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BLOCKBUSTER BIOLOGICS REVIEW

Quarterly Update – April 2022

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Blockbuster Biologics Newsletter 1Q 2022 Update

Welcome to our quarterly update relating to biologics and biosimilars, including post-grant and patent litigation challenges to blockbuster biologics.

Since the enactment of the Biologics Price Competition and Innovation Act (BPCIA), 34 biosimilars have been approved, 23 of which have launched.

Notably, since our last update, AbbVie has settled its long-running dispute with Alvotech over Alvotech's adalimumab biosimilar—making Alvotech the 10th company to settle with AbbVie. As of this update, all companies that have an adalimumab biosimilar have settled with AbbVie.

Strikingly, the number of post grant challenges against biologics patents has precipitously dropped since reaching a peak in 2017.

On the Food and Drug Administration (FDA) front, FDA announced that it is offering funding for several research proposals under the regulatory science pilot for biosimilars under the upcoming Biosimilar User Fee Amendments (BsUFA III) program. Among the goals of this program are to advance the development of interchangeable products and to make biosimilar development more efficient.

We hope you find this update informative. As always, please feel free to reach out to us with any questions.

— Chris, Maria, and Kelly

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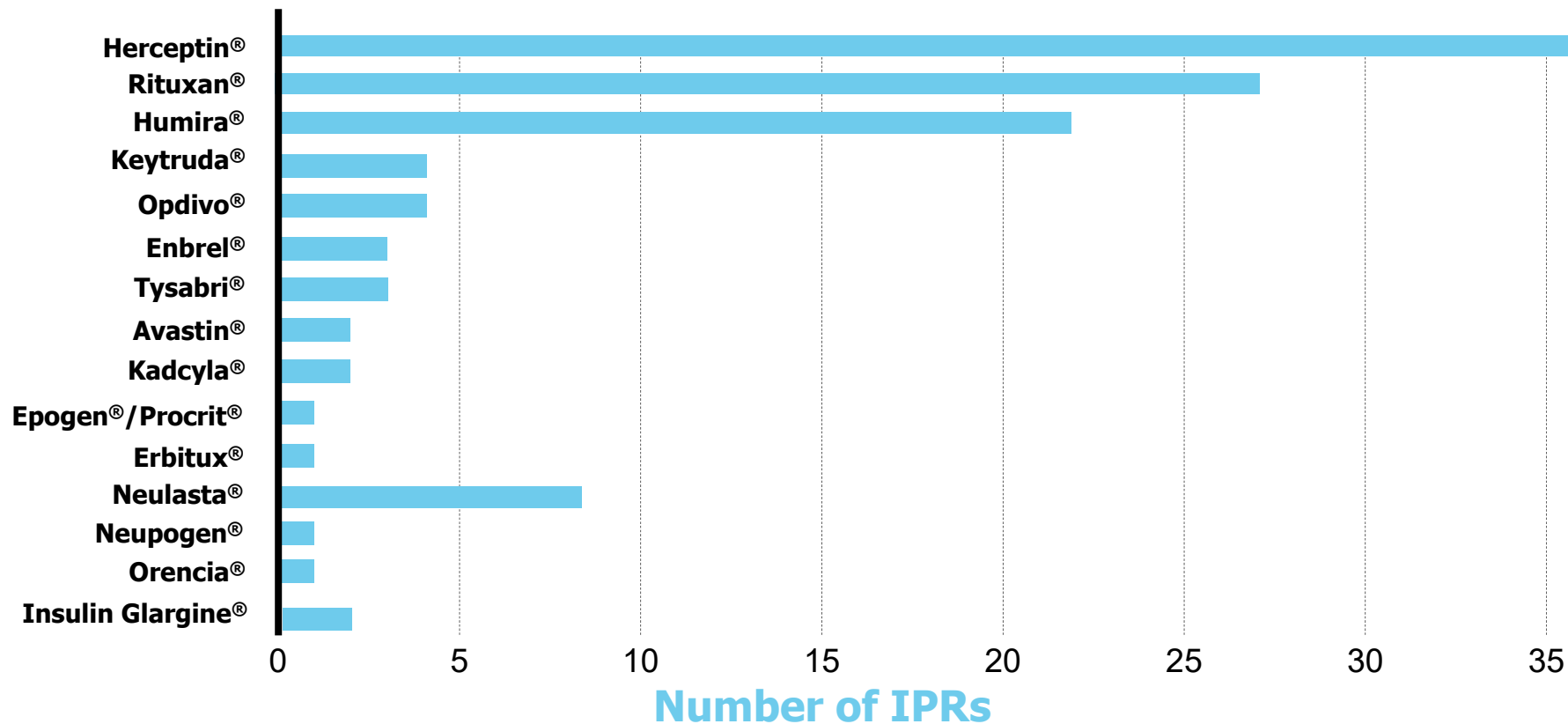
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***INTER PARTES* REVIEWS (IPRS)**

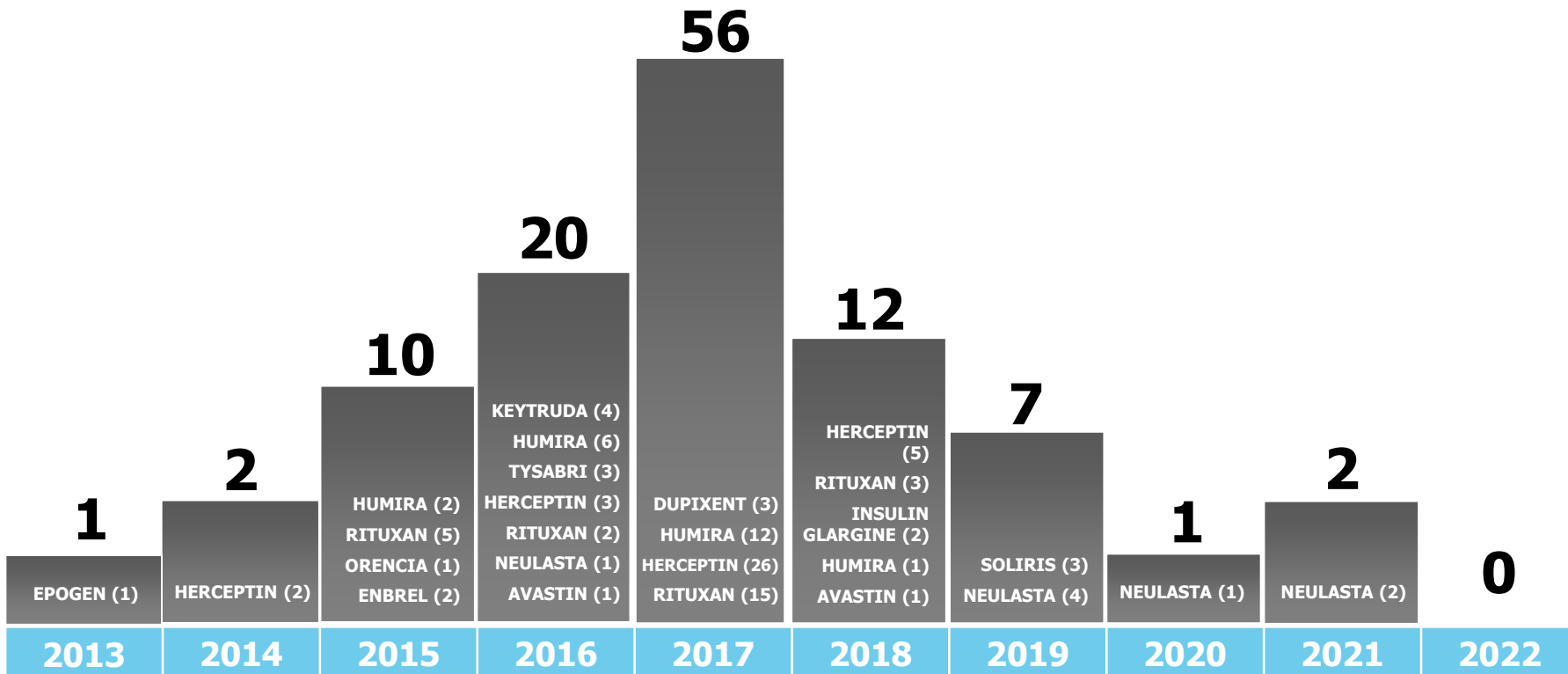
> Quick statistics:

- > The current institution rate for IPR challenges to patents that claim biologics is 37% (excludes IPRs that have settled or otherwise been terminated)
- > Of those IPRs instituted and that have gone to final written decision (FWD), 43% have resulted in the challenged claims being held unpatentable with 60% having mixed results
- > In January 2022, the PTAB instituted Fresenius's petitions challenging two Chugai patents directed to methods of treating rheumatoid arthritis with toclizumab and methotrexate
- > On February 23, 2022, the PTAB instituted two petitions from Fresenius against patents relating to toclizumab
- > On March 3, 2022, the PTAB instituted another petition from Fresenius against a patent relating to toclizumab

IPRs by Reference Product

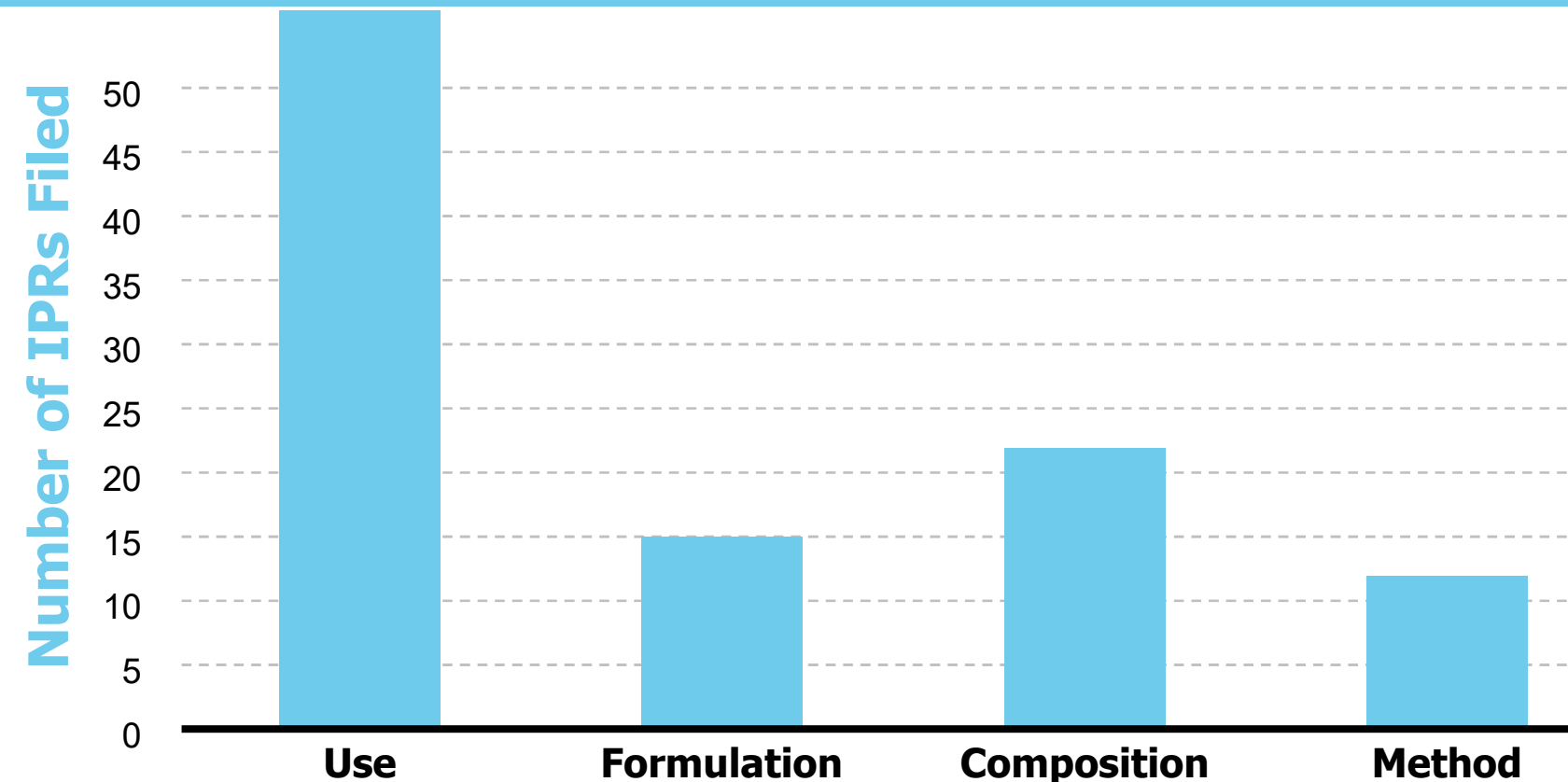


IPR Timeline



US Patent and Trademark Office (USPTO)
(Fiscal Year: October–September)

Types of Claims Being Challenged



IPR Scorecard – Institution

| Product (# of IPRs) | Challenger | Pend. Inst. | Pet. Not Inst. | Sett. Term. | Inst.* |
|---------------------|----------------------|-------------|----------------|-------------|--------|
| Humira (22) | Amgen | 0 | 2 | - | - |
| | Boehringer Ingelheim | 0 | - | - | 2 |
| | Coherus | 0 | 5 | 2 | 3 |
| | Sandoz | 0 | 6 | 2 | - |
| Rituxan (27) | Boehringer Ingelheim | 0 | 1 | 2 | - |
| | Celltrion | 0 | 6 | 2 | 3 |
| | Pfizer | 0 | 5 | 3 | 3 |
| | Sandoz | 0 | 2 | - | - |
| Herceptin (36) | Phigenix | 0 | 1 | - | 1 |
| | Mylan | 0 | - | 2 | - |
| | Hospira | 0 | 1 | - | 5 |
| | Celltrion | 0 | - | 1 | 6 |
| | Pfizer | 0 | 5 | 2 | 4 |
| | Samsung | 0 | 1 | - | 5 |
| | Boehringer Ingelheim | 0 | - | 2 | - |
| Tysabri (3) | Swiss Pharma | 0 | 3 | - | - |

IPR Scorecard – Institution (cont.)

| Product (# of IPRs) | Challenger | Pend. Inst. | Pet. Not Inst. | Sett. Term. | Inst.* |
|-----------------------------|--------------------|-------------|----------------|-------------|-----------|
| Avastin (2) | Hospira | 0 | 1 | - | 1 |
| Orencia (1) | Momenta | 0 | - | - | 1 |
| Neulasta (8) | Apotex | 0 | - | - | 1 |
| | Fresenius Kabi | 0 | 1 | 2 | - |
| | Kashiv Biosciences | 0 | - | 2 | - |
| | Lupin | 0 | 1 | - | - |
| | Hospira | 0 | - | 1 | 0 |
| Enbrel (3) | Kyle Bass | 0 | 1 | - | - |
| | Coherus | 0 | 2 | - | - |
| Epogen (1) | Hospira | 0 | - | 1 | - |
| Keytruda (4) | Merck | 0 | 0 | 4 | - |
| Dupixent (3) | Sanofi-Aventis | 0 | 1 | - | 2 |
| Soliris (3) | Amgen | 0 | 0 | - | 3 |
| Insulin Glargine (2) | Mylan | 0 | 0 | - | 2 |
| TOTALS | | 0 | 45 | 28 | 42 |

Institution rate = 42/115 = 37%

**** IPRs instituted but later settled or otherwise terminated are not included***

IPR Scorecard – Final Written Decisions (FWDs)

| Product (# of IPRs) | Challenger | Inst.* | FWD (invalid) | FWD (upheld) | Mixed |
|---------------------|----------------------|--------|---------------|--------------|-------|
| Humira (22) | Amgen | - | - | - | - |
| | Boehringer Ingelheim | 2 | 2 | - | - |
| | Coherus | 3 | 3 | - | - |
| | Sandoz | - | - | - | - |
| Rituxan (27) | Boehringer Ingelheim | - | - | - | - |
| | Celltrion | 3 | 1 | 1 | - |
| | Pfizer | 3 | 1 | 1 | - |
| | Sandoz | - | - | - | - |
| Herceptin (36) | Phigenix | 1 | - | 1 | - |
| | Mylan | - | - | - | - |
| | Hospira | 5 | 3 | 2 | - |
| | Celltrion | 6 | 2 | 2 | 2 |
| | Pfizer | 4 | 1 | - | 2 |
| | Samsung | 5 | 1 | 2 | 2 |
| | Boehringer Ingelheim | - | - | - | - |

IPR Scorecard – FWDs (cont.)

| Product (# of IPRs) | Challenger | Inst.* | FWD (invalid) | FWD (upheld) | Mixed |
|-----------------------------|--------------------|-----------|---------------|--------------|----------|
| Tysabri (3) | Swiss Pharma | - | - | - | - |
| Avastin (2) | Hospira | 1 | 1 | - | - |
| Orencia (1) | Momenta | 1 | - | 1 | - |
| Neulasta (5) | Apotex | 1 | - | - | 1 |
| | Fresenius Kabi | 1 | - | - | - |
| | Kashiv Biosciences | 2 | - | - | - |
| Enbrel (3) | Kyle Bass | - | - | - | - |
| | Coherus | - | - | - | - |
| Epogen (1) | Hospira | - | - | - | - |
| Keytruda (4) | Merck | - | - | - | - |
| Dupixent (3) | Sanofi-Aventis | 2 | 1 | 1 | - |
| Insulin Glargine (2) | Mylan | 2 | 2 | - | - |
| TOTALS | | 42 | 18 | 11 | 7 |

