PREFACE

In this book mathematical aspects of population genetics are considered.

On the basis of the Hardy-Weinberg law the standard approach to the research of population genetics problems is stated. Along with the standard approach the necessity for separate research of family tree genetics and population genetics which represent a set of the family trees is shown.

Family trees are investigated by methods of discrete mathematics in a discrete time scale which is defined by the alternation of generations. In the research of populations it is necessary to transit to a continuous time scale, continuous functions; therefore, the Hardy-Weinberg law is written down in the form of the differential equation of the second order. Transition to continuous functions has allowed us to receive new and significant results in population genetics. In particular, new results affect the approach to problems of a mutation's occurrence under action of radiation, of a newgrowth's occurrence, migrations of populations under various conditions, to reveal nonlinear character of inbreeding and natural selection, etc.

The book may be useful to geneticists, student-biologists, post-graduate students and anyone who is interested in problems of population genetics.