

# VIRUS-LIKE PARTICLE & NANO-PARTICLE VACCINES

29, 30 November – 1 December 2017, Biopolis, Singapore

## FINAL ORAL PROGRAMME & POSTER PROGRAMME

# VLPNV 2017

### SCIENTIFIC ADVISORY PANEL

John Dangerfield (*Anovasia Pte Ltd, Singapore*)

Rob Lambkin-Williams (*hVIVO Ltd, London, UK*)

Kaspars Tars (*Biomedical Research and Study Center, Riga, Latvia*)

Sebastian Maurer-Stroh (*A-Star, Singapore*)

Jean-Christophe Audonnet (*Meril, Lyon, France*)

Martin Bachmann (*Inselspital, Bern, Switzerland / University of Oxford, Oxford, UK*)

Bryce Chackerian (*University of New Mexico, Albuquerque, New Mexico, USA*)

Marc-Andre D'Aoust (*Medicago Inc., Quebec, Canada*)

Melissa M. Herbst-Kralovetz (*University of Arizona, Phoenix, Arizona, USA*)

George Lomonosoff (*John Innes Centre, Norwich, UK*)

Ann Meyers (*University of Cape Town, South Africa*)

Peter Pushko (*Medigen Inc., Frederick, Maryland, USA*)

Ted Ross (*University of Georgia, Athens, Georgia, USA*)

Polly Roy (*London School of Hygiene & Tropical Medicine, London, UK*)

Brian Ward (*McGill University, Montreal, Quebec, Canada*)

Vidadi Yusibov (*Fraunhofer USA, Newark, Delaware, USA*)

Richard Compans (*Emory University, Atlanta, Georgia, USA*)

Adriana Baz Morelli (*CSL Limited, Parkville, Victoria, Australia*)

Trudy Morrison (*University of Massachusetts, Worcester, Massachusetts, USA*)

Hans Netter (*The Peter Doherty Institute, Melbourne Health, Melbourne, Australia*)

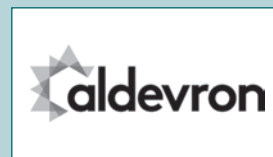
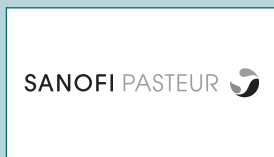
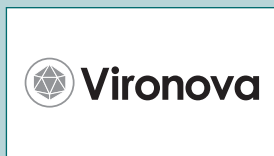
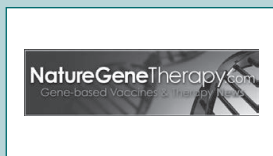
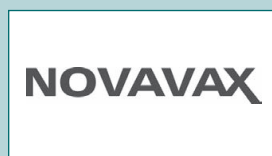
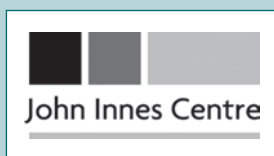
Jane Cardosa (*University of Malaysia/Sentinx Therapeutics, Penang, Malaysia*)

Vernon K. Ward (*University of Otago, Dunedin, New Zealand*)

Jack Hu (*Academia Sinica, Taiwan*)

Linda Lua (*The University of Queensland, Brisbane, Queensland, Australia*)

Madhavan Nallani (*ACM Biolabs, Singapore*)



08.45 Onwards

Arrival & Registration

09.45-10.00

## Welcome & Opening Remarks

John Dangerfield

(Anovasia Pte Ltd., Biopolis, Singapore)

## SESSION 1: OPENING PLENARY

Moderator: John Dangerfield (Anovasia Pte Ltd., Biopolis, Singapore)

10.00-10.45

### 'VLPs for veterinary medicine: Transforming the success of human monoclonal antibodies into effective and affordable medicines for companion animals'

Martin Bachmann

(Inselspital, Bern, Switzerland / University of Oxford, Oxford, UK)

10.45-11.30

### 'Progress towards a norovirus vaccine'

Timo Vesikari

(University of Tampere, Tampere, Finland)

11.30-12.15

### 'Modern modular vaccines designed for rapid response'

Linda Lua<sup>1</sup> and Anton Middelberg<sup>2</sup>

(<sup>1</sup> The University of Queensland, Protein Expression Facility, St Lucia, Queensland, Australia; <sup>2</sup> The University of Adelaide, Faculty of Engineering, Computer and Mathematical Sciences, Adelaide, South Australia, Australia)

