ASSESSMENT OF GENETICS KNOWLEDGE AND SKILLS IN BIOLOGICAL STUDENTS: INSIGHT FOR A HUMAN MOLECULAR GENETICS CURRICULUM

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Abstract

The pace of discovery in biochemistry and genetics and its effect on human lives, places new curricular challenges in master of molecular biology school education. The Human Genome Project and the current thrust of individualized medicine based on genomics emphasize the imminent need for an updated genetics curriculum. Teaching these materials requires reformatting the traditional genetics curriculum, which has traditionally emphasized the basic science such as pattern of inheritance, and quantitative genetics in general. In additional, faculty must continue to provide students with a working knowledge of molecular genetics examination and interpretation skills. These competencies included attitudes about genetics and genetics disease, knowledge of genetics and its implications in human science, skills to counsel affected people and families, and educational strategies to teach these concepts. We sought to evaluate students' understanding of human genetics and its implications. We utilized a needs assessment and a written examination to evaluate the genetics knowledge of 51 second year molecular biology students. The needs assessment surveyed students' self-perceptions of their own understanding of basic related genetic principles and the most effective educational methods. Molecular biologist students reported more competence with basic science learned during the bachelor degree than clinical concepts, and they demonstrated relatively low knowledge levels in human molecular genetics concepts on the examination, with an average of 21% correct on questions pertaining to genetic counseling compared with 72% correct with regard to inheritance patterns. While at least half of students reported minimal understanding or awareness of key genetic website (e.g. OMIM) and indications for support group recommendations and genetics referrals. Teaching these more specific genetics skills and concepts needs to be emphasized in human molecular genetics curriculum.

Keywords: *education, genetics, human molecular genetics.*