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***“One Health is the collaborative efforts of multiple disciplines working locally, nationally, and globally to attain optimal health for people, animals, plants and our environment.”***

*“One Health implementation will help protect and/or save untold millions of lives in our generation and for those to come.”*

*“Between animal and human medicine there are no dividing lines--nor should there be.”*

Rudolf Virchow, MD (the father of cellular pathology)

**Posted One Health Initiative website NEWS August 11, 2013**

## **Rabies in Taiwan after 50 years -- in wildlife**

**By Jack Woodall, PhD**

Three ferret-badgers were found dead on the island in 2012, between May and December, but rabies tests were only carried out in June 2013. The delay was presumably due to the extremely low index of suspicion, because Taiwan had been rabies-free since 1959. Since June, 41 more animals of that species have been found dead from rabies, plus a dead infected house shrew that had probably been bitten by one of them. The Animal Health Research Institute (National Laboratory) of Taiwan confirmed the infections by direct fluorescent antibody tests on the 2013 cases.

About 1000 Taiwanese are receiving rabies vaccinations; it may be supposed that these were hunters and others who had handled the carcasses. Ferret-badgers are hunted for their fur in the south of mainland China, where many human cases have been found in hunters. There was a rabies epizootic in ferret-badgers on the mainland in 2007-2008.

According to Tsai Hsiang-jung, Director-general of Taiwan's Council of Agriculture Animal Health Research Institute, analysis of the virus isolates from the ferret-badgers showed that they are about 90 percent similar to those found in mainland China and can be classified into 3 types. The findings suggest the virus has been lurking in Taiwan's mountainous areas for years before it was discovered, but he declined to speculate on how long the virus has existed here. A virology moderator commented in a ProMED post that the heterogeneity of the isolates of rabies virus obtained from the Taiwan ferret-badger population suggests that the virus has been present there for a considerable period, and is not a recent introduction [1].

Asked if the disease could have been caused by smuggled animals from China, Tsai said health officials were not certain of this, but that there was a "very high possibility" this might have happened. This writer suggests that a search of old records might show that the ferret-badger population was once almost hunted out, and then replenished from the mainland [2].

No practical rabies vaccine has been developed for wildlife in China. Taiwan's official report to the OIE states that intensified vaccination of dogs and cats is being carried out in the areas where infected ferret-badgers have been found and that monitoring is ongoing. So far no dogs or cats have been found to be rabid.

Chinese authors publishing in 2009 cited lack of communication and cooperation among mainland China's Center for Disease Control and Prevention, Ministry of Agriculture and wildlife services from the Bureau of Forestry which make the situation there more complicated than canine rabies control. This is a clear case of an outbreak that demands a One Health approach, with close inter-agency collaboration.

[1] ProMED-mail (2013). Rabies - Taiwan (08): ferret badger, more cases, isolate characterization, OIE. ProMED-mail; 6 Aug: 20130806.1866372. <http://www.promedmail.org>. Accessed 6 Aug 2013.

[2] Zhang S, Tang Q Wu X, et al (2009): Rabies in Ferret Badgers, Southeastern China. Emerging Infectious Disease 15(6): 946-9; <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2727325/>. Accessed 6 Aug 2013.

**Footnote: Dr. Woodall**

<http://www.onehealthinitiative.com/publications/Jack%20Woodall%20Biography%20June%202013.pdf> is a member of the One Health Initiative Autonomous *pro bono* team and contents manager of the One Health Initiative website's ProMED-mail page <http://www.onehealthinitiative.com/promed.php>.