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ASSESSING CONCENTRATION IN THE MONOCLONAL ANTIBODY INNOVATION MARKET: A patent-based study

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BACKGROUND

Monoclonal antibodies (mAbs) are revolutionizing healthcare treatments due to their high efficacy and relative safety, despite their cost. Since they first appeared in the late 1980s, a rapidly growing market has developed. This study aims to analyze concentration levels in the market for mAb innovations through a quantitative patent analysis.

METHODS

Data were analyzed using traditional concentration indicators such as the Herfindahl-Hirschman Index and Concentration Ratio, as well as linear regression and kernel density graphs to evaluate innovation and global technology dissemination strategies. The starting point was patents associated with mAbs registered by the FDA and identified in the IQVIA database up until 2019, and supplemented by data from The Antibody Society, Purple Book, Orange Book, and FDA.

RESULTS

Our findings indicate that the market for mAb innovations is moderately concentrated for general patents and unconcentrated for priority patents. However, it is significantly more concentrated than the market for chemical drug innovations (**Figure 1**). The mAb patent families tend to generate more progeny patents, although they are deposited in fewer countries. Chemical drug patents spread faster (**Figure 2**).

Figure 1. Concentration level estimates for the mAbs and chemical drug innovations.

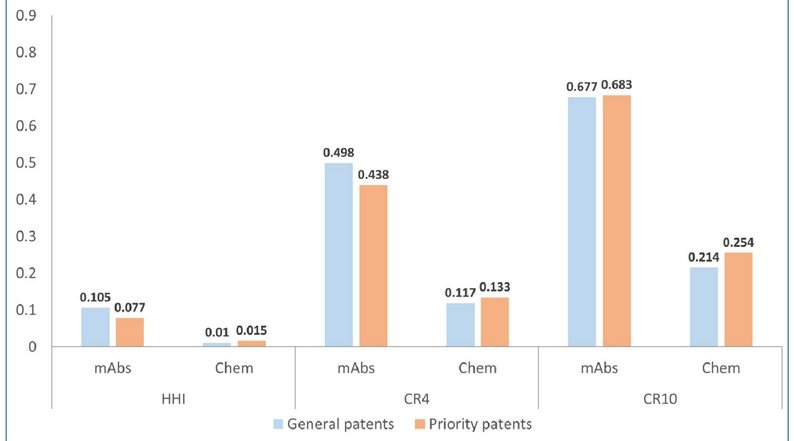
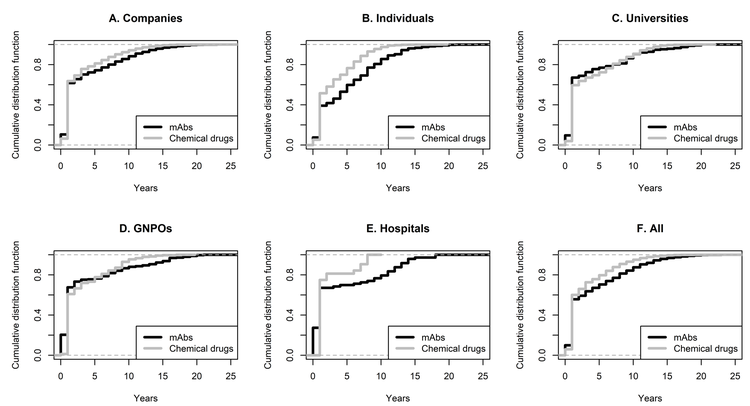


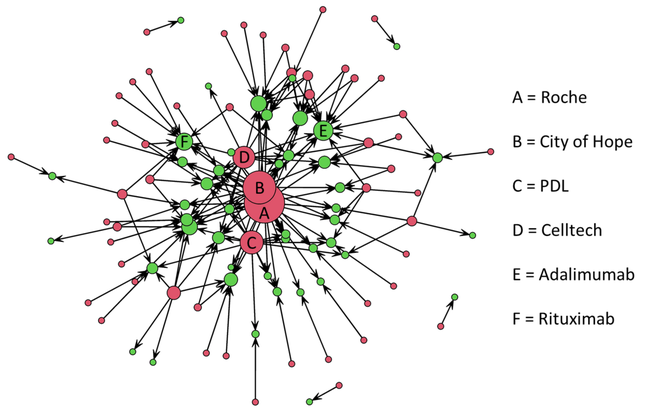
Figure 2. Cumulative distribution functions comparing the market for mAb and chemical drug innovations regarding the time between the priority and progeny patents deposit.



Some companies seem to be central to the development of mAbs worldwide, including Roche, PDL, City of Hope, and Celltech. Other important players in the mAb innovation market are AbbVie, Amgen, Novartis, GSK, Biogen, BMS, Regeneron, J&J, and AstraZeneca (**Figure 3**).

The most relevant patents in the analysis are associated with methods and procedures to obtain mAbs, not with molecules themselves.

Figure 3. Priorities associated with developing medicines according to the holder.



CONCLUSIONS

The concentration in the mAb innovation market is higher than the concentration in the market for chemical drugs innovations. Our findings also indicate that expertise in mAbs development and production is concentrated in a few countries. Additionally, our study identified that a few key players from high-income countries are driving innovation in the mAb market.

SUPPORT

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