPCR ToughMix® Reagents for High Sensitivity Quantification and Accurate Genotyping from Crude Samples.**
David Mark Schuster
 Quanta BioSciences, United States of America

15:00 **Rapid qPCR using a novel Taq mutant**
Patricia de Winter¹, David Sugden²
¹UCL, United Kingdom; ²KCL, United Kingdom

15:30 **A Nū Solution for Real-Time Quantitative PCR**
Gothami Padmabandu
 Illumina Inc, United States of America

16:00 – 16:30 **Coffee break & Networking**

16:30 **Twisted Intercalating Nucleic Acid (TINA) – a novel group of molecules with improved performance in PCR and qPCR applications**
Rainer Schubert

Eurofins Medigenomix, Germany

17:00 **Automated PCR Setup for High Throughput Analysis Enabled by the Labcyte Echo® 525 Liquid Handler and Access™ Workstation**

Celeste Glazer, Carl Jarman

Labcyte, United States of America

17:30 **Factors influencing the transfer of multiplex assays between qPCR instruments**

Ossian Saris

Thermo Fisher Scientific, Vantaa, Finland

18:00 **ValidPrime questions the need for DNase treatment in RT-qPCR experiments**

Henrik Laurell¹, Jason Iacovoni¹, Jean-José Maoret¹, Jean-François Arnal¹, Mikael Kubista²

¹Inserm / Université Paul Sabatier UMR1048, Institut des Maladies Métaboliques et Cardiovasculaires (I2MC), BP84225, 31432 Toulouse cedex 4, France; ²TATAA Biocenter AB, Göteborg, Sweden

19:30 – 24:00 **Symposium Gala Dinner**

Location: Bräustüberl Weihenstephan, Freising International – Bavarian - European- Buffet Music & Dancing & Cocktails



Wednesday 20th March 2013

MIQE & QC strategies in qPCR

Time: Wednesday, 20/03/2013: 8:30am - 12:30pm
Location: Lecture hall 14
Session Chair: Gregory L Shipley, Afif Michel Abdel Nour

8:30 **MIQE 2009-2013 - its impact four years after publication**

Stephen Bustin

Postgraduate Medical Institute, Anglia Ruskin University, Chelmsford, UK;

9:00 **Quality control in Quantitative PCR**

Kristina Lind, Jennifer Pettersson, Robert Sjöback, Mikael Kubista

TATAA Biocenter, Sweden

9:30 **Applying the MIQE guidelines to clinical and pre-clinical trials**

Maxime Doms², Abalo Chango², Essam Azhar¹, Steve Harakeh¹, Elie Barbour³, Flore Depeint², Afif Michel Abdel Nour¹

¹KAU/KFRMC/ Special Infectious Agent unit Biosafety Level 3, Saudi Arabia; ²Institut Polytechnique LaSalle Beauvais, Beauvais, France; ³American University of Beirut, Beirut, Lebanon

10:00 **Applying the MIQE Guidelines to Screens Utilizing qPCR Focused Arrays**

Gregory L Shipley

Shipley Consulting, LLC, United States of America;

10:30 – 11:00 **Coffee break & Networking**

11:00 **Management and Automation of qPCR Diagnostic Workflows**

Matjaz Hren

BioSistemika, Slovenia

11:30 **The use and usefulness of amplification curve analysis in quantitative PCR.**

Jan M Ruijter¹, Michael W Pfaffli², Sheng Zhao³, Andrej N Spiess⁴, Gregory Bogg⁵, Jochen Blom⁶, Robert G Rutledge⁷, Davide Sisti⁸, Antoon Lievens⁹, Katleen De Preter¹⁰, Stefaan Derveaux¹¹, Jan Hellemans¹², Jo Vandesompele¹⁰

¹Academic Medical Centre, Amsterdam, NL; ²Technical University of Munich, Weihenstephan, D; ³University of California, Berkeley, USA; ⁴University Hospital Hamburg-Eppendorf, D; ⁵eDNA Software Inc., Ann Arbor, USA; ⁶Center for Biotechnology, Bielefeld University, D; ⁷Laurentian Forestry Centre, Quebec, CA; ⁸University of Urbino, Urbino, Italy; ⁹Department of Applied Mathematics and Computer Science, Ghent, BE; ¹⁰Center for Medical Genetics, Ghent, Belgium; ¹¹Wafergen, Fremont, CA, USA; ¹²Biogazelle, Zwijnaarde, BE

