

OBJECTIVES:

Knowledge about cancer has improved significantly in the last two decades, but there is still a considerable challenge to achieving precision medicine, which relies on validated biomarkers to better classify patients by their potential disease risk, prognosis and/or response to treatment. This study mapped the technological evolution of cancer biomarkers to understand the inventive activity, technical collaboration, advances, and technological trends in this scientific field through patent data.

METHODS:

This is descriptive and documentary research on families of invention patents (FamPat). FamPat were selected using the keywords biomarker and cancer in the title, abstract, and object of the invention of patent documents. Data were obtained and analyzed using the Questel Orbit Intelligence®1.9.8 platform in January 2023.

RESULTS:

This study selected 4,903 FamPats from 1995 to 2022, 46% published in the last five years (Figure 1). Despite this, the decline in the number of FamPat applications from 2021 onwards may suggest a substantial reduction in the Research and Development (R&D) or intellectual property (IP) registration budgets for this area.

The protection guaranteed by IP occurred mainly for the Chinese and North American markets (Figure 2), involving eleven universities or national research institutes among the twenty assignees with the highest level of inventiveness. The evaluation of citations among FamPat shows strong interactions between players, demonstrating technological maturity in the area by publishing a pioneering portfolio or blocking patents.

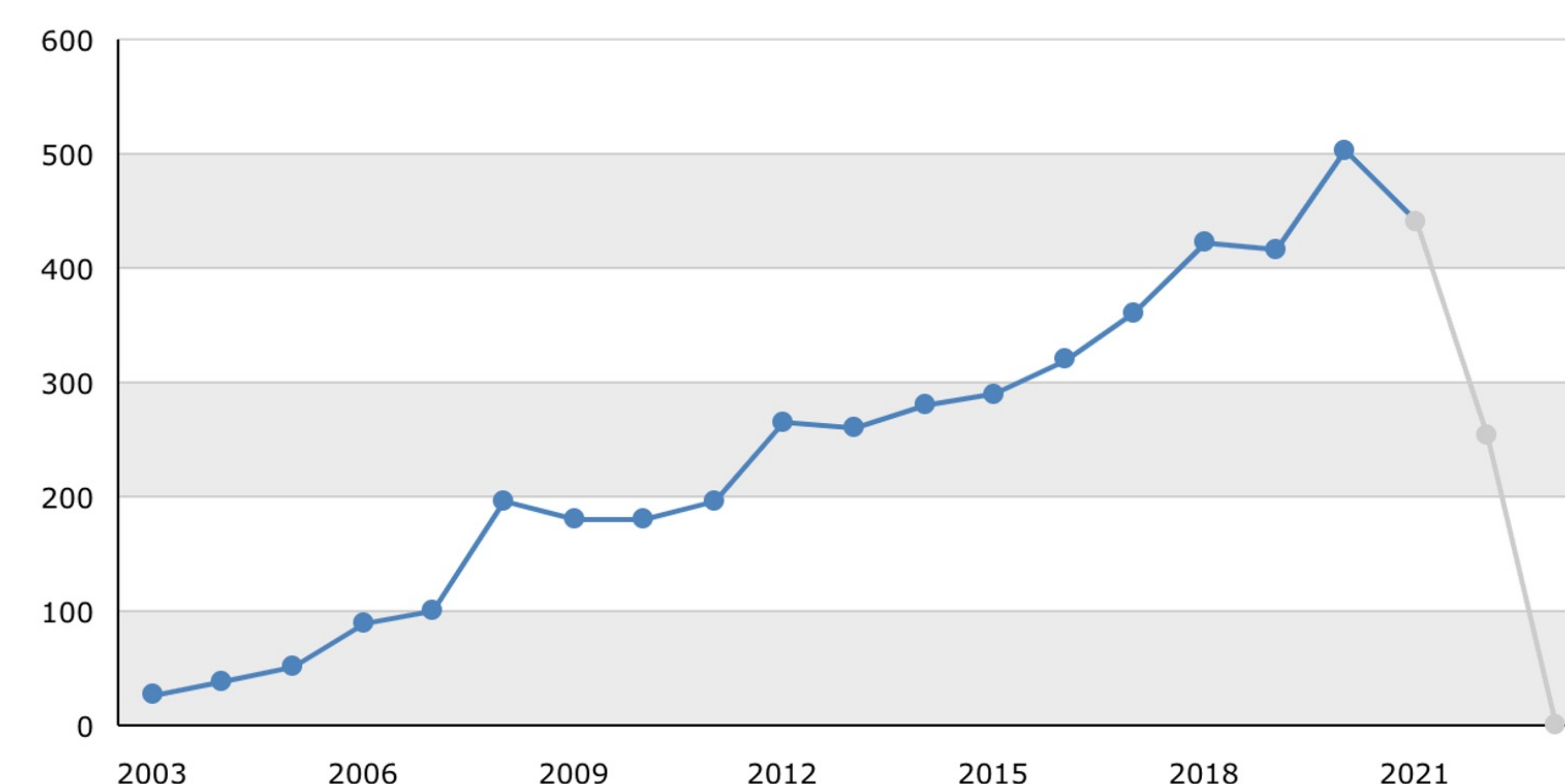


Figure 1: Technology investment trend over last 20 years

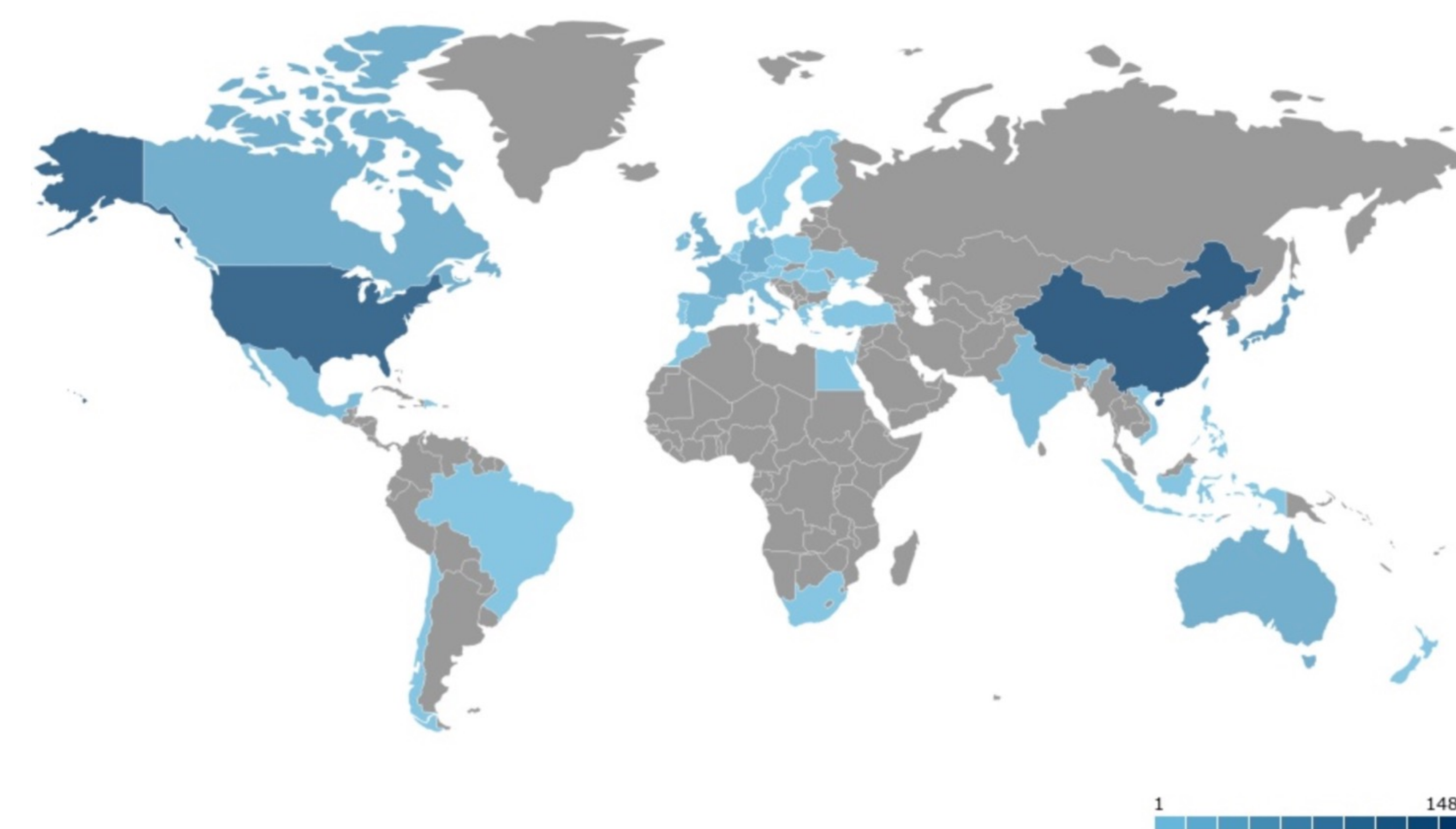


Figure 2: Publication country of the selected FAMPAT

The analysis of the 21 protected technology clusters in the area shows the intense technological competition in the field, mainly for biomarkers in ovarian cancer and those related to oncological treatments (Figure 3).

