fluorescence patterns (Caspersson, Zech, Harris, Wiener & Klein, 1971).

The work was supported by the Swedish Natural Research Council.

Caspersson, T., Farber, S., Foley, G. E., Kudynowski, J., Modest, E. J., Simonsson, E., Wagh, U. & Zech, L. (1968). *Expl Cell Res.* **49**, 219.

Caspersson, T., Hultén, M., Lindsten, J. & Zech, L. (1971). *Hereditas*, **67**, 147.

Caspersson, T., Lindsten, J., Lomakka, G., Wallman, H. & Zech, L. (1970). *Expl Cell Res.* **63**, 477.

Caspersson, T., Lomakka, G. & Zech, L. (1971). *Hereditas*, **67**, 89.

Caspersson, T. & Zech, L. (1971). *Proc. Conf. Fluorescent Labeling and Identification of Human Chromosomes, Colorado Springs* (in the Press).

Caspersson, T., Zech, L., Harris, H., Wiener, F. & Klein, G. (1971). *Expl Cell Res.* **65**, 475.

Caspersson, T., Zech, L., Johansson, C. & Modest, E. J. (1970). *Chromosoma*, **30**, 215.

Caspersson, T., Zech, L., Modest, E. J., Foley, F. E., Wagh, U. & Zech, L. (1969). *Expl Cell Res.* **58**, 141.

Pearson, P. L. & Bobrow, M. (1970). *Nature, Lond.*, **226**, 959.

Somatic Hybridization as a Tool for the Study of Differentiation: a Review

By M. NABHOLZ. (*Genetics Laboratory, Department of Biochemistry, University of Oxford, South Parks Road, Oxford OX1 3QU, U.K.*)

Somatic hybridization is rapidly establishing itself as the equivalent of bacterial mating systems in metazoan cell biology. In recent years several groups have successfully used human-mouse hybrid cells to demonstrate linkages between human genes and to allocate such genes to their chromosomes. Another field in which somatic hybridization seems to be destined to become a major tool of enquiry is the investigation of the mechanisms controlling the expression of differentiated functions. In general, the problem has been approached by crossing an 'undifferentiated' cell line with one that, derived from a 'differentiated' tumour, expresses some of the specific characteristics of the

tissue of origin. A number of systems have been studied in this manner, including high activities and inducibility of certain enzymes, the synthesis of certain tissue-specific products and the electrical membrane properties of neurons (Davidson & Yamamoto, 1968; Davidson & Benda, 1970; Schneider & Weiss, 1971; Minna, Nelson, Peacock, Glazer & Nierenberg, 1971; Bloom, Choi & Lamb, 1971). The same approach has been used to investigate virus-mediated transformation (Basilico & Wang, 1971) and malignancy (Harris, Miller, Klein, Worst & Tachibana, 1969). It is concluded that the expression of differentiated functions in hybrids may depend, not only on the genetic make-up of these cells and the mode of regulation studied, but also on the extent to which the latter is intact in the 'differentiated' parent and the tissue of origin of the 'undifferentiated' parent. Recent experiments have demonstrated the possibility of studying the control mechanisms and genetics of such properties that are extinguished on hybridization with an 'undifferentiated' cell line through the use of human-mouse hybrid cells (Klebe, Chen & Ruddle, 1970). Such hybrids may re-express the differentiated function on loss of certain human chromosomes. If it is possible to cross diploid mouse cells isolated directly from their tissue with heteroploid human cell lines and if such cells lose human chromosomes, the latter approach may be greatly expanded.

Basilico, C. & Wang, R. (1971). *Nature, Lond.*, **230**, 105.

Bloom, A. D., Choi, K. W. & Lamb, B. J. (1971). *Science, N.Y.*, **172**, 382.

Davidson, R. & Yamamoto, K. (1968). *Proc. natn. Acad. Sci. U.S.A.* **60**, 894.

Davidson, R. L. & Benda, P. (1970). *Proc. natn. Acad. Sci. U.S.A.* **67**, 1870.

Harris, H., Miller, O. J., Klein, G., Worst, P. & Tachibana, T. (1969). *Nature, Lond.*, **223**, 363.

Klebe, R. J., Chen, T. & Ruddle, F. H. (1970). *Proc. natn. Acad. Sci. U.S.A.* **66**, 1220.

Minna, J., Nelson, P., Peacock, J., Glazer, D. & Nierenberg, M. (1971). *Proc. natn. Acad. Sci. U.S.A.* **68**, 234.

Schneider, J. A. & Weiss, M. C. (1971). *Proc. natn. Acad. Sci. U.S.A.* **68**, 127.

STEROID BIOCHEMISTRY GROUP COLLOQUIUM ON 'STEROIDS AND CHROMATIN'

Chromatin Structure

By B. M. RICHARDS, J. F. PARDON and A. S. POOLEY. (*Searle Research Laboratories, High Wycombe, Bucks., U.K.*)

The complexity of chromosome structure in eukaryotes has been one of the obstacles to extrapolation from prokaryotes of knowledge on mechanisms of transcription and replication. In

recent years new impetus to work on chromatin structure has resulted from a better understanding of histone structure and the molecular structure of the deoxyribonucleohistone complex. This, together with continuing studies on both the structure of chromatin as seen by electron microscopy and the function of chromatin as revealed by studies *in vitro* with cell-free preparations, has produced some