



# Reading Patent Litigation With Patent Data

*ModernaTX, Inc. et al v. Pfizer Inc. et al (DMA-1-22-cv-11378)*

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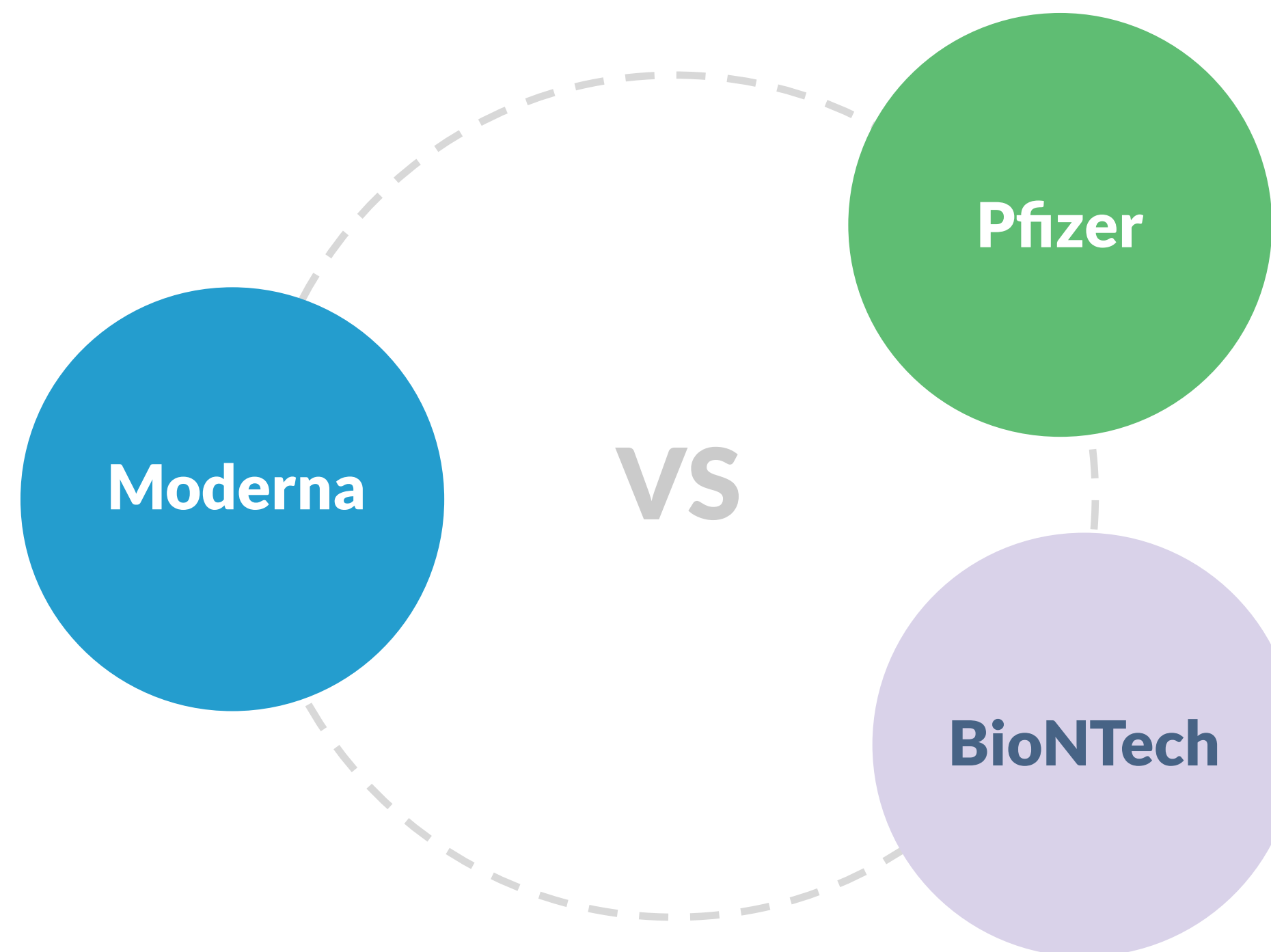
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# About the Case

# About the Case

- On August 26, 2022, Moderna filed a patent infringement case (*DMA-1-22-cv-11378*) against Pfizer and BioNTech over three COVID-19 vaccine patents.
- Just a few months earlier, on March 7, 2022, Moderna updated its patent pledge to suggest that non-AMC 92 countries should respect Moderna's IP rights and pay royalties to use its COVID-19 vaccine technology.



