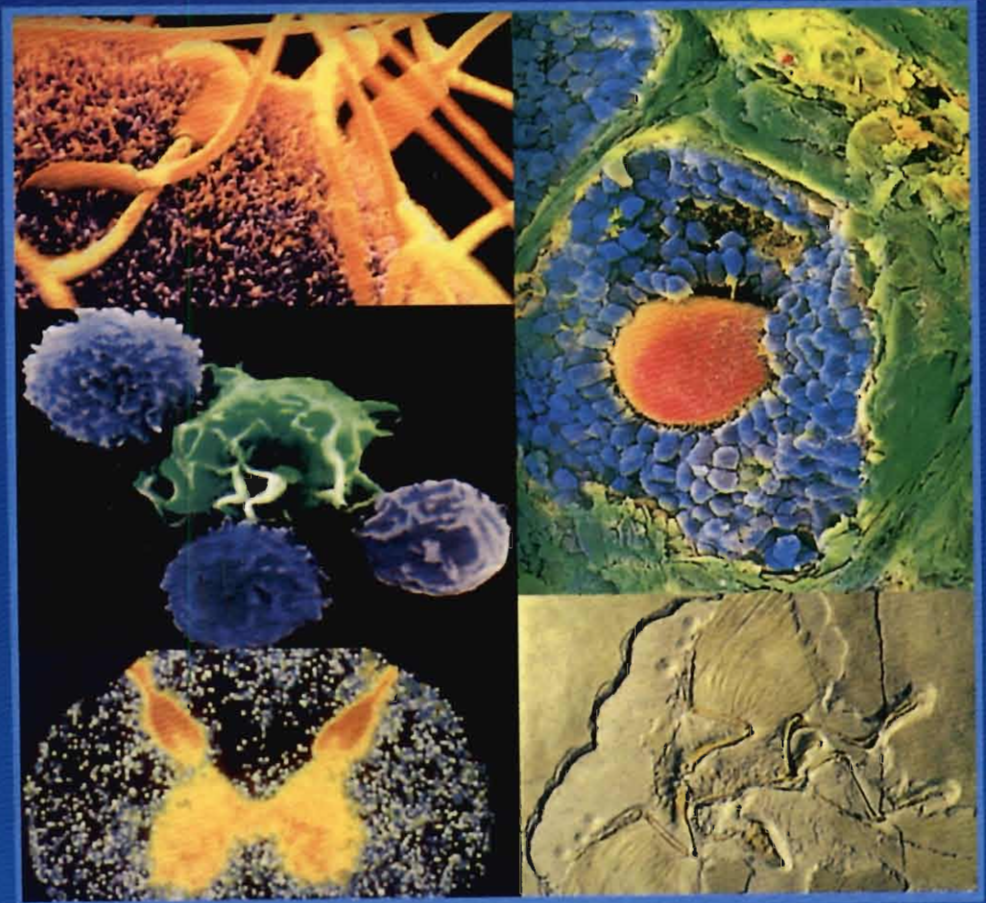


LIFE SCIENCE

Secondary Education
Third Year
Life Sciences Section



NEW EDITION

Center for Educational Research and Development



National
Textbook

New Curricula

Republic of Lebanon

Ministry of Education and Higher Education

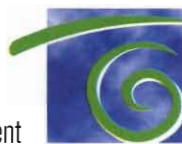
■ LIFE SCIENCE ■

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General Coordinator
Moustapha YAGHI



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Together We Build Through Education!

The Center for Educational Research and Development (CERD) has embarked on an extensive workshop for assessing and developing the educational framework and curricula which have been placed into effect more than three years ago. As part of this long-term project, we are placing in the hands of students and teachers this new version of the textbook «Life Sciences» issued by CERD under the National Textbook Series.

Issuing this version serves a dual purpose: developing textbooks in light of the general and specific objectives, and insuring that the books meet the development requirements of the new curricula. To this end, it is crucial to adjust the size of each course as measured by the number of teaching hours set for it through the school year, taking into consideration the vertical alignment within the same course as well as the horizontal alignment with the rest of the courses.

