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Science Notes - Biochemistry Computer Disks

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SCIENCE NOTES

Biochemistry Computer Disks

Bio-Learning Systems of Jericho, New York, has developed and released a series of computer learning disks related to biochemistry. The stated objectives for these disks are:

1. to introduce fundamental biochemistry to beginning students.
2. to develop knowledge related to the content area of each disk, namely, proteins, lipids, carbohydrates, and nucleic acids.
3. to provide a review for knowledgeable students.
4. to enable students to evaluate their own progress.

The disks are designed to run on the Apple II+ and the Apple IIe DOS 3.3. However, this reviewer used a Franklin Ace 1200 and found each disk completely compatible with this computer.

The biochemistry unit contains five disks: lipids, carbohydrates, proteins, nucleic acids and a test, each of which may be purchased separately. However, the comprehensive test disk has little value unless all preceding content disks have been completed.

The test is fairly comprehensive, covering all four biochemistry disk lessons. It is composed of ten multiple-choice questions, followed by five true-false statements, followed by five additional multiple-choice questions. The test measures recognition, comparison-contrast, and application skills. Questions are chosen at random from a question bank. A running score is maintained for the student. Although the final score is not retained, it can be given to the teacher by the student, or the teacher can simply request to see the final percentage score before the computer is turned off.

The four lesson disks sequentially give major points of the topics. They are not extensive, but quite satisfactory for establishing key biochemistry concepts.

Each disk is accompanied by a reproducible study sheet on which a student can take appropriate notes while studying the concepts being presented. This study sheet will ultimately become a written reference for review for the test disk. The study sheet also gives the teacher a monitoring tool for each student. A teacher's guide accompanies each study sheet and disk, and provides answers to the statements on the study sheet. All instructions are succinct and should offer no real problems to the students.

The graphics used in these disks are first-rate. Color enhances the effectiveness of each program of study. A special feature of typing in words keeps the students active throughout each disk, as well as reinforcing spelling and terminology.

SCIENCE NOTES

Biochemistry Computer Disks (cont.)

Self-test items are interspersed throughout each program. Unlike the study sheets, these self-tests give students immediate feedback. The study sheets either must be corrected by the teacher or the key made available to the students.

The lipid disk includes:

1. structure and functional differences.
2. a comparison of phospholipids to typical fats, oils and waxes.
3. structural formulas of glycerol and fatty acids.
4. a comparison between saturated and unsaturated fats.
5. dehydration synthesis and hydrolysis as processes for the building and breaking apart of lipids.

The carbohydrate disk includes:

1. the basics of carbohydrate structure and function.
2. a comparison of the isomers of glucose.
3. a condensation reaction between monosaccharides.
4. the formation of di- and polysaccharides.
5. a visual depiction of hydrolysis.

The protein disk includes:

1. the properties of proteins.
2. the primary structure of proteins.
3. a comparison of globular and fibrous proteins.
4. an explanation of polymer formation.
5. the processes of dehydration and hydrolysis.

The nucleic acid disk includes:

1. the DNA nucleotide.
2. hydrogen-bond formation between purines and pyrimidines.
3. the formation of a DNA helix.
4. a comparison of DNA and RNA.

The disks for this biochemistry unit fit into the biology and chemistry curricula at the high school level. They also could be of value to similar classes taught in junior colleges and vocational institutions.

Each disk is modestly priced at \$60. However, all five disks (test disk included) can be purchased for \$250 from Bio-Learning Systems, Route 106, Jericho, N.Y. 11753.

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