Sandfly fever (SF) is a acute viral infection transmitted to humans by the sandfly of the genus Phlebotomus. Fever usually lasts 2-3 days with detectable viremia 1 to 3 days before and during the onset of fever. However, detecting virus directly from sera by plaque assay is insensitive and inconsistent. Other techniques such as immunofluorescence (IFA), antigen-capture ELISA and intrathoracic inoculation of sandflies are used more often. IFA appears to be the most sensitive test but interpretation is subjective. We combined the objectivity and sensitivity of an ELISA with virus amplification in cell culture to create a single assay system to titrate and immunologically identify sandfly viruses with SF-infected cells as antigen. Vero cells grown in 24- or 96-well plates were infected with the Sicilian or Naples strains of sandfly virus. After 4-5 days of incubation, culture medium was removed, and the monolayers were fixed. The plates were then incubated with blocker buffer, washed, and incubated with SF mouse hyperimmune ascitic fluid. The plates were again washed and incubated with peroxidase-labeled anti-mouse IgG. Results were read visually or spectrophotometrically after adding ABTS substrate. The entire in situ ELISA required 5 hours. Tissue culture infectious dose 50% (TCID50) results from this assay were obtained earlier and compared well with titers from plaque assays. The *in situ* ELISA is a simple, rapid, and sensitive method to measure and distinguish viruses and has been used successfully to titrate and identify vaccinia, Venezuelan equine encephalitis, and Hantaan viruses.

264 PHLEBOTOMINE SANDFLIES AND ISOLATIONS OF ARBOVIRUSES FROM A SAHELIAN REGION IN SENEGAL. Fontenille D*, Traore-Lamizana M, Zeller HG, Trouillet J, Leclerc A, Mondo M, Ba Y, and Digoutte JP. ORSTOM, BP 1386, Dakar, Senegal; Institut Pasteur, BP 220, Dakar, Senegal; and Departement de Biologie Animale, Universite CAD, Dakar, Senegal.

Longitudinal surveys on the ecology of sandflies and arbovirus transmission by insects were conducted around temporary ground pools in a sahelian region in Senegal from November 1991 to December 1992. Approximately 34,000 sandflies were collected by CO_2 light-traps with a peak of abundance in March and April, one month after the complete drying of the temporary ground pools. Eleven sandfly species were identified from 4,191 specimens caught by sticky traps, including *Phlebotomus duboscqi*, a leishmaniasis vector, *Sergentomyia adleri, S. clydei, S. magna* and *S. schwetzi*, which can feed on mammals. An average of 136 sandflies per m^2 were caught by sticky traps. One strain of Chandipura virus, four strains of Saboya virus, and one strain of a not yet identified virus were isolated. These are the first isolations of arboviruses from phlebotomine sandfly pools in West Africa. Chandipura virus, a Rhabdovirus from the VSV group of the genus vesiculovirus, was first isolated from patients in India, then from hedgehog in Nigeria. The Saboya Flavivirus was already isolated from small rodents (*Tatera kempi, Mastomys* sp, *Arvicantis niloticus* and *Mus musculus*) in Senegal. Its transmission cycle probably occured between rodentophilic sandflies and rodents. All these viruses were pathogenic for new born mice. No isolation of Rift Valley fever phlebovirus was obtained, despite its recent circulation in the survey area, either from mosquitoes or sandflies.

265 VIRAL SURVEY OF TICKS IN SAUDI ARABIA. Tantawy TA, Al-Khalifa MS, Elyan DE, Diab FM, Al-Asgah NA, Hussein HH, Botros BA, and Arthur RR. Virology Division, Naval Medical Research Unit No. 3, Cairo, Egypt; and Department of Zoology, College of Science, King Saud University, Saudi Arabia.

Tick samples collected from indigenous livestock in Saudi Arabia at locations that excluded any possible intermingling with imported animals were investigated to determine the possible viruses that they may carry. From Sept. 1991 to Dec. 1992 a total of 1295 ticks were collected from camels, cattle, sheep, goats, dogs, cats, rodents, chicken and pigeons in diverse areas of the country. Ticks were separated by species, sex and engorgement status into 172 pools (maximum of 30 ticks per pool). They represented 7 species of *Hyalomma* (134 pools), 2 species *ofRhipicephalus* (24 pools), *Argas persicus* (11 pools), *Haemaphysalissulcata* (2 pools) and *Boophilus kohlsi* (1 pool). With few exceptions ticks

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Atlanta, Georgia
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