Background
The Human Factors and Medicine Panel (HFM) encompasses three Area Committees: (1) Health, Medicine and Protection Area (HMP) provides the scientific basis for establishing an operationally fit and healthy force, restoring health, minimizing disease and injury, optimizing human protection, sustainability and survivability. (2) Human Effectiveness (HE) optimizes individual readiness and organizational effectiveness by addressing psycho-social, organizational, cultural and cognitive aspects in military action. (3) Human System Integration (HSI) optimizes the performance of human operated technical systems by addressing the human machine interactions, processes, tools and measures of effectiveness.

Symposium Theme
This three-day Symposium explores NATO nation’s research and development on medical diagnostics and countermeasures against biological agents (B-agents) or related highly contagious infectious diseases is a key issue in both military medical readiness and a Nation’s public health ability to counter those threats. Prophylaxis in the form of vaccination, when available, is clearly preferable but may be impracticable for a broad spectrum of B-agents. Immunization presumes the availability of an approved vaccine that can be administered to the military population in anticipation of a known biological threat; with the appropriate number of doses required for the vaccination regimen. The incubation time required for onset of disease following a B-agent exposure (if detected in a timely manner or diagnosed early) offers the possibility for therapeutic intervention. Many therapeutic countermeasures have not been specifically tested and approved for use following B-agent exposure. Likewise, in the case of new or emerging diseases (e.g. SARS, MERS, avian influenza, etc.), the effectiveness of these countermeasures is likely unknown. This Symposium will address a broad study of the mechanisms of B-agent related infectious disease, prophylaxis and therapy, and will provide a concise overview of the present state-of-the-art in medical countermeasures against B-agents, with a focus on their use in CBRN defense.

In addition to the broad underlying discussion of medical countermeasures (MCM) to emerging and evolving infectious diseases in general, the Task Group preceding this Symposium (HFM-RTG-186) identified fifteen B-agents of primary interest. Specifically, these were (1) variola major (smallpox), (2) Bacillus anthracis, (3) Yersinia pestis (plague), (4) Francisella tularensis (tularemia), (5) filovirus (Ebola and (6) filovirus Marburg (viral hemorrhagic fevers), (7) Clostridium botulinum toxin (botulism), (8) alphaviruses (VEE, EEE, WEE) (viral encephalitis), (9) Brucella species (brucellosis), (10) Burkholderia mallei (glanders), (11) Burkholderia pseudomallei (meliodosis), (12) Coxiella burnetii (Q-fever), (13) Staphylococcus enterotoxin, (14) Rickettsia prowazekii (lymphocytic, and (15) ricin toxin.

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Important Note
Please note that all participants are to make their own travel arrangements, hotel bookings and need to take special note of any VISA requirements.
### Tuesday 14 October 2014

<table>
<thead>
<tr>
<th>Time</th>
<th>Session/Content</th>
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<tr>
<td>09:00</td>
<td>Opening Symposium Chair</td>
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<tr>
<td>09:15</td>
<td><strong>SESSION 2.2 - VACCINES (Continued)</strong>&lt;br&gt;Chair - Dr. John Wade (USA)&lt;br&gt;<em><strong>Anthrax Vaccine Adsorbed: Evidence Supporting Continuing the Vaccination Series when Doses are Delayed</strong></em>&lt;br&gt;Dr. Phillip Pittman, Chief, Dept. Clinical Research, USAMRIID (USA)&lt;br&gt;<em><strong>Progress Towards Development of a Safe and Efficacious Ricin Vaccine</strong></em>&lt;br&gt;Dr. Leonard A. Smith, USAMRIID (USA)&lt;br&gt;<em><strong>Multi-Agent DNA Vaccine Delivered by Electroporation Elicits Protective Immunity Against Aerosolized VEEEEE/VEE Viruses in NHP</strong></em>&lt;br&gt;Dr. Connie S. Schmaljohn, USAMRIID (USA)</td>
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<td>10:45</td>
<td>Break</td>
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<td>11:00</td>
<td><strong>SESSION 3 - DIAGNOSTICS</strong>&lt;br&gt;Chair - Col. François Thibault (FRA)&lt;br&gt;<em><strong>Current to Future Molecular Diagnostics: A Roadmap from Inception to Regulatory Compliance</strong></em>&lt;br&gt;Dr. Timothy Manogue, USAMRIID (USA)</td>
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<td>12:00</td>
<td>Lunch</td>
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<td>13:00</td>
<td><strong>SESSION 4 - BACTERIAL THERAPEUTICS AND MULTI-DRUG RESISTANCE</strong>&lt;br&gt;Chair - Dr. Hugo-Jan Jansen (NLD)&lt;br&gt;<em><strong>Antimicrobial Peptides: A promising Class of Antimicrobial Compounds against BWA and Multi-drug Resistant Bacteria</strong></em>&lt;br&gt;Dr. Floris J. Bikker, Dept. of Oral Biochemistry, Academic Centre for Dentistry, Amsterdam (NLD)</td>
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<td>15:45</td>
<td>The Anthrax Capsule: Target for Novel Therapeutics and New Vaccines&lt;br&gt;Dr. Arthur M. Friedlander, USAMRIID (USA)</td>
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<td>16:15</td>
<td>End of Day 2</td>
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### Wednesday 15 October 2014