Moderna is a U.S. pharmaceutical and biotech company that specializes in mRNA technology. Founded in 2010, Moderna's only commercial product to date is the COVID-19 vaccine — Spikevax.

Pfizer is a U.S. multinational pharmaceutical and biotech corporation that develops and produces various medicines and vaccines.

BioNTech is a German biotech company founded in 2008 that develops and manufactures active immunotherapies to treat various diseases.

The two companies collaborated to produce the Pfizer–BioNTech COVID-19 vaccine, sold under the brand name Comirnaty.

# The Patents-in-suit

Discovering the Patents' Potential Quality Issues

# The ‘Quality Insights’ of the Patents-in-suit



Moderna asserted a total of three patents against Pfizer and BioNTech. The patents-in-suit and their quality-related information are as follows:

The Patents-in-Suit		Prosecution / PTAB Record			Potential Issues	
Patent No.	Title	Novelty Challenge	Double Patenting	Abandoned Family Members	Number of Novelty Prior Art	Number of Non-obviousness Prior Art
<a href="#">US 10,702,600</a>	Betacoronavirus mRNA vaccine	None	None	6 applications	30	22
<a href="#">US 10,933,127</a>	Betacoronavirus mRNA vaccine	None	None		18	7
<a href="#">US 10,898,574</a>	Delivery and formulation of engineered nucleic acids	None	US 9,533,047 US 9,950,068	1 application	11	26

The three patents-in-suit correspond to 2 patent families, with the ‘600 and ‘127 patents from the same family.

# The 'Quality Insights' of The Patents-in-suit

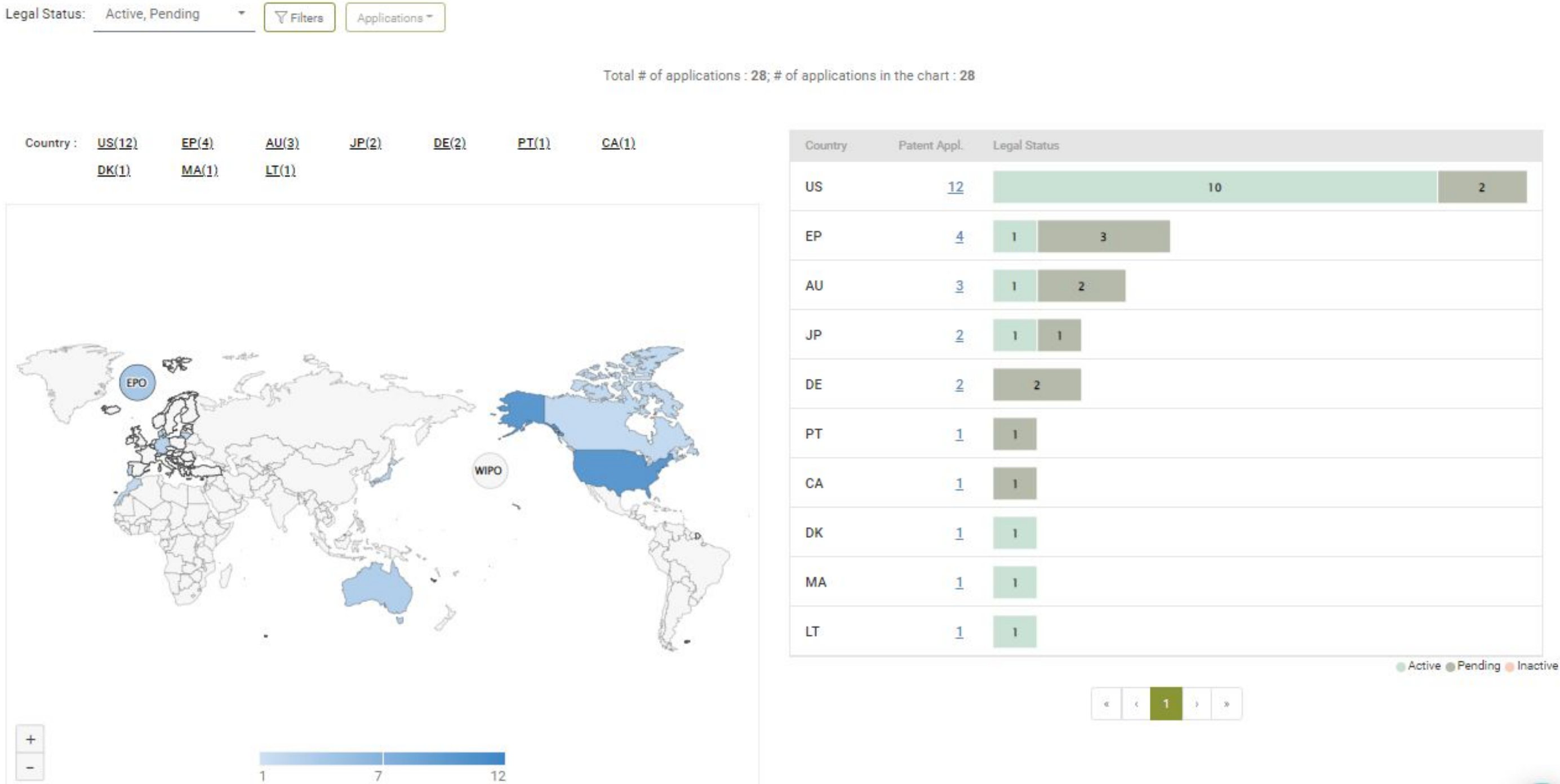
We found that all three of the patents-in-suit show potential quality issues, especially since they have quite a few abandoned family members. We also found several potential §102 and §103 prior art, which pose potential threats to the patents.

