Book Review

L. J. Lawrence, V. R. Fowler, J. E. Novakofski: Growth of Farm Animals. 3rd Edition. CABI Wallingford UK, Cambridge, MA, USA, 2012. XV and 352 p. (alk. paper) ISBN 978-1-84593-558-0

Recently there appeared on the book market a third edition of the book by LJ Lawrence (formerly of the Faculty of Veterinary Science, University of Liverpool, UK), VR Fowler (formerly of the Scottish Agricultural College and Rowett Research Institute, UK), and, newly, JE Novakofski (Department of Animal Science, University of Illinois, Illinois, USA). The book should make possible a better understanding of biological processes, connected with changes in size, shape and body composition of those animal species, which humans raise mainly to satisfy their nutritional, or further needs. The second edition of the book by the first two authors was enriched by the explanation of the function of the mammary gland. The third, here reviewed, edition of the book included a chapter on the growth and reproduction of the economically most important avian species.

The text was divided into nineteen chapters. First they concentrated on the general aspects of growth, then cells, principles of cell growth, basic structure and growth of tissues (connective tissue, cartilage and bone, haemopoietic tissue, adipose tissue, muscle tissue, epithelial tissue), continuing with the explanation of mammary gland growth and continuing product yield, hormonal influences on growth, homeostasis and homeorhesis, communications of cells and tissues, genetic influences on growth, the immune system and growth, gametes, fertilization and embryogenesis, prenatal and postnatal growth in mammals, growth of avian species, efficiency of growth, compensatory growth, growth and puberty in the breeding animals, measuring and predicting growth and body composition in the live animals, measuring the carcass, growth promoters, performance enhancers, feed additive alternative approaches and, finally the future of animal growth. Every chapter included tables, figures, boxes and a selection of quoted literature. The text included a comprehensive twelve page index.

To delve into the elementary phenomenon of living systems, growth, the authors continued from the previous two editions (the first appeared in the year 1997), mainly from the fundamental principles, which were in the previous century in science gradually formulated by e. g. Kleiber, Brody, Hammond, and, from new statistical methods and techniques making possible the uncovering of contexts and relationships even if not always causal.

Livestock production has been changing. After World War II great production units began to grow in North America and Europe equipped with industrial technologies.

An inseparable part of these technological changes was the use of feed additives, antibiotics, growth promoters and performance enhancers. Today many are known - different nutrient modifiers (enzymes, zoolites and clay minerals, surfactants), physiological regulators (hormones, stimulators, tranquilizers), various gut flora modifiers and stabilizers (antibiotics, antibacterials, probiotics, chemical probiotics, organic acids, nutraceuticals, prebiotics, nutribiotics); many not clearly arranged names and firm terms.

The authors rightly reminded how gradually began to spread the fear that excessive use and uncontrolled abuse of antibiotics in nutrition of farm animals can generate antibiotic resistant bacterial strains, and thus lead to the loss of effectiveness of antibiotics in human medicine.

Further they explained, how, based on well-founded reports published in UK in the 1960s, and further investigations, the EU decided that the use of therapeutic antibiotics should not be allowed in farm animals without prescription and reported that harmonization of this decision across the globe may take many years, but it is in the interest of all animal producing nations to put in place alternatives to drugs and antibiotics that have a role in human medicine or that might contaminate the environment.

In this context it is necessary to emphasize that the exclusion of certain feed antibiotics from the animal production in EU created a new situation with possible far-reaching consequences. Their "growth promotion" effect was achieved by a direct influence on the gut bacteria, i. e. of microbiom of the individual. But the individual is not only a pile of material, or a whirl of energy, but an integrated unit of harmonized processes, a basic sign of its existence. The individual is an integrated process as in space, so in time. Its fully integrated part is also the microbiom present in the gastrointestinal tract. Its cell number, for instance in the human being, is ten times higher than the count of cells in the human body itself. The originator of individuality of any organism, the necessity to maintain its stability of the water milieu intérieur for the integration of the individual into its full integrity in both space and time, is the genome. The human genome has about 20-25 thousand genes. On the other hand, the number of genes in the human microbiom present in the gastrointestinal tract is estimated at about 3.3 million. The number of genes in its microbiom is thus more than two orders higher. They inevitably must influence one another.

The stimulating work by the authors in a relatively short period has rightfully three editions. Their interpretation of one of the basic manifestations of life, growth, is inspiring. But in my opinion in the future more attention should be devoted to connecting the growth and the developmental

phases of an individual, and, the significance of farm animal microbiom. It would not only be a concise source of information, but, also an appeal call.

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