THE FOURTH INTERNATIONAL:

SKIN VACCINATION SUMMIT 2017

22-24 May 2017, Leiden University Medical Centre, Leiden, The Netherlands

FINAL ORAL & POSTER PROGRAMME

SVS 2017

SCIENTIFIC ADVISORY PANEL

08.15
Arrival & Registration & Poster-Set-Up

09.20-09.30
Welcome to Leiden
Joke Bouwstra
(Leiden/Amsterdam Center for Drug Research, Amsterdam, The Netherlands)

SESSION 1: OPENING PLENARY SESSION

Moderator: Joke Bouwstra
(Leiden/Amsterdam Center for Drug Research, Amsterdam, The Netherlands)

09.30-10.00
'How can skin be utilized for improved vaccines?'
Mark Kendall
(University of Queensland, Brisbane, Queensland, Australia)

10.00-10.30
'Immunotherapy of cancer'
Ferry Ossendorp
(Leiden University Medical Centre, Leiden, The Netherlands)

10.30-11.00
'Can skin vaccination be beneficial for pregnancy?'
Ioanna Skountzou, E. Stein Esser, Elizabeth Q. Littauer, Elena V. Vassilieva, Joanna Pulit-Penaloza, Haripriya Kalluri, Andrey Romanyuk, Devin McAllister, Mark R. Prausnitz and Richard W. Compans
(Emory University, Atlanta, Georgia, USA)

11.00-11.30
Coffee Break & Poster Set-Up

SESSION 2: PLENARY

Moderator: Mark Kendall
(University of Queensland, Brisbane, Queensland, Australia)

11.30-12.00
'Migration of cells using human skin models'
Esther de Jong
(University of Amsterdam, Amsterdam, The Netherlands)

12.00-12.30
'Role of tissue-resident memory T cells in protective immunity: Implications for vaccination'
Marcel B.M. Teunissen
(University of Amsterdam, Amsterdam, The Netherlands)

12.30-13.00
'Modelling of uptake and trafficking of DCs'
Cees W.J. Oomens
(Eindhoven University, Eindhoven, The Netherlands)

13.00-14.30
Lunch Break & Posters

SESSION 3: SKIN TOPICS

Moderator: Marcel B.M. Teunissen
(University of Amsterdam, Amsterdam, The Netherlands)

14.30-15.00
'Synergistic effects of dendritic cell targeting and laser-microporation on enhancing epicutaneous skin vaccination efficacy'
Richard Weiss
(University of Salzburg, Salzburg, Austria)

15.00-15.20
'Sialic Acid receptors and Langerin on Langerhans cells in a human skin model for vaccination strategies against melanoma'
J. Lübbers, S. Duinkerken, R.J.E. Li, J.J. Garcia-Vallejo and Y. van Kooyk
(VU University Medical Center, Amsterdam, the Netherlands)

15.20-15.40
'Development of a vaccination strategy targeting human skin DC using tumor specific glyco-conjugates'
S. Duinkerken, C.M. Fehres, H. Kalay, M. Ambrosini, S.J. van Vliet, J.J. Garcia-Vallejo and Y. van Kooyk
(VU University Medical Center, Amsterdam, The Netherlands)

15.40-16.00
'Which skin model is best for dermal drug delivery?'
Lisa A. Dick, Scott A. Burton, Vinh S. Hua and Joan M. Moseman
(3M Drug Delivery Systems, St. Paul, Minnesota, USA)

16.00-16.30
Tea Break & Posters

SESSION 4: MICRONEEDLES/MICROARRAYS I

Moderator: Mark Prausnitz
(Georgia Institute of Technology, Atlanta, Georgia, USA)

16.30-17.00
'Diphtheria toxoid coated microneedles for intradermal vaccination'
Joke Bouwstra
(Leiden/Amsterdam Center for Drug Research, Amsterdam, The Netherlands)

17.00-17.20
'Examining the breadth of use of dissolvable microneedle patches for dermal delivery of polio vaccines'
Anne Moore
(University College Cork, Cork, Ireland)

17.20-17.40
'Polymeric microneedle arrays as intradermal vaccination candidates: Making the right choices'
A.J. Courtenay, M.T.C. McCrudden and R.F. Donnelly
(Queens University Belfast, Belfast, Co. Antrim, Northern Ireland, UK)

