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Press Release

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The Ebola epidemic

Is there a way out?

The International Union of Immunology Societies (IUIS) calls for rapid and adequate funding of trials on experimental vaccines and therapies

Berlin, 27 October 2014. Not everyone who contracts the Ebola virus dies, the survival rate is around 30% (1) suggesting that some kind of immunity to the disease is possible. Experimental treatments and vaccines against Ebola exist but have not yet been tested in large groups for safety and efficacy (phase 2 trials).

The International Union of Immunology Societies (IUIS) published a statement today in its official journal, *Frontiers in Immunology* (2) calling for urgent and adequate funding of vaccine candidates in clinical trials and speedy implementation of immunisation in African countries.

"The current Ebola outbreak, is an unprecedented disaster for humans. This virus cunningly hijacks the human immune system with devastating effects. Without blocking transmission, Ebola may become endemic," says Prof Clive Gray, author of the paper and member of the Clinical Immunology Committee of the IUIS, from the Institute of Infectious Diseases and Molecular Medicine, University of Cape Town, South Africa. "Efforts are being made on health communication in order to prevent the spread of this virus from person to person. This is essential but not enough. Stakeholders need to work together to accelerate the roll out of vaccines and therapies," Gray stated.

According to the IUIS paper, vaccination will be a vital additional strategy. Authors explain that although no licensed vaccines exist on the market, "significant progress" has been made in recent years and especially in the last few months. Among the promising vaccines being tried today, the paper mentions the *Cad3 Ebola vaccine* developed using chimpanzee adenovirus. This vaccine was found to protect animals with a single dose and is currently undergoing phase 1 trials (where researchers test the vaccine candidate in a small group of people to evaluate safety, determine safe dosage and identify side effects). Another promising vaccine candidate is r*VSV-ΔG-ZEBOV* that has proven safe and efficient in non-human primates with no major toxicities. Phase 1 trials for this vaccine started in October.

Commenting on the need for a vaccination strategy, Prof Marylyn Addo, Department of Medicine, Division of Emerging Infections and Tropical Medicine, University Medical Centre, Hamburg, Germany explained: "the fact that the current outbreak of Ebola is through a single strain with low mutability, suggests that vaccine strategies could be easily achievable. Understanding how immunity works in survivors of Ebola may further contribute to strategic vaccine design and optimisation. » Addo concluded that: « we need to speed up the development process in order to advance clinical testing and, ultimately, the deployment of effective vaccines. However, despite the urgency of the situation, the safety of the vaccines for recipients needs to be ensured and cannot be compromised."

Alongside vaccination (to prevent infection), the IUIS paper says that experimental therapies are also available to treat people who are already infected with the virus. *ZMapp,* for example, combines antibodies that cling to the virus and allow the immune system to clear it. The drug has been tried on animals and humans with different outcomes. Currently the drug is not available, so it cannot be tested further.

Other therapeutic approaches are *siRNA* (also known as *TKM-Ebola*) and *Favipiravir* (*T705*). "These drugs need to be tried for efficacy and safety, but currently we do not have time to conduct traditional studies," explained Prof Reinhold Schmidt, Director of the Centre of Internal Medicine, Division of Immunology and Rheumatology, University of Hannover, Germany.

The IUIS paper calls for a speedy roll-out of a human vaccine to Ebola. Prof Schmidt continues, "Of course we do not overrule the need for trials to ensure safety, but IUIS is calling on authorities to speed up the process by a) performing parallel animal safety and immunogenicity studies alongside human phase 1 clinical trials with small sets of volunteers to assess safety and optimal dosage and b) rapidly designing and implementing phase 2 clinical trials." Prof Schmidt concluded: "Time is not on our side. Funding is urgently needed, as well as a more flexible and speedy process to make vaccines available to populations at greatest risk, in order to halt this devastating Ebola outbreak."

ENDS

References

(1) Ebola, WHO, R. Team, O. March, and O. August. 2014. Ebola Virus Disease in West Africa - The First 9 Months of the Epidemic and Forward Projections. N. Engl. J. Med. 1–15. DOI: 10.1056/NEJMoa1411100
(2) A Dead-End Host: is there a way out? A position piece on the Ebola virus outbreak by the International Union of Immunology Societies. doi: 10.3389/fimmu.2014.00562

(3) **WHO Situation Report 15 October 2014:**
http://apps.who.int/iris/bitstream/10665/136508/1/roadmapsitrep15Oct2014.pdf

Notes to Editors

(1) **About the International Union of Immunology Societies (IUIS)**
The International Union of Immunological Societies (IUIS) is an umbrella organization for many

regional and national societies of immunology throughout the world. As articulated in its Constitution, the objectives of IUIS are:

- to organise international co-operation in immunology and to promote communication between the various branches of immunology and allied subjects
- to encourage within each scientifically independent territory co-operation between the Societies that represent the interests of immunology
- to contribute to the advancement of immunology in all its aspects.

There are currently 69 Member Societies of IUIS.

Please see more about us here:
http://www.iuisonline.org/index.php?option=com_content&view=article&id=47&Itemid=54&5a48d87dcdf6fac96a6bc0ffc1b9e64c=bfedb13f50bde4fc680a6e1dced655a8

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More information on this press release, spokespersons and a PDF of the statement (under embargo) are available from:

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Once the embargo lifts, on Monday 27 at 10:00 CET, the full paper will be available here:

http://journal.frontiersin.org/Journal/10.3389/fimmu.2014.00562/full