12.15-12.30

### Questions

12.30-14.00

Lunch Break & Poster Set-Up

## SESSION 2: IMMUNE-MODULATION APPROACHES

Moderator: Linda Lua

(The University of Queensland, St Lucia, Queensland, Australia)

14.00-14.30

### 'Differentially designed chimeric virus-like particles for optimising immunisation outcomes'

Natalie J. Kingston<sup>1</sup>, Michiko Hyakumura<sup>1</sup>, Renae Walsh<sup>2</sup>, Carina Joe<sup>3</sup>,

Liriye Kurtovic<sup>4</sup>, George Lovrecz<sup>3</sup>, Tim Adams<sup>3</sup>, James Beeson<sup>4</sup>,

Stephen Locarnini<sup>2</sup> and Hans J. Netter<sup>2</sup>

(<sup>1</sup> Dept. of Microbiology, Monash University, Victoria, Australia; <sup>2</sup> Victorian Infectious Diseases Reference Laboratory, Melbourne Health, Victoria, Australia;

<sup>3</sup> Commonwealth Scientific and Industrial Research Organisation (CSIRO), Clayton, Victoria, Australia; <sup>4</sup> Burnet Institute, Melbourne Victoria, Australia)

14.30-14.50

### 'Understanding multiscale molecular/nano structures of engineered nano-adjuvants and their immuno-adjuvanticity'

Yannan Yang, Prasanna Lakshmi Abbaraju, Hao Song and Chengzhong Yu (Australian Institute for Bioengineering and Nanotechnology, The University of Queensland, St Lucia, Brisbane, Queensland, Australia)

14.50-15.10

### 'Harnessing dendritic cells function to improved T cell responses in VLP-based vaccines'

Ariane C. Gomes<sup>1</sup>, Julius Muller<sup>1</sup> and Martin F. Bachmann<sup>1,2</sup>

(<sup>1</sup> Jenner Institute, University of Oxford, Oxford, UK; <sup>2</sup> Inselspital, Bern, Switzerland)

15.10-15.30

### 'Engineering effective immune adjuvant by controlling shape, crystallinity and surface functionalization of aluminum oxyhydroxide nanoparticles'

Bingbing Sun

(Dalian University of Technology, Liaoning, China)

15.30-16.00

Tea Break & Posters

## SESSION 3: DELIVERY TOOLS – I

Moderator: Hans Netter (Melbourne Health, Victoria, Australia)

16.00-16.30

### 'Molecular painting as a tool to functionalise biomembrane surfaces'

John A. Dangerfield and Walter H. Gunzburg

(Anovasia Pte Ltd, Biopolis, Singapore and Institute of Virology, University of Veterinary Medicine, Vienna, Austria)

16.30-16.50

### 'Synthetic virus-like particles prepared via protein corona formation enable effective vaccination in an avian model of coronavirus infection'

Chen-Yu Huang<sup>1,2</sup>, Shu-Yi Lin<sup>1</sup>, Zih-Syun Fang<sup>1,2</sup>, Chen-Hsuan Hsu<sup>1</sup>, Jung-Chen Lin<sup>2</sup>, Yuan-I Chen<sup>2</sup>, Bing-Yu Yao<sup>2</sup>, Che-Ming J. Hu<sup>2,3</sup> and Hui-Wen Chen<sup>1,3</sup>

(<sup>1</sup> Department of Veterinary Medicine, National Taiwan University, Taipei, Taiwan; <sup>2</sup> Institute of Biomedical Sciences, Academia Sinica, Taipei, Taiwan; <sup>3</sup> Research Center for Nanotechnology and Infectious Diseases, Taipei, Taiwan)

16.50-17.15

### 'Development of protein capsular matrix vaccine technology: A nanoparticle delivery system'

Kevin P. Killeen

(Matrivax Research & Development Corporation, Boston, Massachusetts, USA)

17.15-17.40

### 'Norovirus VLP and rotavirus VP6 nanoparticles as a combination vaccine candidate'

Vesna Blazevic

(Vaccine Research Center, Faculty of Medicine and Life Sciences, University of Tampere, Tampere, Finland)

\* This final programme is correct at the time of publication. However the organizers reserve the right to make any alterations that may be required in the interests and integrity of the conference programme.

