INTRODUCTION

For the past 17 years, I have been working in the biotechnology industry, and for the past 13 years, I have exclusively been devoted to the bioinformatics field. I have seen varying definitions of bioinformatics, but the most accepted description is the application of computer science and mathematics to solve biological problems (BioPlanet, 2014). Ever since the completion of the human genome project in 2003, the biggest challenge has been in analysis of the massive amount of data available. Currently, my main duties are in providing bioinformatics support for our assay business, which in a nutshell enables detection of specific fragments of nucleotides (DNA and RNA). The human genome contains approximately 30,000 different genes, and we have assays for every one of them available. However, bioinformatics support is needed to better annotate the genome (all available species, not just human), and our assays themselves. Web technologies in particular are used to communicate this information to customers. I see HTML5 and jQuery being used extensively now and in the future to further this goal.

HTML5

As we all know since the beginning of this module, HTML5 is the latest HTML standard, used mainly for presenting web pages on desktop and laptop computers, tablets, and mobile devices. Currently, biological information between different organizations is predominantly disseminated through the web. Perhaps the best example of this is the National Center for Biotechnology Information (NCBI) web site, which one can access publicly available information on every species known (NCBI, 2014). This trend will continue. However, the vast majority of biological scientists are not trained in computer science. Experience in HTML5 will put me at an advantage over those seeking employment in the biotechnology industry.

JQUERY

Even though we have not covered this technology, my understanding of jQuery is that it is the most used JavaScript library, and is used to simplify the implementation of JavaScript in web pages (Deitel, 2012, p. 8). Since HTML is already extensively used in bioinformatics applications, so too is jQuery. An often-used application is BLAST, which stands for “Basic local alignment search tool”, which essentially is a tool that compares nucleotide (DNA or RNA) and protein sequences. The NCBI provides a web page for scientists to input their data into a form (NCBI, n.d.). Such forms can benefit from jQuery implementing client-side validation using JavaScript.

GOING FORWARD

Many bioinformatics software tools are still needed, and many of the existing ones use the UNIX command-line; only a small fraction of them have a web-interface. Most trained biologists, though possessing computer skills, are not comfortable in the UNIX command-line environment. As one can see, experience in implementing web technologies such as HTML5 and jQuery would be useful for one working in the bioinformatics field. Even though I live in Silicon Valley, it is still difficult to find available personnel trained in computer science. The added requirement of formal training in biology is already making the competition for qualified personnel that much tougher.

REFERENCES:

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