12:00 **Four Years of RDML qPCR Data Format – Achievements and Opportunities**

Andreas Untergasser¹, Steve Lefever², Jan M Ruijter³, Jan Hellemans⁴, Jo Vandesompele^{2,4}

¹University Heidelberg, Heidelberg, Germany; ²Ghent University, Ghent, Belgium; ³Academic Medical Center, Amsterdam, The Netherlands; ⁴Biogazelle, Zwijnaarde, Belgium

12:30 **The Impact of MIQE Guidelines in the Plant Science Community.**

Ellen De Keyser, Laurence Desmet, Jan De Riek
ILVO, Belgium

12:30 – 14:00 **Lunch in the student cafeteria**

12:30 – 14:00 **Lunch Poster Session**

Genomatix: NGS data analysis lunch time seminar

Time: Wednesday, 20/03/2013: 1:00pm - 2:00pm
Location: Lecture hall 14

13:00 **Start making sense - NGS data analysis with Genomatix**

Christian Zinser

Genomatix Software GmbH, Munich, Germany

Best Academic Poster Award

Time: Wednesday, 20/03/2013: 2:00pm - 2:15pm
Location: Lecture hall 14
Session Chair: Michael Pfaffl, Klemen Zupancic

14:00 Best Academic Poster Award for the best academic poster at the qPCR & NGS Poster Session

Single-Cell Diagnostics

Time: Wednesday, 20/03/2013: 2:15pm - 4:45pm
Location: Lecture hall 14
Session Chair: Kenneth James Livak, Anders Ståhlberg

14:15 **A Microfluidic Device that Isolates Single Cells then Processes RNA for qPCR or Sequencing**

Kenneth James Livak

Fluidigm Corporation, United States of America

14:45 **Genome Analysis Of Individual Cells**

Christian Korfhage

QIAGEN GmbH, Germany

15:15 **Quantitative PCR Analysis of DNA, RNAs, and Proteins in the Same Single Cell**

Anders Ståhlberg

University of Gothenburg, Sweden

15:45 **Visualizing gene expression at the single cell, single chromosome, single RNA, and single base level**

Marshall Levesque, Arjun Raj

Biosearch Technologies Inc., United States of America

16:15 **Single-Cell Digital Gene Expression On Up To 800 Unique Transcripts Using Optically-Barcoded Single-Nucleic Acid Counting: Comparison With Microfluidic qPCR And RNA-seq (Whole Transcriptome)**

Michael Rhodes

Nanostring Technologies, United Kingdom

Non-coding RNAs microRNA, siRNA and long non-coding RNAs

Time: Wednesday, 20/03/2013: 8:30am – 1:00pm
Location: Lecture hall 15
Session Chair: Pieter Mestdagh, Mirco Castoldi

8:30 **Evaluation of quantitative microRNA gene expression platforms in the microRNA Quality Control (miRQC) study**

Pieter Mestdagh¹, Toumy Gettouche², Thomas Peters³, Nicole Hartmann³, Jo Vandesompele¹

¹Ghent University / Biogazelle, Belgium; ²University of Miami, Florida, USA; ³Novartis Institutes for BioMedical Research, Novartis, Basel, Switzerland

9:00 **Non-Coding RNAs in Tumor and Inflammatory Diseases.**

Jörg Hackermüller^{1,2,3}, The Ribolution Project Consortium⁴

¹Young Investigators Group Bioinformatics and Transcriptomics, Helmholtz Centre for Environmental Research - UFZ, ²RNomics group, Fraunhofer IZI, ³Department of Computer Science, University of Leipzig, Germany

9:30 **An Optimized miRNA Profiling System for Limiting Samples**

Jonathan Michael Shaffer

QIAGEN, United States of America;

10:00 **Emerging role of blood circulating microRNA as non-invasive biomarker**

Mirco Castoldi

Universitätsklinikum Düsseldorf, Germany

10:30 – 11:00 **Coffee break & Networking**

11:00 **Generating Robust Results From qPCR Analysis Of MicroRNAs In Biofluids**

Ditte Andreassen, Thorarinn Blondal, Maria Wrang Theilum, Niels Tolstrup, Jörg Krummheur, Nana Jacobsen, Peter Mouritzen

