6. This Court has personal jurisdiction over Corteva because Corteva commenced and continues to maintain this action against Bayer in this judicial district.

7. Venue is proper because Corteva commenced and continues to maintain this action against Bayer in this judicial district.

COUNT I: DECLARATORY JUDGMENT OF UNENFORCEABILITY OF THE '555 PATENT

8. Bayer restates and incorporates by reference each of the foregoing paragraphs as if fully set forth herein.

9. Counterclaim Defendant has asserted the '555, '283, and '745 patents against Bayer in the instant action.

10. The claims of the '555 patent are unenforceable due to inequitable conduct committed during Counterclaim Defendant's (including its purported predecessor-in-interest's) prosecution of the '555 patent before the U.S. Patent & Trademark Office ("Patent Office").

11. Among other reasons, on information and belief, the named inventor Dr. Terry Wright withheld material test data and information and made material misrepresentations and omissions in connection with the prosecution of the '406 Application. Dr. Wright owed a duty of candor to the Patent Office. Nevertheless, Dr. Wright failed to disclose material data and information during prosecution, including in connection with Dr. Wright's Declaration of April 10, 2019, before the Patent Office ("Wright I"), a true and accurate copy of which is attached hereto as Ex. 1, and his Declaration of September 9, 2020, before the Patent Office ("Wright II"), a true and accurate copy of which is attached hereto as Ex. 2, the latter of which cross-referenced and relied upon Wright I and the data submitted therewith, Ex. 2 at 6 (Wright II ¶¶ 16–17) (citing Wright I App'x III). The declarations not only were submitted in support of arguments asserting patentability and opposing arguments of unpatentability relied upon

by the Patent Office, but were also relied upon by the Examiner in deciding to allow the ’555 patent to issue.

12. For example, at the time of Dr. Wright’s declarations, pending claim 15 of the ’406 Application, which ultimately issued as claim 1 of the ’555 patent, recited as follows:

> 15. A transgenic plant cell comprising a recombinant polynucleotide that encodes an AAD-1 protein that exhibits aryloxyalkanoate dioxygenase activity wherein said activity enzymatically degrades a phenoxy auxin herbicide and an (R)-aryloxyphenoxypropionate herbicide, further wherein said AAD-1 protein comprises:
>
> > i) an amino acid sequence having at least 85% sequence identity with SEQ ID NO: 9; and
> >
> > ii) an AAD-1 motif having the general formula of:
> >
> > $HX_{112}D(X)_{114\text{-}137}T(X)_{139\text{-}269}H(X)_{271\text{-}280}R$, wherein
> >
> > X_{112} represents a single amino acid at position 112, relative to the sequence of SEQ ID NO: 9;
> >
> > $(X)_{114\text{-}137}$ represents a sequence of 24 amino acids;
> >
> > $(X)_{139\text{-}269}$ represents a sequence of 131 amino acids; and
> >
> > $(X)_{271\text{-}280}$ represents a sequence of 10 amino acids.

Ex. 1 at 9 (Wright I App’x I); Ex. 2 at 9 (Wright II App’x I). That claim was rejected by the Examiner on multiple occasions, including for failure to satisfy the written description requirement of 35 U.S.C. § 112.

13. As discussed in greater detail below, on information and belief, during the prosecution of the ’406 Application, [redacted]

[redacted]—and thus failed to support, were inconsistent with, and contradicted the position taken during prosecution—that the amino acid sequences within the scope of claim 15, and in particular amino acid sequences with 85% sequence identity to SEQ ID NO: 9, had the required dual mechanism of action, Ex. 1 at 9 (Wright I App'x I); Ex. 2 at 9 (Wright II App'x I), *i.e.*, that such amino acid sequences exhibited "aryloxyalkanoate dioxygenase activity wherein said activity enzymatically degrades a phenoxy auxin herbicide and an (R)-aryloxyphenoxypropionate herbicide." Likewise, [redacted]—and thus failed to support, were inconsistent with, and contradicted the position taken during prosecution—that the "AAD-1 motif" recited in claim 15 was important to and necessary for such activity, Ex. 1 at 6–7 (Wright I ¶¶ 15–16). [redacted]

14. These misrepresentations and omissions were material as a matter of law, under the standard set forth in *Therasense, Inc. v. Becton, Dickinson & Co.*, 649 F.3d 1276 (Fed. Cir. 2011), as Dr. Wright's misrepresentations in and omissions from his declarations and his suppression of unfavorable test data were acts of egregious misconduct and violated his duty of candor.

15. The misrepresentations and omissions were also material because the Patent Office relied on Dr. Wright's declarations and the data contained therein in deciding to allow the claims of the '555 patent to issue.

16. On information and belief, Dr. Wright intended to mislead the Patent Office into granting Corteva a patent that Dr. Wright believed would cover forthcoming Monsanto (now Bayer) products, and thus interfere with Monsanto's efforts to bring such products to market.

