characteristics from those of A6. For example, strain A7 will agglutinate with both human and horse erythrocytes, the haemagglutination is inhibited by D-galactose, and it co-aggregates with Salmonella strains which have terminal D-galactose residues on their LPS. In contrast to A6, A7 is able to agglutinate with 'Bombay' erythrocytes. Neutralising antibodies have been produced against the A7 HAG, and studies similar to those described above for A6 are under way.

Finally, there is an interesting distribution of adhesin type

- among the motile aeromonads. The A6-type adhesin was found in 14 of 59 A. hydrophila (24%), 1 of 35 A. caviae (3%), and 2 of 61 A. sobria (3%). Another HAG type, characterised by being inhibited by mannose but not fucose or galactose, was found in 4 of 59 A. hydrophila (7%), none of 35 A. caviae, and 25 of 61 A. sobria (41%). These results suggest that there may be significant differences in the distribution of HAG types between the different species of aeromonads. This possibility is currently under investigation.
- 1 Adams, D., Atkinson, H.M., and Woods, W.H., FEMS Microbiol. Lett. 20 (1983) 197.
- 2 Adams, D., Atkinson, H. M., and Woods, W. H., J. clin. Microbiol. 17 (1983) 422.
- 3 Atkinson, H. M., Adams, D., and Woods, W. H., FEMS Microbiol. Lett. 20 (1983) 311.
- 4 Atkinson, H. M., and Trust, T. J., Infect. Immun. 27 (1980) 938.
- 5 Boorman, K. E., Dodd, B. E., and Lincoln, P. J., Blood Group Serology, 5th edn, p. 174. Churchill Livingstone, London 1977.
- 6 Chakraborty, T., Montenegro, M.A., Sanyal, S.C., Helmuth, R., Bulling, E., and Timmis, K. N., Infect. Immun. 46 (1984) 435.
- 7 Horowitz, M.I., in: The Glycoconjugates, vol. 1, pp. 189–213. Eds M.I. Horowitz and W. Pigmon. Academic Press, New York 1977.
- 8 Laemmli, U.K., Nature (London) 227 (1970) 680.
- 9 Towbin, H., Staehlin, T., and Gordon, J., Proc. natn. Acad. Sci. USA 76 (1979) 4350.
- Trust, T.J., Courtice, I.D., and Atkinson, H.M., in: Fish Diseases, 3rd COPRAQ-session. pp. 218–223. Ed. W. Ahne. Springer-Verlag, Heidelberg 1980.

0014-4754/87/040372-03\$1.50 + 0.20/0 © Birkhäuser Verlag Basel, 1987

Concluding remarks: Areas of future research

A. von Graevenitz and P. Turnbull*

Department of Medical Microbiology, University of Zürich, Gloriastrasse 32, CH-8028 Zürich (Switzerland), and *Vaccine Research and Production Laboratory, PHLS Centre for Applied Microbiology and Research, Porton Down, Salisbury, Wiltshire (England)

Key words. Aeromonas; Plesiomonas.

This workshop reviewed a variety of aspects of ongoing *Aeromonas* and *Plesiomonas* research and pinpointed several areas in which further research seems particularly urgent. These include: 1. Comparative studies on sensitivity and specificity of various selective media. It was proposed that this should involve a multicentric investigation. Carrier rates in various countries among both indigenous and transient populations would also be the product of such a collaborative study. At the time of printing, part of these studies may already be in progress (inquire with the senior author).

- 2. Follow-up studies on carriers.
- 3. Determination of the precise role of Aeromonas and Plesiomonas in diarrhea. While epidemiological data point to these bacteria being etiological agents of diarrhea, it was the consensus of opinion at the workshop that the evidence was still not conclusive. Studies could investigate correlations between diarrhea and Aeromonas/Plesiomonas serotypes, biotypes, serum sensitivity, optimal growth temperatures, number of organisms per gram of stool, presence of known toxins (synergistic effects?), hemagglutinins, adhesins, and various underlying conditions in an endeavor to establish the enteropathogenicity (or lack of it) of these species. Further volunteer feeding experiments may be called for. Recognizable markers of enteropathogenicity would be looked for in these studies.
- 4. The effect of antimicrobial treatment upon Aeromonas/Plesio-monas-associated diarrhea.

- 5. The role of Aeromonas and Plesiomonas in chronic diarrhea
- 6. Characterization of reference strains.
- 7. Standardization of media and of procedures for testing biochemical reactions and possible virulence factors.

It was also agreed that a centralized literature collection would be desirable. At the time of publication of this symposium, plans will have been worked out (for inquiries please contact the senior author).

A second International Workshop on Aeromonas and Plesiomonas is planned for 1988.

Acknowledgments. At the end of this workshop, we want to thank a number of organizations and individuals who have made this symposium possible:

- The US Naval Medical Research and Development Command for travel assistance to invited speakers;
- GIBCO (U.K.) and UNILEVER (U.K.) for financial assistance with administrative costs; and
- The Public Health Laboratory Service Centre for Applied Microbiology and Research for service and workshop booklet costs.

0014-4754/87/040374-01\$1.50 + 0.20/0 \odot Birkhäuser Verlag Basel, 1987