Invalidation rate = 18/42 = 43%, with mixed results for 60%

**** IPRs instituted but later settled or otherwise terminated are not included***

Blockbuster Biologics: IPR Appeals (Humira)

| Patent Owner | Challenger | Patent No. | IPR No. (Appeal No.) | Decision Appealed | Status of Appeal |
|--------------|----------------------|------------|------------------------|-------------------|--|
| AbbVie | Coherus | 8,889,135 | 2016-00172 (2017-2304) | Claims Invalid | <ul style="list-style-type: none">• All of these appeals have been consolidated• Federal Circuit affirmed five FWDs, finding claims unpatentable as obvious |
| AbbVie | Boehringer Ingelheim | 8,889,135 | 2016-00408 (2017-2362) | Claims Invalid | |
| AbbVie | Boehringer Ingelheim | 8,889,135 | 2016-00409 (2017-2363) | Claims Invalid | |
| AbbVie | Coherus | 9,017,680 | 2016-00188 (2017-2305) | Claims Invalid | |
| AbbVie | Coherus | 9,073,987 | 2016-00189 (2017-2306) | Claims Invalid | |

Blockbuster Biologics: IPR Appeals (Rituxan)

| Patent Owner | Challenger | Patent No. | IPR No. (Appeal No.) | Decision Appealed | Status of Appeal |
|--------------|------------|------------|--|-------------------|---|
| Genentech | Celltrion | 7,820,161 | 2016-1614 (2018-1885) 2017-01115 joined (2018-1924) | Claims Valid | <ul style="list-style-type: none"> • Appeal No. 2016-1614 voluntarily dismissed • Appeal No. 2018-1885 dismissed with prejudice as part of Settlement and License Agreement • Appeal No. 2018-1924 dismissed as part of litigation settlement (Case No. 18-574-RMB-KMW (D.N.J.)) |
| Biogen | Pfizer | 8,821,873 | 2017-01168 (2019-1364) | Claims Invalid | <ul style="list-style-type: none"> • Biogen challenging constitutionality of IPRs • Pfizer not participating in appeal • USPTO intervened in appeal • Parties voluntarily dismissed appeal • Issues fully briefed • Affirmed Board's decision |

Blockbuster Biologics: IPR Appeals (Herceptin)

| Patent Owner | Challenger | Patent No. | IPR No. (Appeal No.) | Decision Appealed | Status of Appeal |
|--------------|------------|------------|--|-------------------|---|
| Genentech | Hospira | 7,807,799 | 2016-01837 (2018-1933) | Claims Invalid | <ul style="list-style-type: none"> USPTO intervened Affirmed Board's decision that challenged claims as unpatentable on anticipation and obviousness grounds |
| Genentech | Hospira | 7,846,441 | 2017-00731 (2019-1263) | Claims Invalid | <ul style="list-style-type: none"> Hospira withdrew as party due to settlement, and USPTO intervened Lead case – consolidated with 2019-1267 Appeal submitted on briefs Affirmed Board's decision that challenged claims as unpatentable on obviousness grounds |
| Genentech | Celltrion | 7,846,441 | 2017-01121 (2019-1267) | Claims Invalid | <ul style="list-style-type: none"> USPTO intervened Consolidated with 2019-1263 Affirmed Board's decision |
| Genentech | Hospira | 6,627,196 | 2017-00804/ 2017-01958 joined (2019-1173) | Claims Valid | <ul style="list-style-type: none"> Lead case – consolidated with 2019-1174 Appeal voluntarily dismissed |

Blockbuster Biologics: IPR Appeals (Herceptin) (cont.)

| Patent Owner | Challenger | Patent No. | IPR No. (Appeal No.) | Decision Appealed | Status of Appeal |
|--------------|------------|------------|--|-------------------|---|
| Genentech | Hospira | 7,371,379 | 2017-00805/ 2017-01959 joined (2019-1174) | Claims Valid | <ul style="list-style-type: none"> Consolidated with 2019-1173 Appeal voluntarily dismissed |
| Genentech | Celltrion | 6,627,196 | 2017-01139 (2019-1258) | Claims Valid | <ul style="list-style-type: none"> Consolidated with 2019-1259 Parties dismissed appeal |
| Genentech | Celltrion | 7,371,379 | 2017-01140 (2019-1259) | Claims Valid | <ul style="list-style-type: none"> Consolidated with 2019-1258 Parties dismissed appeal |
| Genentech | Hospira | 7,892,549 | 2017-00737/ 2017-01960 joined (2019-1265) | Claims Invalid | <ul style="list-style-type: none"> Hospira withdrew as party due to settlement Samsung Bioepis withdrew as party Lead – consolidated with 2019-1270 Affirmed Board's decision that challenged claims as unpatentable on obviousness grounds |
| Genentech | Celltrion | 7,892,549 | 2017-01122 (2019-1270) | Claims Invalid | <ul style="list-style-type: none"> USPTO allowed to intervene Affirmed Board's decision |

Blockbuster Biologics: IPR Appeals (Neulasta)

| Patent Owner | Challenger | Patent No. | IPR No. (Appeal No.) | Decision Appealed | Status of Appeal |
|--------------|------------|------------|------------------------|-------------------|---|
| Amgen | Apotex | 8,952,138 | 2016-01542 (2019-2171) | Claims Invalid | <ul style="list-style-type: none">• Amgen filed Notice of Appeal• USPTO allowed to intervene• Amgen raised Appointments Clause challenge• Board's decision vacated and case remanded to Board for proceedings consistent with court's decision in <i>Arthrex</i> |

Blockbuster Biologics: IPR Appeals (Avastin)

| Patent Owner | Challenger | Patent No. | IPR No. (Appeal No.) | Decision Appealed | Status of Appeal |
|--------------|------------|------------|------------------------|-------------------|--|
| Genentech | Hospira | 7,622,115 | 2016-01771 (2018-1959) | Claims Invalid | <ul style="list-style-type: none">• Includes constitutional challenge regarding retroactive application of IPR to pre-AIA patent• United States intervened• Oral argument held July 11, 2019• Judgment affirmed |

Blockbuster Biologics: IPR Appeals (Orencia)

| Patent Owner | Challenger | Patent No. | IPR No. (Appeal No.) | Decision Appealed | Status of Appeal |
|----------------------|------------|------------|------------------------|-------------------|---|
| Bristol-Myers Squibb | Momenta | 8,476,239 | 2015-01537 (2017-1694) | Claims Valid | <ul style="list-style-type: none">Federal Circuit dismissed appeal for lack of standing/jurisdiction and for mootness |

Post-Grant Reviews (PGRs)

- > Only one PGR has been filed to date in connection with a blockbuster biologic (US 9,856,287)

| Product (# IPRs) | Challenger | Pend. Inst. | Pet. Not Inst. | Sett. Term. | Inst. |
|------------------|---------------|-------------|----------------|-------------|-------|
| Neupogen (1) | Adello/Apotex | - | - | - | 1 |

US BIOSIMILAR-RELATED PATENT LITIGATIONS

> **Humira Litigation: *AbbVie v. Alvotech***

- > On March 8, 2022, Alvotech Holdings S.A. (Alvotech) announced that it has settled all pending disputes between AbbVie and Alvotech related to AVT02 (100 mg/mL), Alvotech's high-concentration, citrate-free biosimilar candidate for Humira® (adalimumab).
- > Alvotech has nonexclusive rights to market AVT02 in the United States starting July 1, 2023.
- > This marks the 10th settlement related to adalimumab; all companies that currently have an adalimumab biosimilar have settled with AbbVie.

> **Neulasta Litigation: *Amgen v. Pfizer and Hospira***

- > On March 18, 2022, Amgen and Pfizer announced that they have settled a patent-infringement lawsuit over Hospira's proposed biosimilar version of Neulasta.
- > Four Neulasta biosimilars are now on sale in the United States.

US Biosimilar Litigations: Developments (cont.)

> Summary of 10 Humira Biosimilar Settlements

| Party | US Market Entry | EP Market Entry |
|----------------------------|--------------------|------------------|
| Amgen | January 31, 2023 | October 16, 2018 |
| Biogen and Samsung Bioepis | June 30, 2023 | October 16, 2018 |
| Mylan | July 31, 2023 | - - - |
| Sandoz | September 30, 2023 | October 16, 2018 |
| Fresenius Kabi | September 30, 2023 | Upon approval |
| Momenta | November 20, 2023 | - - - |
| Pfizer | November 20, 2023 | - - - |
| Coherus | December 15, 2023 | - - - |
| Boehringer Ingelheim | July 1, 2023 | - - - |
| Alvotech | July 1, 2023 | |

US Biosimilar Litigations: Developments (cont.)

- > Products in patent litigation that we are monitoring include:
 - > Avastin
 - > Enbrel
 - > Epogen
 - > Herceptin
 - > Humira
 - > Neulasta
 - > Neupogen
 - > Remicade
- > These litigations are summarized on the following slides

Blockbuster Biologics: US Litigation Scorecard – Humira

| Product (# of litigations) | Case Name | Case No. (Jurisdiction) | # of Asserted Patents | Types of Claims* | Status |
|-------------------------------|---------------------------------------|------------------------------|-----------------------------|---------------------|--|
| Humira (7) | <i>AbbVie v. Amgen</i> | No. 16-666-MSG (D. Del.) | 10 | M, F, U, C | • Settled – US launch of Amjevita expected January 31, 2023 |
| | <i>AbbVie v. Boehringer Ingelheim</i> | No. 17-1065-SLR (D. Del.) | 8 | M, F, U, C | • Parties stipulated to dismissal |
| | <i>AbbVie v. Sandoz</i> | No. 18-12668 (D.N.J.) | 2 | U, F | • Settled – US launch of Hyrimoz expected September 20, 2023 |
| | <i>Coherus v. Amgen</i> | No. 19-00139 (D. Del.) | 3 | C | • Parties stipulated to dismissal • Amgen’s filed motion for determination of exceptional case and award of fees denied |

*See slide 58 for legend of abbreviations.

Blockbuster Biologics: US Litigation Scorecard – Humira (cont.)

| Product (# of litigations) | Case Name | Case No. (Jurisdiction) | # of Asserted Patents | Types of Claims* | Status |
|-------------------------------|---------------------------|-----------------------------|-----------------------------|---------------------|---|
| Humira (7) | <i>AbbVie v. Alvotech</i> | No. 21-2258 (N.D. Ill.) | 4 | F, M, U | <ul style="list-style-type: none"> • Court denied motion to dismiss on August 23, 2021 and entered a scheduling order on September 20, 2021 • Trial set for August 2022, and court plans to issue trial decision by end of October 2022 • Defendant agreed not to launch in the United States until after court's trial decision • Settled on March 8, 2022 |
| | <i>Alvotech v. AbbVie</i> | No. 21-00265 (E.D. Va.) | 4 | F, M, U | <ul style="list-style-type: none"> • October 22, 2021, E.D. Va. court transferred case to the N.D. Ill. • Dismissed AbbVie's pending Motion to Dismiss as moot • Settled on March 8, 2022 |
| | <i>AbbVie v. Alvotech</i> | No. 21-02899 (N.D. Ill.) | 58 | F, M, U | <ul style="list-style-type: none"> • Complaint filed May 28, 2021 • Settled on March 8, 2022 |

Blockbuster Biologics: US Litigation Scorecard – Rituxan

| Product (# of litigations) | Case Name | Case No. (Jurisdiction) | # of Asserted Patents | Types of Claims | Status |
|-------------------------------|-------------------------------|--|---|--------------------|---|
| Rituxan (4) | <i>Genentech v. Sandoz</i> | No. 17-13507-RMB-KMW (D.N.J.) | 24 | M, U, C | <ul style="list-style-type: none"> Stipulated dismissal without prejudice Sandoz decided not to pursue its FDA submission for its biosimilar |
| | <i>Celltrion v. Genentech</i> | No. 18-276-JSW (N.D. Cal.) No. 18-2161 (Fed. Cir.) (consolidated with No. 18-2160) | 37 | M, U | <ul style="list-style-type: none"> Genentech's Motion to Dismiss granted Final judgment appealed to Federal Circuit Appeal voluntarily dismissed |
| | <i>Genentech v. Celltrion</i> | No. 18-574-RMB-KMW (D.N.J.) | 40 | M, U, C | <ul style="list-style-type: none"> Settled |
| | <i>Genentech v. Celltrion</i> | No. 18-11553 (D.N.J.) (consolidated with No. 18-574-RMB-KMW) | 18 (Claims mirror those of No. 18-574-RMB-KMW— filed to ensure compliance with BPCIA) | M, U, C | <ul style="list-style-type: none"> Settled |

Blockbuster Biologics: US Litigation Scorecard – Herceptin

| Product (# of litigations) | Case Name | Case No. (Jurisdiction) | # of Asserted Patents | Types of Claims | Status |
|-------------------------------|-------------------------------|---|--------------------------|--------------------|--|
| Herceptin (6) | <i>Celltrion v. Genentech</i> | No. 18-274-JSW (N.D. Cal.) No. 18-2160 (Fed. Cir.) | 38 | M, U, C | <ul style="list-style-type: none"> • Genentech’s Motion to Dismiss granted • Final judgment appealed to Federal Circuit • Appeal voluntarily dismissed |
| | <i>Genentech v. Celltrion</i> | No. 18-095-CFC (D. Del.) | 40 | M, U, C | <ul style="list-style-type: none"> • All Delaware cases were before Judge Connolly and coordinated • <i>Markman</i> hearing April 2019 • Trial in December 2019 • Lead case • Settled |
| | <i>Genentech v. Pfizer</i> | No. 17-1672-CFC (D. Del.) | 40 | M, U, C | <ul style="list-style-type: none"> • Settled |

Blockbuster Biologics: US Litigation Scorecard – Herceptin (cont.)

| Product (# of litigations) | Case Name | Case No. (Jurisdiction) | # of Asserted Patents | Types of Claims | Status |
|-------------------------------|-------------------------------------|-------------------------------|--------------------------|--------------------|---|
| Herceptin (6) | <i>Genentech v. Amgen</i> | No. 18-924-CFC (D. Del.) | 37 | M, U, C | • Parties stipulated to dismissal on July 7, 2020 |
| | <i>Genentech v. Celltrion</i> | No. 18-1025-CFC (D. Del.) | 40 | M, U, C | • Settled |
| | <i>Genentech v. Samsung Bioepis</i> | No. 18-01363-CFC (D. Del.) | 21 | M, U, C | • Dismissed due to settlement |

Blockbuster Biologics: US Litigation Scorecard – Neupogen

| Product (# of litigations) | Case Name | Case No. (Jurisdiction) | # of Asserted Patents | Types of Claims | Status |
|-------------------------------|------------------------|--|--------------------------|--------------------|--|
| Neupogen (7) | <i>Amgen v. Sandoz</i> | No. 14-04741-RS (N.D. Cal.) No. 15-1499 (Fed. Cir.) Nos. 15-1039, 15-1195 (Supreme Court) No. 18-1551 (Fed. Cir.) | 1 | M | <ul style="list-style-type: none"> Complaint alleged Sandoz violated BPCIA by (1) failing to provide its aBLA and manufacturing information within 20 days of FDA acceptance and (2) providing notice of commercial marketing before FDA approval of its aBLA District court ruled in favor of Sandoz; on appeal, Federal Circuit and Supreme Court did the same District court subsequently granted Sandoz's Motion for Summary Judgment of Noninfringement; affirmed on appeal Petition for rehearing en banc denied |
| | <i>Amgen v. Apotex</i> | No. 15-62081-JIC (S.D. Fla.) | 2 | M, C | <ul style="list-style-type: none"> Consolidated with <i>Amgen v. Apotex</i> pegfilgrastim (Neulasta) litigation, No. 15-61631, where district court entered judgment of noninfringement for Sandoz Affirmed |

Blockbuster Biologics: US Litigation Scorecard – Neupogen (cont.)

| Product (# of litigations) | Case Name | Case No. (Jurisdiction) | # of Asserted Patents | Types of Claims | Status |
|-------------------------------|-------------------------|---------------------------------|--------------------------|--------------------|---|
| Neupogen (7) | <i>Amgen v. Kashiv</i> | No. 18-3347-JMV-SCM (D.N.J.) | 17 | M | <ul style="list-style-type: none"> Amended Complaint filed, reducing number of patents to four and naming Amneal Pharmaceuticals as co-defendant Amneal moved to dismiss Amended Complaint for failure to state claim and lack of subject-matter jurisdiction Claim construction briefed June 10, 2019, Kashiv substituted in place of Adello November 25, 2019, parties stipulated to dismissal without prejudice |
| | <i>Amgen v. Hospira</i> | No. 18-1064 (D. Del.) | 1 | M | <ul style="list-style-type: none"> Parties stipulated to dismiss all claims and counterclaims with prejudice |
| | <i>Sandoz v. Amgen</i> | No. 19-00977 (N.D. Cal.) | 1 | M | <ul style="list-style-type: none"> Sandoz voluntarily dismissed action without prejudice |

Blockbuster Biologics: US Litigation Scorecard – Neupogen (cont.)

| Product (# of litigations) | Case Name | Case No. (Jurisdiction) | # of Asserted Patents | Types of Claims | Status |
|-------------------------------|-------------------------|------------------------------------|--------------------------|--------------------|---|
| Neupogen (7) | <i>Amgen v. Tanvex</i> | No. 19-1374-AJB-MSB (S.D. Cal.) | 1 | M | <ul style="list-style-type: none"> Complaint and Answer to Complaint filed December 19, 2019, parties entered into stipulation of dismissal without prejudice |
| | <i>Amgen v. Hospira</i> | No. 20-561 (D. Del.) | 1 | M | <ul style="list-style-type: none"> Parties filed stipulation of dismissal with prejudice |

Blockbuster Biologics: US Litigation Scorecard – Neulasta

| Product (# of litigations) | Case Name | Case No. (Jurisdiction) | # of Asserted Patents | Types of Claims | Status |
|-------------------------------|------------------------|--|---|--------------------|--|
| Neulasta (7) | <i>Amgen v. Apotex</i> | No. 15-61631-JIC (S.D. Fla.) No. 16-1308 (Fed. Cir.) No. 17-1010 (Fed. Cir.) No. 16-332 (Supreme Court) | 2 | M, F | <ul style="list-style-type: none"> • Amgen found not to infringe • Supreme Court denied Apotex’s Petition for Certiorari • Federal Circuit affirmed district court ruling • District court: <ol style="list-style-type: none"> 1) granted Amgen’s Motion for Summary Judgment re: invalidity defenses except nonenablement 2) awarded judgment of noninfringement for Apotex 3) dismissed Apotex’s nonenablement defense without prejudice |
| | <i>Amgen v. Sandoz</i> | No. 16-1276-SRC-CLW (D.N.J.) | Litigation over whether Sandoz violated BPCIA | NA | <ul style="list-style-type: none"> • Dismissed after Sandoz restarted patent-dance negotiations |