However, according to our observations, it is more common for patents in this industry to have a higher number of abandoned family members and potential prior art. This implies that the quality issues found in the patents-in-suit may not pose such a significant issue than other cases.



# The Possible Impact On the Litigation

The patents-in-suit and their family members are deployed in 12 jurisdictions. However, since the vast majority of the active patents (10 out of 16) are deployed in the U.S., it will be unlikely that the fight will reach other countries soon.



Source: Due Diligence

The remaining six active patents are distributed evenly among six other jurisdictions: Europe, Australia, Japan, Denmark, Morocco, and Lithuania.

Additionally, Pfizer and BioNTech’s COVID vaccine is used in these six regions (according to each country governments’ policies), implying that Moderna could enforce its patents in these six jurisdictions.

The Pfizer/BioNTech vaccine is [approved in 149 countries](#). Roughly speaking, after deducting the non-amc 92 countries and the 12 jurisdictions covered by Moderna’s patents-in-suit (including the patent families), there are at least 45 jurisdictions where the Pfizer/BioNTech vaccine is used but not threatened by Moderna’s patents-in-suit.



# The Data Behind the Results – Abandoned or Revoked Family Members



We found that both of the families of the patents-in-suit have family members abandoned during examination or revoked after being issued. This indicates that these family members were possibly unable to overcome prior art references cited by the examiner, also implying that the patents-in-suit may also have similar quality issues.

## Abandoned and Revoked Family Members ⓘ

An indication of quality issues such as family members not overcoming prior art.

ⓘ About This Chart

Legal Status: Active, Pending

Filters

Families

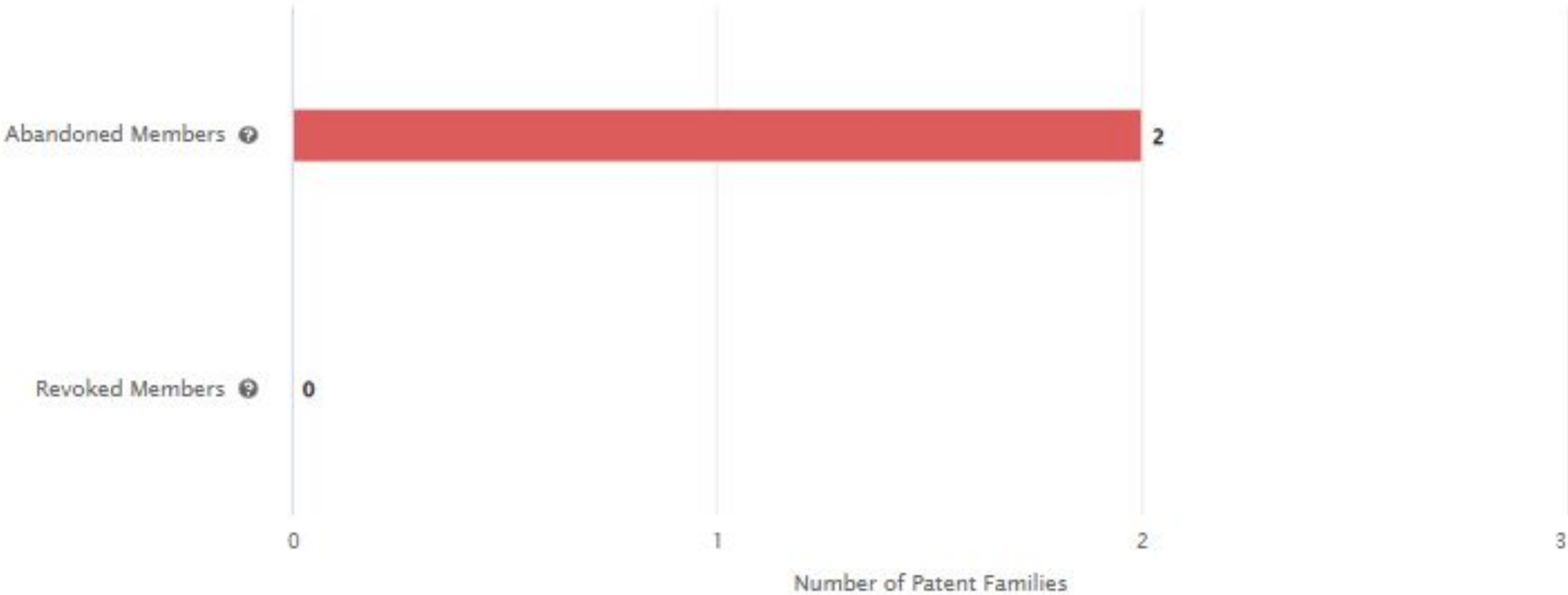
Total # of families : 2; # of families in the chart : 2

