

Zoonoses**0503****First comparison of genome sequences of rotavirus groups A to G reveals insights into evolution and demarcation of rotavirus species**E. Trojnar¹, E. Kindler², P. Otto³, J. Matthijssens⁴, G. Heckel⁵, *R. Johne¹¹Federal Institute for Risk Assessment, Berlin, Germany²Kantonal Hospital St. Gallen, Institute of Immunobiology, St. Gallen, Switzerland³Friedrich Loeffler Institute, Institute for Bacterial Infections and Zoonoses, Jena, Germany⁴University of Leuven, Rega Institute for Medical Research, Leuven, Belgium⁵University of Bern, Institute of Ecology and Evolution, Bern, Switzerland

Rotaviruses are a leading cause of acute viral gastroenteritis in humans and animals. Currently, five rotavirus groups (A to E) have been defined based on antibody reactivity, and three additional putative groups (F, G and ADRV-N) are investigated. Group A, B, C and ADRV-N are found in humans and animals, whereas group D, F and G have only been detected in birds so far.

Here, the first nearly complete genome sequences of group F and G rotaviruses have been determined and were compared to known sequences of the other rotavirus groups. Generally, phylogenetic trees based on 10 of 11 genome segments revealed that all rotavirus groups were clearly separated. Nucleotide sequence identities varied between 33.4% and 64.5%. A threshold was defined for demarcation of rotavirus species based on the sequence of the VP6-encoding genome segment; according to this, ADRV-N was placed into a putative new group H.

Phylogenetic analysis indicated two highly separated clades, one consisting of group A, C, D and F, and the other containing groups B, G, and H. Interestingly, the terminal sequences of the genome segments were also highly conserved within these clades. As - among other factors - these terminal sequences determine specificity of genome segment packaging, these findings may indicate the possibility of intergroup reassortments. A group A-like NSP1 gene was identified in the group D rotavirus strain 05V0049, which may represent the first example for an intergroup reassortant.

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