U.S. Drugmaker Biogen Inc. Said to Approach Samsung To Sell Shares

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According to the Korea Economic Daily, the U.S. biotechnology firm Biogen Inc. was in talks with Samsung Group to sell shares.
● Biogen Inc. (NASDAQ: BIIB.O) is a biotechnology company based in Cambridge, Massachusetts. Founded in 1978, the company is dedicated to neuroscience research, focusing on discovering and treating neurological disorders. Biogen also provides treatments for rare and autoimmune diseases.

● On December 30, 2021, the Korea Economic Daily reported that Biogen was in talks to sell its shares to Samsung Group, which could put the company’s value at US$ 42 billion or more. Samsung BioLogics, the biotech arm of Samsung Group, denied the report in a regulatory filing, saying the information was untrue with no further details.

● According to the Patent Rankings developed by InQuartik, around 55% of Biogen’s patents in some major markets are more likely to be monetized. The potential targets for Biogen to monetize its patents include Conforma Therapeutics, Novartis, and AbbVie.
Coverage and Status - Global Coverage

Applications: 9,670
Families: 1,536

Active
2,423 (25.057%)

Pending
2,224 (22.999%)

Inactive
5,023 (51.944%)

Around 25.06% of Biogen’s patent applications are active patents and around 23.00% are pending.

The geographic coverage of Biogen’s patents:

- Biogen filed the most patents with the USPTO.
- The company has a significant proportion of pending applications in Australia and Israel.
The number of Biogen’s active patents is decreasing rapidly — mainly due to the increase of expiring patents in Hong Kong and the U.S.

The country code below indicates the year by which the company will no longer hold any enforceable patents in that country.

All of its patents in Norway (NO) will expire before January 1, 2036.
## Technologies

<table>
<thead>
<tr>
<th>Main technical fields 1</th>
<th>Main technical fields 2</th>
<th>Main technical fields 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>PREPARATIONS FOR MEDICAL, DENTAL, OR TOILET PURPOSES</td>
<td>PEPTIDES</td>
<td>MICROORGANISMS OR ENZYMES; COMPOSITIONS THEREOF</td>
</tr>
<tr>
<td>587 Patent families (38%)</td>
<td>267 Patent families (17%)</td>
<td>157 Patent families (10%)</td>
</tr>
</tbody>
</table>

Around 55% of Biogen’s patents fall in Preparations for medical, dental, or toilet purposes (IPC A61K) and Peptides (IPC C07K).
Top Inventors

We found the ten most productive inventors in terms of patent applications.

Notice that the major inventors may shift over time.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Inventors</th>
<th>Applicants</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>FEPINSKY R BLAKE</td>
<td>BIOGEN MA INC 78</td>
<td>437</td>
</tr>
<tr>
<td>2</td>
<td>MI SHA</td>
<td>BIOGEN MA INC 65</td>
<td>334</td>
</tr>
<tr>
<td>3</td>
<td>KUMARAVEL GNANASAMBANDAM</td>
<td>BIOGEN MA INC 63</td>
<td>308</td>
</tr>
<tr>
<td>4</td>
<td>MA BIN</td>
<td>BIOGEN MA INC 61</td>
<td>217</td>
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<tr>
<td>5</td>
<td>LEE WEN-CHERNG</td>
<td>BIOGEN MA INC 61</td>
<td>204</td>
</tr>
<tr>
<td>6</td>
<td>GARBER ELLEN</td>
<td>BIOGEN MA INC 67</td>
<td>202</td>
</tr>
<tr>
<td>7</td>
<td>BROWNING JEFFREY</td>
<td>BIOGEN MA INC 61</td>
<td>198</td>
</tr>
<tr>
<td>8</td>
<td>HANNA NABIL</td>
<td>BIOGEN INC 28</td>
<td>191</td>
</tr>
<tr>
<td>9</td>
<td>GARBER ELLEN A</td>
<td>BIOGEN MA INC 63</td>
<td>189</td>
</tr>
<tr>
<td>10</td>
<td>SUN LIHONG</td>
<td>BIOGEN MA INC 65</td>
<td>187</td>
</tr>
</tbody>
</table>

Blake Pepinsky, the inventor in 1st place, has filed more patent applications than other inventors.

The inventors in 2nd, 3rd, and 4th places applied for more patents than Pepinsky over the past decade.
According to the patent records in the U.S. and China, around 19.99% of Biogen's patents have been transacted. Twenty-five patents currently owned by Biogen have been licensed. Go to Due Diligence to find out more.
Patent Litigation History

Around 1.68% of Biogen's U.S. patent applications have been litigated.

See the government bodies to which these patent applications were taken.

Litigated Patents

1.683%

24 Applications

Source: Due Diligence
Quality and Value Evaluation

Why Quality and Value?

Quality and Value are the two cornerstones of patent evaluation. By reflecting on a patent’s true quality and value, we can evaluate patents with an objective viewpoint instead of relying on subjective guesswork—eventually giving a fair price to patents.
According to our proprietary models, each patent is ranked as per the quality and value dimensions and is categorized into one of the following six grades: AAA, AA, A, B, C, and D.

A patent with a quality score in the 97th percentile is graded as AAA.

**Quality:**
Predicts the tendency for invalidation.
Describes whether a patent is eligible, novel, non-obvious, and described with clarity.

**Value:**
Predicts the tendency for monetization.
Describes whether a patent has commercial viability—either realized from enforcement, transaction, or other commercial practices.
Quality and Value Rankings - Quality and Value*

Our Patent Quality & Value Dashboard shows that 55% of Biogen’s patents in major countries are of high value.

Of the 393 patent families, 1,271 patents are active or pending in major countries, of which 696 (55%) are high-value patents.

* The scope of the Quality and Value analysis includes patents filed with the patent offices of the US, China, Europe, Japan, Korea, Taiwan, and the WIPO.
Quality and Value Rankings - Quality and Value*

Among the high-value patents, some have a higher likelihood of standing against legal challenges.

High-value, low-quality patents: They have good monetization potential, but the risk of invalidation is high.

High-quality, high-value patents: The potential for monetization is high, and the risk of being invalidated is low.

* The scope of the Quality and Value analysis includes patents filed with the patent offices of the US, China, Europe, Japan, Korea, Taiwan, and the WIPO.
Peer Comparison - Quality Rankings

For Biogen's patents under IPC A61K, the proportion of high-quality patents is 22.49%, slightly lower than Novartis (25.35%).
Peer Comparison - Value Rankings

The proportion of Biogen’s high-value patents in the same field is 57.21%, higher than Novartis (39.09%).
Quality and Value Highlights - Eligibility and Novelty Issues

Around **71.19%** of Biogen's U.S. patents have been challenged during prosecution or at PTAB — an indicator of potential quality issues for its patents’ family members.

Indefiniteness is the most common challenge brought against Biogen’s patent applications in the U.S.
Biogen’s potential targets based on *novelty citations* include Conforma Therapeutics Corp and Ares Trading SA, among others.

Some of these companies’ patent applications received a novelty (§102) rejection based on patents currently held by Biogen.

Based on *all references* citing Biogen’s patents, its targets include Novartis and AbbVie, among others.
The ten companies that cite Biogen's patents the most. They are potential targets for Biogen to monetize its patents.
The most heavily cited families — these patent families are ideal for Biogen to use against potential targets.
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Matrix Analysis

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- Identify the strengths and weaknesses of a patent portfolio.
- Maximize investment opportunities and value.