Bioinformatics as a Tool for Training in the Scientific Method

De Mesquita, J.F

Dep. de Genética e Biologia Molecular, IB, UNIRIO, RJ, Brazil

Within the Medical School of the Federal University of Rio de Janeiro State (UNIRIO), a course, named Scientific Initiation, allows students to develop a protocol using the scientific method under the supervision of an established researcher. Surprisingly, a group of ten medical students sought out the bioinformatics laboratory to carry-out their respective projects. Upon accepting the challenge of guiding the future physicians by the paths of the computational biology, the starting point was the article “Ataxin-2 intermediate-length polyglutamine expansions are associated with increased risk for ALS”. Subsequent to initial meetings and a thorough literature review using the OMIM (Online Mendelian Inheritance in Man) and PUBMED databases, the students defined their objective: defining a way to structurally analyze proteins carrying mutations detrimental to humans using computational tools. The steps involved included a search for natural variants of the protein in the ExPASy Proteomics Server, investigating the resolved native and variant protein structures in the Protein Data Bank and, when these were not available, the comparative or ab initio structural modelling would be made. At the end of the semester, students were able to write a project in the format required by funding agencies. This undertaking familiarized student with scientific areas not normally addressed in the medical curriculum and introduced hands-on learning of the scientific method.

Word Keys: Education, Bioinformatics, Medicine.