I. MISREPRESENTATIONS AND OMISSIONS TO THE PATENT OFFICE DURING PROSECUTION OF THE '555 PATENT

A. The Examiner's Written Description Rejection

1. The '555 Patent

17. The '555 patent, a true and accurate copy of which is attached hereto as Ex. 3, issued from the '406 Application. Ex. 3 at 1. The '406 Application was filed on October 7, 2016, and claims priority, through a chain of applications, to Patent Cooperation Treaty Appl. No. PCT/US2005/014737 ("the PCT '737 application"), filed on May 2, 2005, and to Provisional Appl. No. 60/567,052, filed on April 30, 2004. *Id.* World Intellectual Property Organization International Publ. No. WO 2005/107437 A2 ("the '437 publication") is the publication of the PCT '737 application. A true and accurate copy of the '437 publication is attached hereto as Ex. 4.

18. The '555 patent relates to transgenic plant cells and plants comprising genes that encode the claimed "AAD-1 protein[s]." Ex. 3 at 165:1–167:17. Independent claim 1 recites:

> 1. A transgenic plant cell comprising a recombinant polynucleotide that encodes an AAD-1 protein that exhibits aryloxyalkanoate dioxygenase activity wherein said activity enzymatically degrades a phenoxy auxin herbicide and an (R)-aryloxyphenoxypropionate herbicide, further wherein said AAD-1 protein comprises:
>
> > i) an amino acid sequence having at least 85% sequence identity with SEQ ID NO: 9; and
> >
> > ii) an AAD-1 motif having the general formula of:
> >
> > $HX_{112}D(X)_{114\text{-}137}T(X)_{139\text{-}269}H(X)_{271\text{-}280}R$, wherein
> >
> > X_{112} represents a single amino acid at position 112, relative to the sequence of SEQ ID NO: 9;

$(X)_{114\text{-}137}$ represents a sequence of 24 amino acids;

$(X)_{139\text{-}269}$ represents a sequence of 131 amino acids; and

$(X)_{271\text{-}280}$ represents a sequence of 10 amino acids.

19. The specification of the ’555 patent discloses that SEQ ID NO: 9 is the prior-art amino acid sequence of the wildtype RdpA protein that is encoded by the naturally occurring *Sphingobium herbicidovorans* RdpA gene. *Id*. at 6:56–58; 19:18–20; 19:38–41; 44:37–47. The specification designates this known wildtype RdpA sequence as “AAD-1 (v1*).” Id*. at 6:56–58.

20. The specification discloses two other amino acid sequences, SEQ ID NO: 10 (“AAD-1 (v2)”) and SEQ ID NO: 11 (“AAD-1 (v3)”), that the Applicant asserted during prosecution of the ’406 Application were examples of the claimed AAD-1 protein. *Id*. at 6:59–63. It was stated during prosecution that those sequences have percentage identity to SEQ ID NO: 9 of 98.8% and 99.7%, respectively. *See* Ex. 5 at COR-AAD1-00000272. Neither SEQ ID NO: 10 nor SEQ ID NO: 11 comes close to providing 85% identity to SEQ ID NO: 9.

21. Prior to the ’406 Application, the Applicant had not sought to obtain a claim with as low as 85% sequence identity to SEQ ID NO: 9. Instead, the Applicant had sought narrower claims. For example, as of its filing on May 2, 2005, claim 1 of the PCT ’737 application, the earliest non-provisional application in the ’555 patent’s priority chain, specified, among other things, that the claimed “AAD-1 protein” must comprise an amino acid sequence “of SEQ ID NO: 9” or have “at least 95% sequence identity with SEQ ID NO:9.” Ex. 4 at 159.

2. The November 13, 2018 Rejection and the March 19, 2019 Examiner Interview

22. In a November 13, 2018 Office Action, the Examiner rejected all pending claims of the ’406 Application for, *inter alia*, lack of written description support. A true and accurate copy of the November 13, 2018 Office Action is attached hereto as Exhibit 5.

23. Applying the written description requirement of 35 U.S.C. § 112, the Examiner determined that the ’406 Application specification failed to convey to a person of ordinary skill in the art (“POSA”) that the Applicant was in possession of the claimed AAD-1 proteins as of the October 7, 2016 filing of the ’406 Application. Ex. 5 at 6–7.

