

Fluorescence-activated flow cytometry (FACS) is one of the most powerful technologies used in immunology. By applying a polychromatic approach it is possible to distinguish between multiple cellular phenotypes in one sample of body liquids or tissues. Using the 12-parameter technology by means of the BD LSR II flow cytometer it was our aim to analyse the cellular composition of blood and lymphoid tissues in the rhesus macaque. Whole blood was drawn from rhesus macaques and surface stained for lineage specific markers to characterise cellular subsets. Additional markers were used to display the differentiation state and activation pattern of these subpopulations. After staining, erythrocytes were lysed by a hypoosmotic shock and leucocytes were washed twice and analysed by flow cytometry. For analysis of tissue-derived lymphocytes, lymph nodes were dissected and mechanically disrupted to get cell suspensions. Cells were stained according to protocols used for whole blood and analysed. Lymphocytes were gated according to their forward and side scatter characteristics. At least 30.000 events were acquired and analysed. Here we demonstrate the enormous capacity of polychromatic analysis to discriminate between cell types of different origin. With polychromatic flow cytometry it is possible to dissect the heterogeneity of cell populations that mediate defence against various pathogens. This ability will be crucial for a further understanding of cellular immunity and disease pathogenicity.

**Poster: Cathemerality in blue-eyed black lemurs (*Eulemur macaco flavifrons*) on the Sahamalaza peninsula, Northwest Madagascar**

Nora Schwitzer<sup>1, 2</sup>, Werner Kaumanns<sup>1</sup>, Horst Zahner<sup>2</sup> & Christoph Schwitzer<sup>1</sup>

<sup>1</sup>Arbeitsgruppe Primatologie, Zoologischer Garten Köln & <sup>2</sup>Institut für Parasitologie, Justus-Liebig-Universität Gießen, D; studpri@zoo-koeln.de

The blue-eyed black lemur is a critically endangered lemur subspecies living exclusively in the few remaining forest fragments on and just east of the Sahamalaza peninsula (Sofia region, Northwest Madagascar). It inhabits primary and secondary semi-humid forests within a transition zone between the Sambirano region in the north and the western dry deciduous forest region in the south.

Although most of the taxa within the genus *Eulemur*, including the nominate subspecies *E. m. macaco*, have been described as showing activity patterns that involve both day and night activity (see Colquhoun, 1997; Wright, 1999), no systematic study has so far been conducted on activity patterns of wild *E. m. flavifrons*. In captivity blue-eyed black lemurs showed a degree of cathemerality similar to that of other *Eulemur* species (Schwitzer, 2003). In the study at hand, we intended to investigate whether the aforementioned results obtained from captive *E. m. flavifrons* also applied to wild individuals of the taxon.

Four groups of *E. m. flavifrons* living in two different fragments of the Ankarafa forest, situated in the south-western part of the Sahamalaza peninsula, were followed for either 24 h/month or 48 h/month each during four months (October, November and December 2004, March 2005). Activity data were collected separately for males and females via instantaneous group sampling using 2-minute intervals. During night hours it was impossible to distinguish between the sexes.

Preliminary results of our study confirm that *E. m. flavifrons* shows a cathemeral activity pattern in the wild. The degree of nocturnal activity exhibited by the study animals was variable and seemed to be linked to moonlight intensity. Activity peaked during the early morning and late afternoon hours. Similar results were obtained by Colquhoun (1997) for *E. m. macaco*.

The results of the study at hand are discussed with reference to different possible ecological influences that may have favoured the evolution of a cathemeral activity pattern in the blue-eyed black lemur. The study was supported by AEECL, the Conservation International Primate Action Fund and the Margot Marsh Biodiversity Fund.

### **Talk: Sexual selection and the mandrill**

Joanna Setchell<sup>1, 2</sup>

<sup>1</sup>Department of Biological Anthropology, University of Cambridge, UK & <sup>2</sup>Centre International de Recherches Médicales, Franceville, Gabon; [mandrills@yahoo.co.uk](mailto:mandrills@yahoo.co.uk)

The mandrill is one of the most sexually dimorphic land mammals, and typifies the exaggerated sex differences that led Darwin to propose his theory of sexual selection. Mandrills are found only in the dense rainforest of central Africa, and have so far proved impossible to habituate in the wild. I will review studies of a semi-free-ranging colony of mandrills at the Centre International de Recherches Médicales, Franceville, Gabon, that have allowed us unique insights into the social organisation and reproductive strategies of this little-known species. I will cover previous work on mandrill social organisation, breeding seasonality, sexual dimorphism, male development and group association, male-male competition and female choice. I will then present recent analyses concerning sexual selection and reproductive careers in both sexes, including mortality, age-specific reproductive success, and variance in reproductive output.

### **Talk: Female-directed aggression in wild spider monkeys: Male display and female mate choice**

Kathy Y. Slater<sup>1</sup>, Colleen M. Schaffner<sup>1</sup> & Filippo Aureli<sup>2</sup>

<sup>1</sup>Department of Psychology, University College Chester & <sup>2</sup>School of Biological and Earth Sciences, Liverpool John Moores University, UK; [k.slater@chester.ac.uk](mailto:k.slater@chester.ac.uk)

Although aggression in spider monkeys occurs relatively infrequently, male spider monkeys are reported to direct the majority of their aggression towards adult females. It has been hypothesised that these attacks are a form of male coercion but recent analyses found that female reproductive state did not influence the frequency of male attacks, with no increase in attacks to coincide with the peri-ovulatory period of the ovarian cycle. Our data from two wild groups of spider monkeys (*Ateles geoffroyi yucatanensis*) from the Otoch Ma'ax Yetel Kooh reserve in Yucatan, Mexico indicated that the majority of female-directed aggression by males was character-