DEVELOPMENT OF A CONCEPT INVENTORY FOR THE MOLECULAR LIFE SCIENCES: AN OVERVIEW

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The exponential growth in knowledge in the molecular life sciences has meant that it is now no longer possible for educators to teach all the concepts presented in rapidly expanding student textbooks. This has led educators to pose the question, “What constitutes core knowledge in our discipline and which concepts are fundamental to our subject and should be the focus of all undergraduate curricula?” In addition to this explosion of knowledge, research in the molecular life sciences has moved towards the study of complex systems. The links between biology, chemistry, physics and mathematics have strengthened as biology has matured as a discipline over the past 50 years. It is therefore timely, if not urgent, to re-focus our molecular life sciences undergraduate curricula to reflect these important changes in ways of thinking and doing science. The first step is to identify a new set of key concepts and explanatory frameworks which underpin the emerging science. An important second step is to develop assessment tools by which the nature and quality of student understandings of key concepts can be evaluated. We propose to develop a concept inventory for the molecular life sciences for this purpose. The instrument will be convenient to use and will inform classroom practice, curriculum development and program evaluation. The development of the instrument will require the establishment of international consensus around the key concepts. IUBMB seeks input into the project from all members of the international community of molecular life scientists.