

Preface

Development is behind what one looks like. Development is directed by genes, the units of heredity, which are made up of deoxyribonucleic acid (DNA) in all animals (including man), plants, microorganisms and most of the viruses except in some viruses where ribonucleic acid (RNA) is the genetic material. Integrated study of genetics and development is the subject matter dealt with in Developmental Genetics. Here one tries to understand role of genes in development, which starts from the very moment an egg is fertilized and proceeds till the individual dies.

Keeping in view importance of developmental genetics as a science, a section comprising of the subject matter in this branch of science has been included in University Grants Commission (UGC) Council of Scientific and Industrial Research (CSIR)—National Entrance Test (NET) in Life Science. Developmental Genetics is taught in almost all the conventional and agricultural Universities of India. A course on Developmental Genetics was included in the postgraduate curricula of the Punjab Agricultural University (PAU), Ludhiana in 1998 and since then I have been teaching Developmental Genetics at PAU.

As a teacher of developmental genetics, it was challenging to collect the material from many different books and research papers even for a single topic as there was no single book available to cater our needs. This necessitated compilation of different lectures into "Class Notes on Developmental Genetics", which were found to be very useful by the students attending this course and those preparing for UGC/CSIR-NET. My other colleagues also found these notes invaluable source of reference. My continued interest in developmental genetics, experience of teaching the subject, lack of a book on developmental genetics by an Indian author, and above all, request from students studying developmental genetics prompted me to write the present book.

This book is intended to serve as a textbook for a postgraduate course in developmental genetics in Indian and foreign universities and a reference book for the teachers teaching this course and for the developmental biologists who conduct research in this area. Attempt has been made to explain various phenomena of developmental genetics, wherever possible, taking examples from animals, plants, bacteria and viruses. Responsibility of including or not including certain topics or examples entirely rests with me. Style of presentation of material is my choice.

This book has been divided into 20 chapters. Each chapter begins with a brief background, matter in the subject is explained with the help of suitable tables, diagrams and flow charts, as felt necessary. Thought provoking questions are given at the end of every chapter. Separate sections on Bibliography and Glossary of useful terms are also included. Author and Subject Indexes given at the end of the book will have special value for the reader.

While writing this book I have consulted a large number of old and new textbooks, original research papers, review articles, dictionaries and encyclopedias. My head bows with respect before all these authors. My colleague, Dr Sudagar Singh, Professor of Genetics made his lecture notes available to me for consultations. I am thankful to him for his gesture.

Mr. Gagandeep Singh of Ludhiana typed the manuscript of the book and made all the figures on the computer with utmost care and efficiency.

My wife Harjit, son Jemmy, daughter-in-law Parvi, son-in-law Shelly and daughter Simmi deserve to be acknowledged for their patience and co-operation during writing of the book. My grand children Sehaj and Prabhasis, always cheered me up and were source of energy, which is required in abundance for such projects. I am thankful to M/s I.K. International Pvt. Ltd., New Delhi, for bringing out this book, as per my wishes, in excellent format and design.

Gurbachan S. Miglani
Professor of Genetics (Retd.)
147-D, BRS Nagar
Ludhiana – 141 004
India