Exiqon A/S, Denmark

11:30 **Integration of disparate sources of information to predict miRNA-mRNA interactions**

Ander Muniategui^{A1}, Ignacio Sanchez-Caballero^{A2}, Rubén Nogales-Cadenas², Carlos O. Sánchez-Sorzano², Alberto Pascual-Montano^{2,2}, Angel Rubio^{*1}

¹CEIT & TECNUN, University of Navarra, Spain;

²Funciotal Bioinformatics group, CNB-CSIC, Madrid, Spain

12:00 **How to Narrow Down the Complexity of Possible miRNA and mRNA Interactions in Cellular Differentiation?**

Swanhild U Meyer¹, Steffen Sass², Fabian J Theis², Michael W Pfaffl¹

¹Physiology Weihenstephan, ZIEL Research Center for Nutrition and Food Sciences; ²MIPS, Institute for Bioinformatics and System Biology, Helmholtz Center Munich, German Research Center for Environmental Health, Neuherberg, Germany

12:30 **High-throughput lncRNA expression profiling identifies candidate cancer lncRNAs**

Pieter Mestdagh¹, Steve Lefever¹, Kristina Althoff², Carina Leonelli¹, Jan Hellemans³, Marine Jean-Christophe⁴, Johannes Schulte², Jo Vandesompele¹

¹Center for Medical Genetics, Ghent University, Belgium;

²Department of Pediatric-Oncology, University Hospital Essen, Germany; ³Biogazelle, Ghent, Belgium; ⁴VIB Laboratory for Molecular Cancer Biology, Leuven, Belgium

12:30 – 14:00 **Lunch in the student cafeteria**

12:30 – 14:00 **Lunch Poster Session**

GENEX: qPCR data analysis lunch time seminar

Time: Wednesday, 20/03/2013: 1:00pm - 2:00pm
Location: Lecture hall 15

13:00 **GenEx - the ultimate tool for qPCR data analysis**

Mikael Kubista

MultiD, TATAA Biocenter, Sweden

Molecular Diagnostics session 2

Time: Wednesday, 20/03/2013: 2:15pm - 4:45pm
Location: Lecture hall 15
Session Chair: Steve Lefever, Irmgard Riedmaier

- 14:15 **Cost-effective and robust genotyping using double-mismatch allele-specific quantitative PCR**
Steve Lefever¹, Ali Rihani¹, Filip Pattyn¹, Tom Van Maerken¹, Jan Hellemans², Jo Vandesompele^{1,2}
¹Center for Medical Genetics Ghent, Ghent University, Ghent, Belgium; ²Biogazelle, Zwijnaarde, Belgium
- 14:45 **Assessment of Transcriptional Activity of *Borrelia burgdorferi* and Host Cytokine Genes During Early and Late Infection in a Mouse Model**
Emir Hodzic
 University of California at Davis, United States of America
- 15:15 **Is lung cancer genetic heterogeneity responsible for resistance to EGFR tyrosine kinase inhibitors? Contribution of digital PCR**
Pascale Tomasini, Veronique Secq, Isabelle Nanni, Antoine Carlioz, Fabrice Barlesi, L'Houcine Ouafik, Frederic Fina
 Assistance Publique Hôpitaux de Marseille, France

15:45 **Cost-effective real-time analysis by mediator probe (RT-) PCR**

Simon Wadle¹, Stefanie Rubenwolf¹, Michael Lehnert¹, Bernd Faltin², Roland Zengerle^{1,3,4}, Felix von Stetten^{1,3,4}

¹Laboratory for MEMS Applications, IMTEK - Department of Microsystems Engineering, University of Freiburg, Georges-Koehler-Allee 103, 79110 Freiburg, Germany; ²Robert Bosch GmbH, Applied Research 1 - Microsystem Technologies - Microstructuring and Assembly, Postfach 10 60 50, 70049 Stuttgart, Germany; ³HSG-IMIT - Institut für Mikro- und Informationstechnik, Georges-Koehler-Allee 103, 79110 Freiburg, Germany; ⁴BIOSS - Centre for Biological Signalling Studies, University of Freiburg, 79110 Freiburg, Germany