### Families with Abandoned and Revoked Members



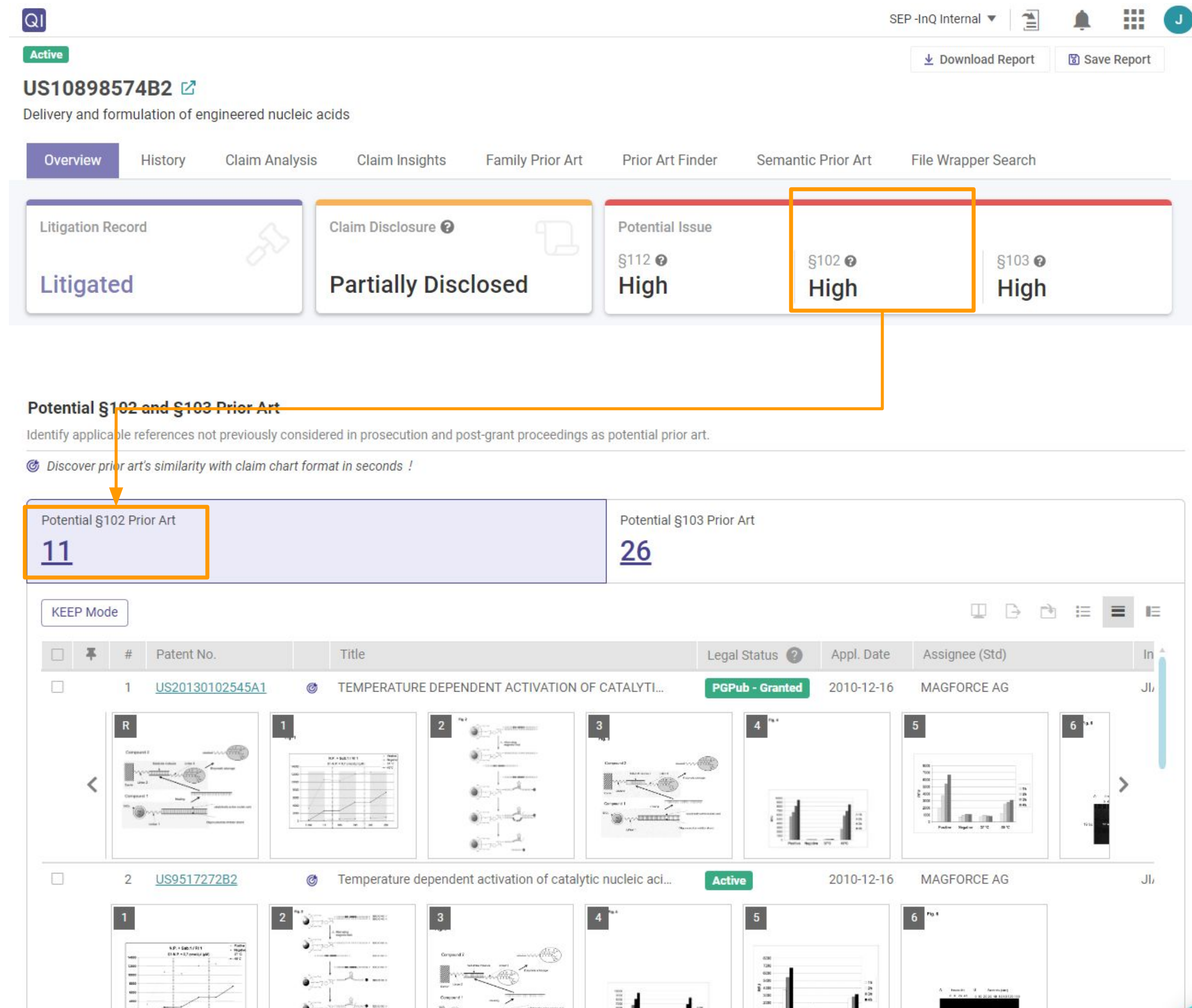
2 Patent Families

### 100 % COMPOSITION



Source: Due Diligence

# The Data Behind the Results –The Number of Potential Novelty Prior Art Found



Source: Quality Insights

The number of potential prior art can also give us an idea of how easily a patent can be challenged.

The potential prior art found by *Quality Insights* includes novelty (§102) issues found in the prior art of family members and in the 2nd and 3rd-degree prior art list.

Using patent No. US 10,898,574 as an example, 11 potential novelty prior art was found, giving it a 'High' under §102 Potential Issues.

# Reviewing Moderna's Patent Portfolio

# The Portfolio's Status



- Moderna’s **complete patent portfolio** consists of 1,674 patent applications that correspond to 347 families.
- 42.9% of the patent applications in Moderna’s portfolio are still pending applications.
- Moderna’s patents and applications are deployed in 39 jurisdictions, with the most active/pending patents in the U.S (299), followed by Europe, Japan, Australia, Canada, and Hong Kong.

Number of Patents	
Applications	1,674
Families	347
Legal Status	
Active	445 (26.58%)
Pending	718 (42.89%)
Inactive	511 (30.52%)
Coverage of Active or Pending Patents (> 50 applications)	
	US (299)
	EP (157)
	JP (103)
	AU (86)
	CA (83)
	HK (69)
	WO (55)

On the other hand, Pfizer’s patent portfolio consists of 98,691 patents, with 32,392 active or pending patents. BioNTech, also a young company, has 2,167 patents, including 1,493 active or pending patents.



# Moderna's COVID Vaccine-related Patent Portfolio



Looking at Moderna's portfolio of patents related to the **patents-in-suit**, i.e., Moderna's patents related to its COVID vaccine, we can see:

- The portfolio consists of 346 patent applications that correspond to 120 families.
- 51.15% of the patent applications are active or pending patents/applications.
- The patents and applications in this portfolio are deployed in 26 jurisdictions. Active patents cover nine jurisdictions with the majority in the U.S. (81 patents). The remaining eight jurisdictions each have only one active patent. As for pending patents, Moderna's portfolio has coverage in 19 jurisdictions.

[Contact us](#) for the full report!