17.40-18.00
'Technical approaches for microneedle-based dermal vaccine delivery'
K. van der Maaden, W. Jiskoot and J. Bouwstra
(Leiden Academic Centre for Drug Research (LACDR), Leiden University, The Netherlands)

18.00-19.00
SVS 2017 Welcome Drinks Reception & Poster Sesssion

** 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 5: DELIVERY I

Moderator: Yotam Levin *(NanoPass Technologies Ltd, Nes Ziona, Israel)*

09.00-09.20
'New trends in ID Vaccination: From prophylaxis to immunotherapy and beyond'
Yotam Levin and Efrat Kochba *(NanoPass Technologies, Nes Ziona, Israel)*

09.20-09.50
'Assessing the health impact of vaccine delivery technologies: A quantitative tool'
Darin Zehrung and Mercy Mvundura *(PATH, Seattle, Washington, USA)*

09.50-10.20
'Nanoparticulate delivery and targeting via the hair follicles'
Claus Michael Lehr
(Helmholtz-Zentrum für Infektionsforschung GmbH, Braunschweig, Germany)

10.20-10.40
'Needle adapters and needle-free injectors for intradermal administration of fractional dose of inactivated poliovirus vaccine: Pilot polio eradication campaigns in Pakistan'
Ondrej Mach *(World Health Organization, Geneva, Switzerland)*

10.40-11.00
'Novel electroporation technology enhances gene delivery to the skin'
Kate E. Broderick and Jean Boyer *(Inovio Pharmaceuticals, San Diego, California, USA)*

11.00-11.15
Coffee Break & Posters

SESSION 6: MICRONEEDLE PATCHES

Moderator: Darin Zehrung *(PATH, Seattle, Washington, USA)*

11.15-11.30
'The public health value proposition of novel delivery technologies: Building policies for procurement and uptake'
Birgitte Giersing and Martin Friede *(WHO, Geneva, Switzerland)*

11.30-11.50
'First-time-in-human clinical trials evaluating the acceptability and tolerability of high-density silicon microarray patches (the Nanopatch), and the immunogenicity of an influenza vaccine delivered by the Nanopatch'
Angus Forster[1], Cristyn Davies[2], Rachel Skinner[2], Samantha Brandler[3] and Paul Griffin[4,5] *([1] Vaxxas Pty Ltd, Brisbane, Australia; [2] University of Sydney, Sydney, Australia; [3] 360 biolabs, Melbourne, Australia; [4] Mater Health Services and Mater Medical Research Institute, Brisbane, Australia; [5] Q-Pharm, Herston, Australia)*

11.50-12.20
'Translation of microneedle patch vaccines from laboratory to clinic'
Mark Prausnitz *(Georgia Institute of Technology, Atlanta, Georgia, USA)*

12.20-12.40
'Delivery of trivalent influenza vaccine with microneedle patches shows rapid and enhanced antibody gene expression in vaccinees'
Lisa K. Mills[1], E. Stein Esser[1], Elena V. Vassilieva[1], Richard W. Compans[1], **Ioanna Skountzou[1]**, Sebastien Henry[2], Devin McAllister[2], Haripriya Kalluri[2], Winston Pewin[2], Mark R. Prausnitz[2], Nadine Rouphael[3], Mark J. Mulligan[3] and the TIV-MNP2015 Study Group[3]
([1] Emory University School of Medicine, Atlanta, Georgia, USA; [2] Georgia Institute of Technology, Atlanta, Georgia, USA; [3] Hope Clinic of the Emory Vaccine Center, Division of Infectious Diseases, Emory University, Atlanta, Georgia, USA)

12.40-13.00
'A boosting skin vaccination with dissolving microneedle patch encapsulating M2e vaccine broadens the protective efficacy of conventional influenza vaccines'
Wandi Zhu[1], Mark R. Prausnitz[2] and Bao-Zhong Wang[1]
([1] Institute for Biomedical Sciences, Georgia State University, Atlanta, Georgia, USA; [2] School of Chemical and Biomolecular Engineering, Georgia Institute of Technology, Atlanta, Georgia, USA)