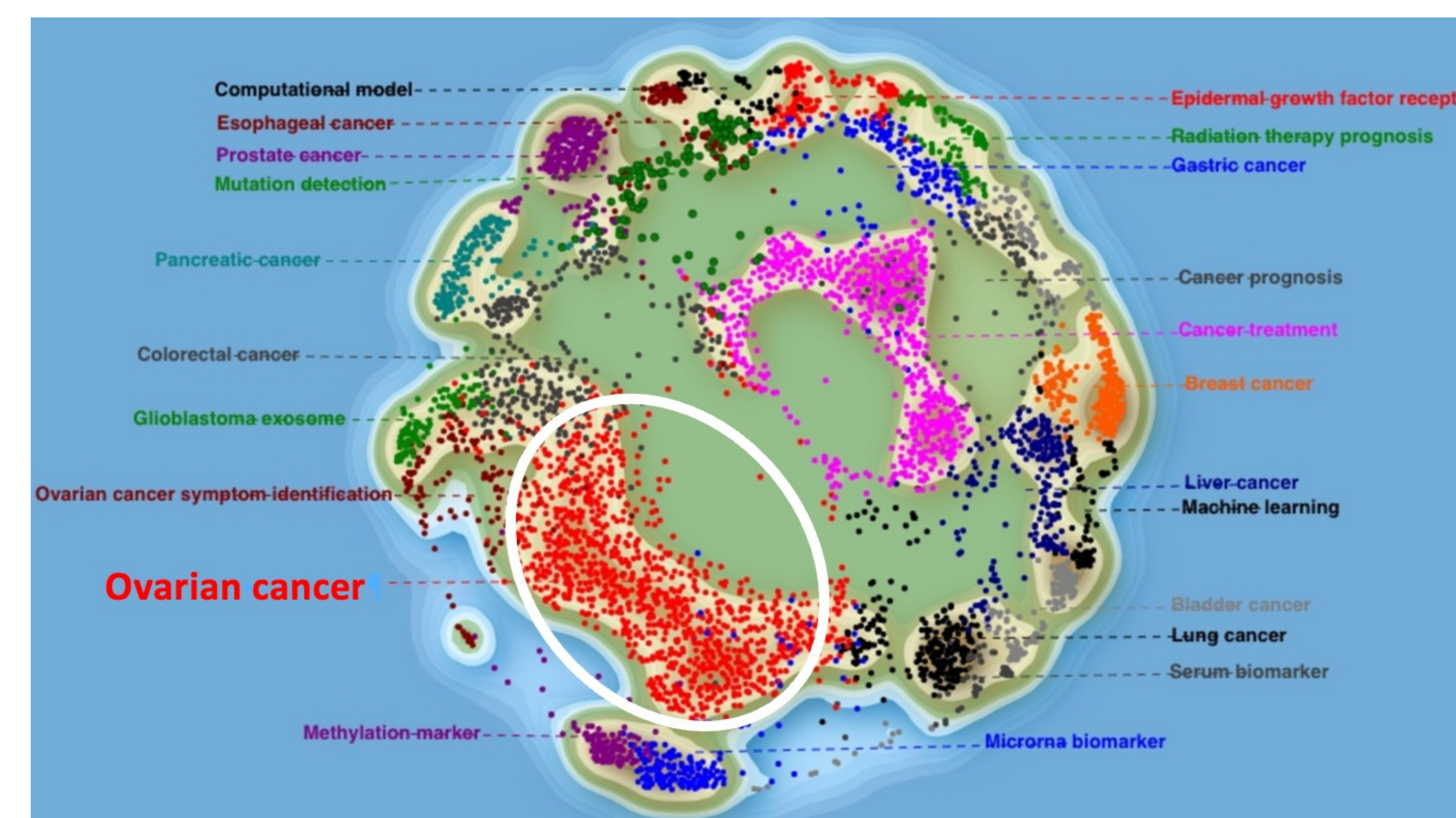


Figure 3: Landscape by technology clusters

CONCLUSIONS:

The FamPat assessment of cancer biomarkers demonstrates current great global interest with a high degree of inventiveness and contributions based on basic science coming from universities. Despite the need for the theme to evolve, the reduction in technological investment suggests a future with a lower level of inventiveness.

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- (2) Veiga, C. P. et al. (2015). Dengue Vaccines: A Perspective from the Point of View of Intellectual Property. *Int. J. Environ. Res. Public Health*;12:9454-74.