16:15 **Somatic mutations – detecting less than 0.05% KRAS and BRAF mutation in a background of wildtype DNA**

Christina Andersen¹, Tine Y. Wolff², Alice Riva³, Milo Frattini³, **Ulf Bech Christensen**¹, Majbritt H. Kyneb²

¹PentaBase ApS, Lumbyvej 11, building 5V, 5000 Odense C, Denmark; ²Danish technological institute, Life Science department, Kongsvang Allé 29, 8000 Aarhus C, Denmark; ³Laboratory of Molecular Pathology, Institute of Pathology Via in Selva, 24 6600 Locarno, Switzerland;

Closing of the Symposium Lecture hall HS 14

16:45 **Closing of the Symposium & Farewell**
 Michael W. Pfaffl

Thursday 21st March & Friday 22nd March 2013

qPCR Application Workshops



The workshops are aimed at giving participants a deep and objective understanding of real-time quantitative PCR, digital PCR, biostatistics, expression profiling, and its applications. The courses are intended for academic or industrial persons considering working with quantitative PCR or scientists currently working with qPCR seeking a deeper understanding.

The qPCR courses cover all aspects in qPCR and are held during 2-days. Each course is approximately 50% hands-on and is limited to 15 participants (biostatistics 30 participants), resulting in very interactive teaching and everybody given the opportunity to try the instrumentation. After the course participants will be able to plan and perform qPCR experiments themselves, as well as interpret and analyze data. Detailed course material and full catering (lunch, coffee, soft drinks and snacks) are included in the course fee.

All workshops start on **Thursday and Friday at 9 am until 5 pm**. Three workshops are hosted by the TATAA Biocenter Sweden, (www.tataa.com) and the digital PCR workshop is hosted by Bio-Rad (www.Bio-Rad.com). The qPCR workshop seminar rooms, S1, S2, S3 and computer seminar rooms PU26 and PU26A (fully equipped with computers) are close to the central lecture hall.

qPCR Workshop topics:

- **Basic Module qPCR Application Workshop (2-days)** hosted by TATAA Seminar room **S3**
- **Experimental design and statistical data analysis for qPCR (2-days)** hosted by TATAA Computer seminar room **PU26**
- **MIQE: Quality control of qPCR in Molecular diagnostics (2-days)** hosted by TATAA Seminar room **S2**
- **Digital PCR (2-days)** hosted by Bio-Rad Seminar room **S1**

NGS data analysis workshop:

The NGS data analysis workshop on 21st and 22nd March is hosted by **Genomatix** (www.Genomatix.com)

- **NGS data analysis workshop (2-days)** hosted by **Genomatix** Computer seminar room **PU26A**



Basic Module qPCR Application Workshop (2-days)

Seminar room S3

Description: The basic real-time qPCR course. You will acquire a comprehensive overview of the possibilities with real-time PCR, how to use it and how to analyze the results.



The course contains:

Day 1

- Basic PCR and qPCR
- Review of different detection technologies (SYBR Green I, hydrolysis probes, Molecular Beacons, etc)
- Different instrument platforms
- Applications and possibilities of qPCR.
- Primer and probe design
- Basic data handling and analysis
- Experimental design and optimization

Day 2

- Introduction to quantification principles
- Quantification strategies, uses and limitations
- Strategies for normalization of qPCR data
- Calculations using different relative quantification methods
- Absolute quantification
- Validation of qPCR assays

Experimental design and statistical data analysis for qPCR (2-days)

Computer seminar room PU26

Description: Learn how appropriate statistics shall be selected and applied correctly to get the most out of your qPCR data. The course includes theoretical lectures combined with practical data analysis performed with qPCR analysis software. The course contains:

Day 1 - Statistical analysis of real-time PCR data

- Basic principles of statistics
- Advanced principles of statistics
- Statistical tests
- Ability to detect a difference



Day 2 - Gene expression profiling with real-time PCR

- Multiplate measurements
- Standard curves and absolute quantification
- Experimental design, Selecting reference genes
- Relative quantification, Comparison of groups
- Expression profiling

The computer seminar room PU26 is fully equipped with computers. In the qPCR data analysis workshop the data conversion, normalisation procedure, biostatistical calculations and the expression profiling will be done with the **newest GenEx software by MultiD**.