Blockbuster Biologics: US Litigation Scorecard – Neulasta (cont.)

| Product (# of litigations) | Case Name | Case No. (Jurisdiction) | # of Asserted Patents | Types of Claims | Status |
|-------------------------------|-------------------------|--|--------------------------|--------------------|--|
| Neulasta (7) | <i>Amgen v. Sandoz</i> | No. 16-02581-RS (N.D. Cal.) No. 18-1552 (Fed. Cir.) (consolidated with No. 18-1551) | 2 | M, F | <ul style="list-style-type: none"> On appeal, fully briefed, pending scheduling of oral argument Summary Judgment of Noninfringement granted for Sandoz Affirmed |
| | <i>Amgen v. Coherus</i> | No. 17-546-LPS (D. Del.) No. 18-1993 (Fed. Cir.) | 1 | M | <ul style="list-style-type: none"> Court granted Coherus's Motion to Dismiss for Failure to State a Claim Judgment entered against Amgen, and case was dismissed Affirmed |

Blockbuster Biologics: US Litigation Scorecard – Neulasta (cont.)

| Product (# of litigations) | Case Name | Case No. (Jurisdiction) | # of Asserted Patents | Types of Claims | Status |
|-------------------------------|------------------------|-------------------------------|--------------------------|--------------------|--|
| Neulasta (7) | <i>Amgen v. Mylan</i> | No. 17-1235-MRH (W.D. Pa.) | 2 | M | <ul style="list-style-type: none"> • Claim Construction Order issued • Amgen ordered to file, with infringement contentions, a statement identifying facts relied on outside of Mylan’s FDA filings • Motion for Summary Judgment of Noninfringement of US Patent No. 9,643,997 filed – ruling deferred • Abeyance in place, pending further order to be issued around August 14, 2019 • Parties stipulated to noninfringement of US Patent No. 9,643,997 |
| | <i>Amgen v. Apotex</i> | No. 18-61828 (S.D. Fla.) | 1 | M | <ul style="list-style-type: none"> • District court denied Apotex’s motion to dismiss Amgen’s complaint for failure to state a claim • Joint Claim Construction Statement filed • Accord Biopharma substituted in place of Apotex as defendant in August 2019 • November 14, 2019, parties entered into stipulation of dismissal without prejudice |

Blockbuster Biologics: US Litigation Scorecard – Neulasta (cont.)

| Product (# of litigations) | Case Name | Case No. (Jurisdiction) | # of Asserted Patents | Types of Claims | Status |
|-------------------------------|-------------------------|----------------------------|--------------------------|--------------------|--|
| Neulasta (7) | <i>Amgen v. Hospira</i> | No. 20-201 (D. Del.) | 1 | M | <ul style="list-style-type: none"> • Complaint filed February 11, 2020 • Hospira and Pfizer filed Motion to Dismiss for Failure to State a Claim, arguing that Amgen surrendered subject matter during prosecution • Motion to Dismiss denied • Case stayed following Claim Construction Order until decision made as to whether early summary judgment practice as to noninfringement should be entertained • Settled and jointly dismissed by the parties on March 18, 2022 |

Blockbuster Biologics: US Litigation Scorecard – Enbrel

| Product (# of litigations) | Case Name | Case No. (Jurisdiction) | # of Asserted Patents | Types of Claims | Status |
|-------------------------------|-----------------------------------|--|--------------------------|--------------------|---|
| Enbrel (2) | <i>Immunex v. Sandoz</i> | No. 16-01118-CCC-JBC (D.N.J.) No. 20-1037 (Fed. Cir.) | 5 | C, F, U | <ul style="list-style-type: none"> • Before trial, Sandoz stipulated to infringement to certain asserted claims of two of the five patents-in-suit • Bench trial held September 2018 and district court judge ruled in favor of Immunex, holding that patents-in-suit were valid • Sandoz appealed to Federal Circuit • Federal Circuit affirmed on July 1, 2020 • Petition for rehearing en banc denied |
| | <i>Immunex v. Samsung Bioepis</i> | No. 19-11755-CCC (D.N.J.) | 5 | C, U, M, F | <ul style="list-style-type: none"> • Court entered Final Judgment and Permanent Injunction against Samsung Bioepis on November 3, 2021 • Permanent injunction in effect until April 24, 2029, when patents expire |

Blockbuster Biologics: US Litigation Scorecard – Epogen

| Product (# of litigations) | Case Name | Case No. (Jurisdiction) | # of Asserted Patents | Types of Claims | Status |
|-------------------------------|-------------------------|--|--------------------------|--------------------|---|
| Epogen (1) | <i>Amgen v. Hospira</i> | No. 15-839-RGA (D. Del.) No. 16-2179 (Fed. Cir.) (appeal was dismissed) No. 19-1067 and No. 19-1102 (Fed. Cir.) | 2 | C, M | <ul style="list-style-type: none"> • Jury found infringement and awarded \$70M in damages • Final judgment entered with pre- and post judgment interest • Hospira appealed, arguing that all of its batches of product should be subject to safe-harbor provision about which jury was given erroneous instructions • Amgen responded that there was sufficient evidence supporting jury's finding that only seven of 21 drug batches qualified for safe harbor • Oral argument held September 30, 2019 • Judgment affirmed December 16, 2019 • Petition for Rehearing and Petition for Rehearing En Banc denied |

Blockbuster Biologics: US Litigation Scorecard – Avastin

| Product (# of litigations) | Case Name | Case No. (Jurisdiction) | # of Asserted Patents | Types of Claims | Status |
|-------------------------------|----------------------------|-----------------------------------|--|--------------------|---|
| Avastin (8) | <i>Genentech v. Amgen</i> | No. 17-165-GMS (D. Del.) | Litigation over violations of BPCIA | NA | <ul style="list-style-type: none"> Dismissed complaint without prejudice |
| | <i>Amgen v. Genentech</i> | No. 17-7349-GW-AGR (C.D. Cal.) | 27 | M, C, F, U | <ul style="list-style-type: none"> Genentech's Motion to Dismiss for Lack of Subject-Matter Jurisdiction granted |
| | <i>Genentech v. Amgen</i> | No. 17-1407-CFC (D. Del.) | 24 | M, C, F, U | <ul style="list-style-type: none"> Consolidated with No. 17-1471 Lead case Granted Genentech's Motion to Dismiss Amgen's Counterclaims, seek declaratory judgment that two patents are invalid, unenforceable, and not infringed for lack of subject-matter jurisdiction Joint Stipulation of Dismissal filed on July 7, 2020 |
| | <i>Genentech v. Amgen</i> | No. 17-1471-CFC (D. Del.) | 25 | M, C, F, U | <ul style="list-style-type: none"> Consolidated with No. 17-1407 |
| | <i>Genentech v. Pfizer</i> | No. 19-00638-CFC (D. Del.) | 22 | M, C, F, U | <ul style="list-style-type: none"> Settled |

Blockbuster Biologics: US Litigation Scorecard – Avastin (cont.)

| Product (# of litigations) | Case Name | Case No. (Jurisdiction) | # of Asserted Patents | Types of Claims | Status |
|-------------------------------|---------------------------------------|---|--------------------------|--------------------|---|
| Avastin (8) | <i>Genentech v. Immunex and Amgen</i> | No. 19-00602-CFC (D. Del.) No. 19-2155 (Fed. Cir.) | 14 | M, C, F, U | <ul style="list-style-type: none"> Genentech's motion to enforce statutory prohibition on commercial marketing and TRO denied Federal Circuit denied Genentech's Motion for an Injunction Pending Appeal Genentech appealed regarding commercial marketing Federal Circuit affirmed |
| | <i>Genentech v. Samsung Bioepis</i> | No. 20-cv-00859 (D. Del.) | 14 | M, C, F, U | <ul style="list-style-type: none"> Complaint filed June 28, 2020 |
| | <i>Genentech v. Centus</i> | No. 20-cv-00361 (E.D. Tex.) | 10 | M, U | <ul style="list-style-type: none"> Complaint filed November 12, 2020 Parties filed Joint Motion to Stay all Deadlines and Notice of Settlement Motion to Dismiss with prejudice granted due to parties' settlement |

Blockbuster Biologics: US Litigation Scorecard – Remicade

| Product (# of litigations) | Case Name | Case No. (Jurisdiction) | # of Asserted Patents | Types of Claims | Status |
|-------------------------------|-----------------------------|--|--------------------------|---------------------------|---|
| Remicade (5) | <i>Janssen v. Celltrion</i> | No. 15-10698-MLW (D. Mass.) No. 17-1120 (Fed. Cir.) | 2 | C, U | <ul style="list-style-type: none"> • Partial Summary Judgment of Invalidity granted with respect to one patent ('471 patent) • Federal Circuit dismissed appeal as moot upon affirming decision in appeal (No. 17-1257) from ex parte reexamination ruling by USPTO that same patent's claims are unpatentable for double patenting • Dismissed without prejudice in favor of No. 17-11008 |
| | <i>Janssen v. Celltrion</i> | No. 16-11117-MLW (D. Mass.) | 1 | M (cell culture media) | <ul style="list-style-type: none"> • Dismissed without prejudice in favor of No. 17-11008 |
| | <i>Janssen v. HyClone</i> | No. 16-00071-BCW (D. Utah) | 1 | M (cell culture media) | <ul style="list-style-type: none"> • Case administratively closed November 26, 2019, per related litigation in District of Massachusetts |

Blockbuster Biologics: US Litigation Scorecard – Remicade (cont.)

| Product (# of litigations) | Case Name | Case No. (Jurisdiction) | # of Asserted Patents | Types of Claims | Status |
|-------------------------------|-----------------------------------|---|--------------------------|------------------------------|---|
| Remicade (5) | <i>Janssen v. Celltrion</i> | No. 17-11008 (D. Mass.) No. 18-2350 (Fed. Cir.) Lead appeal (No. 18-2321) | 1 | M (cell culture media) | <ul style="list-style-type: none"> Judgment entered for defendants after court allowed Motion for Summary Judgment of Noninfringement based on ensnarement Affirmed on appeal |
| | <i>Janssen v. Samsung Bioepis</i> | No. 17-3524-MCA-SCM (D.N.J.) | 3 | M | <ul style="list-style-type: none"> Janssen voluntarily dismissed its patent-infringement claims Suit dismissed with prejudice |

LEGISLATIVE & REGULATORY UPDATES

Legislative and Regulatory Updates

- > **On March 7, 2022, the FDA announced that it is offering funding for several research proposals under the regulatory science pilot for biosimilars under the upcoming Biosimilar User Fee Amendments (BsUFA III) program.**
 - > The five-year program, which will run from FY2023-2027, must still be approved by Congress.
 - > The broad goals of the program are to advance the development of interchangeable products and to make biosimilar development more efficient.
 - > Up to five awards of \$1 million-\$2 million possible.
 - > The FDA said “a variety of project types are welcomed under this FOA [funding opportunity announcement], including analytical methodology (including bioassay) development, in silico tools, real world evidence, pharmacology studies, ancillary studies in parallel to planned or ongoing clinical trials, and combinations of these project types.”

BIOSIMILAR APPROVALS AND LAUNCHES

Biosimilar Approvals and Launches Updates

- > **Three new biosimilars were approved:**
 - > **February 2022:** Releuko (filgrastim-ayow) approved as a biosimilar to Neupogen
 - > **December 2021:** Yusimry (adalimumab-aqvh) approved as a biosimilar to Humira
 - > **December 2021:** Rezvoglar (insulin glargine-aglr) approved as a biosimilar to Lantus

US Biosimilar Approvals – 34 Total

| Drug Name | Approval Date |
|--------------------------------------|----------------|
| Releuko (filgrastim-ayow) | February 2022 |
| Yusimry (adalimumab-aqvh) | December 2021 |
| Rezvoglar (insulin glargine-aglr) | December 2021 |
| Byooviz (ranibizumab-nuna) | September 2021 |
| Semglee (insulin glargine-yfgn) | July 2021 |
| Riabni (rituximab-arrx) | December 2020 |
| Hulio (adalimumab-fkjp) | July 2020 |
| Nyvepria (pegfilgrastim-apgf) | June 2020 |

| Drug Name | Approval Date |
|-----------------------------------|---------------|
| Avsola (infliximab-axxq) | December 2019 |
| Abrilada (adalimumab-afzb) | November 2019 |
| Ziextenzo (pegfilgrastim-bmez) | November 2019 |
| Hadlima (adalimumab-bwwd) | July 2019 |
| Ruxience (rituximab-pvvr) | July 2019 |
| Zirabev (bevacizumab-bvzr) | June 2019 |
| Kanjinti (trastuzumab-anns) | June 2019 |
| Eticovo (etanercept-ykro) | April 2019 |

US Biosimilar Approvals – 34 Total (cont.)

| Drug Name | Approval Date | Drug Name | Approval Date |
|----------------------------------|---------------|--------------------------------|----------------|
| Trazimera (trastuzumab-qyyp) | March 2019 | Ixifi (infliximab-qbtx) | December 2017 |
| Ontruzant (trastuzumab-dttb) | January 2019 | Ogivri (trastuzumab-dkst) | December 2017 |
| Herzuma (trastuzumab-pkrb) | December 2018 | Mvasi (bevacizumab-awwb) | September 2017 |
| Truxima (rituximab-abbs) | November 2018 | Cyltezo (adalimumab-adbm) | August 2017 |
| Udenyca (pegfilgrastim-cbqv) | November 2018 | Renflexis (infliximab-abda) | May 2017 |
| Hyrimoz (adalimumab-adaz) | October 2018 | Amjevita (adalimumab-atto) | September 2016 |
| Nivestym (filgrastim-aafi) | July 2018 | Erelzi (etanercept-szsz) | August 2016 |
| Fulphila (pegfilgrastim-jmdb) | June 2018 | Inflectra (infliximab-dyyb) | April 2016 |
| Retacrit (epoetin alfa-epbx) | May 2018 | Zarxio (filgrastim-sndz) | March 2015 |

US Biosimilar Approval Statistics (cont.)



| aBLA No. | Biosimilar Brand Name | Biosimilar Scientific Name | aBLA Holder | aBLA Acceptance Date | Date of Biosimilar License | US Biosimilar Launch Date | Pendency from Acceptance to Licensure | Pendency from Acceptance to Launch | Pendency from Licensure to Launch |
|--------------------|-----------------------|----------------------------|----------------------|----------------------|----------------------------|---------------------------|---------------------------------------|------------------------------------|-----------------------------------|
| aBLA 761024 | Amjevita™ | Adalimumab-atto | Amgen | Nov. 25, 2015 | Sep. 23, 2016 | NA | 303 days | NA | NA |
| aBLA 761058 | Cyltezo® | Adalimumab-abdm | Boehringer Ingelheim | Oct. 27, 2016 | Aug. 25, 2017 | NA | 302 days | NA | NA |
| aBLA 761071 | Hyrimoz™ | Adalimumab-adaz | Sandoz | Oct. 30, 2017 | Oct. 30, 2018 | NA | 365 days | NA | NA |
| aBLA 761059 | Hadlima™ | Adalimumab-bwwd | Samsung Bioepis | Jul. 23, 2018 | Jul. 23, 2019 | NA | 365 days | NA | NA |
| aBLA 761118 | Abrilada™ | Adalimumab-afzb | Pfizer | Nov. 16, 2018 | Dec. 31, 2019 | NA | 410 days | NA | NA |
| aBLA 761154 | Hulio® | Adalimumab-afzb | Mylan / Biocon | Jul. 12, 2019 | Jul. 6, 2020 | NA | 360 days | NA | NA |
| aBLA 761028 | Mvasi™ | Bevacizumab-awwb | Amgen | Nov. 14, 2016 | Sep. 14, 2017 | Jul. 19, 2019 | 304 days | 977 days | 673 days |
| aBLA 761099 | Zirabev™ | Bevacizumab-bvzr | Pfizer | Jun. 29, 2018 | Jun. 27, 2019 | Dec. 31, 2019 | 363 days | 550 days | 187 days |

US Biosimilar Approval Statistics (cont.)



| aBLA No. | Biosimilar Brand Name | Biosimilar Scientific Name | aBLA Holder | aBLA Acceptance Date | Date of Biosimilar License | US Biosimilar Launch Date | Pendency from Acceptance to Licensure | Pendency from Acceptance to Launch | Pendency from Licensure to Launch |
|--------------------|-----------------------|----------------------------|-------------------------|----------------------|----------------------------|---------------------------|---------------------------------------|------------------------------------|-----------------------------------|
| aBLA 125545 | Retacrit® | Epoetin Alfa-epbx | Hospira / Pfizer | Dec. 16, 2014 | May 15, 2018 | Nov. 12, 2018 | 1,246 days | 1,427 days | 181 days |
| aBLA 761042 | Erelzi® | Etanercept-szsz | Sandoz | Jul. 30, 2015 | Aug. 30, 2016 | NA | 397 days | NA | NA |
| aBLA 761066 | Eticovo™ | Etanercept-ykro | Samsung Bioepis | May 25, 2017 | Apr. 25, 2019 | NA | 700 days | NA | NA |
| aBLA 125553 | Zarxio® | Filgrastim-sndz | Sandoz | May 8, 2014 | Mar. 6, 2015 | Sep. 3, 2015 | 302 days | 483 days | 181 days |
| aBLA 761080 | Nivestym™ | Filgrastim-aafi | Pfizer | Sep. 21, 2017 | Jul. 20, 2018 | Oct. 1, 2018 | 272 days | 375 days | 103 days |
| aBLA 125544 | Inflectra® | Infliximab-dyyb | Celltrion / Pfizer | Aug, 8, 2014 | Apr. 5, 2016 | Nov. 28, 2016 | 606 days | 843 days | 237 days |
| aBLA 761054 | Renflexis® | Infliximab-abda | Samsung Bioepis / Merck | Mar. 21, 2016 | Apr. 21, 2017 | Jul. 24, 2017 | 396 days | 490 days | 94 days |