## SESSION 4: VACCINES FOR CANCER & BACTERIAL INFECTIONS

Moderator: Sebastien Maurer-Stroh (*A-Star, Singapore*)

09.00-09.30

### 'Development of VLP based vaccine against Lyme disease'

Kaspars Tars<sup>1</sup>, Ashley Marcinkiewicz<sup>2</sup>, Ilva Lieknina<sup>1</sup>, Svetlana Kotelovica<sup>1</sup>, Mihails Shishovs<sup>1</sup>, Xiuli Yang<sup>2</sup>, Utpal Pal<sup>2</sup> and Yi-Pin Li<sup>2</sup> (<sup>1</sup> *Biomedical Research and Study Center, Riga, Latvia*; <sup>2</sup> *New York State Department of Health Wadsworth Center, Albany, New York, USA*)

09.30-09.50

### 'Development and exploration of a novel personalized cancer vaccine based on virus-like particles incorporating patient-specific melanoma T-cell epitopes'

Mona O. Mohsen<sup>1,2</sup> and Martin F. Bachmann<sup>1,3</sup>  
(<sup>1</sup> *University of Oxford, Oxford, UK*; <sup>2</sup> *Qatar Foundation, Doha, State of Qatar*; <sup>3</sup> *Inselspital, Universitätsklinik RIA, Immunologie, Bern, Switzerland*)

09.50-10.10

### 'A novel VLP-display technology enables induction of protective antibody responses directed against human HER2 in a transgenic mouse model of spontaneous breast cancer'

Arianna Palladini<sup>1</sup>, Susan Thrane<sup>2</sup>, Christoph M. Janitzek<sup>2</sup>, Jessica Pihl<sup>2</sup>, Thomas M. Clausen<sup>2</sup>, Morten A. Nielsen<sup>2</sup>, Thor G. Theander<sup>2</sup>, Giordano Nicoletti<sup>3</sup>, Lorena Landuzzi<sup>3</sup>, Tania Balboni<sup>1</sup>, Marianna L. Lanzano<sup>1</sup>, Veronica Giusti<sup>1</sup>, Ali Salanti<sup>2</sup>, Pier-Luigi Lollini<sup>1</sup>, Patrizia Nanni<sup>1</sup> and Adam F. Sander<sup>2</sup> (<sup>1</sup> *Department of Experimental, Diagnostic and Specialty Medicine, University of Bologna, Bologna, Italy*; <sup>2</sup> *Centre for Medical Parasitology at the Department of Immunology and Microbiology, University of Copenhagen, and Department of Infectious Diseases, Copenhagen University Hospital, Denmark*; <sup>3</sup> *Rizzoli Orthopedic Institute, Laboratory of Experimental Oncology, Bologna, Italy*)

10.10-10.30

### 'Tumor antigen epitope-displaying virus-like particles in combination with a novel TLR7 agonist as cancer vaccines'

Thorsten Klamp<sup>1</sup>, Mahjoub Bihi<sup>1</sup>, Anja Wilming<sup>1</sup>, Thomas Hiller<sup>1</sup>, Jens Schumacher<sup>1</sup> and Ugur Sahin<sup>2</sup>  
(<sup>1</sup> *BioNTech Protein Therapeutics GmbH, Mainz, Germany*; <sup>2</sup> *BioNTech AG, Mainz, Germany*)

10.30-10.50

### 'Plant viral vaccine delivery as a platform to induce cellular immunity against cancer antigens'

Chuan Wang, Yidao Wang, Alex Allen, Jantipa Jobsri, Christian Ottensmeier, Surinder Sahota and Natalia Savelyeva (*University of Southampton, Southampton, UK*)

10.50-11.20

Coffee Break & Posters

## SESSION 5: PROCESSING & PROCESS-RELATED TOOLS

Moderator: Kaspars Tars (*Biomedical Research and Study Center, Riga, Latvia*)

11.20-11.50

### 'Development of a production and purification platform for virus like particles (VLP) vaccine candidates: A case study'

Miles Shi and Youness Cherradi (*Merck Life Science, Process Solutions, Overijse, Belgium*)

