

The new age of proteomics: An integrative vision of the cellular world

January 17 2013

The enormous complexity of biological processes requires the use of highperformance technologies —also known as 'omics'—, that are capable of carrying out complete integrated analyses of the thousands of molecules that cells are made up of, and of studying their role in illnesses. In the post-genomic age we find ourselves in, the comprehensive study of cellular proteins —prote-omics— acquires a new dimension, as proteins are the molecular executors of genes and, therefore, the most important pieces of the puzzle if we wish to understand more completely how cells work.

The head of the Proteomics Core Unit at the Spanish National Cancer Research Centre (CNIO), Javier Muñoz, publishes this week, alongside researchers from the University of Utrecht and the Netherlands Proteomics Centre, a revision of the latest technological advances in proteomics including improvements in the preparation of [biological samples](#), in mass spectrometry techniques and in the bioinformatic analysis of data. The article has been published this week in the journal *Nature Review Genetics*.

To illustrate these advances, the authors coin the term "next--generation proteomics", in reference to the new [genome sequencing](#) techniques employed by most of the scientific community. They use the example of several illustrative proteomic study cases that have brought to light key data in several biomedical research scenarios.

The authors end their revision by emphasising the main applications of

these studies for clinical practice, such as the search for useful new biomarkers to improve [cancer diagnosis](#) and prognosis, or the design of personalized therapies for patients following the analysis of a reduced number of cells.

Provided by Centro Nacional de Investigaciones Oncologicas (CNIO)

Citation: The new age of proteomics: An integrative vision of the cellular world (2013, January 17) retrieved 26 April 2024 from <https://medicalxpress.com/news/2013-01-age-proteomics-vision-cellular-world.html>

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