D-37: Establishment of paternity of two elephant calves by DNA fingerprinting

Himesha Vandebona[1], Maya B Gunasekera[1], Nalin C W Goonesekere[1], J Alahakoon[2], W D Ratnasooriya[2]
([1]*Biotechnology Laboratory, Dept of Chemistry, University of Colombo, Colombo 3,* [2]*National Zoological Gardens, Dehiwela,* [3]*Dept of Zoology, University of Colombo, Colombo 3*)

The Sri Lankan elephant (*Elephas maximus maximus)* a sub species of the Asian elephant, is listed as an endangered species in CITES index 1. Captive breeding programmes play an important role in the conservation of the Asian elephant.

However, their success will depend critically on maintenance of genetic diversity among successive generations of progeny. As oestrus females are

capable of accepting more than one partner, an accurate method is required to establish paternity. We have previously shown that the multiocus human DNA probe 33.15 can be used to detect genetic variation in elephants.

The aim of this study was to establish, by DNA fingerprinting analysis, the paternity of the two calves born to Rajina (Nandamitra) and Kumari (Sukumali) at the Pinnawela elephant orphanage. DNA extracted from blood samples collected from the calves, mothers, and three putative fathers (Wijaya, Neela and Kandula) were subjected to digestion with Hinf 1 followed by agarose gel electrophoresis. Southern blots (nylon) of gels were hybridized with ^{32}P oligolabelled 33.15 DNA probe. In both cases, the fingerprint of the calf and the mother were compared with each of the putative fathers.

The real father was identified easily, as he shared with the calf the bands that were not in common between the mother and calf. The father of Nandamitra was found to be Neela (band sharing probability of Wijaya, Neela and Kandula was 0.488, 0.45 and 0.421, respectively). This is the first report on the use of DNA fingerprinting for establishment of paternity in elephants.