US Biosimilar Approval Statistics (cont.)



| aBLA No. | Biosimilar Brand Name | Biosimilar Scientific Name | aBLA Holder | aBLA Acceptance Date | Date of Biosimilar License | US Biosimilar Launch Date | Pendency from Acceptance to Licensure | Pendency from Acceptance to Launch | Pendency from Licensure to Launch |
|--|-------------------------------|----------------------------|----------------|----------------------|----------------------------|---------------------------|---------------------------------------|------------------------------------|-----------------------------------|
| aBLA 761072 | Ixifi™ | Infliximab-qbtx | Pfizer | Feb. 13, 2017 | Dec. 13, 2017 | NA | 303 days | NA | NA |
| aBLA 761086 | Avsola® | Infliximab-axxq | Amgen | Dec. 14, 2018 | Dec. 6, 2019 | Jul. 6, 2020 | 357 days | 570 days | 213 days |
| aBLA 205692 | Basaglar® | Insulin Glargine | Eli Lilly | Oct. 17, 2013 | Dec. 16, 2015 | --- | 790 days | NA | NA |
| aBLA 210605 aBLA 761201 | Semglee® (interchangeable) | Insulin Glargine | Mylan / Biocon | Apr. 27, 2017 | Jul. 28., 2021 | --- | 1,553 days | NA | NA |
| aBLA 761075 | Fulphila® | Pegfilgrastim-jmdb | Mylan / Biocon | Dec. 9, 2016 | Jun. 4, 2018 | Jul. 30, 2018 | 542 days | 598 days | 56 days |
| aBLA 761039 | Udenyca™ | Pegfilgrastim-cbqv | Coherus | Aug. 9, 2016 | Nov. 2, 2018 | Jan. 3, 2019 | 569 days | 877 days | 308 days |
| aBLA 761045 | Ziextenzo® | Pegfilgrastim-bmez | Sandoz | Aug. 27, 2015 | Nov. 5, 2019 | Nov. 15, 2019 | 1,531 days | 1,541 days | 10 days |

US Biosimilar Approval Statistics (cont.)



| aBLA No. | Biosimilar Brand Name | Biosimilar Scientific Name | aBLA Holder | aBLA Acceptance Date | Date of Biosimilar License | US Biosimilar Launch Date | Pendency from Acceptance to Licensure | Pendency from Acceptance to Launch | Pendency from Licensure to Launch |
|--------------------|-----------------------|----------------------------|------------------|----------------------|----------------------------|---------------------------|---------------------------------------|------------------------------------|-----------------------------------|
| aBLA 761111 | Nyvepria™ | Pegfilgrastim-apgf | Pfizer / Hospira | Jun. 10, 2019 | Jun. 11, 2020 | NA | 367 days | NA | NA |
| aBLA 761202 | Byooviz™ | Ranibizumab-nuna | Samsung Bioepis | Sep. 17, 2020 | Sep. 20, 2021 | NA | 368 days | NA | NA |
| aBLA 761088 | Truxima® | Rituximab-abbs | Celltrion / Teva | Apr. 28, 2017 | Nov. 28, 2018 | Nov. 11, 2019 | 579 days | 927 days | 348 days |
| aBLA 761103 | Ruxience® | Rituximab-pvvr | Pfizer | Jul. 25, 2018 | Jul. 23, 2019 | Jan. 23, 2020 | 363 days | 547 days | 184 days |
| aBLA 761140 | Riabni™ | Rituximab-arrx | Amgen / Allergan | Dec. 19, 2019 | Dec. 17, 2020 | Jan. 12, 2021 | 364 days | 390 days | 26 days |
| aBLA 211939 | Bonsity® | Teriparatide | Pfenex | Dec. 7, 2018 | Oct. 7, 2019 | --- | 304 days | NA | NA |
| aBLA 761074 | Ogivri™ | Trastuzumab-dkst | Mylan / Biocon | Nov. 3, 2016 | Dec. 1, 2017 | Dec. 2, 2019 | 393 days | 1,124 days | 731 days |

US Biosimilar Approval Statistics (cont.)



| aBLA No. | Biosimilar Brand Name | Biosimilar Scientific Name | aBLA Holder | aBLA Acceptance Date | Date of Biosimilar License | US Biosimilar Launch Date | Pendency from Acceptance to Licensure | Pendency from Acceptance to Launch | Pendency from Licensure to Launch |
|--------------------|-----------------------|----------------------------|-------------------------|----------------------|----------------------------|---------------------------|---------------------------------------|------------------------------------|-----------------------------------|
| aBLA 761091 | Herzuma® | Trastuzumab-pkrb | Celltrion / Teva | May 30, 2017 | Dec. 14, 2018 | Mar. 16, 2020 | 563 days | 1,021 days | 458 days |
| aBLA 761100 | Ontruzant® | Trastuzumab-dttb | Samsung Bioepis / Merck | Oct. 20, 2017 | Jan. 18, 2019 | Apr. 15, 2020 | 455 days | 908 days | 453 days |
| aBLA 761081 | Trazimera™ | Trastuzumab-qyyp | Pfizer | Jun. 22, 2017 | Mar. 11, 2019 | Feb. 15, 2020 | 627 days | 968 days | 341 days |
| aBLA 761073 | Kanjinti™ | Trastuzumab-anns | Amgen / Allergan | Jul. 28, 2017 | Jun. 13, 2019 | Jul. 19, 2019 | 685 days | 721 days | 36 days |
| Average: | | | | | | | 527.4 days | 807.2 days | 253.7 days |

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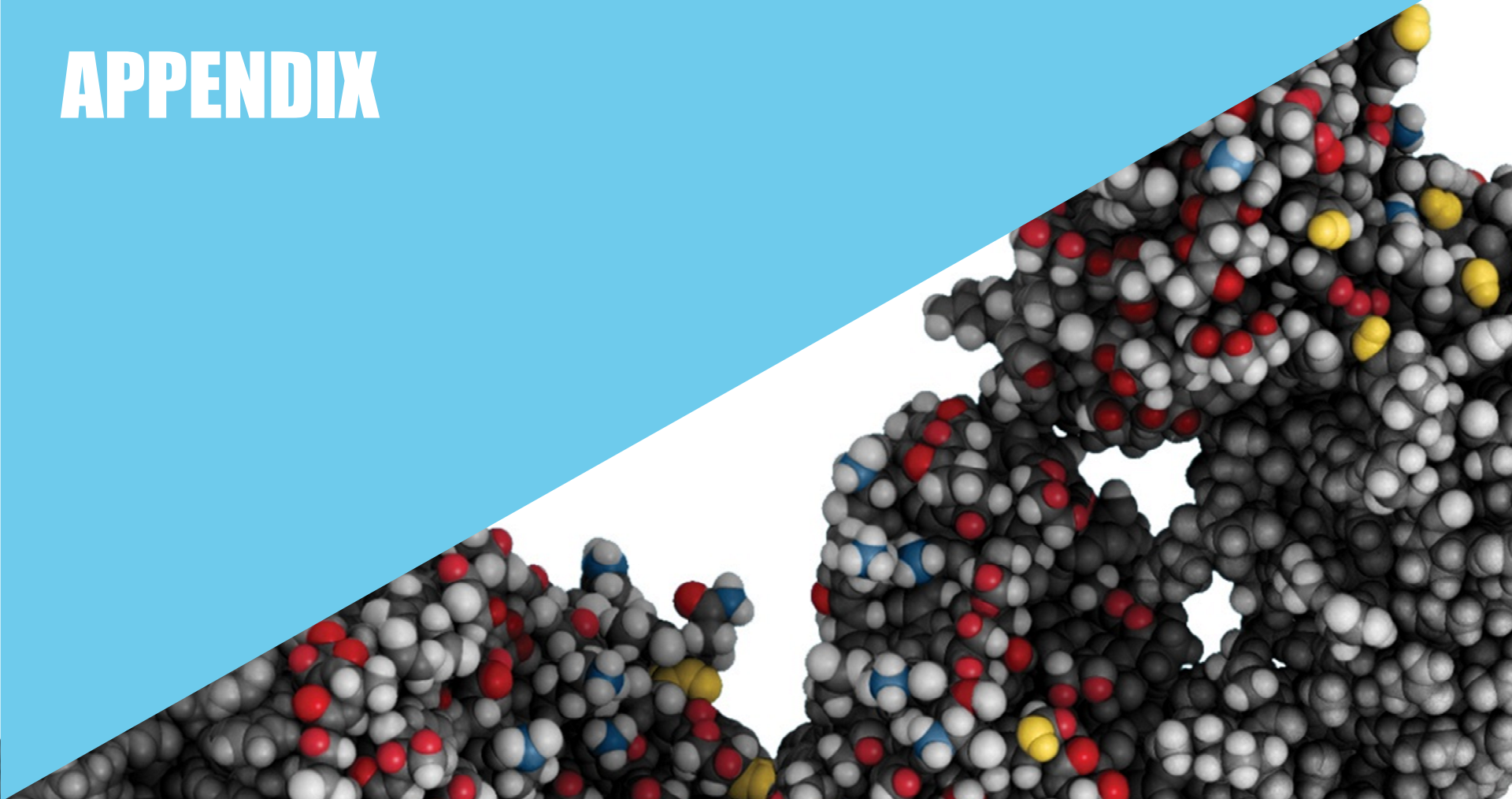


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APPENDIX



Legend

| | |
|---------------------------|---|
| P | Petitioner |
| PO | Patent Owner |
| 2-Consid. | Secondary Considerations raised by PO to support nonobviousness |
| U | Use |
| F | Formulation |
| C | Composition |
| M | Method |
| FWD | Final Written Decision |
| Pending | IPR has been instituted and is pending an FWD |
| Institution Denied | PTAB has denied institution of IPR |
| J/W | Joined with |
| NA | Not Applicable |
| Y/N | Yes/No |

HUMIRA

> 22 IPRs filed challenging 14 different patents

| AbbVie Patent | Challenger(s) | IPR No. | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|-------------------------|---------------|-------------------|-----------|---------------|------------------------------------|
| 8,916,157 | Amgen | 2015-01514 | 1/0 | Y | F (20-150 mg) | Institution Denied |
| 8,916,158 | Amgen | 2015-01517 | 1/0 | Y | F (20-150 mg) | Institution Denied |
| 8,889,135 | 1) Coherus | 1) 2016-00172 | 1) 2/5 | 1) Y | 1) U (RA) | 1) FWD – Claims Invalid (Appealed) |
| | 2) Boehringer Ingelheim | 2) 2016-00408 | 2) 2/5 | 2) Y | 2) U | 2) FWD – Claims Invalid (Appealed) |
| | 3) Boehringer Ingelheim | 3) 2016-00409 | 3) 2/5 | 3) Y | 3) U | 3) FWD – Claims Invalid (Appealed) |
| 9,017,680 | Coherus | 2016-00188 | 3/5 | Y | U (RA) | FWD – Claims Invalid (Appealed) |
| 9,073,987 | Coherus | 2016-00189 | 3/5 | Y | U (RA) | FWD – Claims Invalid (Appealed) |

> 22 IPRs filed challenging 14 different patents

| AbbVie Patent | Challenger(s) | IPR No. | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|---------------|--|--|--|-------------------------|---|
| 9,114,166 | Coherus | 2016-01018 | 2/0 | Y | F (50 mg) | Institution Denied |
| 9,085,619 | Coherus | 1) 2017-00822 2) 2017-00823 3) 2017-00826 4) 2017-00827 5) 2017-01008 6) 2017-01009 | 1) 1/0 2) 1/0 3) 2/NA 4) 2/NA 5) 2/0 6) 2/0 | 1) Y 2) N 3) Y 4) Y 5) Y 6) Y | F (Bufferless) | 1-2) Institution Denied 3-4) IPRs Dismissed April 11, 2017* 5-6) Institution Denied |
| 9,067,992 | Sandoz | 2017-02106 | 1/1 | Y | U (Psoriatic arthritis) | Terminated Due to Settlement |
| 8,911,737 | Sandoz | 2017-01987 | 6/0 | Y | U (Crohn's) | Institution Denied |
| 8,974,790 | Sandoz | 2017-01988 | 6/0 | Y | U (Ulcerative colitis) | Institution Denied |
| 9,090,689 | Sandoz | 2017-02105 | 3/2 | Y | U (Plaque psoriasis) | Terminated Due to Settlement |

> 22 IPRs filed challenging 14 different patents

| AbbVie Patent | Challenger(s) | IPR No. | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|---------------|---------------|-------------------|-----------|----------------------|-----------------------|
| 8,802,100 | Sandoz | 2017-01823 | 1/0 | N | F (45-150 mg) | Institution Denied |
| 9,512,216 | Sandoz | 1) 2017-01824 | 1) 2/0 | 1) Y | U (Plaque psoriasis) | 1) Institution Denied |
| | | 2) 2018-00002 | 2) 2/0 | 2) Y | | 2) Institution Denied |
| 9,187,559 | Sandoz | 2018-00156 | 2/0 | Y | U (IBD) | Institution Denied |

Representative Claim

1. A stable liquid aqueous pharmaceutical formulation comprising:
 - a) a human IgG1 anti-human Tumor Necrosis Factor alpha (TNF α) antibody, or an antigen-binding portion thereof, at a concentration of 20 mg/ml to 150 mg/ml;
 - b) a tonicity agent;
 - c) a surfactant; and
 - d) a buffer system having a pH of 4.0 to 8.0, wherein the antibody comprises the light chain variable region (LCVR) and the heavy chain variable region (HCVR) of D2E7.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--------------------|
| Amgen | 2015-01514 | 1-8, 10-13, 15-30 | None | 1/0 | Y | F | Institution Denied |

Representative Claim

1. A stable liquid aqueous pharmaceutical formulation comprising:
 - a) a human IgG1 anti-human TNF α antibody, or an antigen-binding portion thereof, at a concentration of 20 mg/ml to 150 mg/ml;
 - b) a tonicity agent;
 - c) a surfactant; and
 - d) a buffer system having a pH of 4.0 to 8.0, wherein the antibody comprises the LCVR and HCVR of D2E7.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--------------------|
| Amgen | 2015-01517 | 1-4, 9-18, 20-30 | None | 1/0 | Y | F | Institution Denied |

Representative Claim

1. A method for treating rheumatoid arthritis in a human subject by administering subcutaneously a total body dose of 40 mg of a human anti-TNF α antibody once every 13–15 days for a period sufficient to treat the rheumatoid arthritis, wherein the anti-TNF α antibody comprises an IgG1 heavy chain constant region; a variable light (V_L) chain region comprising a CDR1 having the amino acid sequence of SEQ ID NO:7, a CDR2 having the amino acid sequence of SEQ ID NO:5, and a CDR3 having the amino acid sequence of SEQ ID NO:3; and a variable heavy (V_H) chain region comprising a CDR1 having the amino acid sequence of SEQ ID NO:8, a CDR2 having the amino acid sequence of SEQ ID NO:6, and a CDR3 having the amino acid sequence of SEQ ID NO:4.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|----------------------|------------|-------------------|----------------------|-------------------|-----------|------------|---------------------------------|
| Coherus | 2016-00172 | 1-5 | § 103 for all claims | 2/5 | Y | U | FWD – Claims Invalid (Appealed) |
| Boehringer Ingelheim | 2016-00408 | 1-5 | § 103 for all claims | 2/5 | Y | U | FWD – Claims Invalid (Appealed) |
| Boehringer Ingelheim | 2016-00409 | 1-5 | § 103 for all claims | 2/5 | Y | U | FWD – Claims Invalid (Appealed) |

Representative Claim

1. A method of reducing signs and symptoms in a patient with moderately to severely active rheumatoid arthritis, comprising:
 - a) administering to said patient, in combination with methotrexate, a human anti-TNF α antibody;
 - b) wherein the human anti-TNF α antibody is administered subcutaneously in a total body dose of 40 mg once every 13–15 days; and
 - c) wherein the anti-TNF α antibody comprises an IgG1 heavy chain constant region; a V_L chain region comprising a CDR1 having the amino acid sequence of SEQ ID NO:7, a CDR2 having the amino acid sequence of SEQ ID NO:5, and a CDR3 having the amino acid sequence of SEQ ID NO:3; and a V_H chain region comprising a CDR1 having the amino acid sequence of SEQ ID NO:8, a CDR2 having the amino acid sequence of SEQ ID NO:6, and a CDR3 having the amino acid sequence of SEQ ID NO:4.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|----------------------|-------------------|-----------|------------|---------------------------------|
| Coherus | 2016-00188 | 1-4 | § 103 for all claims | 3/5 | Y | U | FWD – Claims Invalid (Appealed) |

Representative Claim

1. A method of reducing signs and symptoms in a patient with moderately to severely active rheumatoid arthritis, comprising:
 - a) administering to said patient a total body dose of 40 mg of a human anti-TNF α antibody;
 - b) wherein the dose is administered subcutaneously in a 40 mg dosage unit form once every 13–15 days; and
 - c) wherein the anti-TNF α antibody comprises an IgG1 heavy chain constant region; a V_L chain region comprising a CDR1 having the amino acid sequence of SEQ ID NO:7, a CDR2 having the amino acid sequence of SEQ ID NO:5, and a CDR3 having the amino acid sequence of SEQ ID NO:3; and a V_H chain region comprising a CDR1 having the amino acid sequence of SEQ ID NO:8, a CDR2 having the amino acid sequence of SEQ ID NO:6, and a CDR3 having the amino acid sequence of SEQ ID NO:4.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|----------------------|-------------------|-----------|------------|---------------------------------|
| Coherus | 2016-00189 | 1-2 | § 103 for all claims | 3/5 | Y | U | FWD – Claims Invalid (Appealed) |

