DO DENGUE-RELATED TECHNOLOGY SOLUTIONS MEET THE GLOBAL PUBLIC HEALTH PROBLEM? A STUDY FROM THE PERSPECTIVE OF INTELLECTUAL PROPERTY

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OBJECTIVES

Dengue fever (DF) is a public health concern, given the urgency in controlling the number of cases and the rapid global spread of the disease. There is no specific treatment for DF; the available vaccines have significant limitations, and vector control is a challenge. This study mapped dengue-related patents to understand the reason for the low effectiveness in providing innovative solutions to the population at risk of contracting the viral infection.

METHODS

This exploratory study analyzes innovations related to DF from the lens of intellectual property, adopting a (i) longitudinal and (ii) historical approach. The selection of this research database is predicated on the recognition that patents are abundant sources of technological information capable of facilitating novel discoveries. Families of invention patents (FamPat) were selected using the keyword dengue 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 December 2023.

RESULTS

This study selected 2,307 FamPat from 1993 to 2023; almost half (43.78%) expired or were revoked. China is the largest jurisdiction where 415 Fampat have been filed, but many regions where the DF global burden is high lack intellectual protection of dengue-related innovations (Fig.1).

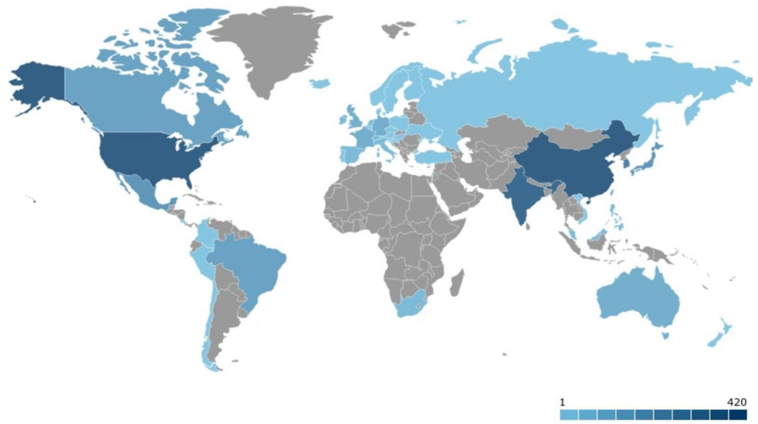
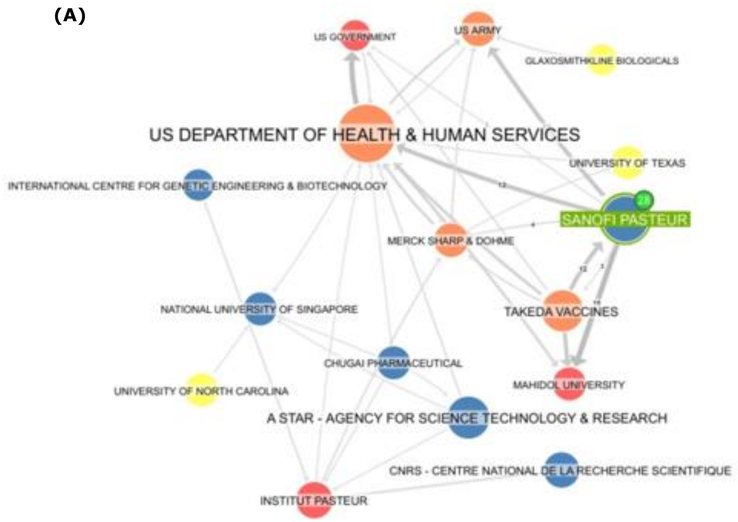


Fig. 1. Geographic distribution of Fampat - analysis of the countries of publication

Most assignees involved academic institutions, although private companies participate significantly in the total group of assignees, and partnerships and collaboration have been identified between both. Among the leading assignees are the companies responsible for the two commercially available dengue vaccines, and these companies differentiate themselves from the others due to their high knowledge absorption capacity (Fig. 2A and B).



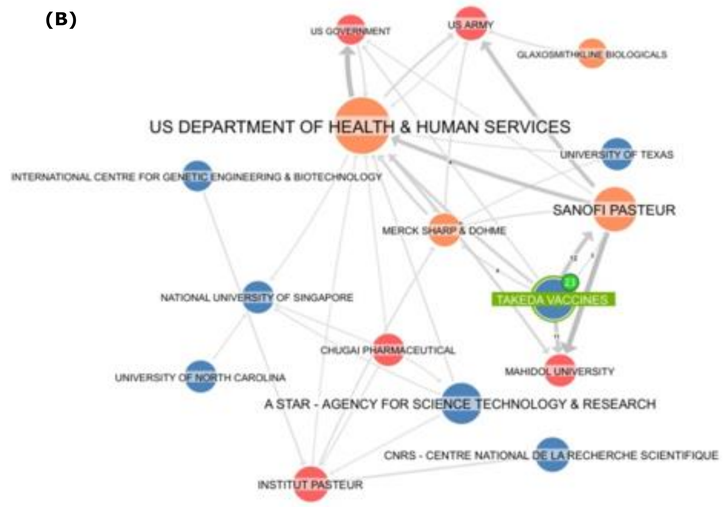


Fig. 2. The flow of knowledge encompasses contributions from various vital entities, including Sanofi Pasteur (Part A) and Takeda Vaccines ((Part B)

CONCLUSIONS

Although the number of Fampat is relatively high for DF and the interaction between universities, government, and private companies shows the potential development of an innovation ecosystem, few technological solutions are available. This study corroborates the literature by demonstrating that the capacity to absorb knowledge influences the effectiveness of making technology available as a commercial product. The scenario is challenging to achieve the DF control objectives proposed by the World Health Organization.

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