

# FIMED: Flexible management of biomedical data

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**Resumen(Abstract).** *Background and objectives:* In the last decade, clinical trial management systems have become an essential support tool for data management and analysis in clinical research. However, these clinical tools have design limitations, since they are currently not able to cover the needs of adaptation to the continuous changes in the practice of the trials due to the heterogeneous and dynamic nature of the clinical research data. These systems are usually proprietary solutions provided by vendors for specific tasks. In this work, we propose FIMED, a software solution for the flexible management of clinical data from multiple trials, moving towards personalized medicine, which can contribute positively by improving clinical researchers quality and ease in clinical trials.

*Methods:* This tool allows a dynamic and incremental design of patients' profiles in the context of clinical trials, providing a flexible user interface that hides the complexity of using databases. Clinical researchers will be able to define personalized data schemas according to their needs and clinical study specifications. Thus, FIMED allows the incorporation of separate clinical data analysis from multiple trials.

*Results:* The efficiency of the software has been demonstrated by a real-world use case for a clinical assay in Melanoma disease, which has been indeed anonymized to provide a user demonstration. FIMED currently provides three data analysis and visualization components, guaranteeing a clinical exploration for gene expression data: heatmap visualization, clusterheatmap visualization, as well as gene regulatory network inference and visualization. An instance of this tool is freely available on the web at <https://khaos.uma.es/fimed>. It can be accessed with a demo user account, "researcher", using the password "demo".

*Conclusion:* This paper shows FIMED as a flexible and user-friendly way of managing multidimensional clinical research data. Hence, without loss of generality, FIMED is flexible enough to be used in the context of any other disease where clinical data and assays are involved.