24. Specifically, the Examiner reasoned that “Applicant does not describe the claimed genus of AAD-1 proteins or the AAD-01 motif.” *Id.* at 7. The Examiner noted that the ’406 Application specification merely describes the broader αKG motif. *Id.*

25. On March 19, 2019, the Examiner had a telephonic interview with Dr. Wright, John Breen (the outside attorney from Barnes & Thornburg LLP handling the prosecution of the ’406 Application), and Phil Poirier (an in-house attorney for the Applicant). Ex. 6 at 1. A true and accurate copy of the Examiner’s record of the March 19, 2019 interview is attached hereto as Ex. 6. The Section 112 rejection was discussed. *Id.* at 1. In summarizing the interview, the Examiner noted the parties discussed the “required amino acids in the AAD-1 motif” and whether they “demonstrat[e] that these amino acids are critical for maintaining the claimed function (see claim 15, lines 3 and 4)”—*i.e.*, that the AAD-1 protein “enzymatically degrades a phenoxy auxin herbicide and an (R)-aryloxyphenoxypropionate herbicide” and thus exhibits a dual mechanism of action. *Id.* The requirement for the “at least 85% sequence identity” was also discussed, but the Examiner noted, “No agreement was reached concerning the ‘at least 85% sequence identity’ limitation in claim 15.” *Id.*

26. The Examiner's rejection and the Interview Summary reflect that two issues that were important to overcoming the Examiner's written description rejection were establishing the relationship between the claimed AAD-1 motif and the claimed activity, as well as providing support for a limitation with as low as 85% sequence identity to SEQ ID NO: 9. On information and belief, at least in light of his participation in the Examiner interview, Dr. Wright was aware that these showings were needed to obtain allowance of the pending claims.

B. Wright I

27. On April 12, 2019, the Applicant submitted remarks and arguments for patentability that relied heavily on Wright I. Ex. 7 at 8–12. A true and accurate copy of the Applicant's April 12, 2019 remarks are attached hereto as Ex. 7

28. In Wright I, Dr. Wright noted his understanding that claims 15–48 of the '406 Application had been rejected "as allegedly not supported by, or not disclosed in, the specification of the '406 Application." Ex. 1 at 2 (Wright I ¶ 3). Dr. Wright therefore sought to demonstrate the importance of the AAD-1 residue to the recited dual mechanism of action ("MOA") herbicide activity. *Id.* at 6-7 (Wright I ¶¶ 14-16).

29. In support of Wright I, Dr. Wright provided data for, nine "variants" of SEQ ID NO. 9. Three of those sequences—identified as Seq01, Seq02, and Seq03—were "94-95% identical" to SEQ ID NO. 9 and had "the AAD-1 motif intact." *Id.* at 6–7 (Wright I ¶¶ 14, 16). The remaining six sequences—identified as Seq04-Seq09—were the same as Seq01 except that each included an additional amino acid modification, included to try "to show that the defined amino acids in the AAD-1 motif are real and important." *Id.* at 6 (Wright I ¶ 14).

Seq01-Seq03 are 94-95% identical to AAD-1v1 and have the AAD-1 motif intact.

Seq04 to Seq09 begin with Seq01 sequence and individually change one amino acid of the defined AAD-1 motif as follows:

Seq04 $H_{111}F$
Seq05 $D_{113}K$
Seq06 $T_{138}A$
Seq07 $H_{270}F$
Seq08 $R_{281}A$
Seq09 $R_{285}A$

Ex. 1 at 16 (Wright I App'x III).

30. Dr. Wright submitted new experimental data in Appendix III regarding the relative enzymatic activity of the nine AAD-1 variant sequences. Ex. 1 at 18 (Wright I App'x III).

31. Appendix III of Wright I contained bar graphs of the "Relative Enzyme Activity" of these nine AAD-1 variant sequences against two herbicides, 2,4-D and R-quizalofop, expressed relative to a baseline of the activity levels of the wildtype RdpA sequence. *Id.* (Wright I App'x III). In relation to the activity required by then-pending claim 15 of the '406 Application, 2,4-D is a "a phenoxy auxin herbicide," and R-quizalofop is "an (R)-aryloxyphenoxypropionate herbicide." *Id*. at 4–5, 9 (Wright I ¶¶ 8, 12, and App'x I (claim 15)).

AAD-1 Variants Verifying Motif Validity

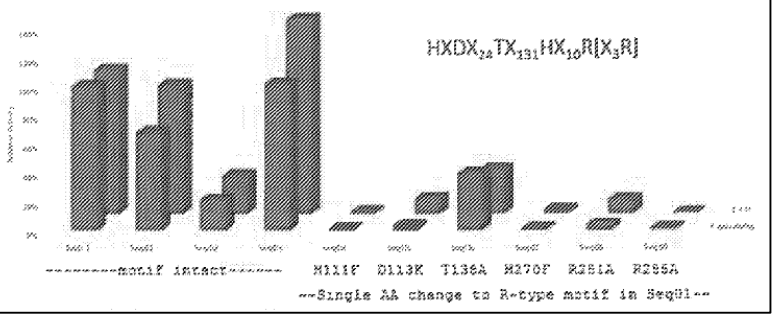
$HX\{D/E\}X_{23-26}\{T/S\}X_{114-133}HX_{10-13}R$ [PCT 0085] = Group II a-KG (include TauD, TfdA, RdpA, et al)

