Federal Trade Commission
Re: Competition and Consumer Protection in the 21ST Century, Hearing #4 Industry Perspectives on Innovation and IP Policy
Date: 21 December 2018

The Initiative for Medicines, Access & Knowledge (I-MAK) is grateful for the opportunity to submit comment in relation to FTC Hearing #4 on Competition and Consumer Protection in the 21st Century, and the panel relating to Industry Perspectives on Innovation and IP Policy.

In prior written comments submitted in August 2018, and for our testimony during FTC Hearing #4, we focused upon the ongoing abuse of the patent system, or overpatenting, within the pharmaceutical sector, and the impact this business practice has upon consumer welfare in the United States.

For this submission, we focus on a brief examination of the effective market exclusivity for biological medicines and how the patenting practices of originator companies are preventing the early entry of competition.

Oral testimony provided by the Biotechnology Innovation Organization during the panel Industry Perspectives on Innovation and IP Policy, focused only on the effective market exclusivity for small molecule compounds. It was stated that the effective market exclusivity for new molecular entities (NMEs) has averaged 13.8 years, with 'first in class' molecules having a slightly longer term of market exclusivity (14.5 years), whereas 'me-too' compounds averaged 12.9 years of effective market exclusivity. These figures are based upon earlier academic studies that examined how market exclusivity has evolved in the U.S., in particular as the incentives for generic companies to challenge patents have evolved. The stable duration of market exclusivity implies that, insofar as this average duration of market exclusivity is 'fair', intellectual property protection (and the patenting practices of drug companies) is not leading to excessive monopolies, which otherwise result in unaffordable medicine prices for a longer period of time.

However, according to our knowledge, an analysis of the effective market exclusivity for biological medicines and the role of patents has not been published to date.

Effective Market Exclusivity of Biologics and the Role of Patents

Biologics sales are growing rapidly and especially in the U.S. where eight of the top twelve best selling drugs today are biologics, and often the prices of these products can be tens of thousands of dollars. Between 2010 and 2015, biologics accounted for an estimated 40 percent of U.S. prescription drug spending and 70 percent of growth in pharmaceutical expenditure.[i] In 2017, biologics sales were an estimated US$ 120 billion.

Patents on biologics are also an increasingly significant element of the patent portfolios of originator companies. As early as 2009, 60 percent of all pharmaceutical patents filed by the top 10 pharmaceutical companies were for biologics.[ii]

I-MAK has studied the patenting and market exclusivity of eight best-selling biological medicines and the trends for such products indicate that:

1. The effective market exclusivity of such products is often significantly longer than the 13.8 years for small molecule compounds.
2. Originator companies are filing numerous secondary patents on these products in the U.S. and most of these patents are filed after USFDA approval.

Patent applications on best-selling biological medicines in the U.S.

For the eight best-selling biological medicines in the U.S., originator companies have filed numerous secondary patents on these products. The following table illustrates the total number of patent applications for each product, the term of patent protection that these patent applications could provide for originator companies, and the percentage of patent applications filed after regulatory approval.

Table 1: Top-selling biologics and possible term of patent exclusivity

Branded Biologic Product	Total # patent applications filed	Potential years blocking biosimilar competition	% of patent applications filed after FDA approval
Humira	247	39	89%
Avastin	219	43	73%
Rituxan	204	47	90%
Herceptin	186	48	84%
Remicade	123	32	93%
Lantus	74	37	95%
Eylea*	67	31	37%
Enbrel	57	39	72%
average	**151**	**40**	**80%**

As noted above, originator companies have filed anywhere from 57 to 247 patent applications on these products, with the possibility of providing the originator with anywhere from 31 to 48 years of patent exclusivity for these products. In addition, for seven of the eight products, over 70 percent of the patent applications were filed after USFDA approval (the sole product for which there are fewer patent applications post-approval has only been on the market for seven years - *Eylea).

These practices, as noted in our prior written testimony to the FTC, are indicative of an effort by originator companies to extend their market exclusivity for their products. Such efforts may extend market exclusivity far beyond the average market exclusivity of 13.8 years that originator companies have historically secured for small molecule compounds.

