Rifampicin is highly active against experimental tuberculosis in the mouse and has also established itself in clinical practice as a first-line tuberculostatic. It was therefore of interest to examine the activity of the drug in animals against another facultative intracellular microorganism, *Listeria monocytogenes*, and compare it with that of antibiotics recommended for the treatment of human listeriosis. In vitro, rifampicin was considerably more active against *Listeria* than tetracycline, chloramphenicol and sulphadiazine; the minimum inhibitory concentrations, however, were only slightly lower than those of ampicillin, penicillin G and gentamicin. These substances were tested in mice infected in various ways with *Listeria* and treated according to various dosage schedules. In all the experiments rifampicin proved very much superior to the other substances, being active in doses at least 30 times lower. After a single dose, the count of viable *Listeria* in the spleens of the treated animals was reduced more quickly by rifampicin than by ampicillin in a dose roughly 300 times greater. In animals given rifampicin in combination with ampicillin or tetracycline a synergistic effect was observed. The demonstrable superiority of rifampicin over ampicillin in animal experiments is presumably not due to the slight difference in their activity in vitro, but to the effect of rifampicin on intracellular micro-organisms. In this connection, however, the longer sojourn of rifampicin in the body of the mouse must also be taken into consideration.

Systematical Research of *Salmonellas* in Sewage and River Water in Strasbourg and Outskirts: Public Health Problem

F. Lautier, E. Reeb, D. Razafitsalama et J. Lavillaureix
Institut d'Hygiène, Faculté de Médecine,
4, rue Kirschleger, F–67085 Strasbourg Cedex

During the period from 16. 9. 1974 to 12. 11. 1975, in order to make a microbial study of sewage and of the river Ill in Strasbourg, we received each week 2 samples, taken at 41 different places, to trace *Salmonellas*. We treated 123 samples (each place is then represented three times at different seasons of the year) in which 75% contained *Salmonellas*; 209 strains were isolated – with 32 serotypes – from the groups B, C, D, E and G. We have to mention the great diversity of these serotypes; *Typhimurium* (13,5% of the 209 strains), Para B (10,5%) and Panama (10%) were the most frequently isolated. In many samples we often found 4 to 6 different serotypes. Finally we noted that the river Ill contains little *Salmonellas* when compared to sewage. Moreover the samples of sewage near hospitals and clinics did not contain more *Salmonellas* than others.

Description and Physiological Properties of an Autotrophic Hydrogen-Oxidizing *Spirillum*

M. Aragno and H. G. Schlegel
Institut für Mikrobiologie der Universität,
Grisebachstrasse 8, D–3400 Göttingen

Two strains, SA 32 and SA 33, of a facultatively autotrophic hydrogen-oxidizing *Spirillum* were isolated from the water of a small eutrophic lake by the membrane filter method, using a mineral agar medium and an atmosphere of $H_2 + O_2 + CO_2$. They appear as typical, medium-sized spirilla, 0.6–0.8 μm in diameter, with bipolar lophotrichous flagellation. Spira has a wave length of 3–4 μm with clockwise orientation. Growth occurs either autotrophically in mineral medium under knallgas and carbon dioxide, or heterotrophically, with many organic acids or amino acids as sole C-source. Carbohydrates are not used as substrates, except for sugar acids such as gluconate and 2-keto-gluconate. Denitrification does not occur, but nitrates, as well as ammonium ions, urea and asparagine, are used as sole *N*-source. The G + C content of DNA is approximately 60–62%. Autotrophic growth is microaerophilic. Generation times of about 4.5 h were measured in the fermentor, with frequent adjustment of the oxygen partial pressure to cell concentration. With succinate as sole C-source, the generation time under air was about 2 h. Hydrogenase is localized in membranes and fails to reduce either NAD of NADP. It is inducible by H_2. Oxygen represses hydrogenase synthesis at concentrations higher than 1.8 mg/l, but has no inhibitory effect on the oxy-hydrogen reaction in vivo up to 11,3 mg/l. Autotrophically-grown cells are able to oxidize acetate, gluconate and succinate without a lag phase, but at a reduced rate compared to substrate-induced cells. Citrate is oxidized only after a lag phase.

Involvement of 4-Aminobutyrate Aminotransferase in Arginine Biosynthesis and Putrescine Catabolism of *Pseudomonas aeruginosa*

R. Voellmy and Th. Leisinger
Mikrobiologisches Institut, ETH-Zentrum, CH–8092 Zürich

4-Aminobutyrate aminotransferase (GABAT) from *Pseudomonas aeruginosa* was purified 64-fold to apparent electrophoresis homogeneity from cells grown with 4-aminobutyrate as the only source of carbon and nitrogen. Purified GABAT catalyzed the transamination of 4-aminobutyrate, N^2-acetyl-L-ornithine, L-ornithine, putrescine, L-lysine, and cadaverine with 2-oxoglutarate (listed in order to decreasing efficiency as substrates). The enzyme is induced in cells grown on 4-guanidinobutyrate, 4-aminobutyrate or putrescine as the only carbon and nitrogen source. Cells grown on arginine or on glutamate contained low levels of the enzyme. The regulation of the synthesis of GABAT as well as the growth properties of a mutant with an inactive N^2-acetyl-L-ornithine 5-aminotransferase suggest that GABAT functions in the biosynthesis of arginine by converting N^2-acetyl-L-ornithine 5-semialdehyde to N^2-acetyl-L-ornithine as well as in catabolic reactions during growth on putrescine or 4-guanidinobutyrate but not during growth on arginine.

Studies on the Mode of Action Phenylmercuric Borate on *Escherichia coli*

M. Cortat
Groupe de Microbiologie, ZYMA SA, CH–1260 Nyon

The bactericidal activity of the disinfectant phenylmercuric borate (PHB: Phenylhydrargiriboras) was investigated on *Escherichia coli*. In the first step of this study, we attempted to localize PHB in cells exposed to it. The fractionation by differential centrifugation of a cell free extract of *E. coli* exposed to the drug gave about the same distribution of PHB and proteins in the different fractions. This result shows the poor specificity of PHB in regard to the numerous proteins of the cell, all of which appear as potential fixation sites. The fractionation by density gradient centrifugation permits the isolation of