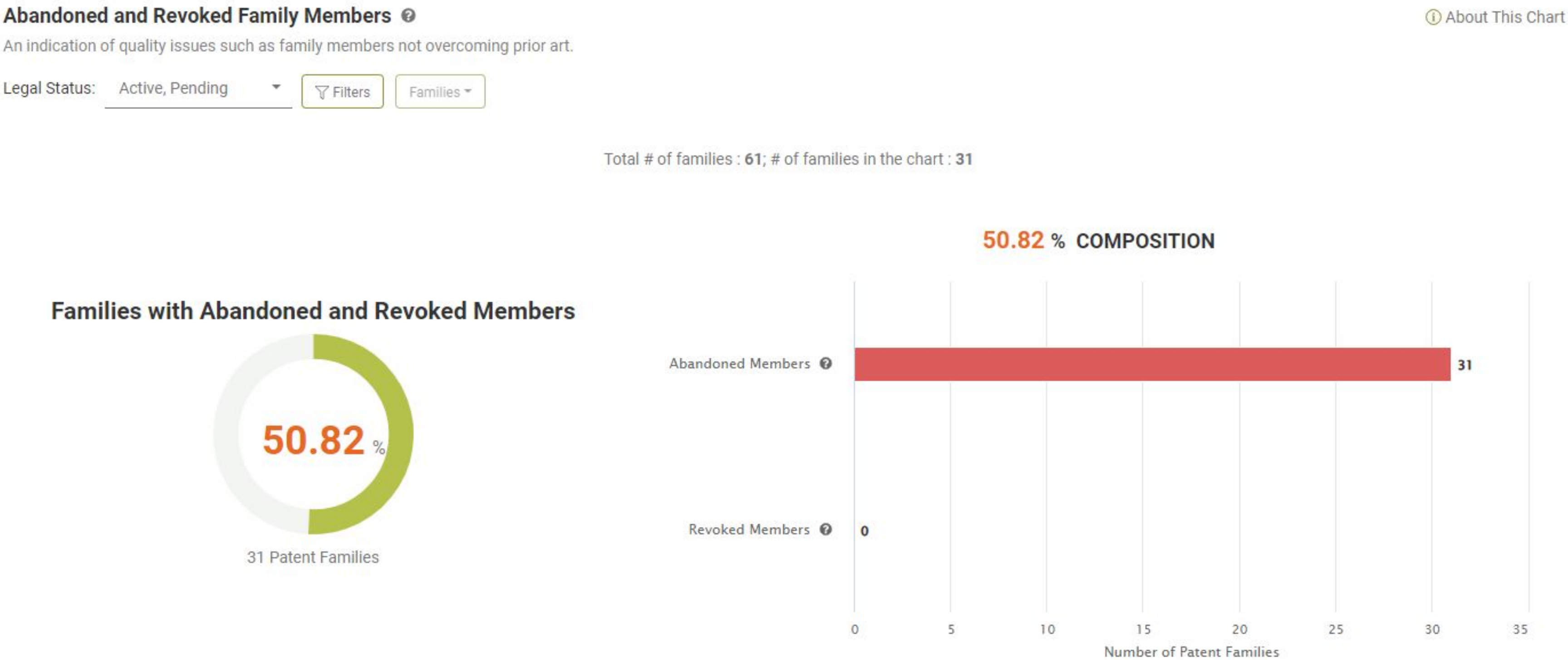
Number of Patents	
Applications	346
Families	120
Legal Status	
Active	89 (25.72%)
Pending	88 (25.43%)
Inactive	48 (48.84%)
Coverage of Active Patents	
	US (103)
	EP (1)
	AU (1)
	DK (1)
	CN (1)
	LT (1)
	MA (1)
	SI (1)
	JP (1)

The related patents include the patents-in-suit, their extended families, and their citations. The following analysis and results are made using this vaccine-related patent portfolio.

# Quality Highlights of the Portfolio – Abandoned or Revoked Family Members



Looking at the active and pending family members of Moderna vaccine-related patents, we found that 50.82% of the families have family members abandoned during examination or revoked after being issued. This indicates that these family members were possibly unable to overcome prior art references cited by the examiner, also implying that the portfolio’s patents may also have similar quality issues.



Source: Due Diligence



# Quality Highlights of the Portfolio – Eligibility and Novelty Issues



As for the percentage of eligibility and novelty issues found among the active/pending U.S. applications, 71.84% of the family members have quality issues in their prosecution and PTAB history. However, the percentage of novelty (§ 102) issues is lower, with only 25 patents/applications in the portfolio.

### Eligibility and Novelty Issues (US Patents Only)

[About This Chart](#)

The family members may have similar quality issues to the patents analyzed in this chart.

