Falcons from the United Arab Emirates infected with *Chlamydia psittaci/C. abortus* intermediates specified as *Chlamydia buteonis* by PCR

Sandro Stalder, Dr med vet, Hanna Marti, Dr med vet, Nicole Borel, Prof Dr med vet Dipl ECVP, FVH, Barbara Renate Vogler, Dr med vet, Theresa Pesch, Barbara Prähauser, Peter Wencel, DVM, Karine Laroucau, PhD, Sarah Albini, Dr med vet FVH

*Abstract:* *Chlamydiaceae* are obligate intracellular bacteria with a broad host range. Several studies found chlamydial species that are genetically intermediate between *Chlamydia psittaci* and *Chlamydia abortus* in various avian species. One of these intermediate *Chlamydia* species, found in a red-shouldered hawk (*Buteo lineatus*), was recently classified as a new species *Chlamydia buteonis*. This newly described *Chlamydia* species has so far only been reported in hawks exhibiting clinical signs of conjunctivitis, dyspnea, and diarrhea. In the present study, fecal samples of 5 gyrfalcons (*Falco rusticolus*), 3 gyr/peregrine falcon hybrids (*Falco rusticolus* x *Falco peregrinus*), and 15 falcons of unknown species presented to falcon clinics on the Arabian Peninsula were shipped to the Vetsuisse Faculty, University of Zurich, Zurich, Switzerland, for examination for the presence of *Chlamydiaceae*. A step-wise diagnostic approach was performed in order to identify the chlamydial species involved. *Chlamydiaceae* were detected in 21/23 falcons by a family specific real-time PCR (qPCR). Further identification with a 23S ribosomal RNA-based microarray assay and 16S conventional PCR and sequencing yielded inconclusive results, indicating the presence of an intermediate *Chlamydia* species. As none of the falcons tested positive for *Chlamydia psittaci* by specific qPCR, all 23 samples were subjected to a *Chlamydia buteonis*-specific qPCR, which was positive in 16/23 samples. Detailed information regarding clinical history was available for 8 falcons admitted to a falcon clinic in Dubai, United Arab Emirates. Six of these birds that were presented to the clinic due to loss of performance and poor general condition including vomiting and diarrhea were positive for *C buteonis*. In two birds without clinical disease signs admitted for a routine health examination, 1 was positive for *C buteonis* and 1 negative. It is yet unknown whether *Chlamydia buteonis* causes disease in birds, but the findings in this study indicate that *Chlamydia buteonis* may be an infectious pathogen in falcon species.