AAD-1 proteins have novel property of being able to degrade 2,4-D, other phenoxy auxin herbicides, and (R)-AOPP herbicides [0086-0090]. This narrows to specific spacing of key residues $HXDX_{24}TX_{131}HX_{10}R[X_3R]$

Seq01 – Seq03 = 94-95% Identity (15-18 aa changes) to AAD-1 (SEQ ID NO. 9, motif intact)

Remaining Seq's single aa change to motif residues

H111F Seq04
D113K Seq05
T138A Seq06
H270F Seq07
R281A Seq08
R285A Seq09



32. Dr. Wright stated that these data mean that Seq01 and Seq03, two of the three tested sequences with an "intact" AAD-1 motif, "showed on average similar activity" against

2,4-D and (R)-quizalofop as the wildtype RdpA sequence. *Id*. at 6–7 (Wright I ¶ 15). For the six sequences in which an AAD-1 motif residue had been modified (Seq04–Seq09), Dr. Wright reported that four of the six sequences suffered "90-100% reduced activity" relative to the wildtype RdpA sequence. *Id.*

33. Dr. Wright further stated that this relative activity data "shows both the importance and necessity of each of the defined residues in the AAD-1 motif . . . for dual MOA activity." *Id.*

34. In the April 12, 2019 remarks to the Examiner, Attorney Breen repeatedly relied on Wright I, including the experimental data disclosed therein regarding the relative enzymatic activity of AAD-1 variants with an "intact" versus modified AAD-1 motif, to oppose the Examiner's written description rejection, including by arguing that the data from Wright I confirm the relationship between the claimed AAD-1 motif, with its five defined residues and four spacers (and, with respect to the version of the AAD-1 motif in issued claim 2, six defined residues and five spacers), and the claimed "dual MOA" functional activity, and support the requirement for at least 85% sequence identity. Ex. 7 at 8–10.

35. While Seq01–Seq03 were stated to have "~94-95%" sequence identity to" SEQ ID NO: 9 (also referred to as AAD-v1), Ex. 1 at 6 (Wright I ¶14), information produced by Corteva in this action reflects that sequences with as little as 85% identity to SEQ ID NO: 9 were also prepared and analyzed and that, on information and belief, Dr. Wright was aware of such sequences and analysis. However, neither the existence of those sequences nor any data for those sequences was disclosed to the Examiner.

36. A document dated January 2019—*i.e.*, prior to the submission of Wright I to the Examiner—and produced by Corteva in this action from the files of Dr. Wright, a true and accurate copy of which is attached hereto as Ex. 8, discloses as follows:

[redacted]

Ex. 8 at COR-AAD1-00369040.

37. According to the above excerpt from Ex. 8, [redacted]

[redacted]

38. According to the above excerpt from Ex. 8, [redacted]

39. To be consistent with Dr. Wright's statement in Wright I that the AAD-1 motif was responsible for the dual MOA enzymatic activity, [redacted]

40. [redacted]

[redacted]

[redacted] *See* Ex. 1 at 9 (Wright I App'x I).

41. On information and belief, Wright I reflects that Dr. Wright was aware that pending claim 15 required as little as 85% sequence identity to SEQ ID NO: 9. Ex. 1 at 9 (Wright I App'x I). Dr. Wright also participated in the examiner interview where "[n]o agreement was reached concerning the 'at least 85% sequence identity' limitation in claim 15." Ex. 6 at 2. [redacted] Such information was material to patentability, including in light of the prosecution record discussed above. On information and belief, Dr. Wright's withholding of such information was intentional in order to deceive the Examiner and obtain allowance of the pending claims.

42. [redacted] Dr. Wright declared, "A number of AAD-1 variants were enabled at the time of the invention. Broader examples demonstrating significant variation in the protein structure can be accommodated so long as the defined AAD-1 motif is intact, maintaining the desired dual MOA herbicide tolerance to 2,4-D and (R)-AOPP herbicides." Ex. 1 at 7 (Wright I ¶16). [redacted] which reflects that his statement concerning "[b]roader examples" was a misstatement in light of the information in his possession.

43. On information and belief, by the time Wright I was submitted, [redacted]

[redacted] *See* Ex. 9 at COR-AAD1-00385700; Ex. 11 at COR-AAD1-00385703. [redacted]

44. In the ’422 publication, Monsanto disclosed multiple sequences with numerous amino acid modifications as compared to SEQ ID NO: 9 (wild-type RdpA, identified as SEQ ID NO: 60 in the ’422 publication) as well as dual MOA activity. Ex. 11 at COR-AAD1-00385710–5714 (Figs. 3, 6A–6E), -5716–5717. The ’422 publication disclosed extensive activity testing and observed, *inter alia*, that “[t]hese data from these assays yielded the surprising result that combinations of specific mutations performed significantly better than others and demonstrated that the enzymatic activity of the engineered proteins could be altered significantly.” *Id.* at COR-AAD1-00385721 ([0071]); *see also id.* at COR-AAD1-00385722 (Tbl. 1).