Legal Status: Active, Pending Filters Applications

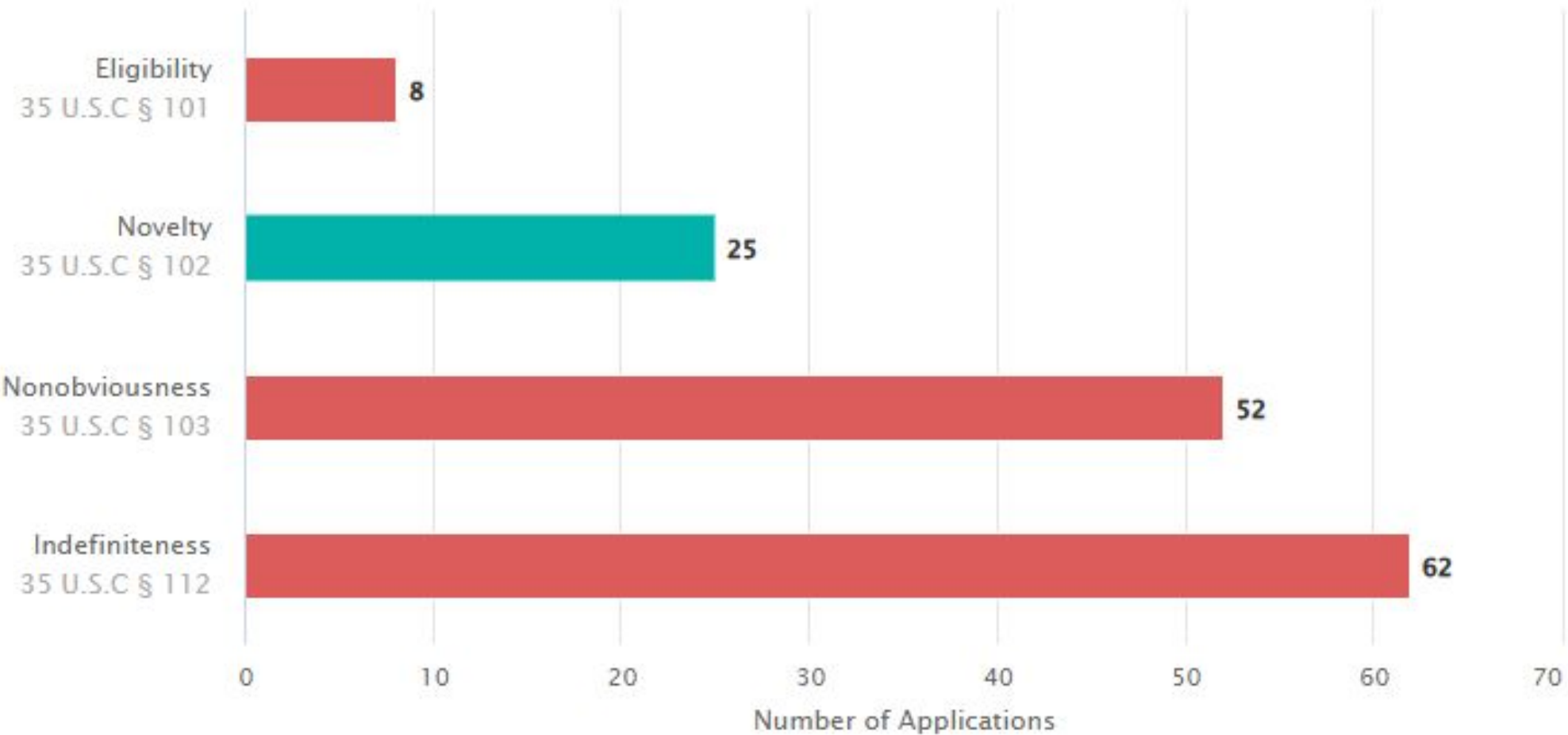
Total # of applications : 103; # of applications in the chart : 74

