MDV-infection.

To further characterize the molecular events involved in this apotosis, the expressions of apoptosis-related genes, DAD1 and p52, were examined by Northern blotting. DAD1 has been reported to inhibit apoptosis while p52 can promote apoptosis in host cells. No differences in the expression levels of these genes in the lymphoid tissues were detected between infected and uninfected chichens during the experimental period.

In conclusion, apoptosis could play an important role in the immunosuppression caused by MDV. Since persistent immunosuppression will be essential for subsequent transformation, to study the mechanism(s) of the apoptosis would be necessary to understand the pathogenesis of MD.

Study on stomach nematodes (Anisakidae) among Steller sea lions, spotted seals and ribbon seals captured at northeast coast of Hokkaido, Japan

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Eight Steller sea lions (*Eumetopias jubatus*), 33 spotted seals (*Phoca largha*) and 28 ribbon seals (*Phoca fasciata*), captured off Rausu, eastern Hokkaido during the winter of 1997–98, were examined. All nematodes were found in the stomach cavity and at the stomach wall of the animals. The nematodes were categorized into 4 groups by their size and the number of worms were counted. Then, some of the adult worms and third- or fourth-stage larvae were picked up randomly and identified.

Steller sea lions harbored an average of 5,112±4,250 (S.D.) worms. Adult parasites found in the animal were *Pseudoterranova decipiens* (75.0%) and *Contracaecum osculatum* (37.5%), with the former as the dominant species. *P. decipiens* was found in 6 animals and consists more than 70% of all adults identified. Larvae of *Anisakis simplex* (75.0%), *P. decipiens* (100%), *C. osculatum* (75.0%) and *Phocascaris* sp. (75.0%) were found. However, adults of *A. simplex* and *Phocascaris* sp. were not found, suggesting that these worms hardly establish in this host. *P. decipiens* are primary species in Japanese waters but *C. osculatum* are found more often in Alaska, USA. It is suggested that the different food resources causes the difference in nematode fauna.

Spotted seals harbored an average of 748± 820 (S.D.) worms. *P. decipiens* (84.4%) was dominant among adult and adult parasites of *P. cystophorae* (15.6%) were also found. Larvae of *A. simplex* (81.3%), *P. decipiens* (100%), *C. osculatum* (56.3%) and *Phocascaris* sp. (34.4%) were found, with *P. decipiens* as the dominant species. *A. simplex* and *C. osculatum* larvae were also commonly found in the animals, but adult worms of these species were not found. Because parasitism by the adults of these species is seldom reported, it seems that *A. simplex* and *C. osculatum* hardly develop in this host. The nematode abundnce of adult hosts was significantly larger than that of immature or pup hosts.

Ribbon seals harbored an average of 1,297±

1,212 (S.D.) worms. Adults of *C. osculatum* (89.3%) was dominant and adults of *P. decipiens* (17.9%) and *P. cystophorae* (10.7%) were also found. Larvae of *C. osculatum* (100%) and *Phocascaris* sp. (96.4%) were dominant species and *A. simplex* (57.4%) and *P. decipiens* (67.9%) were also found. Although 4th stage larvae of *Phocascaris* sp. were dominantly found among the larvae identified, its adult stage was not commonly found in this animal. It is suggested that the ribbon seals are not important hosts of this species.

The number of larval nematode species per host was 2.75–3.18 in average, which was significantly more than that of adult nematodes, 0.97–1.18.

Development of *Echinococcus vogeli* in alternative host models using laboratory rodents.

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Echinococcus vogeli, a neotropical species of the genus *Echinococcus*, is one of the causative agents of parasitic zoonoses in Central and South America. The sylvatic cycle of the cestode involves the bush dog (*Speothos venaticus*) as the definitive host and the paca (*Cuniculup paca*) as the intermediate host. Very little is known about the developments of the parasite. In the present study, alternative definitive and intermediate host models for *E. vogeli* were established using Mongolian gerbils (*Meriones unguiculatus*) and AKR mice, and the growth of the parasite in the larval and tapeworm stages was observed.

For observation of the tapeworm stage development, Mongolian gerbils treated with prednisolone tertiary-butylacetate (PTBA) were orally inoculated with protoscoleces. The development of the worm was as follows; band formation at 7 days post infection (DPI), segmentation and formation of genital primordium and testes at 14 DPI, second proglottid formation, spermatozoa in testes and receptaculum seminis, and cleavage of ovum in uterus at 21 DPI, hook formation in oncospheres at 28 DPI and embryophore formation at 34 DPI. Morphologically mature eggs were first detected in feces at 35 DPI. Most of the mature worms were recovered from the upper one-third part of the small intestine. Time course of coproantigen excretion was analyzed by sandwich enzyme-linked immunosorbent assay using a monoclonal antibody EmA9 directed against *E. multiloculars* adult somatic antigen. The OD value increased from 7 DPI, thus indicating the possibility of early diagnosis of *E. vogeli* infection by this method. EmA9 reacted immunohistochemically with *E. vogeli* after 7 DPI. Infectivity of the eggs was not proven because *E. vogeli* cysts could not be recovered after oral inoculation of the eggs into Mongolian gerbils and AKR mice necropsied between 2 to 12 weeks post infection.

For observation of the larval stage development, metacestodes were surgically transplanted into the abdominal cavity of Mongolian gerbils. Development of metacestodes consisted of growth in diameter and exogenous proliferation of