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BLEEDING PRIMATES WITHOUT NEEDLE
STRESS-FREE BLOOD SAMPLING THROUGH BLOOD-SUCKING BUGS

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Primates are frequently bled for research purposes (43,500 animals in 2008). Conventional blood sampling using a needle, however, is often problematic. Usually individuals are captured, restrained and narcotized. In small species imprecise puncturing of the blood vessel leads to scars making sequential bleeding of the same individual impossible. The whole group gets stressed if a single individual is targeted and the focus animal is stressed anyway. Furthermore, one side effect of using narcosis and a needle is that stress-sensitive blood parameters can be biased. The use of bugs *(Dipetalogaster maximus;* Heteroptera) would circumvent these problems. The bug's proboscis is 32x smaller than a needle and does not harm the target animal. The saliva contains pain-killers and the haemolymph possesses an anticoagulating substance. Within only 20 min these insects suck up to 4 ml blood that can be harvested from their abdomen. To allow the use for karyotyping, endocrinology, DLW-studies, serology and haematology a parameter specific validation necessarily has to be done. However, once a parameter was validated successfully the bug can be used for any animal species. In 1986 Triatomine bugs were used for the first time in bats. In 2001 we revitalized this method and collected blood from about 50 species. Since the method is likely to become a standard procedure for non-invasive blood sampling we have refined this innovative approach and adopted it exemplarily to primate species such diverse as mouse lemurs, squirrel monkeys, bonobos and orang-utans.

Keywords: stress-free bleeding, *Dipetalogaster maximus*, innovation, animal welfare