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The importance of a one health bio-surveillance system in public health and pandemic defence

One Health is global and has to be respected as the biggest threats are the emerging zoonotic diseases. We will encounter more often the bio threats as we travel more and with an increasing dense population of the world, the spread of infectious diseases goes faster and over a bigger area. The recent outbreak of SARS-CoV-2 is an example of an emerging pathogen, which has spread all over the world. This nasty virus is discovered in humans almost two years ago and has created a lot of fear and economic damage. It is of utmost importance to do research on the new emerging contagious diseases and to keep biosafety and biosecurity well organised in the laboratories where this research is done. To train the bio threat awareness and biological management is very important. Tools to monitor, detect and identify the threat of new emerging zoonotic diseases is getting more important together with diagnostic tools for the diagnosis of the victims of new pandemic causing pathogens. Classical microbiological identification techniques are too slow or unspecific for prompt reaction on an outbreak of a new emerging disease, which is at that moment unknown. To detect 'Pathogenicity islands' in a virus or bacterium is more important in this phase than to identify the organisms, the zoonotic micro-organism most probably is mutated naturally or in a laboratory and therefore not identifiable with existing 'classical' techniques. New gene-extraction techniques and new analysers, which give a kind of fingerprint of the threat, are developed and these new techniques will be important to monitor the safety of the environment.

Biography

Stef Stienstra works internationally for several medical and biotech companies as scientific advisory board member and is also an active reserve-officer of the Royal Dutch Navy in his rank as Commander (OF4). For the Dutch Armed Forces he is CBRNe specialist with focus on (micro) biological and chemical threats and medical- and environmental functional specialist within the 1st CMI (Civil Military Interaction) Battalion of the Dutch Armed Forces. For Expertise France he has managed from 2014 to 2019 an EU CBRN CoE public health project in West Africa. He is visiting professor at the University of Rome Tor Vergata giving lectures for the CBRN Master study. In his civilian position he is at this moment developing with MT-Derm in Berlin (Germany) a novel intradermal vaccination technology as well as a new therapy for cutaneous leishmaniasis for which he has won a Canadian 'Grand Challenge' grant. With Hemanua in Dublin (Ireland) he has developed an innovative blood separation unit, which is also suitable to produce convalescent plasma for Ebola Virus Disease therapy. He has finished both his studies in Medicine and in Biochemistry in the Netherlands with a doctorate and has extensive practical experience in cell biology, immune-haematology, infectious diseases, biodefense and transfusion medicine. His natural business acumen and negotiation competence helps to initiate new successful businesses, often generated from unexpected combinations of technologies.