11.50-12.20

### 'Developing novel tools for the production and characterization of virus-like particles'

Susanne Heider<sup>1</sup>, Marianne Zaruba<sup>1</sup>, John A. Dangerfield<sup>2</sup>, Erik Reimhult<sup>3</sup> and Christoph Metzner<sup>1</sup> (<sup>1</sup> *Institute of Virology, University of Veterinary Medicine, Vienna, Austria*; <sup>2</sup> *Anovasia Pte Ltd, Biopolis, Singapore*; <sup>3</sup> *Institute of Biologically Inspired Materials, University of Natural Resources and Life Science, Vienna, Austria*)

12.20-12.40

### 'Advances in rapid virus and particle concentration and size analysis using nanoparticle tracking analysis'

Matt McGann, Agnieszka Siupa, Clayton Deighan and Jonathan Mehtala (*Malvern Instruments, Westborough, Massachusetts, USA*)

12.40-13.00

### 'Evaluation of Self-Assembling Protein Nanoparticles (SAPN) for multi-antigen display'

Evelina Angov<sup>1</sup>, Elke S. Bergmann-Leitner<sup>1</sup>, Zoltan Beck<sup>2</sup>, Katherine L. Mallory<sup>1</sup>, Christopher Mann<sup>1</sup>, Neeraja Punde<sup>1</sup>, David E. Lanar<sup>1</sup>, Carl Alving<sup>2</sup>, Gary R. Matyas<sup>2</sup> and Peter Burkhard<sup>3</sup> (<sup>1</sup> *Military Malaria Research Program, Malaria Vaccine Branch, Walter Reed Army Institute of Research, Silver Spring, Maryland, USA*; <sup>2</sup> *Military HIV Research Program, Laboratory of Adjuvant and Antigen Research, Walter Reed Army Institute of Research, Silver Spring, Maryland, USA*; <sup>3</sup> *Alpha-O Peptides AG, Riehen, Switzerland*)

13.00-14.00

Lunch Break & Posters

## SESSION 6: ALTERNATIVE PRODUCTION SYSTEMS

Moderator: Martin Bachmann (*Inselspital, Bern, Switzerland / University of Oxford, Oxford, UK*)

14.00-14.30

### 'Stabilised poliovirus VLPs as candidate vaccines for the post-eradication world'

Helen Fox<sup>1</sup>, Andrew Macadam<sup>1</sup>, Philip Minor<sup>1</sup>, Johanna Marsian<sup>2</sup>, George Lomonosoff<sup>2</sup>, Elizabeth Fry<sup>3</sup>, David Stuart<sup>3</sup>, Mohammed Bahar<sup>3</sup>, Ian Jones<sup>4</sup>, Toby Tuthill<sup>5</sup>, Keith Gehan<sup>6</sup>, Lee Sherry<sup>6</sup>, Oluwapelumi Adeyemi<sup>6</sup>, Nicola Stonehouse<sup>6</sup> and David Rowlands<sup>6</sup>  
(<sup>1</sup> *National Institute for Biological Standards and Control, Potters Bar, UK*; <sup>2</sup> *John Innes Centre, Norwich Research Park, Norwich, UK*; <sup>3</sup> *Division of Structural Biology, University of Oxford, Oxford, UK*; <sup>4</sup> *University of Reading, Reading, UK*; <sup>5</sup> *The Pirbright Institute, Pirbright, Surrey, UK*; <sup>6</sup> *University of Leeds, Leeds, Yorkshire, UK*)

14.30-14.50

### 'Development of a plant-made recombinant virus-like particle (VLP) vaccine against African Horse Sickness'

S.J. Dennis, A.E. Meyers, I.I. Hitzeroth and E.P. Rybicki  
(*Biopharming Research Unit, Department of Molecular and Cell Biology, University of Cape Town, Rondebosch, South Africa*)

14.50-15.10

### 'Separation of HIV-1 gag H1 virus-like particles from Baculovirus expressed in insect cells and 3D modeling of the particles'

Tobias A. Schneider<sup>1</sup>, Patricia Pereira Aguilar<sup>2</sup>, Rupert Tscheliebnig<sup>1,2</sup> and Alois Jungbauer<sup>1,2</sup>  
(<sup>1</sup> *Austrian Centre of Industrial Biotechnology, Vienna, Austria*; <sup>2</sup> *Department of Bio-technology, University of Natural Resources and Life Sciences Vienna, Vienna, Austria*)