This workshop, which was launched under the kind sponsorship of His Excellency the Minister of Education and Higher Education in implementation of Decree No. 10227 embodying the educational curricula and their objectives, fits in with our proclaimed new motto: «Together We Build Through Education...»

It is our earnest desire to see this national, all-inclusive workshop attracting the greatest amount of interest and participation to define the safest and soundest educational options that directly affect our children, as we vow to continually modernize education and develop its ways and means to keep abreast of modern developments and progress in science and technology.

Dr. Leila MALEEHA
President CERD



PREFACE

This textbook answers the questions raised by the teachers and the problems faced by the students, while building their own knowledge.

In line with the new educational curricula, this textbook is adapted to the evaluation requirements, as well as to the training sessions and to the official exams. It contains five parts:

- Reproduction and genetics
- Immunology
- Neurophysiology
- Systems of Regulation
- Evolution

Each part is subdivided into chapters, each of which includes a number of coherent documents, designed to better serve the pedagogical needs and the learning strategies.

Teaching life sciences is based on scientific reasoning; that is why observations and experiments are completed by the study of different documents that develops critical thinking, that insures proper methodological and intellectual training indispensable for higher scientific education and allows the student to face any problematic situation.

The introduction of the « Documents » helps the student to formulate adequate questions and then try to answer them.

In addition, the documents of this textbook have varied contents that train the student in different modes of scientific representations : texts, tables, graphical representations, diagrams, figures...These documents include probing questions, that train the students to different competences.

Each chapter ends by a summary that clearly shows the essential and fundamental scientific notions, as well as a concept map that permits to draw out the key ideas of the chapter and thus restructures the learned notions.

At the end, a set of exercises follows the evaluation system required by the CERD and assures the evolution of the different competences.

We hope that this textbook will be an efficient and attractive educational tool, both for the teacher and the student. We would also like to sincerely thank all those who helped us, and those who will suggest any critical and constructive remarks.

The Authors

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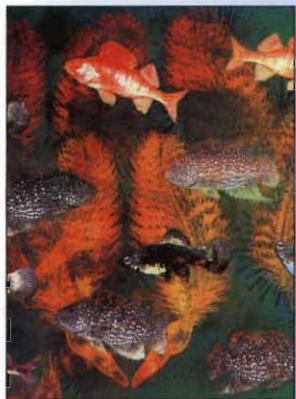
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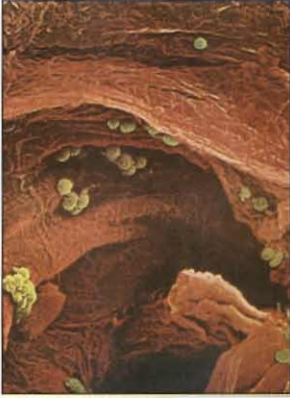
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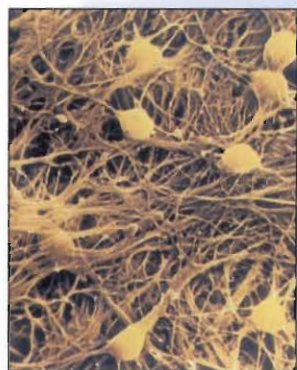
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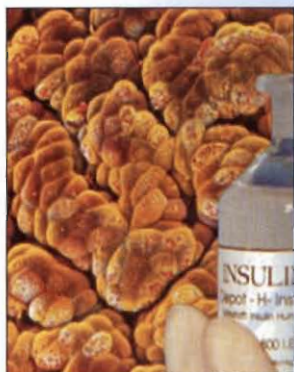
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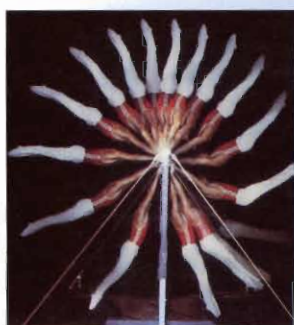
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