13.00-14.20
Lunch Break & Posters

SESSION 7: MICRONEEDLES/MICROARRAYS II

Moderator: Mark Kendall *(University of Queensland, Brisbane, Queensland, Australia)*

14.20-14.40
'Skin vaccination using a microneedle patch induces mucosal immunity to rotavirus in mice'
Theresa K. Resch[1], Yuhuan Wang[1], Sung-Sil Moon[1], Jessica Joyce[2], Song Li[2], Mark Prausnitz[2] and Baoming Jiang[1]
([1] Division of Viral Diseases, Centers for Disease Control and Prevention (CDC), Atlanta, Georgia, USA; [2] School of Chemical & Biomolecular Engineering, Georgia Institute of Technology, Atlanta, Georgia, USA)

14.40-15.00
'High protein content in dissolving microneedles for dermal vaccine delivery'
M. Leone[1], M.I. Priester[1], J. Mönkäre[1], C. O'Mahony[3], J.A. Bouwstra[1] and G. Kersten[1,2] *([1] LACDR, Leiden University, The Netherlands; [2] Intravacc, Bilthoven, The Netherlands; [3] Tyndall National Institute, Cork City, Ireland)*

15.00-15.20
'The use of solid and hollow microneedle systems for administration of prophylactic and therapeutic vaccines'
Mark Tomai *(3M Company, St. Paul, Minnesota, USA)*

15.20-15.40
'Cellular responses after hollow microneedle immunization: Comparative study of ovalbumin-loaded nanoparticles'
B. Slütter[1,3], J. Mönkäre[1], G.S. Du[1], M.R. Nejadnik[1], J. Tu[2], R.M. Hathout[1], M. Nasr[1], A. Kros[2], W. Jiskoot[1] and J. A. Bouwstra[1] *([1] Drug Delivery Technology, Leiden Academic Centre for Drug Research, Leiden University, Leiden, The Netherlands; [2] Department of Soft Matter Chemistry, Leiden Institute of Chemistry, Leiden University, Leiden, The Netherlands; [3] Biopharmaceutics, Leiden Academic Centre for Drug Research, Leiden University, Leiden, The Netherlands)*

15.40-16.00
'Acceptability, usability, and programmatic fit of microarray patches for vaccine delivery in Ghana'
Sarah McGray[1], Charlotte Tawiah[2], Courtney Jarrahian[1] and Darin Zehrung[1]
([1] PATH, Seattle, Washington USA; [2] Kintampo Health Research Centre (KHRC) Ghana Health Services, Kintampo, Brong Ahafo Region, Ghana)

16.00-16.30
Tea Break & Posters

SESSION 8: ADJUVANTS & VACCINES

Moderator: Yotam Levin *(NanoPass Technologies, Nes Ziona, Israel)*

16.30-16.50
'Polyfunctional Type 1 T cells induced by NanoPass intradermal delivery of LAMP-based vaccines: A potential for nucleic acid based cancer vaccines'
Teri Heiland *(Immunomic Therapeutics Inc., Rockville, Maryland, USA)*

16.50-17.10
'New vaccine based on Antigen1 against leishmaniasis'
Alessandra Marcia da Fonseca Martins and Herbert Leonel de Matos Guedes *(Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil)*

17.10-17.30
'Thermostable plasmid DNA launches a live-attenuated yellow fever vaccine platform that targets dendritic cells in the dermis and induces protection *in vivo*'
Michael A. Schmid, Niraj Mishra, Johan Neyts and Kai Dallmeier *(Rega Institute for Medical Research KU Leuven, University of Leuven, Leuven, Belgium)*

SESSION 9: DELIVERY II

Moderator: Mark Tomai *(3M Company, St. Paul, Minnesota, USA)*

09.00-09.20

'Overview of development of microneedle patches with Inactivated Poliovirus Vaccine (IPV)'

Shanda Boyle[1] and Hiromasa Okayasu[2]

([1] Bill & Melinda Gates Foundation, Seattle, Washington, USA; [2] Polio Eradication Department, World Health Organization, Geneva, Switzerland)

09.20-09.50

'Transitioning delivery of inactivated poliovirus vaccine by the Nanopatch from pre-clinical studies to clinical trials'

David A. Muller[1,2], Germain Fernando[2], Paul R. Young[2], Paul Fahey[3] and Angus Forster[3]