15.10-15.30

### 'Harnessing novel RNA-based chaperone in bacterial assembly of virus-like particles'

Baik-Lin Seong (*Yonsei University, Seoul, South Korea*)

15.30-15.50

### 'Process development for production of pandemic influenza vaccines using baculovirus expression system'

Chia-Chun Lai<sup>1,2</sup>, Pin-Wen Chen<sup>1</sup>, Yi-Chu Liao<sup>1</sup>, Min-Shi Lee<sup>1</sup>, Wang-Chou Sung<sup>1</sup> and Alan Yung-Chih Hu<sup>1</sup> (<sup>1</sup> *National Institute of Infectious Diseases and Vaccinology, National Health Research Institutes, Zhunan, Taiwan*; <sup>2</sup> *Collage of Life Science Biology, National Tsing Hua University, Taiwan*)

15.50-16.10

Tea Break & Posters

## SESSION 7: DELIVERY TOOLS – II

Moderator: Madhavan Nallani (*ACMBio Labs, Singapore*)

16.10-16.30

### 'Virus-like particle assembly in vitro and bio-application'

Hui-Chen Guo, Shi-Qi Sun, Yun Zhang, Jia-Xi Ru, Yan-Quan Wei, Jian-Xun Luo, Hong Yin and Xiang-Tao Liu (*State Key Laboratory of Veterinary Etiological Biology, National Foot and Mouth Disease Reference Laboratory, Lanzhou Veterinary Research Institute, Chinese Academy of Agricultural Sciences, Lanzhou, Gansu, China*)

16.30-16.50

### 'Cross-protective vaccine technology to mitigate respiratory viral diseases in a pig model'

Renukaradhya J. Gourapura (Aradhya)  
(*Food Animal Health Research Program, Ohio Agricultural Research and Development Center, Department of Veterinary Preventive Medicine, The Ohio State University, Wooster, Ohio, USA*)

16.50-17.10

### 'Designer length TMV-based nano-rods for nanotechnological applications'

Keith Saunders (*John Innes Centre, Norwich, UK*)

17.10-17.30

### 'Norovirus-specific T cell responses in VLP immunized mice are targeted both to conserved and variable domains of capsid VP1'

Maria Malm, Kirsi Tamminen, Timo Vesikari and Vesna Blazevic  
(*Vaccine Research Center, Faculty of Medicine and Life Sciences, University of Tampere, Tampere, Finland*)

## SESSION 8: PRODUCTION TOOLS

Moderator: Vidadi Yusibov  
(Fraunhofer USA, Newark, Delaware, USA)

08.45-09.15

### KEYNOTE PRESENTATION:

#### 'VLP-based vaccine development: Promise and challenges'

Vidadi Yusibov  
(Fraunhofer USA, Newark, Delaware, USA)

09.15-09.45

#### 'Novel synthetic vaccines: Artificial cell membranes based antigens'

Madhavan Nallani  
(ACMBio Labs, Singapore)

09.45-10.15

#### 'A universal platform for the rapid development of vaccines against emerging pathogens'

Oluwapelumi Adeyemi<sup>1</sup>, Sam Stephen<sup>1</sup>, Amy Roe<sup>1</sup>, Darren Tominson<sup>1</sup>, Antra Zeltina<sup>2</sup>, Tom Bowden<sup>2</sup>, David J. Rowlands<sup>1</sup> and Nicola J. Stonehouse<sup>1</sup>  
(<sup>1</sup> University of Leeds, Leeds, Yorkshire, UK; <sup>2</sup> University of Oxford, Oxford, UK)

10.15-10.35

#### 'Recombinant VLPs as superior drug candidates'

Carina Joe<sup>1,2,3</sup>, Tim Adams<sup>1</sup>, Peter Smooker<sup>2</sup>, Hans J. Netter<sup>3</sup>, Renae Walsh<sup>3</sup>, Tram Phan<sup>1</sup>, Mylinh La<sup>1</sup>, Tam Pham<sup>1</sup>, Louis Lu<sup>1</sup>, Stephen Locarnini<sup>3</sup> and George Lovrecz<sup>1</sup>  
(<sup>1</sup> CSIRO Tissue Culture Laboratories, Biomedical Manufacturing Program, Parkville, Victoria, Australia; <sup>2</sup> Biotechnology and Environmental Biology, School of Applied Sciences, RMIT University, Bundoora, Victoria, Australia; <sup>3</sup> Victorian Infectious Diseases Reference Laboratory, Melbourne Victoria, Australia)