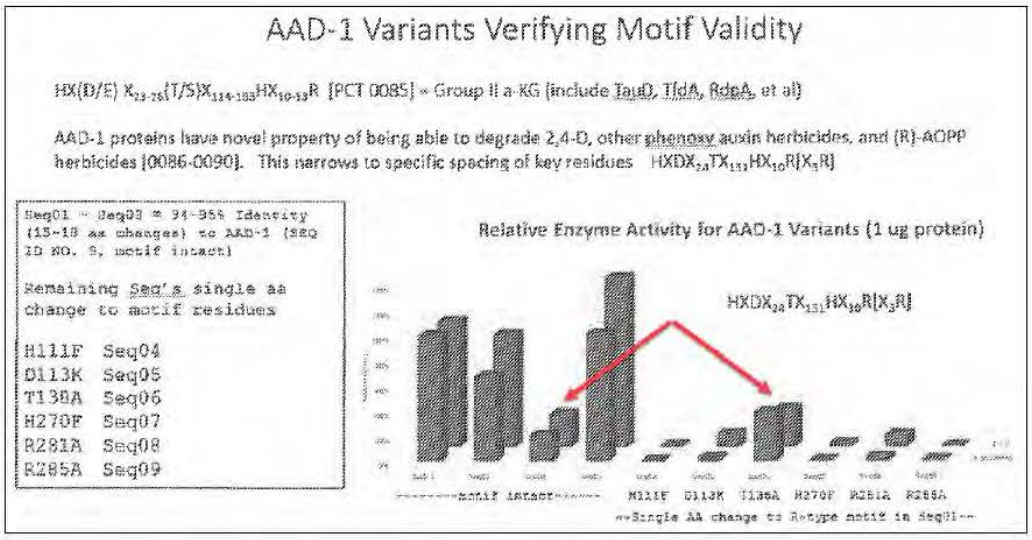
45. The Monsanto ’422 publication disclosed active sequences that had less than “at least 95% sequence identity” to SEQ ID NO: 9 or the two nearly identical variants of SEQ ID NO: 9. Those sequences therefore fell outside of the claims of the issued patents within the ’406 Application patent family, specifically U.S. Patent Nos. 7,838,733, 9,127,289, and 10,174,337. Ex. 12 at 161:51–166:17; Ex. 13 at 161:53–164:26; Ex. 14 at 161:49–163:17. True and accurate copies of those patents are attached hereto as Exs. 12–14, respectively.

46. On information and belief, Dr. Wright was motivated to withhold information from, and make material misstatements to, the Examiner in order to try to obtain claims to cover work by Monsanto as reflected in the ’422 publication. [redacted]

[redacted]

Ex. 9 at COR-AAD1-00385700 (annotation added).

47. In Wright I, Dr. Wright stated that "Seq01 and Seq03, which preserved the [AAD-1] motif, showed on average similar activity to 2,4-D and (R)-quizalofop [an (R)-AOPP herbicide)] substrates as AAD-1 (RdpA)." Ex. 1 at 6–7 (Wright I ¶15) (second alteration in original). Seq02, however, produced activity results that were lower than Seq06, one of the sequences which did not have the AAD-1 motif "intact" (and accordingly, would not fall within the pending claims). *Id.* at 18 (Wright I App'x III).



Id. (annotations added). These results were inconsistent with and undermined the attempt by Dr. Wright in his declaration to "demonstrate the importance of the[] defined residues in the AAD-1 motif." *Id.* at 6 (Wright I ¶ 14).

48. In an apparent attempt to explain away in Wright I the lower activity data for Seq02 as compared to Seq06, Dr. Wright stated that "the reported values" for Seq02 were "likely less than expected." Ex. 1 at 7 (Wright I ¶15). He declared that "[t]he quantity of enzyme in these samples is likely underestimated," because "[r]ecovery of enzymes Seq02 and Seq05 was low due to a large proportion of expressed protein insolubility." *Id.* Dr. Wright's reliance on "insolubility" issues to explain the lower activity data for Seq02 in his declaration [redacted] Ex. 8.

49. [redacted]

C. Wright II

50. On information and belief, following the experiments disclosed in Wright I, and in particular the low enzymatic activity exhibited by Seq02, [redacted]

51. [redacted]

52. [redacted]

[redacted]

Id. [redacted] *Id.*

53. [redacted]

Id. (annotation added).

54. On July 12, 2019, the Examiner renewed his written description rejection of the pending claims. A true and accurate copy of the July 12, 2019 Office Action is attached hereto as Ex. 16. The Examiner again faulted the priority specification for failing to disclose the claimed AAD-1 motif. Ex. 16 at 6. The Examiner specifically indicated his consideration and rejection of the arguments set forth in Wright I. *Id.* at 7. Among other things, the Examiner stated that the PCT '737 application's specification "does not describe what structure in the AAD-1 motif provides the specific activity" of dual MOA. *Id.* at 9. Moreover, the Examiner reasoned that even fixing constant the five defined residues of the AAD-1 motif, there was "substantial variation within the genus" of AAD-1 proteins, and under controlling written description case law, "one must describe a sufficient variety of species to reflect the variation within the genus." *Id.* at 9–10.

