

P0997 iSkyLIMS, a friendly environment to facilitate the incorporation of massive sequencing to a genomics core facility

Luis Chapado¹, Sara Monzon*¹, Pedro J. Sola-Campoy^{1,2}, Ana Hernandez¹, Angel Zaballos³, Isabel Cuesta de la Plaza¹

¹Carlos III Health Institute, Bioinformatics Unit, Majadahonda, Spain, ²Carlos III Health Institute, Reference and Research Laboratory for Antibiotics Resistance, Majadahonda, Spain, ³Carlos III Health Institute, Genomics Unit, Majadahonda, Spain

Background: The introduction of massive sequencing (MS) in genomics facilities has meant an exponential growth in data generation, requiring a precise tracking system, from library preparation to fastq file generation, analysis and delivery to the researcher. Software designed to handle those tasks are called Laboratory Information Management Systems (LIMS), and its software has to be adapted to their own genomics laboratory particular needs.

iSkyLIMS is born with the aims to help on the wet laboratory tasks, and implements a workflow that guides genomics labs on their activities from library preparation to data production, reducing potential errors associated to high throughput technology, and facilitating the quality control of the sequencing. Also, iSkyLIMS connects the wet lab with dry lab facilitating data analysis by bioinformaticians.

Materials/methods: iSkyLIMS has been implemented using Django Framework running on Python 3.6 and a MySQL database to store the processed data generated by the Illumina sequencer.

Results: iSkyLIMS is an open-source software that runs on a Linux distribution with a web-based interface for user interaction. The sequencing runs inside iSkyLIMS are handled in a state machine concept where each run is passing through all possible states, from initial until completed state. Data from the MS Illumina platform are fetched, processed and stored in a database which is the base for the quality analysis, statistics information, and reports done afterwards.

Conclusions: Keeping all sequencing information centralized and running on a virtual environment allows iSkyLIMS to be a scalable system to fulfill the future needs, since the number of runs increases with the incorporation of MS to the routine of a clinical research laboratory.