10.35-10.55

#### 'The development of a chimaeric Rift Valley fever virus-like particle vaccine candidate made in *Nicotiana benthamiana*'

Sandiswa Mbewana<sup>1</sup>, Ann Meyers<sup>1</sup> and Edward Rybicki<sup>1,2</sup>  
(<sup>1</sup> Biopharming Research Unit, Department of Molecular and Cell Biology, University of Cape Town, Rondebosch, South Africa; <sup>2</sup> Institute of Infectious Disease and Molecular Medicine, University of Cape Town, Cape Town, South Africa)

10.55-11.25

Coffee Break & Posters

## SESSION 9: GENERAL

Moderator: Jean-Christophe Audonnet  
(Boehringer Ingelheim Santé Animale, Lyon, France, IMI ZAPI Project Coordinator)

11.25-12.05

#### 'Overview of the ZAPI IMI project: Design of biological particle complexes for rapid manufacturing of vaccines against zoonotic pathogens'

Jean-Christophe Audonnet  
(Boehringer Ingelheim Santé Animale, Lyon, France, IMI ZAPI Project Coordinator)

12.05-12.25

#### 'Changing the flexibility and density of a protective malaria epitope can modulate its immunogenicity on the Tobamovirus VLPs'

Sheetij Dutta, Farhat Khan, Mark Langowski, Alexis Bitzer, Kim Soto, Christopher Genito and Adrian Batchelor  
(Laboratory of Structural Vaccinology, Malaria Vaccine Branch, Walter Reed Army Institute of Research, Silver Spring Maryland, USA)

12.25-12.45

#### 'VLP based EV71 vaccine and carrier vaccine development and characterization'

Li Shi  
(Shanghai Zerun Biotechnology Co. Ltd., Pudong, Shanghai, PR China)

12.45-13.05

#### 'Using plants to make candidate vaccines against emerging viruses'

Hadrien Peyret  
(John Innes Centre, Norwich, UK)

13.05-14.00

Lunch Break & Posters Breakdown

## SESSION 10: CLOSING SESSION

Moderator: John Dangerfield  
(Anovasia Pte Ltd., Biopolis, Singapore)

14.00-14.30

#### 'Development of viruslike particle vaccine and reporter assay for Zika virus'

Himanshu Garg, Melina Sedano, Gabrielle Plata, Erin B. Punke and Anjali Joshi  
(Texas Tech University Health Sciences Center, El Paso, Texas, USA)

14.30-14.50

#### 'Preclinical assessment of virus-like particle-associated pre- and post-fusion forms of respiratory syncytial virus (RSV) F protein in maternal vaccination'

Jorge C.G. Blanco<sup>1</sup>, Liubov M. Pletneva<sup>1</sup>, Lori McGinnes<sup>2</sup>, Raymonde O. Oue<sup>1</sup>, Mira C. Patel<sup>1</sup>, Marina S. Boukhvalova<sup>1</sup> and Trudy G. Morrison<sup>2</sup>  
(<sup>1</sup> Sigmovir Biosystems, Rockville, Maryland; <sup>2</sup> Department of Microbiology and Physiological Systems, University of Massachusetts Medical School, Worcester, Massachusetts, USA)

14.50-15.10

#### 'Virus-like particle vaccines (IMX313, Qβ and AP205-SpyCatcher) against malaria induce conflicting antibody quantity and quality'

Darren B. Leneghan<sup>1</sup>, Kazutoyo Miura<sup>2</sup>, Iona J. Taylor<sup>1</sup>, Yuanyuan Li<sup>1</sup>, Jing Jin<sup>1</sup>, Yu Zhou<sup>1</sup>, Rebecca A. Dabbs<sup>1</sup>, Karl D. Brune<sup>3</sup>, Martin F. Bachmann<sup>1,4</sup>, Mark Howarth<sup>3</sup>, Carole A. Long<sup>2</sup> and Sumi Biswas<sup>1</sup>  
(<sup>1</sup> Jenner Institute, University of Oxford, Oxford, UK; <sup>2</sup> Laboratory of Malaria and Vector Research, National Institute of Allergy and Infectious Disease/National Institutes of Health, Rockville, Maryland, USA; <sup>3</sup> Department of Biochemistry, University of Oxford, Oxford, UK; <sup>4</sup> Inselspital, Bern, Switzerland)

