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Foreword

This special issue is devoted to viruses which very successfully adapted themselves to the respiratory tract of their host. Almost all known animal species are infected by respiratory viruses. These viruses can lead to highly contagious infections and epidemic diseases due to the direct transmission of viruses often moderately resistant to the environment. Fewer respiratory viruses are responsible for more endemic diseases that show, however, a high potential of transmission within herds. Interestingly, the adaptation of respiratory viruses to their hosts can follow two apparently opposite directions. Some viruses are genetically and antigenically stable, and their success relies on mechanisms of persistence, like chronic or latent infections, with herpesviruses as the best examples. Other viruses are highly variable. They are mainly RNA viruses, like influenza viruses or caliciviruses e.g., and their perpetuation is ensured by a high mutation rate allowing a very quick adaptation to new environmental constraints. All these viruses have solved the issues related to aerogenic spread and recognition of specific receptors on cells of the respiratory tract.

Taking examples from the most important respiratory infections of domestic animals, virus-host interactions are reviewed as deeply as possible and the molecular mechanisms are presented where they are available. Each article shows the very strong link between molecular and clinical virology, as knowledge of the underlying mechanisms is essential to develop efficacious hygienic and medical preventive measures.

I am very grateful that all contributors have so nicely strengthened the sense of veterinary virology by their work and that the editors of Veterinary Research support this special issue on animal respiratory viruses.

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