SCIENTIFIC VETERINARY INSTITUTE „NOVI SAD“

INSTITUTE OF VETERINARY MEDICINE OF SERBIA

„One Health – New Challenges“

First International Symposium of Veterinary Medicine

(ISVM2015)

BOOK OF ABSTRACTS



Hotel "Premier Aqua" - Vrdnik
May 21 – 23, 2015

SCIENTIFIC VETERINARY INSTITUTE „NOVI SAD“

INSTITUTE OF VETERINARY MEDICINE OF SERBIA

„One Health – New Challenges“

First International Symposium of Veterinary Medicine

(ISVM2015)

BOOK OF ABSTRACTS

Hotel "Premier Aqua" – Vrdnik

May 21 – 23, 2015

Publisher

Scientific Veterinary Institute „Novi Sad“, Novi Sad, Serbia

For the Publisher

Prof Dr Miroslav Ćirković, Principal Research Felow

Editor in Chief

Dr Tamaš Petrović, Senior Research Associate

Technical Editor

Dr Tamaš Petrović, Senior Research Associate

Printed

Multidizajn, Novi Sad

150 copies

ISBN: ISBN 978-86-82871-37-8

ORGANISERS

SCIENTIFIC VETERINARY INSTITUTE „NOVI SAD“
and
INSTITUTE OF VETERINARY MEDICINE OF SERBIA

CO-ORGANISERS and SUPPORTERS

MINISTRY OF EDUCATION SCIENCE AND TECHNOLOGICAL DEVELOPMENT
PROVINCIAL SECRETARIAT FOR SCIENCE AND TECHNOLOGICAL DEVELOPMENT
MINISTRY OF AGRICULTURE AND ENVIRONMENTAL PROTECTION

ORGANIZING COMMITTEE

Dr Miroslav Ćirković, Principal Research Fellow - President

Dr Dobrila Jakić-Dimić,Principal Research Fellow
Dr Branka Vidić, Principal Research Fellow
Dr Sava Lazić, Principal Research Fellow
Dr Tamaš Petrović, Senior Research Associate
Dr Vladimir Radosavljević, Research Associate
Dr Sara Savić, Research Associate
Dr Vladimir Polaček, Research Associate
Dr Jadranka Žutić, Research Associate
Dr Milica Živkov-Baloš, Senior Research Associate
Dr Jelena Petrović, Senior Research Associate
Dr Dragana Ljubojević, Research Associate
Petar Bakmaz, secretary of Organizing Committee

TECHNICAL SECRETARIAT

Jelena Babić, DVM, MSc, Research Assistant
Biljana Božin, DVM, MSc, Research Trainee
Nikola Bakmaz, Secretary
Dobrisav Vuković, IT engineer
Vera Prokić, librarian

SCIENTIFIC COMMITTEE

Dr Tamaš Petrović, Senior Research Associate – President (Serbia)

Dr Miroslav Ćirković, Principal Research Fellow (Serbia)
Dr Dobrila Jakić-Dimić,Principal Research Fellow (Serbia)
Dr Theresa Bernardo, Principal Research Fellow (USA)
Dr Branka Vidić, Principal Research Fellow (Serbia)
Dr Tamaš Bakonyi, Principal Research Fellow (Hungary)
Dr Sava Lazić, Principal Research Fellow (Serbia)
Dr Dušan Orlić, Principal Research Fellow (Serbia)
Dr Juan Carlos Saiz, Principal Research Fellow (Spain)
Dr Ivan Pavlović, Principal Research Fellow (Serbia)
Dr Vladimir Radosavljević, Research Associate (Serbia)
Dr Aleksandar Mašić, Adjunct professor (Canada)
Dr Stanko Boboš, professor (Serbia)
Dr Maja Velhner, Principal Research Fellow (Serbia)
Dr Aymeric Hans, Senior Research Associate (France)
Dr Vesna Milošević, professor (Serbia)
Dr Dušan Lalošević, professor (Serbia)
Dr Ivan Bogut, professor (Croatia)
Dr Milica Živkov-Baloš, Senior ResearchAssociate(Serbia)
Dr Miloš Kapetanov, Principal Research Fellow (Serbia)
Dr. Corinna Kehrenberg, professor (Germany)
Dr Slavica Košarčić,Principal Research Fellow(Serbia)
Dr Jelena Petrović, Senior Research Associate (Serbia)
Dr Vladimir Savić, Senior Research Associate(Croatia)
Dr Ivana Hrnjaković-Cevtković, professor (Serbia)
Dr Sandra Stefan-Mikić, professor (Serbia)
Dr Snežana Ivanović, Principal Research Fellow (Serbia)
Dr Nataša Golić, Principal Research Fellow (Serbia)
Dr Dubravka Milanov,Senior Research Associate(Serbia)
Dr Tania Hubenova, professor (Bulgaria)
Dr Igor Stojanov, Senior Research Associate (Serbia)
Dr Sara Savić, Research Associate (Serbia)
Dr Dejan Bugarski, Research Associate (Serbia)
Dr Vladimir Polaček, Research Associate (Serbia)
Dr Marjana Todorčević, Postdoc.Research Assistant(UK)
Dr Jadranka Žutić, Research Associate (Serbia)
Dr Miroslav Urošević, Research Associate (Serbia)
Dr Jasna Prodanov Radulović,ResearchAssociate (Serbia)
Dr Petr Kralik, Research Associate (Czech Republic)
Dr Dragana Dimitrijević , PhD (Serbia)
Dr Bojana Grgić, MSc (Serbia)
Dr Milovan Jovičin, Research Associate (Serbia)
Dr Radomir Ratajac, Research Associate (Serbia)
Dr Dragana Ljubojević, Research Associate (Serbia)
Dr Živoslav Grgić, Research Associate (Serbia)
Dr Diana Lupulović, Research Associate (Serbia)
Dr Aleksandar Milovanović, Research Associate (Serbia)
Dr Željko Mihaljev, Research Associate (Serbia)
Dr Danka Maslić-Strižak, Research Associate (Serbia)
Dr Dragica Vojinović, Research Associate (Serbia)
Dr Ksenija Nešić, Research Associate (Serbia)
Dr Živka Ilić, Research Associate (Serbia)
Dr Božidar Savić, Research Associate (Serbia)
Dr Branislav Kureljušić, Research Associate (Serbia)
Dr Sandra Jakšić, Research Assosiate (Serbia)