15.10-15.30

#### 'Predicting the solubility of VLPs: Qualitative structure property relationship (QSPR) modelling applied to HBcAg VLPs'

Philipp Vormittag<sup>1</sup>, Cathrin Dürr<sup>1</sup>, Anja Wilming<sup>2</sup>, Thomas Hiller<sup>2</sup>, Thorsten Klamp<sup>2</sup> and Jürgen Hubbuch<sup>1</sup>  
(<sup>1</sup> KIT, Karlsruhe, Germany; <sup>2</sup> BioNTech AG, Mainz, Germany)

15.30-15.50

#### 'Save our salmon! Plant-expressed VLPs for use in aquaculture'

John Steele  
(John Innes Centre, Norwich, UK)

15.50-16.05

#### 'Split-protein Tag/Catcher mediated virus like particle display creates dual vaccine effective against cervical cancer and placental malaria'

Christoph M. Janitzek, Susan Thrane, Philip H.R. Carlsen, Louise Goksøyr, Morten A. Nielsen, Thor G. Theander, Ali Salanti and Adam F. Sander  
(University of Copenhagen, Copenhagen, Denmark)

16.05

Closing Remarks, Tea & Departure

Poster 101

**'Antiviral effects of fermented kimchi and black raspberry against murine norovirus and feline calicivirus'**

Garam Bae<sup>1</sup>, Jeongwon Kim<sup>1</sup>, Hyojin Kim<sup>1</sup>, Jong Hyeon Seok<sup>2</sup>, Dan Bi Lee<sup>2</sup>, Jae Deok Jo<sup>2</sup>, Kyung Hyun Kim<sup>2</sup> and Mi Sook Chung<sup>1</sup>

(<sup>1</sup> Department of Food and Nutrition, Duksung Women's University, Seoul, Korea;

<sup>2</sup> Department of Biotechnology & Bioinformatics, Korea University, Sejong, Korea)

Poster 102

**'Split-protein Tag/Catcher mediated virus like particle display creates dual vaccine effective against cervical cancer and placental malaria'**

Christoph M. Janitzek, Susan Thrane, Phillip H.R. Carlsen, Louise Goksøyr, Morten A. Nielsen, Thor G. Theander, Ali Salanti and Adam F. Sander

(University of Copenhagen, Copenhagen, Denmark)

Poster 103

**'Conformational modulation of influenza virus hemagglutinin: Characterization and *in vivo* efficacy of monomeric form'**

Jong Hyeon Seok<sup>1</sup>, Jeongwon Kim<sup>2</sup>, Dan Bi Lee<sup>1</sup>, Ji-Hye Lee<sup>1</sup>, Garam Bae<sup>2</sup>, Mi Sook Chung<sup>2</sup> and Kyung Hyun Kim<sup>1</sup>

(<sup>1</sup> Department of Biotechnology & Bioinformatics, Korea University, Sejong, Korea;

<sup>2</sup> Department of Food and Nutrition, Duksung Women's University, Seoul, Korea)

Poster 104

**'Mucosal antibodies induced by intranasal immunization block norovirus GII.4 virus-like particle receptor binding'**

Kirsi Tamminen, Maria Malm, Timo Vesikari and Vesna Blazevic

(Vaccine Research Center, Faculty of Medicine and Life Sciences, University of Tampere, Tampere, Finland)

Poster 105

**'Recombinant rotavirus VP6 tubular and spherical nanostructures are highly immunogenic and act as adjuvants when co-delivered with norovirus VLPs'**

Suvi Heinimäki, Maria Malm, Timo Vesikari and Vesna Blazevic

(Vaccine Research Center, Faculty of Medicine and Life Sciences, University of Tampere, Tampere, Finland)

Poster 106

**'Zika virus VLPs induced syncytia by baculovirus-expressed E protein for antiviral screening'**

Shiyu Dai, Tao Zhang, Yanfang Zhang, Hualin Wang and Fei Deng

(State Key Laboratory of Virology, Wuhan Institute of Virology, Chinese Academy of Sciences, Wuhan, China)

