GENETICA POLONICA
Vol. 25 1984 No. 3

BOOK REVIEW

D. Hámori: CONSTITUTIONAL DISORDERS AND HEREDITARY DISEASES IN DOMESTIC ANIMALS Akadémiái Kiadó, Budapest 1983, pp. 728.

The publishing house of the Hungarian Academy of Sciences has published "Contitutional Disorders and Hereditary Diseases in Domestic Animals" by Prof. D. Hámori, a well-known authors in veterinary circles offering to the reader a new comprehensive manual and monograph on the subject.

On 728 pages the author presents all available and well-illustrated material concerning the development of constitutional disorders and hereditary diseases collected as a result of very laborious and time-consuming work.

The 14 chapters with a number of subdivisions, each finishing with an imposing bibliography, give a detailed treatment of probably all spheres of interest dealing with the subject and make the manual very useful to veterinarians and animal breeders.

After a detailed analysis of constitutional disorders in domestic animals in the first chapter the author discusses environmental factors, which can lead to such abnormalities. He also shows pathomechanisms associated with the described morphological and pathophysiological changes, trying sometimes to explain these phenomena on molecular level. In some cases the author gives tabular data obtained as a result of many-year experiments and observations. This careful collection of information in the field of immunogenetics supplied with many useful photographs and tabulated data, as well as a competent interpretation of the illustration material in view of a wide range of factors characterized by polymorphism, make the manual comprehensive and very attractive.

Cytogenetic and clinical aspects of constitutional abnormalities are the subject of the second chapter. Presentation of proper karyograms and techniques applied for complete differentiation of karyotypes made it possible to the author to discuss in detail the chromosome aberrations recorded in the world literature on the subject. Hermaphroditism, mosaicism, free-martinism in domestic animals illustrated by photographs of reproductive organs show the range of malformations associated with them and attract reader's attention.

The third chapter is devoted to fertility and prolificity. It also contains tables showing the frequency of twinning in various cattle breeds and similar information about multiple pregnancy.

Abnormalities in the reproductive efficiency of males are carefully described and are illustrated by photographs of morphological anomalies in the genital organs of various domestic animal species — at their different developmental stages and in adults. Microphotograms and electronograms of abnormalities in the testis structure serve as a complementary evidence and make this chapter interesting.

Hereditary reproduction disorders in female domestic animals are discussed in chapter fourth. Skillfully selected material makes it possible for the reader to understand many cases of abnormal development of the female genital organs; the heritability coefficient of these abnormalities is also given in many cases of various species and breeds of domestic animals.

The fifth chapter discusses hereditary abnormalities in metabolism, seen also in the aspect of genetic biochemistry. Much attention is paid to dwarfism in various species and to degeneration of skeletal muscles.

In chapter sixth the reader can find descriptions heredopathology of organs and organ systems. Epithelial defects, the lack or excess of hair, parakeratosis, dentition defects, shortness of

the upper jaw or mandible, malformations of the head, labio-palatoschisis and defects of the vertebral column and nervous system, as well as changes in the eye ball and its components – are the topics of that chapter.

The next succeeding chapters concern abnormalities of different organs. Thus, chapter seven is dealing with abnormalities of the gastrointestinal tract, chapter eight is devoted to the respiratory diseases, chapter nine — to the circulation system. Chapter ten describes diseases of the genitourinary system, chapter eleven — abnormalities associated with the structure of the mammary gland and abnormalities in the milk yield with reference to inflammation-resistant or susceptible udder. Chapter twelve contains a description of hereditary abnormalities of the organs of motion.

Genetically determined differences in resistance to infectious disease are the subject of chapter thirteen. One of its subdivisions contains a proposition to utilize disease resistance for the genetic prevention of disease. Chapter fourteen presents problems of multifactorial diseases and genetic resistance. Appendix is given in chapter fifteen.

Like other comprehensive manuals the book has also the Author index and Subject index.

I would especially emphasize the collection of perfect photographs made available by the courtesy of many different authors, as well as enormous bibliography. A careful editorial preparation of the material and beautiful coated paper of the book — due also to the efforts of the Elsevier Scientific Publishing Company in Holland — make this manual very interesting and attractive to readers; it can also enrich book collections of institutional libraries.

October, 1983

Prof. Dr hab. *Henryk Balbier*
Institute of Physiological Sciences
Veterinary Department
Academy of Agriculture
Wroclaw

Ph. Nagley, A. W. Linnane, W. J. Peacock and J. A. Pateman, (Edit), MANIPULATION AND EXPRESSION OF GENES IN EUKARYOTES, Academic Press, Sydney, New York, London, Paris, San Diego, San Francisco, Sao Paulo, Tokyo, Toronto, 1983, pp. 386.

Gene structure and gene regulation belongs to the most unclear and passionating subjects of molecular biology. During the 12th International Congress of Biochemistry (August 1982) in Australia a satellite meeting on eukaryote molecular biology, concerning manipulation, structure and expression of genes was held. This book includes 60 papers presented at that conference and is divided into six parts: I. Mammals and birds, II. Amphibians, Fish and Insects, III. Simple Eukaryotes, IV. Plants, V. Organelles, VI. Viruses.

Several papers illustrate the isolation of particular genes during preparation of DNA libraries using lambda phage vector. One paper is dealing with the use of chemically synthesized oligonucleotide probes to screen directly a human DNA library for leukocyte interferon genes. Very useful in molecular biology is also hybridization in situ, applicated for gene localization and semi-quantitative analysis of gene expression on the basis of specific mRNA synthesis.

Genome instability is presented on the model of immunoglobulin genes of variable parts rearrangement and switch of constant heavy chain genes. Two transposable elements are described: *Ty 1* in yeast responsible for mutations and reverse mutations and element *P* in *Drosophila* responsible for "hybrid dysgenesis" syndrome.

Eleven papers describe details on circular DNA structure in mitochondria and chloroplasts, including problems of replication, initiation of transcription, structure of introns etc. The last part is dealing with some aspects of genome structure of SV 40 virus, influenza viruses, adenoviruses and cucumber mosaic virus.

Many papers are dealing with the problem of gene regulation discussing the role of particular DNA signals in gene expression. Only one paper (17 of Part II) presents studies on Xenopus 5S

ribosomal RNA genes expression focusing on higher regulation by proteins. The authors of that paper have shown that expression of oocyte type of 5S RNA, not transcribed in somatic tissues, is caused by cytoplasmic factors from oocytes, while its repression in somatic tissues — by chromatin proteins. Noteworthy is their statement: "A key question in modern biology is how gene expression is regulated during development. The molecular mechanisms of activation or inactivation are not yet known for any gene in a higher eukaryotic system".

All papers are written clearly, well illustrated with all needed schemes of used methods, schemes of genes structure and autoradiogram documentations. The book contains a good review on the modern knowledge of particular genome structures from simple eukaryotes, viruses and organelles to animals and plants, including similarity and differences of particular gene structures and evolutionary correlations.

February, 1984

Docent Dr hab. *Ewa M. Rakowicz-Szulczyńska*,
Institute of Human Genetics,
Polish Academy of Sciences,
Poznań