HONORARY COMMITTEE:

Dr Srđan Verbić, prof dr Snežana Bogosavljević Bošković, prof dr Zoran Mašić, Vladimir Pavlov, Branislav Bogaroški, prof dr Dragan Glamočić, prof dr Vlada Teodorović, prof dr Radovan Pejanović, prof dr Milan Popović, prof dr Zora Mijačević, prof dr Brana Radenković Damjanović, prof dr Nikola Grujić, prim dr Dragan Ilić, doc dr Vladimir Petrović, prof dr Dine Mitrov, prof dr Nihad Fejzić, doc dr Boris Habrun, prof dr Željko Cvetnić, prof dr Andrej Kirbiš, prof dr Tadej Malovrh, prof dr Boris Stegny, prof dr Paul Pirsan, prof dr Gheorghe Darabus, dr Teodor Dujin, dr Radovan Pavlović, dr Ivana Kovinčić, dr Marijana Galić, dr Ksenija Stevanović, dr Milan Šurjanović, dr Mira Velhner, dr Dragan Milićević, Petar Matijević, prof dr Dragan Šefer, dr Aleksandar Lončarević, dr Milenko Žutić, dr Vojin Ivetić, dr Snežana Janković, dr Vesna Đorđević, dr Jovanka Lević.

LIVE ATTENUATED SWINE INFLUENZA VIRUSES AS VACCINE CANDIDATES

Aleksandar Masic[1]*, Yan Zhou[2], Shawn Babiuk[3], Bojana Prunic[4] Tamas Petrovic[4]

1. CanCog Technologies, Toronto, Canada
2. Vaccine and Infectious Disease organization, Saskatoon, Canada
3. National Center for Foreign Animal Disease, Winnipeg, Canada
4. Scientific Veterinary Institute "Novi Sad", Novi Sad, Serbia
* Corresponding author: SashaM@cancog.com

Summary

Swine influenza (SI) is an acute, highly contagious, respiratory disease of swine caused by influenza A viruses. In addition, SI infections possess significant human public health concerns as they may serve as intermediate host for the generation of new pandemic viruses. Vaccination is still the primary method for the prevention and control of SI. Currently, commercially available vaccines against SI are a combination of inactivated swine influenza viruses (SIVs) with oil adjuvant. Their application induces mainly humoral immune response, which may not be protective against virus variation in the field. In contrast, application of live attenuated influenza vaccines (LAIV) mimics natural infection and induces strong, cell-mediated and humoral immunity. Furthermore, LAIV induces cross-protective immunity against different subtypes of influenza A viruses and are currently unavailable for SI. Using reverse genetics technology, we generated multiple different mutant SIVs that could be considered as a LAIV. Two SIV mutants were derived from A/Swine/Saskatchewan/18789/02 (H1N1) SIV and had modified cleavage site within hemagglutinin (HA) segment. Both SIV mutants were fully dependent on the presence of human neutrophil elastase for their growth in tissue culture, thus they were highly attenuated when administered to pigs due to the lack of exogenous elastase at the replication site. The second approach was focused on the generation of a new LAIV, an eight-segment SIV harboring two different SIV hemagglutinins (HAs), H1 and H3, in the genetic background of H1N1 SIV. This mutant SIV was generated by fusing the H3 HA ectodomain from A/Swine/Texas/4199-2/98 (H3N2) to the cytoplasmic tail, transmembrane domain, and stalk region of neuraminidase (NA) from A/Swine/Saskatchewan/18789/02 (H1N1) SIV. While this H1-H3 chimeric SIV, when propagated *in vitro* in the presence of exogenous neuraminidase, showed kinetics and growth properties similar to the parental wild-type virus, *in vivo* it was highly attenuated in pigs. Furthermore, application of these three genetically modified, live attenuated, swine influenza viruses as a live vaccines induced robust humoral (systemic and mucosal), cell-mediated and cross-reactive immune responses in pigs which conferred complete protection against infections with both H1 and H3 SIV subtypes in pigs.

Keywords: Live attenuated vaccine, swine influenza, reverse genetics