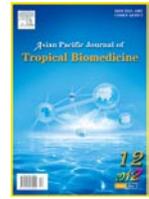




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# Noninvasive genetic sampling on the rare sumatran rhinoceros (*Dicerorhinus sumatrensis*): Identification of the host species from the blood meal collected from the tabanid fly (Tabanidae: *Haematopota* sp.)

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## PEER REVIEW

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## Comments

I strongly support this paper to be published as it has improved the field method by cleverly using molecular genetics via tabanids feeding on host species of rhinos. It has greater use to other species of wildlife in the thick rain forest.

(Details on Page)

## ABSTRACT

**Objective:** To demonstrate a noninvasive large mammalian genetic sampling method using blood meal obtained from a Tabanid fly. **Methods:** Blood meal was recovered from the abdomen of an engorged Tabanid fly (*Haematopota* sp.) which was captured immediately after biting a Sumatran rhino in captivity. The blood was applied on to a Whatman FTA<sup>®</sup> blood card. Subsequent laboratory work was conducted to extract, amplify and sequence the DNA from the sample. Validation was done by sampling the hair follicles and blood samples from the rhinoceros and subjecting it to the same laboratory process. **Results:** BLAST search and phylogenetic trees constructed confirmed the blood meal samples were indeed from the rhino. **Conclusion:** This method could be used in the field application to noninvasively collect genetic samples. Collection of Tabanids and other haematophagous arthropods (*e.g.* mosquitoes and ticks) and other blood–sucking parasites (*e.g.* leeches and worms) could also provide information on vector–borne diseases.

## KEYWORDS

Noninvasive DNA sampling, Blood meal, Tabanid fly, Sumatran rhino

## 1. Introduction

Collecting genetic material from free–ranging, elusive and rare animal species that live in remote tropical rainforests is difficult or even impossible. Coupled with the dense nature of the rainforest, even spotting an individual in the wild is almost impossible, making the acquisition of

DNA samples almost extremely difficult and in practice prohibitively expensive in terms of manpower, money and time mosquitoes and ticks. Even collection of faecal samples has proven almost impossible, under conditions of frequent rain on remote, extensive forested hills. However, plenty of studies have demonstrated the usefulness of the noninvasive genetic sampling in the research on free–

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