WHO Advisory Committee on Variola Virus Research

Report of the Sixteenth Meeting

Geneva, Switzerland

20 and 21 October 2014

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Executive summary

On 20 and 21 October 2014 the Advisory Committee on Variola Virus Research held its sixteenth meeting.

The Advisory Committee received reports on the virus collections held at the two WHO Collaborating Centres that are authorized as repositories of variola virus: the State Research Centre for Virology and Biotechnology (VECTOR), Koltsovo, Novosibirsk Region, Russian Federation and the Centers for Disease Control and Prevention (CDC), Atlanta, Georgia, United States of America (USA).

All the proposals for research in 2013-2014 that involved live variola virus and that had been approved by the scientific subcommittee were requests for extensions of existing approved proposals. No new proposal for research involving live variola virus was approved (one was received but not approved).

The Advisory Committee also received updates on the use of live variola virus for the refinement of diagnostic tests, the search for an animal model of smallpox, antiviral studies, and the status of vaccine development.

In the USA, a DNA-based diagnostic test for variola virus has been refined and is entering final stages of validation. In the Russian Federation, documentation has been prepared and the necessary arrangements made for government licensing of a DNA-based assay for species-specific diagnosis of variola virus and other pathogenic orthopoxviruses.

Participants from CDC reported the discovery of vials labelled as variola virus found in a laboratory in the USA. These vials were transported under high security to the CDC laboratories under the existing programme at the WHO Collaborating Centre. The vials were found to contain viable variola virus by real-time PCR tests and underwent full genomic sequencing. These are now held in the secure CDC facility awaiting destruction. A thorough search of all government laboratories in the USA was initiated and revealed no further variola virus material.

The discovery of smallpox material on display in the National Museum of Prague was also reported. A small portion of this material was extracted and sent under high security to a European laboratory for testing; molecular assays and sequencing confirmed that it contained smallpox material. Nevertheless, DNA analysis indicated that the variola genomes were considerably degraded and therefore it was unlikely that the material contained viable virus.

Two antiviral compounds (tecovirimat, ST-246, and brincidofovir, CMX-001) that are in the process for registration in the USA do not require further animal model research with live variola virus for review by the Food and Drug Administration. Representatives of two pharmaceutical companies described progress toward the registration of these two candidate antiviral agents.

Considerable progress has been made towards the testing and registration of highly attenuated smallpox vaccines that would be suitable for use in people that are immunologically

compromised. Some of these vaccine stocks have been shown to be stable in a range of storage conditions.

The estimated smallpox vaccine stocks at global level are about 700 million doses (country and WHO stock).