### Eligibility and Novelty Issues



74 Applications

### 71.845 % COMPOSITION



Source: Due Diligence



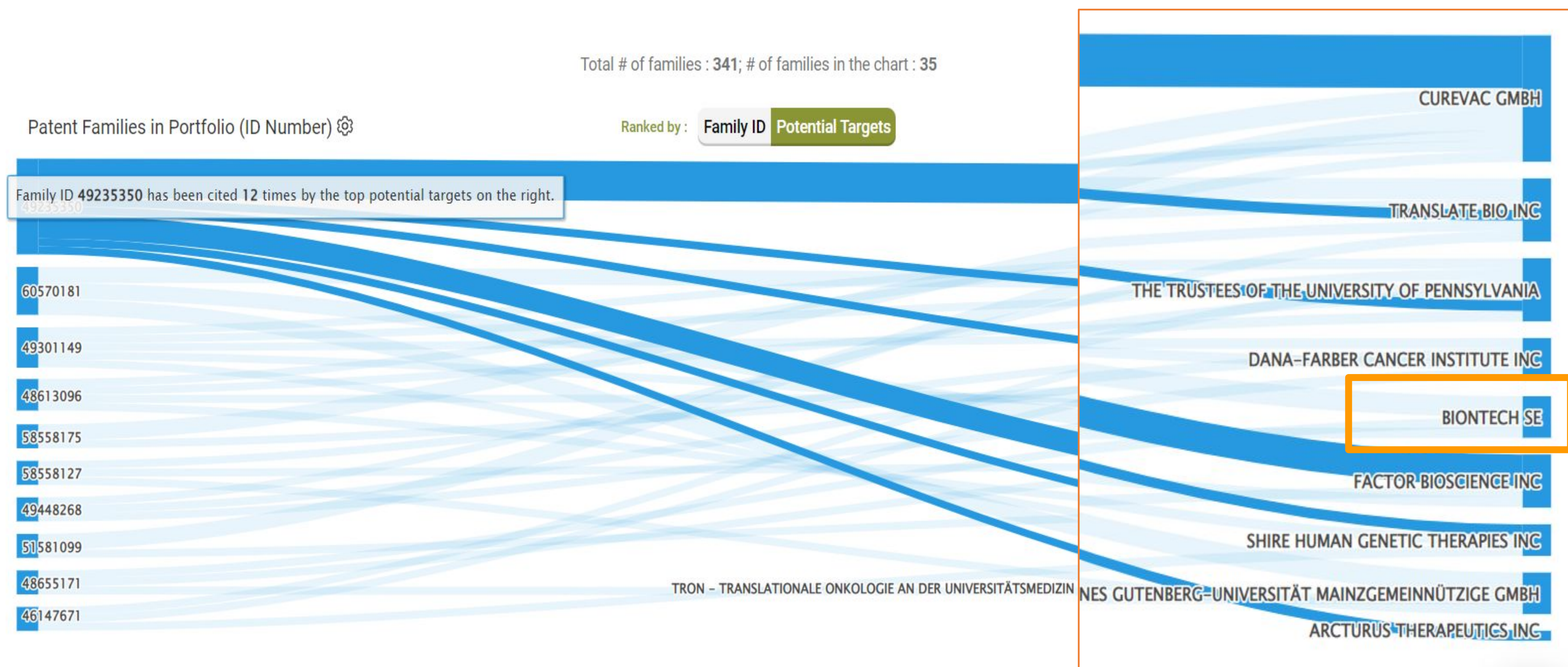
# Moderna's Potential Targets

This Potential Target chart identifies potential buyers or licensees of the portfolio. These targets are considered technology followers of the company's portfolio based on novelty-citation information.

The example here shows that family ID 49235350 was cited by the patent applications of Curevac, Translate Bio, Factor Bioscience, Shire Human Genetic Therapies, and Arcturus Therapeutics. Among these companies, Curevac, Translate Bio, and Arcturus Therapeutics work directly with vaccines and would be potential targets for Moderna to consider.

We can also see BioNTech listed as a technology follower and a potential target.

However, we can see that Curevac has cited Moderna's portfolio more than BioNTech. Coupled with the fact that it was originally developing its mRNA vaccine, this indicates that it may also be a good potential target.



Source: Due Diligence

Based on a preliminary review of the parties' patent portfolios, we found that although Pfizer has a large number of patent assets, Moderna also holds a comparable patent portfolio in value.

Looking at Moderna's vaccine-related patents, the portfolio is quite strong in terms of coverage (covering 26 jurisdictions). Although around 50% of the families have abandoned family members that were unable to pass prosecution and 25% of the applications have novelty issues, a significant portion of the patents in the portfolio is still fairly sound.

We also found potential targets, such as Curevac, Translate Bio, and Arcturus Therapeutics, who work with similar technology. Moderna can consider targeting these companies in the future.



# Conclusion

- We found that all patents-in-suit show potential quality issues, such as a number of abandoned family members and potential §102 and §103 prior art. However, these issues may not pose over-serious quality concerns.
- Since several active family members of the patents-in-suit are also deployed in six other countries (namely Europe, Australia, Japan, Denmark, Morocco, and Lithuania) that use the Pfizer-BioNTech vaccine, this presents the possibility of Moderna asserting the patents in the six jurisdictions. There are still around 45 countries where the Pfizer-BioNTech vaccine is used, but not threatened by Moderna's patents-in-suit.
- Moderna's vaccine-related patent portfolio is fairly sound despite having some quality issues. As Moderna's COVID-19 vaccine is the company's only commercialized product, this litigation may be another means for Moderna to increase its revenue. Through our analysis, we identified several companies that work directly with vaccines as potential targets for Moderna to consider, including Curevac, Translate Bio, and Arcturus Therapeutics.
- The lawsuit may be the first shot fired for Moderna to start asserting its IP rights and monetizing its patent assets.

We hope you have gained some new insights from this report.

If you have any questions, [let us know!](#)





# Thank You!

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