Press information

FLI Scientists discover new bacteria

Chlamydia avium and *Chlamydia gallinacea* presented in scientific journal

Insel Riems, 03 February 2014. During investigations of a psittacosis outbreak in Germany in 2005 the workgroup of Konrad Sachse, Institute of Molecular Pathogenesis of the Friedrich-Loeffler-Institut in Jena, has discovered so far unknown bacterial species. After intensive research conducted by an international team, the new species *Chlamydia avium* and *Chlamydia gallinacea* can now be presented in the scientific journal *Systematic and Applied Microbiology*. *Chlamydia avium* causes respiratory disease in pigeons and parakeets; *Chlamydia gallinacea* is relatively common in galliform birds. In the future, the two new bacterial species should be included in investigations of chlamydioses (psittacosis of parakeets, ornithoses of other bird species).

An international team, which also included scientists from France, Italy, Spain, and the USA and was coordinated by the FLI workgroup, investigated cases of disease in farm poultry, pigeons and parakeets involving the new bacterial species. Gradually the team succeeded in isolating viable field strains whose detailed genomic analysis conclusively confirmed the identification of two new species. *Chlamydia avium* and *Chlamydia gallinacea* are obligate intracellular microorganisms, i.e. unlike most other bacteria they cannot be cultivated in liquid or solid culture media, but require cell culture or hatching eggs for replication.

Chlamydia avium causes potentially fatal respiratory disease in pigeons and parakeets. According to present knowledge, *Chlamydia gallinacea* is rather common in poultry. Its

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pathogenic effect has not been fully established; however there is evidence for an infection risk in contact persons.

In their publication, the scientists emphasize the necessity to include the newly identified pathogens into investigations of chlamydioses of poultry, ornamental and wild birds. So far only the classical pathogen *Chlamydia psittaci* has been taken into account in avian chlamydiosis (psittacosis, ornithosis) diagnostics. In the future the two newly discovered species will also have to be considered. The extent of involvement of the detected species in infection events can vary. Thus, *Chlamydia avium* and *Chlamydia gallinacea* can occur individually as monoinfections; in numerous cases however mixed infections with *Chlamydia psittaci* have been observed, often associated with a tendency towards a more severe course of disease.

The national reference laboratory for chlamydiosis of the FLI, which also acts as reference laboratory of the World Organisation for Animal Health, has developed detection methods using DNA microarray and real time PCR and will now also begin to provide laboratory protocols for rapid and specific pathogen detection.

The manuscript has been published ahead of print on the website of the scientific journal Systematic and Applied Microbiology (http://dx.doi.org/10.1016/j.syapm.2013.12.004).

SACHSE, K., LAROUCAU, K., RIEGE, K., WEHNER, S., DILCHER, M., HUOT CREASY, H., WEIDMANN, M., MYERS, G., VORIMORE, F., VICARI, N., MAGNINO, S., LIEBLER-TENORIO, E., RUETTGER, A., BAVOIL, P.M., HUFERT, F.T., ROSSELLÓ-MÓRA, R., MARZ, M. (2014) Evidence for the existence of two new members of the family *Chlamydiaceae* and proposal of *Chlamydia avium* sp. nov. and *Chlamydia gallinacea* sp. nov.