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Bioinformatics analysis of NGS data - current applications on biomedical research

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Abstract

Next Generation Sequencing (NGS) technologies are promptly becoming the most popular research strategy for Drug discovery and Biomedical research in the post-genome era. The bioinformatics analysis of NGS data is data-driven, computationally demanding and increasingly more integrative, as new technologies are introduced.

The Center for Research Informatics at the University of Chicagohas developed a set bioinformatics pipelines that by making use of the open source Galaxy framework, are able to integrate the use of High Performance Computing (HPC) clusters, Large Scale Computational Storage and the most popular analysis tools in a user-friendly bioinformatics workbench, that enables non-computer experts (like biologist and statisticians) to execute computationally demanding bioinformatics analysis, without the need of expert knowledge on the use of command line or console-based coding. The use of these pipelines allows researchers, to focus in the biological question and toeasily overcome some of the most important challenges in NGS data analysis, including data transfer, data and analysis sharing and analysis repeatability/reproducibility. A case study demonstrating the usability of the developed pipelines will be presented and discussed.

Biography

Dr. Andrade obtained his PhD degree in Bioinformatics at the Royal Institute of Technology in Sweden, followed by a post-doctoral fellowship at the prestigious Karolinska Institute in Stockholm.After his training, Dr. Andrade entered the Pharmaceutical Industry working for Eli Lilly in Singapore as senior research scientist, followed by his appointment as Associate Director of the Department of Pharmacogenomics R&D the Beijing Genome Institute (BGI) in Shenzhen, China.

Dr. Jorge Andrade is currently the director of Bioinformatics at the University of Chicago, responsible for planning and oversight of the Bioinformatics Core. His area of expertise is the bioinformatics analysis of NGS data and it's application to Drug discovery and biomedical research.