Representative Claim

1. A stable liquid aqueous pharmaceutical formulation comprising a human anti-human TNF α IgG1 antibody at a concentration of 50 mg/ml, wherein the antibody comprises the LCVR and HCVR of D2E7, and a buffer system; wherein the formulation is isotonic, suitable for single-use subcutaneous injection, and has a pH of 4.0 to 8.0.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-----------------------------|--------------------|-------------------|-----------|------------|--------------------|
| Coherus | 2016-01018 | 1-4, 6-10, 13-16, 23-26, 28 | None | 2/0 | Y | F | Institution Denied |

Representative Claim

16. An aqueous pharmaceutical formulation comprising:
- a) an anti-TNF α antibody comprising an LCVR having a CDR3 domain comprising the amino acid sequence of SEQ ID NO:3, a CDR2 domain comprising the amino acid sequence of SEQ ID NO:5, and a CDR1 domain comprising the amino acid sequence of SEQ ID NO:7; and an HCVR having a CDR3 domain comprising the amino acid sequence of SEQ ID NO:4, a CDR2 domain comprising the amino acid sequence of SEQ ID NO:6, and a CDR1 domain comprising the amino acid sequence of SEQ ID NO:8, wherein the concentration of the antibody is 50 mg/ml to 200 mg/ml; and
 - b) water; wherein the formulation does not comprise a buffering system.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--------------------|
| Coherus | 2017-00822 | 16-19, 24-30 | NA | 1/0 | Y | F | Institution Denied |
| Coherus | 2017-00823 | 16-19, 24-30 | NA | 1/0 | N | F | Institution Denied |

Representative Claim

16. An aqueous pharmaceutical formulation comprising:
- a) an anti-TNF α antibody comprising an LCVR having a CDR3 domain comprising the amino acid sequence of SEQ ID NO:3, a CDR2 domain comprising the amino acid sequence of SEQ ID NO:5, and a CDR1 domain comprising the amino acid sequence of SEQ ID NO:7; and an HCVR having a CDR3 domain comprising the amino acid sequence of SEQ ID NO:4, a CDR2 domain comprising the amino acid sequence of SEQ ID NO:6, and a CDR1 domain comprising the amino acid sequence of SEQ ID NO:8, wherein the concentration of the antibody is 50 mg/ml to 200 mg/ml; and
 - b) water; wherein the formulation does not comprise a buffering system.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--------------------|
| Coherus | 2017-00826 | 16-19, 24-30 | NA | 2/NA | Y | F | Dismissed |
| Coherus | 2017-00827 | 16-19, 24-30 | NA | 2/NA | Y | F | Dismissed |
| Coherus | 2017-01008 | 16-19, 24-30 | NA | 2/0 | Y | F | Institution Denied |
| Coherus | 2017-01009 | 16-19, 24-30 | NA | 2/0 | Y | F | Institution Denied |

Representative Claim

1. A method of treatment of moderate to severe active psoriatic arthritis in adult patients, wherein each said patient has ≥ 3 swollen and ≥ 3 tender joints prior to the treatment and has failed NSAID therapy, comprising administering subcutaneously to each said patient 40 mg of adalimumab every other week, wherein 23% of said patients achieve 70% reduction in American College of Rheumatology (ACR) score at week 24 of the treatment.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|---|-------------------|-----------|------------|------------|
| Sandoz | 2017-02106 | 1, 2, 5-7 | § 102 for claims 1, 5, 6; § 103 for all claims | 1/1 | Y | U | Terminated |

Representative Claim

1. A method for treating Crohn's disease in a human subject by administering subcutaneously a total body dose of 40 mg of a human anti-TNF α antibody once every 13–15 days for a period sufficient to treat Crohn's disease, wherein the anti-TNF α antibody comprises an IgG1 heavy chain constant region; a V_L chain region comprising a CDR1 having the amino acid sequence of SEQ ID NO:7, a CDR2 having the amino acid sequence of SEQ ID NO:5, and a CDR3 having the amino acid sequence of SEQ ID NO:3; and a V_H chain region comprising a CDR1 having the amino acid sequence of SEQ ID NO:8, a CDR2 having the amino acid sequence of SEQ ID NO:6, and a CDR3 having the amino acid sequence of SEQ ID NO:4.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--------------------|
| Sandoz | 2017-01987 | 1-6 | NA | 6/0 | Y | U | Institution Denied |

Representative Claim

1. A method for treating ulcerative colitis in a human subject by administering subcutaneously a total body dose of 40 mg of a human anti-TNF α antibody once every 13–15 days for a period sufficient to treat the ulcerative colitis, wherein the anti-TNF α antibody comprises an IgG1 heavy chain constant region; a V_L chain region comprising a CDR1 having the amino acid sequence of SEQ ID NO:7, a CDR2 having the amino acid sequence of SEQ ID NO:5, and a CDR3 having the amino acid sequence of SEQ ID NO:3; and a V_H chain region comprising a CDR1 having the amino acid sequence of SEQ ID NO:8, a CDR2 having the amino acid sequence of SEQ ID NO:6, and a CDR3 having the amino acid sequence of SEQ ID NO:4.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--------------------|
| Sandoz | 2017-01988 | 1-6 | NA | 6/0 | Y | U | Institution Denied |

Representative Claim

1. A method of administering adalimumab for treatment of moderate to severe chronic plaque psoriasis by filling adalimumab into vessels and administering subcutaneously 40 mg of said adalimumab every other week.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------------|----------------------|-------------------|-----------|------------|------------|
| Sandoz | 2017-02105 | 1, 4, 7, 10, 13, 16, 19 | § 103 for all claims | 3/2 | Y | U | Terminated |

Representative Claim

1. A stable liquid aqueous pharmaceutical formulation comprising:
 - a) a human IgG1 anti-human TNF α antibody, or an antigen-binding portion thereof, at a concentration of 45 mg/ml to 150 mg/ml;
 - b) a polyol;
 - c) a polysorbate at a concentration of 0.1 mg/ml to 10 mg/ml; and
 - d) a buffer system having a pH of 4.5 to 7.0, wherein the antibody comprises the LCVR and HCVR of D2E7.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--------------------|
| Sandoz | 2017-01823 | 1-29 | NA | 1/0 | N | F | Institution Denied |

Representative Claim

1. A method for treating moderate to severe chronic plaque psoriasis by administering subcutaneously to an adult patient an initial dose of 80 mg of adalimumab, followed by 40 mg of adalimumab every other week, starting one week after said first dosing, wherein the patient achieves at least Psoriasis Area and Severity Index (PASI) 75 response at week 12 of the treatment.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--------------------|
| Sandoz | 2017-01824 | 1-16 | NA | 2/0 | Y | U | Institution Denied |
| Sandoz | 2018-00002 | 1-16 | NA | 2/0 | Y | U | Institution Denied |

Representative Claim

1. A multiple-variable dose method for treating idiopathic inflammatory bowel disease in a human subject in need thereof, comprising administering subcutaneously to the human subject:
 - a) a first dose of 160 mg of adalimumab administered to the human subject within a day; and
 - b) a second dose of 80 mg of adalimumab administered to the human subject within a day, wherein the second dose is administered two weeks following administration of the first dose.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--------------------|
| Sandoz | 2018-00156 | 1-30 | NA | 2/0 | Y | U | Institution Denied |

RITUXAN

> 27 IPRs filed challenging 10 different patents

| Genentech/ Biogen Patent | Challenger(s) | IPR No. | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|-----------------------------|---------------|---------------|----------------------|-----------|------------|--|
| 7,820,161 | 1) BI | 1) 2015-00415 | 1) 1/0 | 1) Y | 1) U (RA) | 1) Petitioner's adverse judgment |
| | 2) Celltrion | 2) 2015-01744 | 2) 1/0 | 2) Y | 2) U | 2) Dismissed |
| | 3) Celltrion | 3) 2016-01614 | 3) 2/1 | 3) Y | 3) U | 3) FWD – Claims Valid |
| | 4) Pfizer | 4) 2017-01115 | 4) 3/NA | 4) Y | 4) U | 4) FWD – Claims Valid (J/W '614) |
| 7,976,838 | 1) BI | 1) 2015-00417 | 1) 1/0 | 1) Y | 1) U (RA) | 1) Petitioner's adverse judgment |
| | 2) Celltrion | 2) 2015-01733 | 2) 1/0 | 2) Y | 2) U | 2) Dismissed |
| | 3) Celltrion | 3) 2016-01667 | 3) 2/0 | 3) Y | 3) U | 3) Institution Denied |
| | 4) Pfizer | 4) 2017-01923 | 4) 3/1 | 4) Y | 4) U | 4) Terminated – Settled |
| | 5) Sandoz | 5) 2017-02042 | 5) 2/0 | 5) Y | 5) U | 5) Institution Denied |
| | 6) Sandoz | 6) 2017-02036 | 6) 2/0 | 6) Y | 6) U | 6) Institution Denied |
| | 7) Celltrion | 7) 2018-01019 | 7) 3/0 | 7) Y | 7) U | 7) Terminated – Settled (J/W 2017-01923) |

> 27 IPRs filed challenging 10 different patents

| Genentech/ Biogen Patent | Challenger(s) | IPR No. | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|-----------------------------|---------------|---------------|----------------------|-----------|-----------------|---|
| 8,329,172 | 1) BI | 1) 2015-00418 | 1) 1/0 | 1) Y | 1) U (lymphoma) | 1) Institution Denied |
| | 2) Celltrion | 2) 2017-01093 | 2) 2/0 | 2) Y | 2) U | 2) Institution Denied |
| | 3) Pfizer | 3) 2017-01166 | 3) 2/0 | 3) Y | 3) U | 3) Institution Denied |
| | 4) Pfizer | 4) 2018-00285 | 4) 2/1 | 4) Y | 4) U | 4) Terminated – Settled |
| 8,557,244 | 1) Celltrion | 1) 2017-01094 | 1) 2/0 | 1) Y | 1) U (lymphoma) | 1) Institution Denied (Request for Rehearing Denied) |
| | 2) Pfizer | 2) 2017-01167 | 2) 2/0 | 2) Y | 2) U | 2) Institution Denied |
| 9,296,821 | 1) Celltrion | 1) 2017-01095 | 1) 2/0 | 1) Y | 1) U (lymphoma) | 1) FWD – Claims Invalid |
| | 2) Pfizer | 2) 2018-00186 | 2) 2/1 | 2) Y | 2) U | 2) Terminated |

> 27 IPRs filed challenging 10 different patents

| Genentech/ Biogen Patent | Challenger(s) | IPR No. | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|-----------------------------|---------------|---------------|----------------------|-----------|-----------------|-----------------------|
| 7,682,612 | 1) Celltrion | 1) 2017-01227 | 1) 1/0 | 1) Y | 1) U (leukemia) | 1) Institution Denied |
| | 2) Celltrion | 2) 2017-01230 | 2) 1/0 | 2) Y | 2) U | 2) Institution Denied |
| | 3) Pfizer | 3) 2017-02126 | 3) 2/0 | 3) Y | 3) U | 3) Institution Denied |
| 8,206,711 | 1) Celltrion | 1) 2017-01229 | 1) 1/0 | 1) Y | 1) U (leukemia) | 1) Institution Denied |
| | 2) Pfizer | 2) 2017-02127 | 2) 2/0 | 2) Y | 2) U | 2) Institution Denied |
| 8,821,873 | Pfizer | 2017-01168 | 2/1 | Y | U (lymphoma) | FWD – Claims Invalid |
| 8,545,843 | Pfizer | 2018-00086 | 2/0 | Y | U (vasculitis) | Institution Denied |
| 9,504,744 | Pfizer | 2018-00231 | 2/0 | Y | U (lymphoma) | Terminated |

Representative Claim

1. A method of treating rheumatoid arthritis in a human by administering:
 - a) more than one intravenous dose of a therapeutically effective amount of rituximab; and
 - b) methotrexate.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|----------------------|------------|-------------------|------------------------------------|-------------------|-----------|------------|------------------|
| Boehringer Ingelheim | 2015-00415 | 1-12 | § 103 for claims 1, 2, 5, 6, 9, 10 | 1/0 | Y | U | Adverse Judgment |
| Celltrion | 2015-01744 | 1, 2, 5, 6, 9, 10 | None | 1/0 | Y | U | Dismissed |

Representative Claim

1. A method of treating rheumatoid arthritis in a human by administering:
 - a) more than one intravenous dose of a therapeutically effective amount of rituximab; and
 - b) methotrexate.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|---------------------------------|-------------------|-----------|------------|---|
| Celltrion | 2016-01614 | 1-12 | § 103 for claims 1-3, 5-7, 9-11 | 2/1 | Y | U | FWD – Claims Valid Celltrion's appeal dismissed as part of litigation settlement (Case No. 18-574-RMB-KMW (D.N.J.)) |
| Pfizer | 2017-01115 | 1-12 | § 103 | 3/NA | Y | U | FWD – Claims Valid (J/W '614) |

Representative Claim

1. A method of treating rheumatoid arthritis in a human patient who experiences an inadequate response to a TNF α -inhibitor by administering an antibody that binds to CD20, wherein the antibody is administered as two intravenous doses of 1,000 mg.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|----------------------|------------|-------------------|----------------------|-------------------|-----------|------------|----------------------|
| Boehringer Ingelheim | 2015-00417 | 1-14 | § 103 for all claims | 1/0 | Y | U | Adverse Judgment |
| Celltrion | 2015-01733 | 1-14 | NA | 1/0 | Y | U | Dismissed |
| Celltrion | 2016-01667 | 1-14 | NA | 2/0 | Y | U | Institution Denied |
| Pfizer | 2017-01923 | 1-14 | § 103 for all claims | 3/1 | Y | U | Terminated – Settled |

Representative Claim

1. A method of treating rheumatoid arthritis in a human patient who experiences an inadequate response to a TNF α -inhibitor by administering an antibody that binds to CD20, wherein the antibody is administered as two intravenous doses of 1,000 mg.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|----------------------|-------------------|-----------|------------|---------------------------------------|
| Sandoz | 2017-02036 | 1-14 | NA | 2/0 | Y | U | Institution Denied |
| Sandoz | 2017-02042 | 1-14 | NA | 2/0 | Y | U | Institution Denied |
| Celltrion | 2018-01019 | 1-14 | § 103 for all claims | 3/0 | Y | U | Terminated – Settled (J/W 2017-01923) |

Representative Claim

1. A method of treating low-grade, B-cell non-Hodgkin's lymphoma (NHL) in a human patient by administering chemotherapy consisting of cyclophosphamide, vincristine, and prednisone (CVP therapy) to which the patient responds, followed by rituximab maintenance therapy, wherein the maintenance therapy comprises four weekly administrations of rituximab at a dose of 375 mg/m² every six months, and wherein the maintenance therapy is provided for two years.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|----------------------|------------|-------------------|--------------------|-------------------|-----------|------------|----------------------|
| Boehringer Ingelheim | 2015-00418 | 1 | NA | 1/0 | Y | U | Institution Denied |
| Celltrion | 2017-01093 | 1 | NA | 2/0 | Y | U | Institution Denied |
| Pfizer | 2017-01166 | 1 | NA | 2/0 | Y | U | Institution Denied |
| Pfizer | 2018-00285 | 1 | § 103 | 2/1 | Y | U | Terminated – Settled |

Representative Claim

1. A method of treating a patient with diffuse, large-cell lymphoma by administering an unlabeled chimeric anti-CD20 antibody and CHOP (cyclophosphamide, hydroxydaunorubicin/doxorubicin, vincristine, and prednisone/prednisolone) chemotherapy to the patient, wherein the patient is >60 years old and has bulky disease (tumor >10 cm in diameter).

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--|
| Celltrion | 2017-01094 | 1-2 | NA | 2/0 | Y | U | Institution Denied (Request for Rehearing Denied) |
| Pfizer | 2017-01167 | 1-2 | NA | 2/0 | Y | U | Institution Denied |

Representative Claim

1. A method for treating low-grade or follicular NHL by administering to a patient a therapeutically effective amount of rituximab during a chemotherapeutic regimen, wherein the chemotherapeutic regimen consists of CVP therapy, wherein the method comprises administering 375 mg/m² of rituximab, and wherein the method provides a beneficial synergistic effect in the patient.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|---|-------------------|-----------|------------|----------------------|
| Celltrion | 2017-01095 | 1-6 | § 102 for all claims; § 103 for all claims | 2/0 | Y | U | FWD – Claims Invalid |
| Pfizer | 2018-00186 | 1-6 | § 102 for claims 4-6; § 103 for all claims | 2/1 | Y | U | Terminated |

Representative Claim

1. A method of treating chronic lymphocytic leukemia (CLL) in a human patient by administering an anti-CD20 antibody in an amount effective to treat the CLL, wherein the method does not include treatment with a radiolabeled anti-CD20 antibody.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|--------------------|--------------------|-------------------|-----------|------------|--------------------|
| Celltrion | 2017-01227 | 23-57 | NA | 1/0 | Y | U | Institution Denied |
| Celltrion | 2017-01230 | 1-22, 58-60 | NA | 1/0 | Y | U | Institution Denied |
| Pfizer | 2017-02126 | 1-13, 15-35, 37-60 | NA | 2/0 | Y | U | Institution Denied |

Representative Claim

1. A method of treating CLL in a human patient by administering rituximab in an amount effective to treat the CLL, wherein the rituximab is administered to the patient at a dosage of 500 mg/m².