([1] Australian Institute for Bioengineering and Nanotechnology, The University of Queensland, Brisbane, Queensland, Australia; [2] School of Chemistry and Molecular Biosciences, The University of Queensland, Brisbane, Queensland, Australia; [3] Vaxxas Pty Ltd, Sydney, New South Wales, Australia)

09.50-10.20

'HIV enzyme interactions in combined intradermal DNA immunization in mice'

Maria G. Isaguliants[1,2,3]

([1] A. Kirchenstein Institute of Microbiology and Virology, Riga Stradins University (RSU), Riga, Latvia; [2] Chumakov Federal Scientific Center for Research and Development of Immunobiological Preparations, Moscow, Russia; [3] Department of Microbiology, Tumor and Cell Biology, Karolinska Institutet, Stockholm, Sweden)

10.20-10.50

'Tracking nanoparticles from top to the bottom: Uptake behavior of Chitosan-PLGA nanoparticles within the skin structure'

Hanzey Yasar[1], Simon Delandre[2], Chiara De Rossi[1], Kai Schulze[2], Brigitta Loretz[1], Sarah Gordon[3], Andreas Müller[4], Carlos A. Guzman[2] and Claus-Michael Lehr[1]

([1] Helmholtz-Institute for Pharmaceutical Research Saarland (HIPS) and Helmholtz Centre for Infection Research (HZI), Department of Drug Delivery, Saarbruecken, Germany; [2] Helmholtz Centre for Infection Research (HZI), Department of Vaccinology and Applied Microbiology, Braunschweig, Germany; [3] School of Pharmacy and Biomolecular Sciences, James Parsons Building Tower, Byrom Street, Liverpool, UK; [4] Otto-von-Guericke University of Magdeburg (OVGU), Magdeburg, Germany)

10.50-11.30

Coffee Break & Posters

SESSION 10: DELIVERY III

Moderator: Anne Moore *(University College Cork, Cork, Ireland)*

11.30-11.50

'Tight junction inhibition as a transdermal vaccine delivery strategy'

Matthew G Brewer, Elizabeth Anderson, Benjamin Miller and Lisa Beck

(University of Rochester, Rochester, New York, USA)

11.50-12.10

'Prophylactic intradermal delivery of INO-4201 drives robust ebola glycoprotein specific humoral and cellular Immune responses in healthy volunteers in an open label phase I trial'

Jean Boyer and Kate E. Broderick

(Inovio Pharmaceuticals, San Diego, California, USA)

12.10-12.30

'Importance of assessment of skin thickness in healthy children aged 8 weeks to 18 years in development of intradermal drug delivery devices'

Timothi Van Mulder *(Novosanis NV, Wijnegem, Belgium)*

12.30-14.00

Lunch Break & Posters Breakdown

SESSION 11: LATE-BREAKER PRESENTATIONS

Moderators: Joke Bouwstra and Bram Slutter

(Leiden/Amsterdam Center for Drug Research, Amsterdam, The Netherlands)

14.00-14.20

'Role of alternative reading frame protein in the immune response to HCV core, evaluation by intradermal DNA-immunization in mice'

Juris Jansons[1,2], Anastasija Dovbenko[2], Dace Skrastina[2], Stefan Petkov[3], Elizaveta Starodubova[3,4,5], Yulia Kuzmenko[4], Gatis Akmenkalns[2], Maria G. Isaguliants[1,3,6] and Irina Sominskaya[2]

([1] Riga Stradins University, Riga, Latvia; [2] Latvian Biomedical Research and Study Center, Riga, Latvia; [3] Department of Microbiology, Tumor and Cell Biology, Karolinska Institutet, Stockholm, Sweden; [4] WA Engelhardt Institute of Molecular Biology, Moscow, Russia; [5] Chumakov Institute of Poliomyelitis and Viral Encephalitides, Moscow, Russia; [6] Gamaleya Research Center of Epidemiology and Microbiology, Moscow, Russia)

14.20-14.40

'Tuberculin skin test (TST) using dissolving microneedle fabricated by centrifugraphy'

Hyungil Jung *(Yonsei University, Seoul, Korea)*

14.40-15.00

'Experimental vaccine protects against hepatitis E virus genotypes 1 and 3 in non-human primate model'

