# SeqUIa: a software platform for GUI based next-generation sequencing data analysis

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Next-generation sequencing (NGS) is the molecular diagnostic technology of the future, which with its significantly dropping costs, started recently to replace the standard diagnostic laboratory techniques. The well-known bottleneck of NGS-based diagnostics is the subsequent bioinformatics analysis, which usually consists of multiple complex steps requiring specific algorithms and settings. Many existing software tools cover only some parts of NGS diagnostics or specialize in specific types of NGS diagnostics, but to the best of our knowledge, there is no generic tool for setting and processing the complete bioinformatics analysis of NGS diagnostics.

Here we present SeqUIa, a software platform to organize, control, and run the NGS bioinformatics analysis through an intuitive web-based GUI. The software handles the whole process, from sample registration all the way to the report visualization. SeqUIa is a full-fledged laboratory information system for NGS-based molecular diagnostics, which includes the means to run the analytical workflows effortlessly. SeqUIa works with Snakemake workflows to ensure reproducible and scalable data analyses. Standard NGS analyses are included in the system, but SeqUIa allows for an easy “plugin” of any additional Snakemake workflow. The software features a 2-tier architecture designed for secure work with sensitive data and flexible deployment to various computational resources.