303 patients, only 148 (48.8%) reacted to the vaccine. The influence of administered drugs on the weak response within the patient's group is discussed.

Two different configurations of rabies glycoproteins

R. Glück, U. Kihm, A. Wegmann and R. Germanier
Department of Virology, Swiss Serum and Vaccine Institute, CH-3000 Bern

In an attempt to develop a potent purified duck embryo rabies vaccine, the physical state of the rabies glycoprotein (GP) antigen has been investigated. Viral antigens derived from embryonated duck eggs were analyzed by density gradient centrifugation, ELISA and determination of infectivity. The results revealed that GP which banded at a density of 1.16 g/cm^3 was an integral component of the intact virion. At a density of 1.19 g/cm^3 high levels of GP were still noted, whereas the infectivity titer had decreased by three logs. Presumably GP in this band was present in form of aggregates with cellular lipids. The two fractions were treated with β-propiolactone and varied in regard to mouse-protective properties and to the antibody response of dogs and humans. These findings suggest that the rabies GP is highly immunogenic when present at the surface of the virus particle. The low immunogenicity of GP in spontaneously formed aggregates may be due to the production of weakly immunogenic complexes with cellular lipids and/or to the presence of soluble GP as recently described by Dietzschold et al. (1983).

Specific immunoglobulin responses in primary Q fever

O. Péter, G. Dupuis and W. Burgdorfer
Division of Clinical Microbiology, Institut Central des Hôpitaux Valaisans, CH-1950 Sion, and Rocky Mountain Laboratories, Hamilton, MT, USA

A knowledge of the different antibodies appearing in acute Q fever as well as their development during the course of this illness are invaluable to the clinicians when interpreting the results of serological analysis. The present study shows the development, during the year following a primary infection, of the antibodies to *Coxiella burnetii* phase I and II detected by complement fixation and immunofluorescence (IgG, IgM). We have evaluated 683 sera taken from 191 patients who had contracted acute Q fever in the autumn of 1983 in Switzerland, during an epidemic in which 415 cases were serologically confirmed.
As a general rule, it was found using complement fixation that the antibodies to *C. burnetii* phase II stay raised during the year following acute Q fever, whilst the antibodies to *C. burnetii* phase I are hardly discernable. By immunofluorescence, IgG anti-phase I and II follow the same pattern, but the sensitivity is higher. In addition, IgM anti-phase I and II appear earlier but only remain for 10–12 weeks on average. Anti-phase II antibodies are generally much higher than anti-phase I antibodies during this period.

Antigen-free vaccination, results of placebo-controlled studies

D. Jachertz
Institut für Hygiene und Medizinische Mikrobiologie, CH-3010 Bern

In contrast to the well known methods of active immunization, antigen-free vaccination consists in transfer of immunologically relevant, information as informative RNA (i-RNA), which is free from antigen. The mode of action of the i-RNA in recipient cells is described.
Placebo-controlled double-blind tests have been performed using i-RNS against influenza virus A-equine-Miami 942, herpes simplex virus type 1 and varicella zoster virus. The significance of sero conversion against influenza-virus-A-equine-Miami 942, was $p = < 0.01$. In patients suffering from herpes simplex virus infection application of i-RNA reduced the frequence of recidives per year from 7.6 (12 months before i-RNA) to 0.8 (12 months after i-RNA). Compared to the placebo group (frequency of recidives not changed) the significance of this reduction is $p = < 0.05$. In the placebo controlled study in patients suffering from herpes zoster the difference between the i-RNA treated group and the placebo group concerning 11 different parameters was also significant with a $p = 0.0007$.

LIA: a procedure employing multiantigen nitrocellulose strips for the simultaneous detection of IgG or IgM antibodies in serum

J. A. Wilhelm, L. Matter, W. Wunderli, F. Roth and K. Schopfer
Institute of Clinical Microbiology and Immunology, CH-9000 St. Gallen

The use of multi-dotted nitrocellulose strips (Hawkes et al., Analyt. Biochem. *119* (1982) 142) has been adapted for semi-automated serum antibody detection for diagnostic purposes. Antigens are applied in parallel lines on a nitrocellulose sheet together with controls and standards. The strips are cut and incubated with serum, HRP-conjugated anti-human Ig (G or M) and finally H_2O_2 with chloronapthol as indicator. The dried strips are scanned in a densitometer. A comparison with classical methods (CF, IF, EIA or ELA) showed a good correlation. A negative: positive cutoff value was thus determined for each antigen.
IgG antibodies to toxoplasma, HSV, VZV, CMV and mumps virus is routinely assessed by this method, as well as IgM to CMV, VZV and HSV antigens. The inclusion of IgG on the IgM strip allows the detection of rheumatoid factor, which can be absorbed with IgG-latex. Results are available within 1 day for 5 (or more) antigens using 10 µl of serum (or antibody containing secretions).
Details of the test procedure, comparisons with other tests, correlations with clinical situations, and the advantages and problems will be discussed. We call the procedure 'LIA': a descriptive term denoting Line Immuno Assay.

Rapid Diagnostic Methods in Microbiology

Detection of human cytomegalovirus in clinical specimens through nucleic acid hybridization

P. Gowland and W. Wunderli
Institute of Clinical Microbiology and Immunology, CH-9000 St. Gallen

The diagnosis of human cytomegalovirus (HCMV) infection presently involves either a titer rise of IgG antibodies to HCMV in serum, the detection of IgM antibodies to HCMV, or isolation of the virus on human fibroblast cell culture. Due to the slow growth of fresh clinical isolates, many cultures take up to 6 weeks before being identified as positive.
We have established a DNA-DNA spot hybridization system for the detection of HCMV in clinical samples (e.g. urine). Viral DNA was isolated from either fresh clinical samples or from the medium of an infected fibroblast culture and bound denatured to nitrocellulose filters. The filters were subsequently hybridized with ^{32}P-labelled cloned Hind III fragments of HCMV strain AD 169 (kindly provided by H. Gadler, Stockholm, Sweden). After washing specific hybridization was detected by autoradiography. The assay can detect less than 1 ng of viral DNA within 3–4 days.