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--------------------|
| Celltrion | 2017-01229 | 1-9 | NA | 1/0 | Y | U | Institution Denied |
| Pfizer | 2017-02127 | 1-9 | NA | 2/0 | Y | U | Institution Denied |

Representative Claim

1. A method of treating a patient with diffuse, large-cell lymphoma by administering anti-CD20 antibody and chemotherapy, wherein the patient is >60 years old, wherein the chemotherapy comprises CHOP, and wherein the anti-CD20 antibody is administered in combination with a stem cell transplantation regimen.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|----------------------|
| Pfizer | 2017-01168 | 1-5 | § 103 | 2/1 | Y | U | FWD – Claims Invalid |

Representative Claim

1. A method of treating vasculitis in a human who does not have rheumatoid arthritis or cancer comprising administering to the human a therapeutically effective amount of rituximab, wherein the administration of the rituximab consists of intravenous administration.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--------------------|
| Pfizer | 2018-00086 | 1-12 | NA | 2/0 | Y | U | Institution Denied |

Representative Claim

1. A method of treating a >60-year-old diffuse, large-cell lymphoma patient comprising administering anti-CD20 antibody and CHOP chemotherapy to the patient, wherein the anti-CD20 antibody is administered to the patient in combination with a transplantation regimen.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|------------|
| Pfizer | 2018-00231 | 1-16 | NA | 2/0 | Y | U | Terminated |

HERCEPTIN

> 36 IPRs filed challenging 12 different patents

| Genentech Patent | Challenger(s) | IPR No. | # P/PO Experts | 2-Consid. | Claim Type | Status |
|------------------------|-------------------------|----------------|----------------|-----------|------------|---|
| 8,337,856 (Kadcyla) | Phigenix | 2014-00676 | 1/4 | Y | C | FWD – Claims Valid |
| 7,575,748 | Phigenix | 2014-00842 | 1/0 | Y | U | Institution Denied |
| 6,407,213 | 1) Mylan | 1) 2016-01693 | 1) 2/0 | 1) Y | 1) C | 1) Terminated (Settled) |
| | 2) Mylan | 2) 2016-01694 | 2) 2/0 | 2) Y | 2) C | 2) Terminated (Settled) |
| | 3) Celltrion | 3) 2017-01373 | 3) 2/4 | 3) Y | 3) C | 3) FWD – Claims Invalid (some) |
| | 4) Celltrion | 4) 2017-01374 | 4) 2/4 | 4) Y | 4) C | 4) FWD – Claims Invalid (some) |
| | 5) Pfizer | 5) 2017-01488 | 5) 2/1 | 5) Y | 5) C | 5) FWD – Claims Invalid (some) |
| | 6) Pfizer | 6) 2017-01489 | 6) 2/1 | 6) Y | 6) C | 6) FWD – Claims Invalid (some) |
| | 7) Boehringer Ingelheim | 7) 2017-02032 | 7) 1/0 | 7) Y | 7) C | 7) Adverse Judgment |
| | 8) Boehringer Ingelheim | 8) 2017-02031 | 8) 1/0 | 8) Y | 8) C | 8) Adverse Judgment |
| | 9) Samsung Bioepis | 9) 2017-02139 | 9) 4/NA | 9) Y | 9) C | 9) FWD – Claims Invalid (some) (J/W '488) |
| | 10) Samsung Bioepis | 10) 2017-02140 | 10) 4/NA | 10) Y | 10) C | 10) FWD – Claims Invalid (some) (J/W '489) |

> 36 IPRs filed challenging 12 different patents

| Genentech Patent | Challenger(s) | IPR No. | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|------------------|--------------------|---------------|-------------------|-----------|------------|------------------------------------|
| 7,807,799 | Hospira | 2016-01837 | 1/2 | Y | M | FWD – Claims Invalid (Appealed) |
| 7,846,441 | 1) Hospira | 1) 2017-00731 | 1) 4/2 | 1) Y | 1) U | 1) FWD – Claims Invalid (Appealed) |
| | 2) Celltrion | 2) 2017-01121 | 2) 3/2 | 2) Y | 2) U | 2) FWD – Claims Invalid (Appealed) |
| | 3) Pfizer | 3) 2017-02063 | 3) 1/NA | 3) Y | 3) U | 3) FWD – Claims Invalid (J/W '121) |
| | 4) Pfizer | 4) 2018-00016 | 4) 1/1 | 4) Y | 4) U | 4) Institution Denied |
| | 5) Samsung Bioepis | 5) 2018-00192 | 5) 2/0 | 5) Y | 5) U | 5) Institution Denied |
| 6,627,196 | 1) Hospira | 1) 2017-00804 | 1) 2 | 1) Y | 1) U | 1) FWD – Claims Valid (Appealed) |
| | 2) Samsung Bioepis | 2) 2017-01958 | 2) 3/NA | 2) Y | 2) U | 2) FWD – Claims Valid (J/W '804) |
| | 3) Celltrion | 3) 2017-01139 | 3) 1/2 | 3) Y | 3) U | 3) FWD – Claims Valid (Appealed) |

> 36 IPRs filed challenging 12 different patents

| Genentech Patent | Challenger(s) | IPR No. | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|------------------|--------------------|---------------|-------------------|-----------|------------|----------------------------------|
| 7,371,379 | 1) Hospira | 1) 2017-00805 | 1) 2 | 1) Y | 1) U | 1) FWD – Claims Valid (Appealed) |
| | 2) Samsung Bioepis | 2) 2017-01959 | 2) 2/NA | 2) Y | 2) U | 2) FWD – Claims Valid (J/W '805) |
| | 3) Celltrion | 3) 2017-01140 | 3) 1/0 | 3) Y | 3) U | 3) FWD – Claims Valid (Appealed) |
| 8,591,897 | 1) Pfizer | 1) 2017-01726 | 1) 3/NA | 1) Y | 1) U | 1) Institution Denied |
| | 2) Pfizer | 2) 2017-01727 | 2) 3/NA | 2) Y | 2) U | 2) Institution Denied |
| | 3) Celltrion | 3) 2017-00959 | 3) 1/NA | 3) Y | 3) U | 3) Adverse Judgment |
| 6,339,142 | 1) Pfizer | 1) 2017-02019 | 1) 2/3 | 1) Y | 1) C | 1) Terminated |
| | 2) Pfizer | 2) 2018-00330 | 2) 3/0 | 2) Y | 2) C | 2) Institution Denied |
| 9,249,218 | 1) Pfizer | 1) 2017-02020 | 1) 2/3 | 1) Y | 1) C | 1) Terminated |
| | 2) Pfizer | 2) 2018-00331 | 2) 1/0 | 2) Y | 2) C | 2) Institution Denied |

> 36 IPRs filed challenging 12 different patents

| Genentech Patent | Challenger(s) | IPR No. | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|------------------|--------------------|---------------|-------------------|-----------|------------|---|
| 7,892,549 | 1) Hospira | 1) 2017-00737 | 1) 1/2 | 1) Y | 1) U | 1) FWD – Claims Invalid (Appealed) 2) Institution Denied 3) FWD – Claims Invalid (Appealed) 4) FWD – Claims Invalid (J/W '737) |
| | 2) Hospira | 2) 2017-00739 | 2) 1/0 | 2) N | 2) U | |
| | 3) Celltrion | 3) 2017-01122 | 3) 1/2 | 3) Y | 3) U | |
| | 4) Samsung Bioepis | 4) 2017-01960 | 4) 2/NA | 4) Y | 4) U | |
| 8,314,225* | Pfizer | 2018-01219 | 1/0 | Y | C | Terminated After Institution (Settled) |

*Also being asserted regarding Rituxan and Avastin

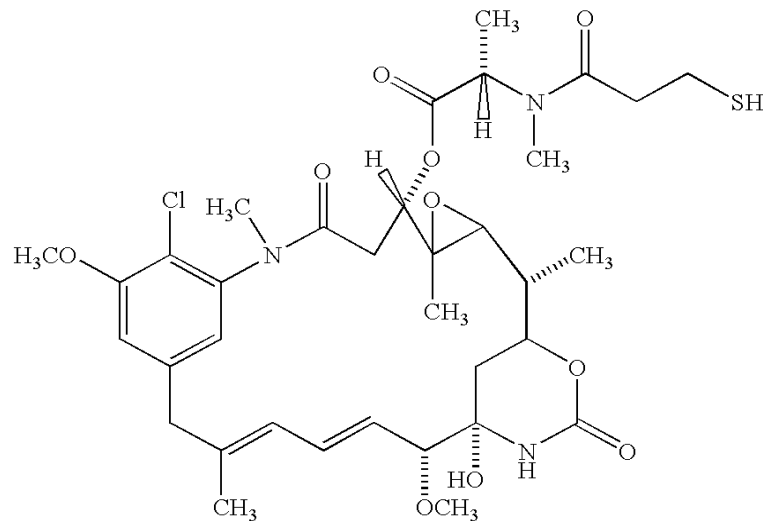
Representative Claim

1. An immunoconjugate comprising an anti-ErbB2 antibody conjugated to a maytansinoid, wherein the antibody is huMAb4D5-8.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|----------------------|-------------------|-----------|------------|--------------------|
| Phigenix | 2014-00676 | 1-8 | § 103 for all claims | 1/4 | Y | C | FWD – Claims Valid |

Representative Claim

1. A method for the treatment of a tumor in a mammal, comprising the steps of: (i) identifying said tumor as being characterized by overexpression of an ErbB2 receptor and as being a tumor that does not respond, or responds poorly, to treatment with an anti-ErbB antibody; and (ii) intravenously administering to the mammal a therapeutically effective amount of a conjugate of a humanized antibody huMab 4D5-8 covalently linked via a thioether linking group with a maytansinoid DM1 having the structure at a dose of between about 0.2 mg/kg and about 10 mg/kg (antibody-maytansinoid conjugate weight/body weight) and at a frequency of dosing selected from the group of dosing frequencies consisting of bolus, less than about one time per week, one time per week, two times per week, more than two times per week, and continuous infusion, whereby said tumor, characterized by overexpression of an ErbB2 receptor and that does not respond, or responds poorly, to treatment with an anti-ErbB antibody, is treated.



| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--------------------|
| Phigenix | 2014-00842 | 1-20, 25-27 | NA | 1/0 | Y | U | Institution Denied |

Representative Claim

1. A humanized antibody variable domain comprising non-human Complementarity Determining Region (CDR) amino acid residues that bind an antigen incorporated into a human antibody variable domain, and further comprising a Framework Region (FR) amino acid substitution at a site selected from the group consisting of 4L, 38L, 43L, 44L, 58L, 62L, 65L, 66L, 67L, 68L, 69L, 73L, 85L, 98L, 2H, 4H, 36H, 39H, 43H, 45H, 69H, 70H, 74H, and 92H, utilizing the numbering system set forth in Kabat.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|---|--|-------------------|-----------|------------|--|
| Mylan | 2016-01693 | 1-2, 4, 12, 25, 29-31, 33, 42, 60, 62-67, 69, 71-81 | NA | 2/0 | Y | C | Settled |
| Mylan | 2016-01694 | 1-2, 4, 12, 25, 29-31, 33, 42, 60, 62-67, 69, 71-81 | NA | 2/0 | Y | C | Settled |
| Celltrion | 2017-01373 | 1-2, 4, 12, 25, 29-31, 33, 42, 60, 62-67, 69, 71-81 | § 103 for all claims | 2/4 | Y | C | FWD – Claims Invalid (1-2, 4, 12, 25, 29-30, 31, 33, 42, 60, 62-64, 66-67, 69, 71, 73-74, 78, 80, 81) |
| Celltrion | 2017-01374 | 1-2, 4, 12, 25, 29-31, 33, 42, 60, 62-67, 69, 71-81 | § 102 for claims 1-2, 4, 25, 29, 62-64, 66, 67, 71-72, 75-76, 80-81; § 103 for claims 1-2, 4, 12, 25, 29-30, 31, 33, 42, 60, 62-67, 69, 71-81 | 2/4 | Y | C | FWD – Claims Invalid (1-2, 4, 25, 29, 30-31, 33, 62-64, 66-67, 69, 72, 78, 80, 81) |

Representative Claim

1. A humanized antibody variable domain comprising non-human CDR amino acid residues that bind an antigen incorporated into a human antibody variable domain, and further comprising an FR amino acid substitution at a site selected from the group consisting of 4L, 38L, 43L, 44L, 58L, 62L, 65L, 66L, 67L, 68L, 69L, 73L, 85L, 98L, 2H, 4H, 36H, 39H, 43H, 45H, 69H, 70H, 74H, and 92H, utilizing the numbering system set forth in Kabat.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|----------------------|------------|---|---|-------------------|-----------|------------|---|
| Pfizer | 2017-01488 | 1-2, 4, 12, 25, 29-31, 33, 42, 60, 62-67, 69, 71-81 | § 102 for claims 1-2, 4, 25, 29, 62-64, 66-67, 71-72, 75-76, 80-81; § 103 for claims 1-2, 4, 12, 25, 29-31, 33, 42, 60, 62-67, 69, 71-81 | 2/1 | Y | C | FWD – Claims Invalid (1-2, 4, 25, 29-31, 33, 62-64, 66-67, 69, 72, 78, 80-81) |
| Pfizer | 2017-01489 | 1-2, 4, 12, 25, 29, 62-67, 69, 71-81 | § 103 for all claims | 2/1 | Y | C | FWD – Claims Invalid (1-2, 4, 12, 25, 29-31, 33, 42, 60, 62-64, 66-67, 69, 71, 73-74, 78, 80-81) |
| Boehringer Ingelheim | 2017-02032 | 1-2, 4, 25, 29, 62-64, 66-67, 71-73, 75-78, 80-81 | § 102 for claims 1-2, 4, 25, 62-64, 66-67, 69, 71, 73, 75, 78, 80-81; § 103 for claims 1-2, 4, 25, 29, 62-64, 66-67, 69, 71-73, 75-78, 80-81 | 1/0 | Y | C | Adverse Judgment |

Representative Claim

1. A humanized antibody variable domain comprising non-human CDR amino acid residues that bind an antigen incorporated into a human antibody variable domain, and further comprising an FR amino acid substitution at a site selected from the group consisting of 4L, 38L, 43L, 44L, 58L, 62L, 65L, 66L, 67L, 68L, 69L, 73L, 85L, 98L, 2H, 4H, 36H, 39H, 43H, 45H, 69H, 70H, 74H, and 92H, utilizing the numbering system set forth in Kabat.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|----------------------|------------|---|--|-------------------|-----------|------------|---|
| Boehringer Ingelheim | 2017-02031 | 1-2, 4, 25, 29, 62-64, 66-67, 69, 71, 75-76, 78, 80-81 | § 102 for claim 63; § 103 for claims 1-2, 4, 25, 29, 62, 64, 66, 69, 71, 73, 75-78, 80-81 | 1/0 | Y | C | Adverse Judgment |
| Samsung Bioepis | 2017-02139 | 1-2, 4, 12, 25, 29, 62-64, 66-67, 69, 71-72, 75-76, 80-81 | § 102 for claims 1-2, 4, 25, 29, 62-64, 66-67, 71-72, 75-76, 80-81; § 103 for claims 1-2, 4, 12, 25, 29, 30, 31, 33, 42, 60, 62-67, 69, 71-81 | 4/NA | Y | C | FWD – Claims Invalid (1-2, 4, 25, 29, 30-31, 33, 62-64, 66-67, 69, 72, 78, 80-81) (J/W '488) |
| Samsung Bioepis | 2017-02140 | 1-2, 4, 12, 25, 29, 62-67, 69, 71-81 | NA | 4/NA | Y | C | FWD – Claims Invalid (1-2, 4, 12, 25, 29, 30-31, 33, 42, 60, 62-64, 66-67, 69, 71, 73-74, 78, 80-81) (J/W '489) |

Representative Claim

1. A method of purifying a protein that comprises a CH₂/CH₃ region by subjecting a composition of said protein to protein A affinity chromatography at a temperature in the range from about 10°C to about 18°C.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|---|-------------------|-----------|------------|--|
| Hospira | 2016-01837 | 1-3, 5-11 | § 102 for claims 1, 2, 5; § 103 for claims 1-3, 5-11 | 1/2 | Y | M | FWD – Claims Invalid Affirmed on Appeal |

Representative Claim

1. A method for the treatment of a human patient with a malignant progressing tumor or cancer characterized by an overexpression of an ErbB2 receptor by administering a combination of an intact antibody that binds to epitope 4D5 within the ErbB2 extracellular domain sequence and a taxoid, in the absence of anthracycline derivative, to the human patient in an amount effective to extend the time to disease progression in said human patient, without increase in overall severe adverse events.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|-----------------|---------------|-------------------|--------------------|-------------------|-----------|------------|---|
| Hospira | 2017-00731 | 1-14 | § 103 | 4/2 | Y | U | FWD – Claims Invalid (Appealed) |
| Celltrion | 2017-01121 | 1-14 | § 103 | 3/2 | Y | U | FWD – Claims Invalid (Appealed) |
| Pfizer | 1) 2017-02063 | 1) 1-14 | 1) § 103 | 1/NA | 1) Y | 1) U | 1) FWD – Claims Invalid (J/W '121) 2) Institution Denied |
| | 2) 2018-00016 | 2) 1-14 | 2) NA | 1/1 | 2) Y | 2) U | |
| Samsung Bioepis | 2018-00192 | 1-14 | NA | 2/0 | Y | U | Institution Denied |

Representative Claim

1. A method for the treatment of a human patient with breast cancer that overexpresses an ErbB2 receptor, comprising administering a combination of an antibody that binds ErbB2, a taxoid, and a further growth inhibitory agent to the human patient in an amount effective to extend the time to disease progression in the human patient, wherein the antibody binds to epitope 4D5 within the ErbB2 extracellular domain sequence.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|---|
| Hospira | 2017-00737 | 1-17 | § 103 | 1/2 | Y | U | FWD – Claims Invalid (Appealed) Denied PO's Motion to Amend |
| Hospira | 2017-00739 | 1-11, 14-17 | NA | 1/0 | N | U | Institution Denied |

