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The CADU Alliance N3 Project

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The history of the Chem-Bio Informatics Society goes back to 1981. The term Chem-Bio Informatics (CBI) had been coined to cover various interdisciplinary areas for studying the effects of chemicals on biosystems at the molecular level. Since then, drug discovery has been the most attractive research area of the CBI, and over the years, it has been a force for the advancement and sophistication of computational methods, programming systems, databases, knowledge-bases, and arts of applying these methodologies and computational resources. Yet now it seems that this discipline has lost its vital energy to offer good new jobs, to attract investors, and to draw the attention of the general public.

We propose new frontiers, which should need new professionals as a workforce, and new partnerships for cultivating these frontiers in order to revitalize this discipline. First, we propose that since CBI consists of such interdisciplinary areas as natural sciences, informatics, and computing, it is natural to include physics here. Although information and computing had not been subjects of physics for a long time, the emerging new fields of quantum information and quantum computing have drastically changed this situation. It is time to consider, for example, computational chemistry simulation by quantum computers. Second, we propose to include applications of smart phones or tablets, and cloud services to CBI. Some examples were well discussed in several papers. Third, we propose to pay special attention to educating many professionals working in health and medical fields.

The last proposal must be considered most seriously, since such educational needs are urgent and tremendously important. It is urgent because very rapid advances of sequencing technology are drastically reducing the costs and time required for genetic and genomic testing so that such tests, which require some genomic competency, may be accepted in any service sectors in health and medical cares. This means that, not only basic researchers in clinical medicine, especially those who are dealing with cancer, but also many clinical professionals such as primary care physicians, nurses, pharmacists, nutritionists, and others must improve their competencies and literacy of genomics. There will be a need to recruit many bioinformaticians to take part in this task. Moreover such a career extension might open new chances for them. Open courseware based on the Internet would be a very strong tool for this purpose.

Right now we are proposing to implement some of these proposals in the context of activities of the CADU Alliance. We hope such efforts might contribute to revitalize this discipline.