Download a free GenEx trial version => [Genex.gene-quantification.info](http://www.multid.com/GenEx/gene-quantification.info)

MIQE: Quality control of qPCR in Molecular diagnostics (2-days)

Seminar room S2

This course will go deep into the MIQE guidelines; describe the important steps in qPCR and how you should work to fulfill the guidelines. The course will also focus on how you do proper quality control of your qPCR assays to be used in molecular diagnostics. It will describe which controls that are needed and the statistics on how to do the evaluations.

The course contains:

- Introduction to the MIQE guidelines
- Nucleic acid extraction and quality control
- Reverse transcription
- Primer design
- qPCR protocol and validation, LOD, LOQ
- Principles of statistics
- Normalization
- Relative quantification
- Absolute quantification
- Variance contribution, experimental design
- Precision testing



digital PCR (2-days)**Seminar room S1**

Description: Learn how to plan, perform, and analyze digital PCR experiments and how digital PCR can help your research to overcome the limitations of real-time qPCR.

Day 1

- Welcome and introductions
- Introduction to Digital PCR
- Droplet generation and PCR start for CNV experiment
- ddPCR applications: CNV
- Start DR for CNV experiment
- Droplet generation and PCR start for RED and ABS experiments
- ddPCR Applications: RED and ABS
- CNV results analysis
- Start DR for RED/ABS experiment
- Review of the day

Day 2

- ddPCR: basic statistics
- RED/ABS results analysis
- Other ddPCR Applications: gene expression and NGS
- When qPCR and when ddPCR? Moving from qPCR to ddPCR
- Open Q&A session
- Review of the workshop

NGS data analysis workshop (2-days)**Computer seminar room PU26A**

Description: The large amounts of data derived from next generation sequencing projects makes efficient data mining strategies necessary. In the course you will learn strategies for the analysis of different kinds of next generation sequencing data. The workshop is based on real world examples and will use the Genomatix software, which provides a graphical user interface; no programming, scripting, or command line tool knowledge is necessary to attend. The computer seminar room PU26A is fully equipped with computers.

Day 1**General introduction to the Genomatix system**

- **SNP analysis:**
 - GMS demo: mapping of DNA data and SNP detection
 - GGA hands-on: SNP effects analysis characterization of regulatory SNPs
- **CNV analysis:**
 - GGA hands-on: pairwise CNV analysis
- **Methylation analysis:**
 - GMS demo: bisulfite mapping and methylation analysis
 - GGA hands-on: visualization of methylation data

**Day 2**

- **miRNA analysis:**
 - GMS demo: mapping to smallRNA library
 - GGA hands-on: differential miRNA expression
- **RNA analysis:**
 - GMS demo: spliced mapping to genome mapping to transcriptome
 - GGA hands-on: differential expression analysis
 - biological classification and pathway analysis of differentially expressed genes
 - assessment and visualization of alternative exon/transcript usage
- **ChIP-Seq analysis:**
 - GGA hands-on: peak detection and classification
 - TF binding site analysis in ChIP peaks
 - de novo definition of common sequence motifs in ChIP data
 - next-neighbor analysis and regulatory target prediction for ChIP regions
 - correlation of several data sets

Industrial Exhibition

40 companies participate in the industrial exhibition held during the qPCR Symposium March 18th – 20th in the foyer of the central lecture hall complex and in two exhibition side rooms S1 and S2.

Booth	Company	Booth	Company
1	Kapa Biosystems / Peplab	18	Life Technologies
2	Solis Biodyne	19	Biologio
3	Bioline / 4titude	20	Fluidigm
4	Bio-Rad	21	Eppendorf
5	New England Biolabs / Bioke	22	Eurogentec
6	Eurofins MWG Operon	23	Quanta Biosciences
7	Roche Applied Science	24	Integrated DNA Technologies
8	Qiagen	25	Illumina
9	Nanostring	26	Gilson
10	Agilent Technologies	27	TATAA & MultiD
11	Metabion	28	Analytik Jena
12	Clontech / TaKaRa	29	Biogazelle
13	Biozym / Cyclertest	30	Mikrogen Diagnostik
14	BioSistemika	31	Hamilton Robotics
15	Biosearch Technologies	32	Primerdesign
16	Exiqon	33	Wafergen
17	TIB Molbiol	34	RainDance Technologies

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