Representative Claim

1. A method for the treatment of a human patient with breast cancer that overexpresses an ErbB2 receptor, comprising administering a combination of an antibody that binds ErbB2, a taxoid, and a further growth inhibitory agent to the human patient in an amount effective to extend the time to disease progression in the human patient, wherein the antibody binds to epitope 4D5 within the ErbB2 extracellular domain sequence.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|-----------------|------------|-------------------|--------------------|-------------------|-----------|------------|---------------------------------|
| Celltrion | 2017-01122 | 1-11, 14-17 | § 103 | 1/2 | Y | U | FWD – Claims Invalid (Appealed) |
| Samsung Bioepis | 2017-01960 | 1-17 | § 103 | 2/NA | Y | U | FWD – Claims Invalid (J/W '737) |

Representative Claim

1. A method for the treatment of a human patient diagnosed with cancer characterized by an expression of an ErbB2 receptor by administering an effective amount of an anti-ErbB2 antibody to the human patient, giving:
 - a) an initial dose of at least approximately 5 mg/kg of the anti-ErbB2 antibody; and
 - b) a plurality of subsequent doses of the antibody in an amount that is approximately the same or less than the initial dose, wherein the subsequent doses are separated in time from each other by at least two weeks.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|-----------------|------------|------------------------|--------------------|-------------------|-----------|------------|-------------------------------|
| Hospira | 2017-00804 | 1-3, 5, 7, 9-11, 17-33 | § 103 | 2 | Y | U | FWD – Claims Valid (Appealed) |
| Samsung Bioepis | 2017-01958 | 1-3, 5, 7, 9-11, 17-33 | § 103 | 3/NA | Y | U | FWD – Claims Valid (J/W '804) |
| Celltrion | 2017-01139 | 1-3, 5, 7, 9-11, 17-33 | § 103 | 1/2 | Y | U | FWD – Claims Valid (Appealed) |

Representative Claim

1. A method for the treatment of a human patient diagnosed with cancer characterized by an overexpression of an ErbB2 receptor by administering an effective amount of an anti-ErbB2 antibody to the human patient, giving:
 - a) an initial dose of at least approximately 5 mg/kg of the anti-ErbB2 antibody;
 - b) a plurality of subsequent doses of the antibody in an amount that is approximately the same or less than the initial dose, wherein the subsequent doses are separated in time from each other by at least two weeks; and
 - c) an effective amount of a chemotherapeutic agent.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------------------|--------------------|-------------------|-----------|------------|----------------------------------|
| Hospira | 2017-00805 | 1-3, 5, 7, 9-11, 16-28, 30-40 | § 103 | 2 | Y | U | FWD – Claims Valid (Appealed) |
| Celltrion | 2017-01140 | 1-3, 5, 7, 9-11, 13-28, 30-40 | § 103 | 1/0 | Y | U | FWD – Claims Valid (Appealed) |

Representative Claim

1. A method for the treatment of a human patient diagnosed with cancer characterized by an overexpression of an ErbB2 receptor by administering an effective amount of an anti-ErbB2 antibody to the human patient, giving:
 - a) an initial dose of at least approximately 5 mg/kg of the anti-ErbB2 antibody;
 - b) a plurality of subsequent doses of the antibody in an amount that is approximately the same or less than the initial dose, wherein the subsequent doses are separated in time from each other by at least two weeks; and
 - c) an effective amount of a chemotherapeutic agent.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|-----------------|------------|-------------------------------|--------------------|-------------------|-----------|------------|-------------------------------|
| Samsung Bioepis | 2017-01959 | 1-3, 5, 7, 9-11, 16-28, 30-40 | NA | 2/NA | Y | U | FWD – Claims Valid (J/W '805) |

Representative Claim

1. A method of adjuvant therapy by administering to a human subject with nonmetastatic HER2 positive breast cancer, following definitive surgery, anthracycline/cyclophosphamide (AC) based chemotherapy, followed by sequential administration of a taxoid and trastuzumab, or an antibody that blocks binding of trastuzumab to HER2.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|-------------------------------|
| Pfizer | 2017-01726 | 1-13 | NA | 3/NA | Y | U | Institution Denied |
| Pfizer | 2017-01727 | 1-13 | NA | 3/NA | Y | U | Institution Denied |
| Celltrion | 2017-00959 | 1-13 | NA | 1/NA | Y | U | Terminated – Adverse Judgment |

Representative Claim

1. A composition of a mixture of anti-HER2 antibody and one or more acidic variants thereof, wherein the amount of the acidic variant(s) is less than about 25%.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--------------------|
| Pfizer | 2017-02019 | 1-3 | NA | 2/3 | Y | C | Terminated |
| Pfizer | 2018-00330 | 1-3 | NA | 3/0 | Y | C | Institution Denied |

Representative Claim

1. A therapeutic composition of a mixture of anti-HER2 antibody and one or more acidic variants thereof, wherein:
 - a) the amount of the acidic variant(s) is less than about 25%;
 - b) the acidic variant(s) are predominantly deamidated variants, wherein one or more asparagine residues of the anti-HER2 antibody have been deamidated;
 - c) the anti-HER2 antibody is humMAb4D5-8;
 - d) the deamidated variants have Asn30 in CDR1 of either or both VL regions of humMAb4D5-8 converted to aspartate; and
 - e) a pharmaceutically acceptable carrier.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--------------------|
| Pfizer | 2017-02020 | 1, 5-7 | NA | 2/3 | Y | C | Terminated |
| Pfizer | 2018-00331 | 1-20 | NA | 1/0 | Y | C | Institution Denied |

Representative Claim

1. A nucleic acid encoding the amino acid sequence of the C-terminal part of the CH3-domain of an immunoglobulin of the class IgA or IgG, or the amino acid sequence of the C-terminal part of the CH4-domain of an immunoglobulin of the class IgE or IgM, wherein the glycine-lysine-dipeptide comprised in said amino acid sequence of the C-terminal part of the CH3- or CH4-domain is encoded by one of the following nucleic acid sequences: ggaaca, ggcaac, gggaaa, ggaaag, ggcaag, and gggaag; the nucleic acid ggaaaa; or the nucleic acid ggcaaa.

*Also being asserted regarding Rituxan and Auastin

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------------|-------------------|-----------|------------|--|
| Pfizer | 2018-01219 | 1-5, 10-12, 20 | §§ 102, 103 for claim 20 | 1/0 | Y | C | Terminated After Institution (Settled) |

TYSABRI

> Three IPRs filed challenging three different patents

| Biogen Patent | Challenger(s) | IPR No. | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|---------------|------------|-------------------|-----------|------------|--------------------|
| 8,815,236 | Swiss Pharma | 2016-00912 | 5/0 | N | U | Institution Denied |
| 8,349,321 | Swiss Pharma | 2016-00915 | 4/0 | N | F | Institution Denied |
| 8,900,577 | Swiss Pharma | 2016-00916 | 4/0 | N | F | Institution Denied |

Representative Claim

1. A method of treatment by administering to a patient with multiple sclerosis a therapeutic amount of a stable, aqueous pharmaceutical formulation of about 20 mg/ml to about 150 mg/ml of natalizumab, about 10 mM phosphate buffer, about 140 mM sodium chloride, and polysorbate 80 present in an amount of about 0.001% to 2% (w/v).

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--------------------|
| Swiss Pharma | 2016-00912 | 1-16, 21-22 | None | 5/0 | N | U | Institution Denied |

Representative Claim

1. A stable, aqueous pharmaceutical formulation of 20 mg/ml of natalizumab, about 10 mM sodium phosphate buffer, 8.18 mg/ml of sodium chloride, and 0.2 mg/ml of polysorbate 80, and wherein the formulation has a pH of 6.1.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--------------------|
| Swiss Pharma | 2016-00915 | 1-4 | None | 4/0 | N | F | Institution Denied |

Representative Claim

1. A stable, aqueous pharmaceutical formulation of about 20 mg/ml to about 150 mg/ml of natalizumab, polysorbate 80 present in an amount of about 0.001% to 2% (w/v), about 10 mM phosphate buffer, and about 140 mM NaCl.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--------------------|
| Swiss Pharma | 2016-00916 | 1, 3-7, 9-12 | None | 4/0 | N | F | Institution Denied |

KEYTRUDA

> Four IPRs filed challenging two patents

| Ono Pharm. Patent | Challenger(s) | IPR No. | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|-------------------|---------------|---------------|-------------------|-----------|------------|------------|
| 9,067,999 | 1) Merck | 1) 2016-01217 | 1) 1/NA | 1) NA | 1) U | 1) Settled |
| | 2) Merck | 2) 2016-01218 | 2) 1/NA | 2) NA | 2) U | 2) Settled |
| 9,073,994 | 1) Merck | 1) 2016-01219 | 1) 1/NA | 1) NA | 1) U | 1) Settled |
| | 2) Merck | 2) 2016-01221 | 2) 1/NA | 2) NA | 2) U | 2) Settled |

Representative Claim

1. A method of treating a lung cancer comprising administering a composition comprising a human or humanized anti-PD-1 monoclonal antibody to a human with the lung cancer, wherein the administration of the composition treats the lung cancer in the human.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|------------------------------|----------------------------|-------------------|-----------|------------|---------|
| Merck | 2016-01217 | 1, 6-14, 19-20, 24-27, 29-30 | §§ 102, 103 for all claims | 1/NA | NA | U | Settled |
| Merck | 2016-01218 | 1, 6-14, 19-20, 24-27, 29-30 | §§ 102, 103 for all claims | 1/NA | NA | U | Settled |

Representative Claim

1. A method of treating a metastatic melanoma comprising intravenously administering an effective amount of a composition comprising a human or humanized anti-PD-1 monoclonal antibody and a solubilizer in a solution to a human with the metastatic melanoma, wherein the administration of the composition treats the metastatic melanoma in the human.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------------------|----------------------------|-------------------|-----------|------------|---------|
| Merck | 2016-01219 | 1-3, 8-9, 14-15, 19-22, 25-26 | §§ 102, 103 for all claims | 1/NA | NA | U | Settled |
| Merck | 2016-01221 | 1-3, 8-9, 14-15, 19-22, 25-26 | §§ 102, 103 for all claims | 1/NA | NA | U | Settled |

AVASTIN

> Two IPRs filed challenging two patents

| Genentech Patent | Challenger(s) | IPR No. | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|------------------|---------------|------------|-------------------|-----------|------------|---|
| 7,622,115 | Hospira | 2016-01771 | 1/2 | Y | U | FWD – Claims Invalid; Genentech Appealed |
| 9,795,672 | Pfizer | 2018-00373 | 1/0 | Y | U | Institution Denied |

Representative Claim

1. A method for treating cancer in a patient by administering an effective amount of bevacizumab and assessing the patient for gastrointestinal perforation.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|----------------------------|-------------------|-----------|------------|--|
| Hospira | 2016-01771 | 1-5 | §§ 102, 103 for all claims | 1/2 | Y | U | FWD – Claims Invalid Affirmed on Appeal |

Representative Claim

1. A method for treating cancer in a patient by administering an effective amount of bevacizumab and assessing the patient for gastrointestinal perforation.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--------------------|
| Pfizer | 2018-00373 | 1-18 | NA | 1/0 | Y | U | Institution Denied |

EPOGEN

- > One IPR filed challenging one patent

Representative Claim

1. A method of administering at least one EPO dose to a patient according to an EPO dosing regimen, wherein said regimen maintains at least a serum EPO concentration above a predose level for about five to about 30 days between doses.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|---|
| Hospira | 2013-00365 | 1-7, 12, 14-28 | NA | 3/0 | NA | U | Not Instituted; Janssen Disclaimed All of the Challenged Claims |

ORENCIA

- > One IPR filed challenging one patent

Representative Claim

1. A stable formulation suitable for subcutaneous administration of at least 100 mg/ml CTLA4Ig molecule, a sugar selected from the group consisting of sucrose, lactose, maltose, mannitol and trehalose and mixtures thereof, and a pharmaceutically acceptable aqueous carrier, wherein the formulation has a pH range of from 6 to 8, viscosity from 9 to 20 cps, and the weight ratio of sugar:protein of 1.1:1 or higher.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--|
| Momenta | 2015-01537 | 1-15 | § 103 | 1/2 | Y | F | FWD – Claims Valid Momenta Appealed (Case No. 17-1694); Momenta ordered to show cause as to why appeal should not be dismissed as moot due to lack of Article III standing |

NEULASTA

> Eight IPRs filed challenging five patents

| Amgen Patent | Challenger(s) | IPR No. | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|--------------|--|---|----------------------------|----------------------|----------------------|--|
| 8,952,138* | Apotex | 2016-01542 | 1/1 | N | M | FWD – Claims 1-17 and 19-24 Unpatentable Claim 18 Patentable (Nonaerobic) Request for Rehearing Denied Appealed |
| 9,856,287 | 1) Fresenius Kabi 2) Fresenius Kabi 3) Lupin | 1) 2019-00971 2) 2020-00314 3) 2021-00326 | 1) 1/0 2) 1/0 3) 1/1 | 1) Y 2) N 3) N | 1) M 2) M 3) M | 1) Institution Denied 2) Terminated Before Institution (Settled) 3) Institution Denied |
| 8,940,878 | Kashiv Biosciences | 2019-00791 | 1/0 | Y | M | Terminated After Institution (Settled) |

> Eight IPRs filed challenging five patents

| Amgen Patent | Challenger(s) | IPR No. | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|--------------|--|--------------------------------|-------------------|--------------|--------------|--|
| 9,643,997 | 1) Kashiv Biosciences 2) Fresenius Kabi | 1) 2019-00797 2) 2019-01183 | 1) 1/0 2) 1/1 | 1) Y 2) N | 1) M 2) M | 1) Terminated After Institution (Settled) 2) Terminated After Institution (Settled) |
| 8,273,707 | Hospira | 2021-00528 | 1/0 | Y | M | Terminated After Institution (Settled) |

Representative Claim

- a) A method of refolding a protein expressed in a non-mammalian expression system and present in a volume at a concentration of 2.0 g/L or greater that includes:
- a) contacting the protein with a refold buffer that has a redox component with a final thiol-pair ratio in the range of 0.001 to 100, a redox buffer strength of 2 mM or greater, and one or more of:
 - i. a denaturant;
 - ii. an aggregation suppressor; and
 - iii. a protein stabilizer to form a refold mixture;
 - b) incubating the refold mixture; and
 - c) isolating the protein from the refold mixture.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|----------------------|-------------------|-----------|------------|--|
| Apotex | 2016-01542 | 1-24 | § 103 for all claims | 1/1 | N | M | <p>FWD – Claims 1-17 and 19-24 Unpatentable Claim 18 Patentable (Non-aerobic)</p> <p>Request for Rehearing Denied</p> <p>Appealed</p> |

Representative Claim

1. A method of refolding proteins expressed in a non-mammalian expression system, the method comprising:
 - a) contacting the proteins with a preparation that supports the renaturation of at least one of the proteins to a biologically active form, to form a refold mixture, the preparation comprising:
 - i. at least one ingredient selected from the group consisting of a denaturant, an aggregation suppressor, and a protein stabilizer;
 - ii. an amount of oxidant; and
 - iii. an amount of reductant, wherein the amounts of the oxidant and the reductant are related through a thiol-pair ratio and a thiol-pair buffer strength, wherein the thiol-pair ratio is in the range of 0.001-100; and wherein the thiol-pair buffer strength maintains the solubility of the preparation; and
 - b) incubating the refold mixture so that at least about 25% of the proteins are properly refolded.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|----------------|------------|--|--------------------|-------------------|-----------|------------|---|
| Fresenius Kabi | 2019-00971 | 1, 4-6, 8-10, 12, 14-16, 19-21, 23-26, 29-30 | NA | 1/0 | Y | M | Institution Denied |
| Fresenius Kabi | 2020-00314 | 1, 4-6, 8-10, 12, 14-16, 19-21, 23-26, 29-30 | NA | 1/0 | N | M | Terminated Before Institution (Settled) |
| Lupin | 2021-00326 | 1-30 | NA | 1/1 | N | M | Institution Denied |

Representative Claim

1. A method of purifying a protein expressed in a non-native soluble form in a non-mammalian expression system comprising:
 - a) lysing a non-mammalian cell in which the protein is expressed in a non-native soluble form to generate a cell lysate;
 - b) contacting the cell lysate with a separation matrix under conditions suitable for the protein to associate with the separation matrix;
 - c) washing the separation matrix; and
 - d) eluting the protein from the separation matrix, wherein the separation matrix is an affinity resin selected from the group consisting of Protein A, Protein G, and a synthetic, mimetic affinity resin.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|--------------------|------------|-----------------------|--------------------|-------------------|-----------|------------|--|
| Kashiv Biosciences | 2019-00791 | 7-8, 11-13, 15-19, 21 | §§ 102, 103 | 1/0 | Y | M | Terminated After Institution (Settled) |

Representative Claim

1. A method of purifying a protein expressed in a non-native soluble form in a non-mammalian expression system comprising:
 - a) lysing a non-mammalian cell in which the protein is expressed in a non-native soluble form to generate a cell lysate;
 - b) contacting the cell lysate with a separation matrix under conditions suitable for the protein to associate with the separation matrix;
 - c) washing the separation matrix; and
 - d) eluting the protein from the separation matrix.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|--------------------|------------|-------------------------------|--------------------|-------------------|-----------|------------|--|
| Kashiv Biosciences | 2019-00797 | 9-10, 13-15, 17-21, 23, 26-30 | §§ 102, 103 | 1/0 | Y | M | Instituted. Terminated After Institution (Settled) |
| Fresenius Kabi | 2019-01183 | 9-10, 13-21, 23-30 | §§ 102, 103 | 1/1 | N | M | Instituted. Terminated After Institution (Settled) |