55. On January 6, 2020, the Applicant submitted remarks and an expert declaration by Dr. Satish Nair, a non-inventor, in an effort to overcome the renewed rejection. This effort proved unsuccessful when, on March 10, 2020, the Examiner yet again rejected the pending claims for lack of written description support for the same reasons as stated in the prior rejections. A true and accurate copy of the March 10, 2020 Office Action is attached hereto as Ex. 17. The Examiner reiterated that even though Applicant disclosed SEQ ID NOS. 9–11 in the specification, "Applicant has only described a very limited 'corner' of the claimed genus." Ex. 17 at 9.

56. On August 26, 2020, Applicant initiated another telephonic interview with the Examiner, which again discussed the pending Section 112 rejection. A true and accurate copy of the Examiner's record of the August 26, 2020 interview is attached hereto as Ex. 18. Dr. Wright was again a participant, along with Attorney Breen and Attorney Poirier. Ex. 18 at 2.

57. According to the Examiner's Interview Summary, the Applicant "presented the attached exhibit demonstrating that the ADD1 [sic] enzyme could be modified down to 82% identical to instant SEQ ID NO: 9 and retain dioxygenase activity in the presence of both 2,4-D and R-quizalofop." *Id.* The Interview Summary further noted that "[t]he inventor," *i.e.*, Dr. Wright, "expressed that the illustrated variants have multiple modifications *throughout the polypeptide sequence* (but not the specific amino acids in the recited AAD-1 motif) and that the variants maintained the recited [dual MOA] activity in instant claim 15 (for example)" nevertheless. *Id.* (emphasis added).

58. The import of Dr. Wright's statement was that the preservation of the AAD-1 motif in the variants provided the desired dual MOA activity, despite "multiple modifications

throughout" the remainder of the full-length sequence which could reduce sequence homology to SEQ ID NO: 9, the wildtype RdpA enzyme, "down to 82%."

59. On September 9, 2020, Dr. Wright submitted Wright II to the Examiner, which contained as Appendix IV a similar version of the exhibit provided at the Examiner interview. In Wright II, Dr. Wright described "further confirmatory assays" comparing the activity of additional designed variants, denominated Var 1 through Var 8, to the activity of SEQ ID NO: 9, the wildtype RdpA protein. Ex. 2 at 6 (Wright II ¶ 17). Here Dr. Wright repeated his prior statement to the Patent Office that because the AAD-1 motif had been preserved for all of these variants, even the "two variants at 82% amino acid identity to SEQ ID NO: 9" possessed dual MOA activity. *Id.* at 6–7 (Wright II ¶¶ 17–20). Dr. Wright represented that this data was further confirmation of the validity of the "at least 85%" sequence identity limitation of the claims sought in the '406 Application. *See id.* at 7 (Wright II ¶ 20).

60. In Wright II, Dr. Wright stated:

> 17. To further confirm our previous demonstration, I designed further confirmatory assays to verify that the exemplified AAD-1 variants can tolerate a wide range of amino acid substitutions while retaining both their dual MOA (e.g., R-quizalofop and 2,4-D degrading activity) and the claimed AAD-1 motif. Six variants with around 88-90% amino acid identity to AAD-1 (SEQ ID NO: 9) and two variants at 82% amino acid identity to SEQ ID NO: 9 were evaluated.

Ex. 2 at 6 (Wright II ¶ 17). That was a misstatement and an omission, [redacted]

61. In his remarks to the Examiner, a true and accurate copy of which is attached hereto as Ex. 19, Attorney Breen repeatedly relied on Wright II—and, once again, on Wright I—to oppose the written description rejection by the Examiner. Ex. 19 at 12–14.

62. In connection with Wright II, Dr. Wright once again made material misstatements and omissions. Appendix IV of Wright II contains data for eight variants of AAD1 (Var1–Var8) and compares them to AAD1 (SEQ ID NO: 9) and a different sequence not discussed in the ’555 patent, “AAD12.” Ex. 2 at 16 (Wright II App’x IV).

63. Unlike Wright I, Wright II does not disclose the amino acid sequences for the tested AAD1 variants, Var1–Var8.

64. [redacted]

65. [redacted] Ex. 20 at COR-AAD1-00585404–5405. AAD-1 and AAD-12 were the comparators for Var1–Var8 in Wright II. Ex. 12 at 16 (Wright II App’x IV). [redacted] Ex. 20 at COR-AAD1-00585404–5405.

66. [redacted]

67. [redacted]

68. In addition, failing to disclose the identity of the amino acid sequences for Var1–Var8 was a material omission, because those sequences are inconsistent with and contradict representations that were made to the Examiner in seeking to obtain allowance of the pending claims.

