**Plasmodium knowlesi**: Reservoir Hosts and Tracking the Emergence in Humans and Macaques

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Introduction

Until recently, it was believed that malaria in humans was caused by only four species of parasite (*Plasmodium falciparum, P. vivax, P. malariae* and *P. ovale*). However, this perception changed when we discovered a large focus of human infections with *P. knowlesi* in the Kapit Division of Sarawak, Malaysian Borneo [1]. These infections had predominantly been mistakenly identified as *P. malariae* by microscopy, since both species have similar morphological characteristics [1,2]. With subsequent reports of human infections in other parts of Malaysia [3,4], and in Thailand [5,6], Myanmar [7], Singapore [8,9], the Philippines [10], Vietnam [11] and Indonesia [12,13], *P. knowlesi* is now recognized as the fifth species of *Plasmodium* responsible for human malaria. It causes a wide spectrum of disease and can lead to high parasite counts, severe complications and death [3,14]. In a recent study, we found that approximately 1 in 10 knowlesi malaria patients at Kapit Hospital developed potentially fatal complications, comparable to *P. falciparum* malaria, which is considered to be the most virulent type of malaria in humans [14].

*P. knowlesi* is primarily a simian malaria parasite and was first isolated from a long-tailed macaque (*Macaca fascicularis*) imported to India from Singapore in 1931 [15]. Subsequently, *P. knowlesi* has been detected in wild long-tailed macaques of Peninsular Malaysia [4,16] and the Philippines [17], in pig-tailed macaques (*Macaca nemestrina*) of Peninsular Malaysia [16] and in banded leaf monkeys (*Presbytis melalophus*) in Peninsular Malaysia [16]. There has been no documented evidence of *P. knowlesi* or any other malaria parasites in monkeys in Sarawak, Malaysian Borneo, when we utilized molecular methods for characterisation and PCR assays for detection of *P. knowlesi* [1], there had been only one confirmed case of a naturally-acquired *P. knowlesi* infection in a human [18]. That person got infected with *P. knowlesi* while spending a few weeks in the forest of Pahang, Peninsular Malaysia in 1965. It is not known whether the large focus in Malaysian Borneo and subsequent