

## The Gibbon as a Host for the Canine Heartworm

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**OBJECTIVE:** To determine the suitability of the gibbon as a model for studying transmission and clinical disease by Dirofilaria immitis, the canine heartworm, in a primate host.

**DESCRIPTION:** In the United States and Japan Dirofilaria immitis, the canine heartworm, has been found in the heart and lungs of humans. The risk of humans to heartworm infections may be significant in areas where heartworm are endemic. In Thailand upwards to 100% of the dogs are infected with Dirofilaria and transmission is by mosquitoes that also feed readily upon man. The study of dirofilariasis in man is made difficult by the absence of a suitable laboratory animal model other than the natural canine host. Because the gibbon is phylogenetically closely related to man and Dirofilaria have been observed in this ape, the gibbon appears to be the animal of choice for studying heartworm infection in a primate host.

**PROGRESS:** Four gibbons were inoculated subcutaneously with approximately 50 infective microfilaria dissected from Aedes aegypti and Aedes togoi that had fed three weeks earlier on a microfilaremic dog infected with Dirofilaria immitis. Blood samples for serologic and hematologic studies were collected at regular intervals for periods ranging up to 14 months following inoculation. Changes in the clinical and serological status of each animal occurred at 2 to 3 months following inoculation of the microfilaria. Skin testing with two types of Dirofilarial skin test antigen resulted in conversion of all animal for from negative to positive. Soluble antigen fluorescent antibodies, hemagglutination-inhibition antibodies, and eosinophil counts began to rise above control values and followed an erratic, but elevated course throughout the study. Thoracic radiographs revealed abnormal shadows usually located in the right diaphragmatic lung lobe. Microfilaremia was never detected in any of the gibbons. One gibbon sacrificed at five months following inoculation had adult heartworms located in the right ventricle and extending along the pulmonary artery as did each of the animals sacrificed later. The number of worms present varied from 3 to 5 in each animal and included both sexes. Although further definitive studies employing direct mosquito transmission of infective microfilaria into host animals may be indicated, it is clear that the gibbon is a worthwhile animal to consider using in future experimental work with this disease.

**SUMMARY:** The gibbon has been shown to be a suitable animal for the study of D. immitis infections in primate.