69. In Wright II, Dr. Wright stated in paragraph 18 that, in designing the tested sequences, "[a]mino acid changes were made *throughout* the protein sequence." Ex. 2 at 6 (Wright II, ¶ 18) (emphasis added). Similarly, in the Examiner Interview Summary of the August 26, 2020 interview, the Examiner recorded that the "Inventor expressed that the illustrated variants have multiple modifications throughout the polypeptide sequence (but not in the specific amino acids in the recited AAD-1 motif) and that the variants maintained the recited activity in instant claim 15 (for example)." Ex. 18 at 2. Those arguments appeared to have been presented in response to statements in the Examiner's rejections, which were critical of whether the sequences provided by the Applicant were sufficiently representative of the broad scope of amino acid sequences in the pending claims. Ex. 16 at 9–10; Ex. 17 at 8–9.

70. However, Dr. Wright's statement that "[a]mino acid changes were made *throughout* the protein sequence" was a mischaracterization of the design of Var 1–Var 8. [redacted] *See* Ex. 20 at COR-AAD-1-00585404–5405. [redacted]

[redacted]

71. A few months after Wright II, the Examiner issued an Office Action on December 8, 2020, withdrawing the prior Section 112 rejection of the pending claims. A true and accurate copy of the December 8, 2020 Office Action is attached hereto as Ex. 21. The Examiner cited "Applicant's response"—which relied on both Wright I and Wright II—and the evidence made of record attached to the Applicant Initiated Interview Summary mailed 31 August 2020"—which was also contained in Wright II—as the impetus for his decision. Ex. 21 at 2.

72. In the December 8, 2020 Office Action, the Examiner noted that the evidence of record "demonstrated that variants of instant SEQ ID NO: 9 produced by truncations of both the N and C termini that retain the claimed function and that would describe the variation within the claimed genus." Ex. 21 at 2. However, in a communication from Attorney Breen dated December 16, 2020, a true and accurate copy of which is attached hereto as Ex. 24, he wrote in regard to the Office Action, "As a minor clarification, and as the Examiner correctly noted in the Interview Summary, *the referenced variants contained amino acid modification throughout their sequences* (but outside of the recited AAD-1 motif)—not truncation of the C- and N- termini, as the final Office action states." Ex. 24 at 8. In support of that statement, Attorney Breen cited the August 31, 2020 Interview Summary, and also cited back to paragraph 18 of Wright II. *Id.*

II. MATERIALITY

73. Bayer restates and incorporates by reference each of the foregoing paragraphs as if fully set forth herein.

74. The misrepresentations in and omissions in connection with the prosecution of the '555 patent, and in particular in connection with Dr. Wright's declarations described above,

were material as a matter of law because they were "affirmative acts of egregious misconduct." *Therasense*, 649 F.3d at 1292. The misstatements in and omissions from Dr. Wright's declarations are themselves material *per se*. *Id.* at 1292–93.

75. In addition, [redacted], as well as [redacted] Var1–Var8, were material because they were inconsistent with and contradicted the purported proof submitted to the Patent Office of the inventors' possession and adequate description of the claimed AAD-1 genus and AAD-1 motifs as of the 2004 filing of the priority application. *See, e.g.*, *Cargill, Inc. v. Canbra Foods, Ltd*., 476 F.3d 1359, 1362–63, 1365–66 (Fed. Cir. 2007) (affirming inequitable conduct finding based on patentee's failure to disclose test data regarding stability of oil product at issue, which was inconsistent with data presented in the specification and during prosecution).

76. In addition, as described above, the Examiner issued multiple rejections during the prosecution of the '555 patent on the basis that the priority applications did not provide written description support for the claimed genus of AAD-1 proteins, as defined by an AAD-1 motif, at least 85% sequence identity, and the functional dual MOA limitation. As described above, Dr. Wright's misrepresentations and omissions suppressed information and data that were inconsistent with and contradicted Dr. Wright's statements that the claimed amino acid sequences exhibited dual MOA herbicide degradation activity as required by the claims, and that the AAD-1 motif provided for such dual MOA herbicide degradation activity. On information and belief, Dr. Wright was aware that the information withheld from the Examiner as a result of his misrepresentations and omissions was inconsistent with and contradicted those statements

77. In addition, the aforementioned misrepresentations and omissions were material because, but for those actions and omissions, the '555 patent would not have issued.

III. SPECIFIC INTENT TO DECEIVE

78. Bayer restates and incorporates by reference each of the foregoing paragraphs as if fully set forth herein.

79. On information and belief, Dr. Wright acted with specific intent to deceive the Patent Office during prosecution of the '406 Application. The single most reasonable inference from the facts described above is that Dr. Wright specifically intended to deceive the Patent Office.