Ilya V. Gordeychuk[1,2], Alexey M. Chumakov[1], Anna A. Lyashenko[1], Alexey A. Sorokin[1], Stanislav A. Gulyaev[1], Ilya A. Potemkin[3], Amir I. Tukhvatulin[2], Denis Y. Logunov[2], Anastasia A. Karlsen[3], Olga V. Isaeva[3], Karen K. Kyuregyan[3] and Mikhail I. Mikhailov[3]

([1] Chumakov Federal Scientific Center for Research and Development of Immune-and-Biological Products of the Russian Academy of Sciences, Moscow, Russia; [2] Gamaleya Research Center for Epidemiology and Microbiology, Ministry of Healthcare of the Russian Federation, Moscow, Russia; [3] Research center at Russian Medical Academy of Postgraduate Education, Ministry of Healthcare of the Russian Federation, Moscow, Russia)

15.00-15.15

'Alternative reporters for monitoring the success of intradermal DNA delivery and expression in a mouse model'

Laura Hippe[1], Martins Kalis[1], Ilya Gordeychuk[2,3], Stefan Petkov[3], Maksim Abakumov[4], Daria Shcherbakova[5], Vladislav Verkhusha[5] and Maria G. Isaguliants[1,2,3]

([1] A. Kirchenstein Institute of Microbiology and Virology (AKMVI), Riga Stradins University (RSU), Riga, Latvia; [2] Gamaleja Research Center of Epidemiology and Microbiology, and Chumakov Federal Scientific Center for Research and Development of Immunobiological Preparations, Moscow, Russia; [3] Department of Microbiology, Tumor and Cell Biology, Karolinska Institutet, Stockholm, Sweden; [4] The Russian National Research Medical University named after N.I. Pirogov, Moscow, Russia; [5] Department of Anatomy and Structural Biology, Albert Einstein College of Medicine, Bronx, New York, USA)

15.15-15.30

'Administration of different Toll like receptor agonists by dissolving microneedle patches to pigs: Assessment of local immune response by macroscopic and histologic evaluation'

Sandra Vreman[1], Joanne McCafferey[2], Norbert Stockhofe-Zurwieden[1] and Anne Moore[3]

([1] Wageningen Bioveterinary Research, Wageningen University & Research, The Hague, The Netherlands; [2] Xeolas, Pharmaceuticals, Dublin, Ireland; [3] School of Pharmacy University College Cork, Cork, Ireland)

15.30-15.45

'Stable expression of HIV reverse transcriptase by murine adenocarcinoma cells enhances growth rate of primary tumors in a mouse model designed to test the therapeutic efficacy of HIV DNA vaccines'

E. Pankova[1,2], A. Latanova[1,2,3], A. Kilpelainen[3,4], I. Gordeychuk[2,3,5], S. Petkov[3], M. Abakumov[4], E. Starodubova[1,3,5] and M. Isaguliants[2,3,5,6]

([1] Engelhardt Institute of Molecular Biology, Moscow, Russia; [2] Gamaleja Research Center of Epidemiology and Microbiology, Moscow, Russia; [3] Karolinska Institutet, Stockholm, Sweden; [4] Pirogov Medical State University, Moscow, Russia; [5] Chumakov Federal Scientific Center for Research and Development of Immune-and-Biological Products of the Russian Academy of Sciences, Moscow, Russia; [6] Riga Stradins University, Riga, Latvia)

15.45

Conference Close & Departure

Poster 101

'Intradermal vaccination with hollow microneedles: Comparative study of protein antigen encapsulated in nanoparticles'

G.S. Du[1], J. Mönkäre[1], J. Tu[2], R. Nejadnik[1], A. Kros[2], W. Jiskoot[1] and J.A. Bouwstra[1]

([1] Leiden Academic Center for Drug Research; [2] Leiden Institute of Chemistry, Leiden University, Leiden, The Netherlands)

Poster 102

'Development of dissolvable microneedle patches for dermal delivery of polio vaccines'

Agnese Donadei[1], Olga Ophorst[2], Rimko Ten Have[2], Heleen Kraan[2], Olivia Flynn[1], Ivo Ploemen[2] and Anne Moore[1]

