

TEACHING BIOCHEMISTRY TO MEDICAL STUDENTS AT THE UNIVERSITY OF IOWA

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The College of Medicine at the University of Iowa accepts 135 new medical students each year. The students must already have an undergraduate bachelor's degree. They must have previously taken a course in organic chemistry, but are not required to have previously taken a course in biochemistry. Thus, some new medical students have no prior exposure to biochemistry, whereas others have majored in biochemistry as undergraduates. This disparity in undergraduate backgrounds is a challenge. All new medical students, independent of their background, must take a 4-semester hour course in biochemistry during their first semester of medical school. The course is taught by four senior faculty members in the Department of Biochemistry. Four one-hour lectures are given each week, plus associated discussion sections and help sessions. Several optional "research lectures" are also given by different faculty members to the more advanced students, which can be used by the students for "honors" credit in the course. There is no laboratory. Likewise, there is no required textbook, although several textbooks are recommended as references (examples: Devlin's "*Textbook in Biochemistry with Clinical Correlations*" 6th edition, and Champe & Harvey's "*Lippincott Illustrated Review of Biochemistry*" 3rd edition). All lectures are accompanied by very detailed handouts that the students receive throughout the course. Clinical examples are used extensively to illustrate the relevance of biochemistry to medical practice. Material covered includes the structure and properties of biological macromolecules, principles of enzymology, mechanisms of information transfer (DNA & RNA), use of molecular biology in medical diagnosis, intracellular signaling pathways, generation of metabolic energy, and metabolism of carbohydrates, amino acids, lipids and amino acids. Four equally spaced examinations are given and students must achieve a pre-determined overall score to pass the course. An effort is made to coordinate the course content with the standardized American "Board Examination" in the basic biomedical sciences that all American medical students must take at the end of the second year of the four-year medical curriculum. About 5% of the students are studying for a combined M.D./Ph.D. degree, which typically takes about 7 total years after entering medical school.