The world's best-selling medicine, Humira, a biologic that is patented by AbbVie, indicates how patents are employed by companies to extend market exclusivity. AbbVie has filed at least 247 patent applications on Humira, with the possibility of delaying competition by 39 years. Nearly 50 percent of the applications for Humira were filed from 2014 onwards, or more than a decade after the product was first marketed. Currently there is no biosimilar on the market in the U.S., which means AbbVie has maintained 16 years of effective market exclusivity (and counting).

AbbVie's patenting practices, at least according to a publicly available company strategy presentation from 2015[iii], indicates the rationale and possible impact of filing and defending so many patent applications. AbbVie has produced a patent estate for Humira that, beyond the initial patent covering recombinant human antibodies expiring in 2016, has included additional patent filings on the methods of treatment, new indications, compositions, formulations, and manufacturing processes, all of which may or do create barriers to biosimilar competition beyond 2016. Furthermore, AbbVie notes in the strategy that litigation on such patents, due to the time it takes for such cases to reach trial (and to be adjudicated on appeal at the U.S. Federal Circuit) is four to five years, which, when coupled with a

possible preliminary injunction against an at-risk launch, would significantly extend the market exclusivity of an originator biologic.

At present, a biosimilar for Humira will not enter the U.S. market until at least 2023, which would provide AbbVie with 20 years of effective market exclusivity for Humira. This would include, according to AbbVie, up to US$ 18 billion in sales in 2020 for Humira. Such extended periods of market exclusivity may have a dramatic impact both on U.S. health care budgets and on consumer welfare for individuals paying out of pocket for the product or through co-pays.

Effective market exclusivity of biological medicines

Not only have pharmaceutical companies filed numerous patent applications to extend the market exclusivity of biologics, but the actual duration of market exclusivity for these best-selling biological medicines often exceeds 13.8 years. The example of Humira, which has expected market exclusivity in the U.S. of an estimated 20 years, is an example of the duration of market exclusivity for biologics.

The following table indicates the term of market exclusivity for all eight best-selling biological medicines. Some of these products already have biosimilar competitors on the market, while others continue to have no biosimilar competition in the U.S.

Table 2: Market exclusivity and biosimilar status for best-selling biologics products

Branded Biologic Product	First approved by FDA	Years on the U.S. market	Biosimilar approved by FDA	Biosimilar on the market
Humira	Dec 2002	16	✗	✗
Avastin	Feb 2004	14	✓	✓
Rituxan	Nov 1997	21	✓	✓
Herceptin	Sept 1998	20	✓	✗
Remicade	Aug 1998	20	✓	✓
Lantus	Apr 2000	14	✓	✗
Eylea	Nov 2018	7	✗	✗
Enbrel	Nov 1998	20	✓	✗
average		**17**		

As Table 3 indicates, market exclusivity for these products has ranged from seven years (for Eylea) to 20 years and counting (for both Enbrel and Herceptin). I-MAK has found that the main driver of extended market exclusivity is abuse of the patent system by drugmakers. In the case of Humira, as noted above, patents coupled with litigation strategies employed by the originator company can be combined to extend market exclusivity.

Additionally, there may be other reasons for the lack of biosimilar competition, including: (a) the complexity, time and investment required to develop biosimilar versions, (b) the particular regulatory requirements in the U.S. for a biosimilar to be classified as 'interchangeable' with an originator product, (c) the lack of transparency around patents that may or may not undermine competition (through the Purple Book) and (d) marketing exclusivity provided under U.S. patent law, which is currently twelve years.

Currently there are only four biosimilars on the market in the U.S., as opposed to 50 in Europe. As Table 3 illustrates, there are additional biosimilars that have been approved by the FDA but remain 'off the market', often due to patent disputes between the originator and one or more competitors.

Whatever the cause of this lengthy period of market exclusivity and the lack of biosimilars in the U.S., the impact on health care budgets and on consumer welfare can be significant and merits additional investigation by the FTC, federal agencies and other branches of the U.S. government.

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[i] https://www.rand.org/content/dam/rand/pubs/perspectives/PE200/PE264/RAND_PE264.pdf
[ii] Financial Times. Fall in number of patents filed by big pharma. Financial Times, 18 March 2012, https://www.ft.com/content/0912c0ea-70f9-11e1-a7f1-00144feab49a
[iii] http://www.biotechduediligence.com/uploads/6/3/6/7/6367956/abbvie_strategy_presentation__1_.pdf