

Investigation on diagnostic assessment of prostate cancer using virtual microscopy system published in Nature Scientific Reports

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The scientific journal Nature Scientific Reports has recently published an investigation aimed to analyze the **potential of virtual microscopy** available at **CRS4 - Center for Advanced Studies, Research and Development in Sardinia** - through its **digital pathology platform** for the diagnosis of histological slides related to patients affected by **prostate cancer**.

CRS4, which operates within the Science and Technology Park of Sardinia, managed by Sardegna Ricerche, has long been engaged in research activities in the field of **pathological anatomy diagnostics**. Thanks to its **digital pathology platform**, it is possible to manage, examine and annotate virtual histological samples in a fully digitized process. The platform is a system that combines a **virtual microscope**, which allows easy navigation and visual examination of histological images details, with tools for clinical annotation of slides, to define regions of interest on the images and perform **quantitative measurements of the relevant tissues**.

The use of such systems contributes to **improving** the quality of the **care path** because, for example, it will allow the patient to receive a second opinion, remotely, from other specialists who will be able to make the relevant assessment by analyzing the very high resolution images of the scanned slides. In addition, it will be possible to carry out further studies on the images by developing and applying **artificial intelligence** tools, capable of automatically detecting groups of cells with particular characteristics that will allow more targeted medical intervention.

The authors of this publication include researchers **Luca Lianas** and **Cecilia Mascia** from CRS4's Visual and Data-Intensive Computing group, as well as Swedish clinical specialists from **Karolinska Institutet** and Örebro University's Department of Urology, the Città della Salute e della Scienza hospital in Turin, the reference center for cancer epidemiology and prevention in Piedmont and Sant'Orsola-Malpighi Hospital in Bologna.

In the framework of this collaboration, CRS4's platform was refined for prostate cancer assessment and, at the same time, one of the most accurate collections of annotated digital slides with clinical information on such disease in Europe was developed.

"The dissemination and use of these methods and systems is evolving rapidly" - underlines **Giacomo Cao**, **CRS4's sole administrator**, "because of their potential benefits not only in research but also in **clinical practice**. This approach allows one to envisage the transition to digital management of the diagnostic process, which can bring several advantages in terms of efficiency and flexibility. The Center, thanks also to the Regional Government's ongoing financial support, is therefore pursuing, with brilliant results such as the publication in such a prestigious scientific journal, the digital health theme which is becoming quite significant in the medical sector".

[Link to the article: https://www.nature.com/articles/s41598-021-82911-z](https://www.nature.com/articles/s41598-021-82911-z)