Poster 107

**'Baculovirus-expressed pre-membrane and envelope protein of the Zika virus form virus-like particles and induce potent neutralizing antibodies in mice'**

Shiyu Dai, Tao Zhang, Yanfang Zhang, Fei Deng, Hualin Wang

(State Key Laboratory of Virology, Wuhan Institute of Virology, Chinese Academy of Sciences, Wuhan, China)

Poster 108

**'Coxsackievirus B1 VLP vaccine induces a strong neutralizing antibody response in mice'**

Minna M. Hankaniemi<sup>1</sup>, Virginia M. Stone<sup>2</sup>, Tanja Andrejčič<sup>1</sup>, Amirbabak Sioofy-Khojine<sup>1</sup>, Heikki Hyöty<sup>1,3</sup>, Malin Flodström-Tullberg<sup>2</sup>, Vesa P. Hytönen<sup>1,3</sup> and Olli H. Laitinen<sup>1</sup>

(<sup>1</sup> Faculty of Medicine and Life Sciences, University of Tampere, Tampere, Finland;

<sup>2</sup> The Center for Infectious Medicine, Department of Medicine HS, Karolinska Institutet, Karolinska University Hospital Huddinge, Stockholm, Sweden; <sup>3</sup> Fimlab Laboratories, Pirkanmaa Hospital District, Tampere, Finland)

Poster 109

**'Viruses in motion: Studying viral dynamics using an insect virus and cryo-electron microscopy'**

Roger Castells-Graells<sup>1</sup>, John E. Johnson<sup>2</sup> and George P. Lomonosoff<sup>1</sup>

(<sup>1</sup> Department of Biological Chemistry, John Innes Centre, Norwich, UK;

<sup>2</sup> Department of Integrative Structural and Computational Biology, The Scripps Research Institute, La Jolla, California, USA)

Poster 110

**'Rapid development of next-generation VLP vaccines using the "Plug-and-Display" technology'**

Genevieve Labbe

(Spybiotech Ltd, Oxford, UK)

Poster 111

**'Construction of virus-like particles carrying homotrimeric LAH domain from hemagglutinin stalk as potential influenza vaccine candidates'**

Anna Kirsteina<sup>1</sup>, I-Na Lu<sup>2</sup>, Sophie Farinelle<sup>2</sup>, Inara Akopjana<sup>1</sup>, Tatjana Kazaka<sup>1</sup>, Claude P. Muller<sup>2</sup>, Kaspars Tars<sup>1</sup> and Andris Kazaks<sup>1</sup>

(<sup>1</sup> Latvian Biomedical Research and Study Centre, Riga, Latvia; <sup>2</sup> Luxembourg Institute of Health, Esch-sur-Alzette, Luxembourg)

Poster 112

**'Chaperone mediated assembly of MERS-CoV ferritin nanoparticles from bacterial host'**

Young-Seok Kim<sup>1,2</sup>, Jihoon Kim<sup>1</sup>, Juwon Kim<sup>3</sup>, Jieun Kim<sup>1</sup>, Soon Bin Kwon<sup>1,2</sup>, Paul Kim<sup>1,2</sup>, Jemin Sung<sup>1,2</sup>, Jinhee Lee<sup>1,2</sup>, Ji Eun Yu<sup>1,2</sup>, Jinil Kim<sup>3</sup>, Sehee Park<sup>3</sup>, Man-Seong Park<sup>3</sup> and Baik L. Seong<sup>1,2</sup>

(<sup>1</sup> Department of Biotechnology, College of Life Sciences and Biotechnology, Yonsei University, Seoul, South Korea; <sup>2</sup> Vaccine Translational Research Center, Yonsei University, Seoul, South Korea; <sup>3</sup> Department of Microbiology, the Institute for Viral Disease, College of Medicine, Korea University, Seoul, South Korea)

Poster 113

**'Implementation of novel nanoparticle based artificial cell membrane technology for vaccine discovery'**

Kelvin Yong, Thomas Cornell, Fabien Décaillot and Madhavan Nallani

(ACM Biolabs, Singapore)

## SPONSORS

The VLPNPV 2017 Scientific Advisory Panel and the organizers would like to acknowledge the support of the following sponsors:



**NOVAVAX**



**medicago**