Representative Claim

1. A process for purifying a protein on a hydrophobic interaction chromatography column such that the dynamic capacity of the column is increased for the protein comprising mixing a preparation containing the protein with a combination of a first salt and a second salt, loading the mixture onto a hydrophobic interaction chromatography column, and eluting the protein, wherein the first and second salts are selected from the group consisting of citrate and sulfate, citrate and acetate, and sulfate and acetate, respectively, and wherein the concentration of each of the first salt and the second salt in the mixture is between about 0.1M and about 1.0.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|------------------------|--------------------|-------------------|-----------|------------|------------|
| Hospira | 2021-00528 | 1, 2, 4, 8, 10, and 11 | NA | 1/0 | Y | M | Instituted |

ENBREL

> Three IPRs filed challenging two patents

| Hoffmann-La Roche Patent | Challenger(s) | IPR No. | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|--------------------------|--|------------|-------------------|-----------|------------|--------------------|
| 8,163,522 | Coalition for Affordable Drugs (Kyle Bass) | 2015-01792 | 1/0 | Y | M | Institution Denied |
| | Coherus | 2017-01916 | 1/2 | Y | M | Institution Denied |
| 8,063,182 | Coherus | 2017-02066 | 1/2 | Y | C | Institution Denied |

Representative Claim

1. A method comprising the steps of:
 - a) culturing a host cell with a polynucleotide, wherein the polynucleotide encodes a protein consisting of:
 - i. the extracellular region of an insoluble human TNF receptor, wherein the insoluble human TNF receptor has an apparent molecular weight of about 75 kilodaltons as determined on a non-reducing SDS-polyacrylamide gel and the amino acid sequence LPAQVAFXPYAPEPGSTC (SEQ ID NO:10); and
 - ii. all of the domains of the constant region of a human IgG immunoglobulin heavy chain other than the first domain of said constant region; and
 - b) purifying an expression product of the polynucleotide from the cell mass or the culture medium.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|--|------------|-------------------|--------------------|-------------------|-----------|------------|--------------------|
| Coalition for Affordable Drugs (Kyle Bass) | 2015-01792 | 1-10 | NA | 1/0 | Y | M | Institution Denied |
| Coherus | 2017-01916 | 1-10 | NA | 1/2 | Y | M | Institution Denied |

Representative Claim

1. An isolated antibody that binds specifically to the polypeptide of SEQ ID NO:548.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--------------------|
| Coherus | 2017-02066 | 2-36 | NA | 1/2 | Y | C | Institution Denied |

DUPIXENT

> Three IPRs filed challenging one patent

| Hofmann-LaRoche Patent | Challenger(s) | IPR No. | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|------------------------|----------------|------------|-------------------|-----------|------------|-------------------------------------|
| 8,679,487 | Sanofi-Aventis | 2017-01879 | 1/1 | N | C | FWD – Claims 1-14, 16-17 Patentable |
| | Sanofi-Aventis | 2017-01129 | 2/0 | N | C | Institution Denied |
| | Sanofi-Aventis | 2017-01884 | 1/3 | N | C | FWD – Claims 1-17 Unpatentable |

Representative Claim

1. An isolated human antibody that competes with a reference antibody for binding to human IL-4 interleukin-4 (IL-4) receptor, wherein the light chain of said reference antibody comprises the amino acid sequence of SEQ ID NO:10, and the heavy chain of said reference antibody comprises the amino acid sequence of SEQ ID NO:12.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|----------------|------------|-------------------|--------------------|-------------------|-----------|------------|-------------------------------------|
| Sanofi-Aventis | 2017-01879 | 1-14, 16-17 | § 102 | 1/1 | N | C | FWD – Claims 1-14, 16-17 Patentable |
| Sanofi-Aventis | 2017-01129 | 1-17 | NA | 2/0 | N | C | Institution Denied |
| Sanofi-Aventis | 2017-01884 | 1-17 | § 103 | 1/3 | N | C | FWD – Claims 1-17 Unpatentable |

SOLIRIS

> Three IPRs filed challenging three patents

| Alexion Patent | Challenger(s) | IPR No. | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|----------------|---------------|------------|-------------------|-----------|------------|--|
| 9,725,504 | Amgen | 2019-00739 | 1/3 | N | M | Terminated After Institution (Settled) |
| 9,718,880 | Amgen | 2019-00740 | 1/3 | Y | C | Terminated After Institution (Settled) |
| 9,732,149 | Amgen | 2019-00741 | 1/3 | Y | C | Terminated After Institution (Settled) |

Representative Claim

1. A method of treating a patient suffering from paroxysmal nocturnal hemoglobinuria (PNH) comprising administering to the patient a pharmaceutical composition comprising an antibody that binds C5, wherein the antibody comprises a heavy chain consisting of SEQ ID NO:2 and a light chain consisting of SEQ ID NO:4.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--|
| Amgen | 2019-00739 | 1-10 | §§ 102, 103 | 1/3 | N | M | Terminated After Institution (Settled) |

Representative Claim

1. A pharmaceutical composition for use in treating a patient afflicted with PNH, wherein the composition is a sterile, preservative free, 300 mg single-use dosage form comprising 30 ml of a 10 mg/ml antibody solution, wherein the antibody comprises a heavy chain consisting of SEQ ID NO:2 and a light chain consisting of SEQ ID NO:4.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--|
| Amgen | 2019-00740 | 1-3 | §§ 102, 103 | 1/3 | Y | C | Terminated After Institution (Settled) |

Representative Claim

1. An antibody that binds C5 comprising a heavy chain consisting of SEQ ID NO:2 and a light chain consisting of SEQ ID NO:4.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--|
| Amgen | 2019-00741 | 1 | §§ 102, 103 | 1/3 | Y | C | Terminated After Institution (Settled) |

INSULIN GLARGINE

- > Two IPRs filed challenging two patents

| Sanofi Patent | Challenger(s) | IPR No. | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|---------------|------------|-------------------|-----------|------------|--------------------------------|
| 7,476,652 | Mylan | 2017-01526 | 3/2 | Y | F | FWD – Claims 1-25 Unpatentable |
| 7,713,930 | Mylan | 2017-01528 | 3/2 | Y | F | FWD – Claims 1-20 Unpatentable |

Representative Claim

1. A pharmaceutical formulation comprising Gly(A21), Arg(B31), Arg(B32)-human insulin; at least one chemical entity chosen from polysorbate 20 and polysorbate 80; at least one preservative; and water, wherein the pharmaceutical formulation has a pH in the acidic range from 1 to 6.8.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--------------------------------|
| Mylan | 2017-01526 | 1-25 | § 103 | 3/2 | Y | F | FWD – Claims 1-25 Unpatentable |

Representative Claim

1. A pharmaceutical formulation comprising Gly(A21), Arg(B31), Arg(B32)-human insulin; at least one chemical entity chosen from esters and ethers of polyhydric alcohols; at least one preservative; and water, wherein the pharmaceutical formulation has a pH in the acidic range from 1 to 6.8.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|------------|--------------------------------|
| Mylan | 2017-01528 | 1-20 | § 103 | 3/2 | Y | F | FWD – Claims 1-20 Unpatentable |

PEN-TYPE INJECTOR FOR INSULIN GLARGINE

Pen-Type Injector-Related IPRs

> Thirteen IPRs filed challenging six patents related to pen-type injector for insulin

| Sanofi Patent | Challenger(s) | IPR No. | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|-----------------------|--------------------------------|-------------------|-----------|-------------------|--|
| 8,603,044 | 1) Mylan 2) Mylan | 1) 2018-01675 2) 2018-01676 | 1) 3/3 2) 3/3 | Y | Pen-type injector | 1) FWD – All Challenged Claims Unpatentable 2) FWD – All Challenged Claims Unpatentable |
| 8,679,069 | 1) Mylan 2) Pfizer | 1) 2018-01670 2) 2019-00979 | 1) 3/3 2) 3/3 | Y | Pen-type injector | 1) FWD – Claim 1 Unpatentable as Obvious 2) FWD – All Challenged Claims Unpatentable |

> Thirteen IPRs filed challenging six patents related to pen-type injector for insulin

| Sanofi Patent | Challenger(s) | IPR No. | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------------|-----------------------------------|-------------------|-----------|-------------------|---|
| 8,992,486 | 1) Mylan | 1) 2018-01677 | 1) 1/NA | 1) NA | Pen-type injector | 1) Petitioner's Unopposed Motion to Dismiss Granted |
| | 2) Mylan, Pfizer | 2) 2018-01678 (2019-00980 joined) | 2) 3/3 | 2) Y | | 2) FWD – All Challenged Claims Unpatentable |
| | 3) Mylan, Pfizer | 3) 2018-01679 (2019-00981 joined) | 3) 3/3 | 3) Y | | 3) FWD – All Challenged Claims Unpatentable |
| | 4) Mylan, Pfizer | 4) 2019-00122 (2019-00982 joined) | 4) 3/3 | 4) Y | | 4) FWD – All Challenged Claims Unpatentable |

> Thirteen IPRs filed challenging six patents related to pen-type injector for insulin

| Sanofi Patent | Challenger(s) | IPR No. | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|--|--|----------------------------|----------------------|-------------------|---|
| 9,526,844 | 1) Mylan, Pfizer 2) Mylan, Pfizer 3) Mylan | 1) 2018-01680 (2019-01022 joined) 2) 2018-01682 (2019-01023 joined) 3) 2018-01696 | 1) 3/3 2) 3/3 3) 1/0 | 1) Y 2) Y 3) N | Pen-type injector | 1) FWD – All Challenged Claims Unpatentable 2) FWD – All Challenged Claims Unpatentable 3) Not Instituted |
| 9,604,008 | Mylan, Pfizer | 2018-01684 (2019-00987 joined) | 3/3 | Y | Pen-type injector | FWD – Claims 1, 7, 8, 17 Unpatentable; Claims 3 and 11 Found Patentable |
| RE47614 | Mylan | 2019-01657 | 2/1 | N | Pen-type injector | FWD – All Challenged Claims Unpatentable |

Representative Claim

11. A housing part for a medication dispensing apparatus, said housing part comprising: a main housing, said main housing extending from a distal end to a proximal end; a dose dial sleeve positioned within said housing, said dose dial sleeve comprising a helical groove configured to engage a threading provided by said main housing, said helical groove provided along an outer surface of said dose dial sleeve; a dose dial grip disposed near a proximal end of said dose dial sleeve; a piston rod provided within said housing, said piston rod is non-rotatable during a dose setting step relative to said main housing; a drive sleeve extending along a portion of said piston rod, said drive sleeve comprising an internal threading near a distal portion of said drive sleeve, said internal threading adapted to engage an external thread of said piston rod; and, a tubular clutch located adjacent a distal end of said dose dial grip, said tubular clutch operatively coupled to said dose dial grip, wherein said dose dial sleeve extends circumferentially around at least a portion of said tubular clutch, and wherein said helical groove of the dose dial sleeve has a first lead and said internal threading of said drive sleeve has a second lead, and wherein said first lead and said second lead are different.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|--------------------|--------------------|-------------------|-----------|-------------------|--|
| Mylan | 2018-01675 | 11, 14, 15, 18, 19 | § 103 | 3/3 | Y | Pen-type injector | FWD – All Challenged Claims Unpatentable |
| Mylan | 2018-01676 | 11, 14, 15, 18, 19 | § 103 | 3/3 | Y | Pen-type injector | FWD – All Challenged Claims Unpatentable |

Representative Claim

1. A housing part for a medication dispensing apparatus, said housing part comprising: a main housing, said main housing extending from a distal end to a proximal end; a dose dial sleeve positioned within said housing, said dose dial sleeve comprising a helical groove configured to engage a threading provided by said main housing, said helical groove provided along an outer surface of said dose dial sleeve; a dose dial grip disposed near a proximal end of said dose dial sleeve; a piston rod provided within said housing, said piston rod is non-rotatable during a dose setting step relative to said main housing; a drive sleeve extending along a portion of said piston rod, said drive sleeve comprising an internal threading near a distal portion of said drive sleeve, said internal threading adapted to engage an external thread of said piston rod; and, a tubular clutch located adjacent a distal end of said dose dial grip, said tubular clutch operatively coupled to said dose dial grip, wherein said dose dial sleeve extends circumferentially around at least a portion of said tubular clutch.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|-------------------|--|
| Mylan | 2018-01670 | 1 | § 103 | 3/3 | Y | Pen-type injector | FWD – Claim 1 Unpatentable as Obvious |
| Pfizer | 2019-00979 | 1-3 | § 103 | 3/3 | Y | Pen-type injector | FWD – All Challenged Claims Unpatentable |

Representative Claim

51. A clutch for use within a pen type drug delivery device, said clutch comprising a tubular body, said tubular body extending from a distal end to a proximal end; and said distal end of said tubular body having a diameter sized such that said distal end of said tubular body may be positioned within a proximal end of a dial member.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|--------------------------------------|-------------------|--------------------|-------------------|-----------|-------------------|--|
| Mylan | 2018-01677 | 51-57 | NA | 1/NA | NA | Pen-type injector | Petitioner's Unopposed Motion to Dismiss Granted |
| Mylan, Pfizer | 2018-01679 (2019-00981 joined) | 51-57 | §§ 102, 103 | 3/3 | Y | Pen-type injector | FWD – All Challenged Claims Unpatentable |

Representative Claim

1. A housing part for a medication dispensing apparatus, said housing part comprising: a main housing, said main housing extending from a distal end to a proximal end; a dose dial sleeve positioned within said housing, said dose dial sleeve comprising a helical groove configured to engage a threading provided by said main housing; a dose knob disposed near a proximal end of said dose dial sleeve; a piston rod provided within said housing, said piston rod is non-rotatable during a dose setting step relative to said main housing; a driver extending along a portion of said piston rod, said driver comprising an internal threading near a distal portion of said driver, said internal threading adapted to engage an external thread of said piston rod; and, a tubular clutch located adjacent a distal end of said dose knob, said tubular clutch operatively coupled to said dose knob, wherein said dose dial sleeve extends circumferentially around at least a portion of said tubular clutch.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|--------------------------------------|--|--------------------|-------------------|-----------|----------------------|---|
| Mylan, Pfizer | 2018-01678 (2019-00980 joined) | 1-6, 12-18, 20, 23, 26-30, 32, 33, 36, and 38- 40 | § 103 | 3/3 | Y | Pen-type injector | FWD – All Challenged Claims Unpatentable |
| Mylan, Pfizer | 2019-00122 (2019-00982 joined) | 1-6, 12-18, 20, 23, 26-30, 32, 33, 36, and 38- 40 | § 103 | 3/3 | Y | Pen-type injector | FWD – All Challenged Claims Unpatentable |

Representative Claim

21. A drug delivery device comprising: a housing comprising a dose dispensing end and a first thread; a dose indicator comprising a second thread that engages with the first thread; a driving member comprising a third thread; a sleeve that is (i) disposed between the dose indicator and the driving member and (ii) releasably connected to the dose indicator; a piston rod comprising either an internal or an external fourth thread that is engaged with the third thread; a piston rod holder that is rotatably fixed relative to the housing and configured to (i) prevent the piston rod from rotating during dose setting and (ii) permit the piston rod to traverse axially towards the distal end during dose dispensing; wherein: the housing is disposed at an outermost position of the drug delivery device; the dose indicator is disposed between the housing and the sleeve and is configured to (i) rotate and traverse axially away from the dose dispensing end during dose setting and (ii) rotate and traverse axially towards the dose dispensing end during dose dispensing; the driving member is configured to rotate relative to the piston rod; the sleeve is rotatably fixed relative to the driving member and configured to traverse axially with the dose indicator; and the piston rod and the driving member are configured to rotate relative to one another during dose dispensing; and the piston rod is configured to traverse axially towards the dose dispensing end during dose dispensing.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|--------------------------------------|-------------------|--------------------|-------------------|-----------|----------------------|---|
| Mylan, Pfizer | 2018-01680 (2019-01022 joined) | 21-30 | §§ 102, 103 | 3/3 | Y | Pen-type injector | FWD – All Challenged Claims Unpatentable |
| Mylan, Pfizer | 2018-01682 (2019-01023 joined) | 21-30 | § 103 | 3/3 | Y | Pen-type injector | FWD – All Challenged Claims Unpatentable |
| Mylan | 2018-01696 | 21-30 | § 103 | 1/0 | N | Pen-type injector | Not Instituted |

Representative Claim

1. A drive mechanism for use in a drug delivery device comprising: a housing comprising a helical thread; a dose dial sleeve having a threaded surface that is engaged with the helical thread of the housing, an insert provided in the housing, where the insert has a threaded circular opening; a drive sleeve releasably connected to the dose dial sleeve and having an internal helical thread; a piston rod having a first thread and a second thread, wherein the first thread is engaged with the threaded circular opening of the insert and the second thread is engaged with the internal helical thread of the drive sleeve; and a clutch located between the dose dial sleeve and the drive sleeve, wherein the clutch is located (i) radially outward of the drive sleeve and (ii) radially inward of the dose dial sleeve.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|--------------------------------------|-----------------------|--------------------|-------------------|-----------|-------------------|---|
| Mylan, Pfizer | 2018-01684 (2019-00987 joined) | 1, 3, 7, 8, 11, 17 | § 103 | 3/3 | Y | Pen-type injector | FWD – Claims 1, 7, 8, 17 Unpatentable; Claims 3 and 11 Found Patentable |

Representative Claim

1. A drug delivery device comprising: a housing with a proximal end and a distal end, a cartridge adapted to accommodate a drug, a cartridge retaining member adapted to retain the cartridge, the cartridge retaining member releasably secured to the housing, and a spring washer arranged within the housing so as to exert a force on the cartridge and to secure the cartridge against movement with respect to the cartridge retaining member, wherein the spring washer has at least two fixing elements configured to axially and rotationally fix the spring washer relative to the housing.

| Challenger(s) | IPR No. | Challenged Claims | Instituted Grounds | # of P/PO Experts | 2-Consid. | Claim Type | Status |
|---------------|------------|-------------------|--------------------|-------------------|-----------|-------------------|--------------------------------|
| Mylan | 2019-01657 | 1-18 | § 103 | 2/1 | N | Pen-type injector | FWD – Claims 1-18 Unpatentable |

THANK YOU

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