

## **DISCUSSION OF THE RESEARCH THAT CAN BE ASSOCIATED WITH THE CONCEPT INVENTORY PROJECT**

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The prime aim of the Concept Inventory Project will be to identify the key concepts and explanatory frameworks that currently compose core knowledge in the molecular life sciences; and, develop a concept inventory of assessment tasks that will effectively measure students' conceptual understanding of the core knowledge and thereby yield useful information for teaching practice and curriculum design. To establish whether this project achieves the stated aims, I will propose the following two research phases: a Development Phase involving an expert perspective of what should constitute core knowledge and effective assessment of such knowledge and, a Validation Phase involving research to establish whether, from a student perspective, the concept inventory is valid and successfully achieves the stated goals of the project. I will then present the following research questions for discussion and briefly outline the methods that could be used to address each question: What concepts and explanatory frameworks currently constitute core knowledge in the molecular life sciences? What sequence should the concepts be taught in order to facilitate sound knowledge construction in students? What is the meaning of conceptual understanding? What types of assessment tasks would most effectively probe such understanding and reveal evidence of alternative conceptions? Are the student responses to the concept inventory useful for informing teaching practice and curriculum design?