([1] School of Pharmacy, University College Cork, Cork, Ireland; [2] Institute of Translational Vaccinology (Intravacc), Bilthoven, Netherlands)

Poster 103

'Alternative reporters for monitoring the success of intradermal DNA delivery and expression in a mouse model'

Laura Hippe[1], Kalis Martins[1] and Maria G. Isaguliants[2]

([1] A.Kirchenstein Institute of Microbiology and Virology (AKMVI), Riga Stradins University, Riga, Latvia; [2] Karolinska Institutet, Stockholm, Sweden)

Poster 104

'Stable expression of HIV reverse transcriptase by murine adenocarcinoma cells enhances growth rate of primary tumors in a mouse model designed to test the therapeutic efficacy of HIV DNA vaccines'

E. Pankova[1,2], A. Latanova[1,2,3], A. Kilpelainen[3,4], I. Gordeychuk[2,3,5], S. Petkov[3], M. Abakumov[4], E. Starodubova[1,3,5] and M. Isaguliants[2,3,5,6]

([1] Engelhardt Institute of Molecular Biology, Moscow, Russia; [2] Gamaleja Research Center of Epidemiology and Microbiology, Moscow, Russia; [3] Karolinska Institutet, Stockholm, Sweden; [4] Pirogov Medical State University, Moscow, Russia; [5] Chumakov Federal Scientific Center for Research and Development of Immune-and-Biological Products of the Russian Academy of Sciences, Moscow, Russia; [6] Riga Stradins University, Riga, Latvia)

Poster 105

'Developing and improving vaccine delivery technologies'

Ivo Ploemen

(Institute for Translational Vaccinology (Intravacc), Bilthoven, The Netherlands)

Poster 106

'Comparative study of different dissolving microneedle manufacture methods in skin vaccination focused on functional activity and stability of antigen'

Geonwoo Kang[1], Huisuk Yang[1], Mingyu Jang[1,2], Chisong Lee[1], Suyong Kim[1,2], Shayan F. Lahiji[1] and Hyungil Jung[1,2]

([1] Yonsei University, Seoul, Republic of Korea; [2] Juvic Inc., Yonsei Engineering Research Park, Seoul, Republic of Korea)

Poster 107

'Tuberculin skin test with an implantation of hyaluronic acid dissolving microneedles encapsulating tuberculin purified protein derivatives'

Huisuk Yang[1], Mingyu Jang[1,2], Geonwoo Kang[1], Suyong Kim[1,2], Shayan F. Lahiji[1] and Hyungil Jung[1,2]

([1] Yonsei University, Seoul, Republic of Korea; [2] Juvic Inc., Yonsei Engineering Research Park, Seoul, Republic of Korea)

Poster 108

'Intradermal administration of gB/pp65 eVLPs is associated with slow clearance from the site of injection but no accumulation in major perfused tissues'

David E. Anderson, Marc Kirchmeier, Anne-Catherine Fluckiger, Catalina Soare, Umar Iqbal, Adam Asselin, Katie Sullivan, Julie Joseph and Tanvir Ahmed

(VBI Vaccines Inc., Ottawa, Ontario, Canada)

Poster 109

'Administration of different Toll like receptor agonists by dissolving microneedle patches to pigs: Assessment of local immune response by macroscopic and histologic evaluation'

Sandra Vreman[1], Joanne McCafferey[2], Norbert Stockhofe-Zurwieden[1] and Anne Moore[3]

([1] Wageningen Bioveterinary Research, Wageningen University & Research, The Hague, The Netherlands; [2] Xeolas, Pharmaceuticals, Dublin, Ireland; [3] School of Pharmacy University College Cork, Cork, Ireland)

Poster 110

'Novel MicroArray Patch Manufacturing System (MAP MS)'

Daniel R. Henderson, Milo Careaga, Nadine Bauer and Thomas Ellison

(Verndari Inc. Sacramento, California, USA)

Poster 111

'Considerations for skin immunization using patch technology'

L. Smith[1], A. Rumyantsev[2], P. Vacus[3], C. Fouquet-Dubois[4] and E. Romeyer[4]

(Sanofi Pasteur, [1] Toronto, Canada and [2] Cambridge, U.S.A., [3] Val-de-Reuil France, [4] Lyon, France)

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