- **Deliverable D8.1:** An assessment of the pathogenesis and horizontal transmission characteristics of BTV-8, BTV-26, and other 'novel' BTV strains in goats and sheep (Partners 2, 4, 5). **(M18) report - Delivered December 2018**

Three variants of bluetongue virus serotype 27, designated here BTV-27v01, BTV-27v02 and BTV-27v03, were recently detected in asymptomatic goats in Corsica, France, between 2014 and 2015. Isolates were made from blood samples. Molecular characterisation revealed genetic differences between the three variants.

We investigated the *in vivo* characteristics of these three virus isolates, in collaboration with Partner 5. Experimental infections of a total of 15 goats, 11 sheep and 4 cattle with any one of the three variants, in separate animal trials, were carried. In goat trials, BTV-naïve animals of the same species were kept in a facility where direct contact was unhindered.

Of the 15 inoculated goats, 13 and 14 animals were found positive for BTV-RNA and antibodies, respectively, until the end of the experiments. Surprisingly, BTV-antibody levels as measured with ELISA and neutralisation test (SNT) were remarkably low in all seropositive goats. Virus isolation from whole-blood was possible at the peak of viremia until 49 dpi. Moreover, detection of BTV-27v02-RNA and antibodies in one contact goat indicated that, like BTV26, at least one of three BTV-27 variants may be transmitted by contact between goats.

In the field, BTV-27 RNA can be detected up to 6 months in whole-blood of Corsican goats infected with the virus. By contrast, BTV RNA was not detected in blood of cattle or sheep. In addition, antibodies to BTV-27 were not detected in cattle and only a transient increase in antibody levels was observed in some sheep. None of the 30 animals showed obvious BT-like clinical signs, regardless of the route of inoculation (intravenous or subcutaneous). Of the three goats infected with BTV-27v03, 2 goats showed a slight and transient increase of body temperature at 2 dpi (39.8°C) and 7 dpi (40.0°C), respectively, as well as minor serous nasal discharge at 14 dpi. Otherwise, these goats were in a consistently good general condition throughout the experiment.

In summary, the phenotypes observed for BTV-27v01-v03 correspond to characteristics commonly known for BTV-25 and 26.