Preparation and Production of Influenza A/H7N9 Recombinant M1, M2, NS1, NS2 and RNP Proteins for Development of Mouse Monoclonal Antibodies

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Background/Objective
A low pathogenic avian influenza virus H7N9 has led to human infection on account of genetic recombination in March 2013. The novel H7N9 virus has shown Tamiflu drug-resistant. More than 661 cases have been confirmed and the mortality rate was as high as 39%. Therefore, it is very important to develop rapid laboratory diagnostics and antibodies.

Method
In the study, baculovirus expression system was applied for expressing recombinant M1, M2, NS1, NS2 and RNP proteins. The bacmids containing M1, M2, NS1, NS2 and RNP genes were transfected into Sf21 insect cells and the indicated proteins were generated after three days infection. The massive production protocols of the recombinant H7N9 viral proteins were characterized and the recombinant proteins were purified by fast protein liquid chromatography.

Result
The amino acid sequences confirmed by mass spectrometry showed the correct sequence coverage with the deduced sequences of H7N9 genes. The antibody screening procedures and the anti-H7N9 murine monoclonal antibody libraries against M1, M2, NS1, NS2 and RNP were established.

Conclusion
The present study provides the recombinant proteins and the corresponding monoclonal antibodies for laboratory diagnosis and disease surveillance of the novel H7N9 influenza virus.