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<tr>
<th>Time</th>
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<tr>
<td>09:00</td>
<td>Opening Symposium Chair</td>
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<tr>
<td>09:10</td>
<td><strong>SESSION 5 - ANTIVIRAL AND ANTI-TOXIN THERAPEUTICS</strong>&lt;br&gt;Chair - Col. Prof. Eric Valade (FRA)&lt;br&gt;<em><strong>Anti-BotABE (EU FP7 project): Neutralizing Antibodies Against Botulinum Toxins A,B,E</strong></em>&lt;br&gt;Dr. Michael Hust, Technische Universität Braunschweig (DEU)</td>
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<td>10:40</td>
<td>Development of Therapeutic Antibodies as Medical Countermeasures to Biological Agents in Defense Research and Development Canada&lt;br&gt;Dr. Wei-Gang Hu, DRDC, Suffield Research Centre (CAN)</td>
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<tr>
<td>11:00</td>
<td><strong>SESSION 6 - ANIMAL MODELS</strong>&lt;br&gt;Chair - Dr. Maria Mateo Maestre (ESP)&lt;br&gt;<em><strong>Civilian-Military Cooperation for Detection, Identification, and Confirmation of Biological Agents</strong></em>&lt;br&gt;Col. Nicholas J. Vietri, USAMRIID (USA)</td>
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<td>12:00</td>
<td>Lunch</td>
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<td>13:00</td>
<td><strong>SESSION 7 - PATHOGENESIS</strong>&lt;br&gt;Chair - Dr. Patricia L. Worsham (USA)&lt;br&gt;<em><strong>The Role of Tat Proteins in Yersinia Pestis Pathogenesis</strong></em>&lt;br&gt;Dr. Joel Bozue, USAMRIID (USA)</td>
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<td>15:45</td>
<td>Proteomic Analysis of RAW 264.7 Mouse Macrophage Cells Infected with Burkholderia pseudomallei K96243&lt;br&gt;Dr. David DeShazer, USAMRIID (USA)</td>
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<td>15:15</td>
<td><strong>Legionella pneumophila: A Biological Threat Model</strong>&lt;br&gt;Dr. Bjørnar Hassel, Norwegian Defense Research Establishment (NOR)</td>
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<td>15:45</td>
<td><strong>TER</strong> Technical Evaluation Report &amp; Discussion&lt;br&gt;Dr. Dave Franz (USA)</td>
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<td>16:30</td>
<td><strong>Closing Remarks</strong>&lt;br&gt;Dr. Leonard Smith and Dr. John Wade, Symposium co-Chairs&lt;br&gt;Dr. John Tangney, HFM Panel Chair</td>
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<td>17:00</td>
<td><strong>End of Symposium</strong></td>
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Science and Technology Organization in NATO

In NATO, Science & Technology (S&T) is defined as the selective and rigorous generation and application of state-of-the-art, validated knowledge for defence and security purposes. S&T activities embrace scientific research, technology development, transition, application and field-testing, experimentation and a range of related scientific activities that include systems engineering, operational research and analysis, synthesis, integration and validation of knowledge derived through the scientific method.

In NATO, S&T is addressed using different business models:

- The Collaborative business model where NATO provides a forum where NATO Nations and partner Nations elect to use their national resources to define, conduct and promote cooperative research and information exchange.

- The In-House delivery business model where S&T activities are conducted in a NATO dedicated executive body, having its own personnel, capabilities and infrastructure.

The Science and Technology Organization - STO

The mission of the NATO STO is to help position the Nations’ and NATO’s S&T investments as a strategic enabler of the knowledge and technology advantage for the defence and security posture of NATO Nations and partner Nations, by:

- Conducting and promoting S&T activities that augment and leverage the capabilities and programmes of the Alliance, of the NATO Nations and the partner Nations, in support of NATO’s objectives;

- Contributing to NATO’s ability to enable and influence security- and defence-related capability development and threat mitigation in NATO Nations and partner Nations, in accordance with NATO policies;

- Supporting decision-making in the NATO Nations and NATO.

Acknowledgement

The Human Factors and Medicine Panel expresses its thanks to the representatives from Lithuania for the invitation to hold this meeting in Vilnius, and for the facilities and personnel, which make this meeting possible.