80. In addition, Dr. Wright's submission to the Patent Office of deceptive and misleading declarations raises a strong inference of specific intent to deceive under the Federal Circuit's line of precedent originating from *Paragon Podiatry Lab'y, Inc. v. KLM Lab'ys, Inc.*, 984 F.2d 1182, 1191–92 (Fed. Cir. 1993), and continuing through post-*Therasense* cases. "The inference arises not simply from the materiality of the affidavits, but from the affirmative acts of submitting them, their misleading character, and the inability of the examiner to investigate the facts." *Paragon Podiatry*, 984 F.2d at 1191–92 (affirming summary judgment of inequitable conduct and subsidiary finding of specific intent based on submission of deceptive affidavits from purportedly disinterested witnesses to overcome examiner's obviousness rejection); *accord eSpeed, Inc. v. BrokerTec USA, L.L.C.*, 480 F.3d 1129, 1138 (Fed. Cir. 2007). The Federal Circuit has found intent to deceive or withhold based on misstatements similar to those that pervaded Dr. Wright's declarations to the Patent Office here. *See GS Cleantech Corp. v. Adkins Energy LLC*, 951 F.3d 1310, 1330–31 (Fed. Cir. 2020) (affirming inequitable conduct ruling where inventor submitted declaration falsely misstating date of commercial offer which would have triggered on-sale bar, and the inventor repeated that false implication in their second declaration by failing to expressly retract it); *Apotex Inc. v. UCB, Inc.*, 763 F.3d 1354, 1357–58, 1361–62 (Fed. Cir. 2014) (affirming inequitable conduct finding where specification mischaracterized nature of

reactions of components of prior-art drug and inventor bolstered this by procuring for submission to PTO an expert declaration further distinguishing that prior-art drug from the claimed drug).

81. In addition, on information and belief, Dr. Wright was motivated to deceive the Patent Office into issuing the ’555 patent, as discussed *supra* ¶¶ 43–46.

COUNT II: DECLARATORY JUDGMENT OF INFECTIOUS UNENFORCEABILITY OF THE ’283 PATENT

82. Bayer restates and incorporates by reference each of the foregoing paragraphs as if fully set forth herein.

83. The ’283 patent issued from a child application of the ’406 Application. A true and accurate copy of the ’283 patent is attached hereto as Ex. 22. The ’283 patent issued from U.S. Appl. No. 17/175,966, which was filed on February 15, 2021, as a continuation of the application that issued as the ’555 patent. The ’283 patent also claims priority through the same chain of applications as the ’555 patent to Patent Cooperation Treaty Appl. No. PCT/US2005/014737, filed May 2, 2005, and to U.S. Provisional Appl. No. 60/567,052, filed April 30, 2004.

84. The claims of the ’283 patent generally relate to transgenic maize plant cells or plants comprising genes that encode the same “AAD-1 protein” claimed and described in the ’555 patent. Like claim 1 of the ’555 patent, claim 1 of the ’283 patent requires “activity [that] enzymatically degrades a phenoxy auxin herbicide and an (R)-aryloxyphenoxypropionate herbicide,” the same “AAD-1 motif” and the “at least 85%” sequence identity limitations, except limited to transgenic maize plant parts. Ex. 22 at 167:2–25.

85. The Examiner of the ’283 patent was also the Examiner of the ’555 patent. Ex. 22 at 1; Ex. 3 at 1.

86. The Federal Circuit's doctrine of infectious enforceability permits a finding of inequitable conduct for a patent to apply to related patents, provided that the applicant engaged in inequitable conduct with respect to the prosecution of an earlier related application in the chain leading to the challenged patent and that this earlier inequitable conduct bears a direct relation to the claims at issue in the later patents. *Consol. Aluminum Corp. v. Foseco Int'l Ltd.*, 910 F.2d 804, 812 (Fed. Cir. 1990); *see also, e.g., IOENGINE, LLC. v. PayPal Holdings, Inc.*, 2019 WL 2121395, at *4–5 (D. Del. May 15, 2019); *Collaboration Props., Inc. v. Tandberg ASA*, 2007 WL 205065, at *3 (N.D. Cal. Jan. 25, 2007).

87. The misconduct committed during the prosecution of the '406 Application occurred during a prosecution that led to the '283 patent and bears a direct relation to the issued claims of those later patents. As discussed *supra* in Count I, Dr. Wright committed inequitable conduct during the prosecution of the '555 patent, which issued from an ancestor application to the application underlying the '283 patent and was reviewed by the same Examiner for the '283 patent. Such inequitable conduct related directly to the limitations directed to "activity [that] enzymatically degrades a phenoxy auxin herbicide and an (R)-aryloxyphenoxypropionate herbicide," the AAD-1 motif, and the "at least 85%" sequence identity present in issued claim 1 of the '283 patent.

88. Under the doctrine of infectious unenforceability, the claims of the '283 patent are unenforceable due to the inequitable conduct committed during the prosecution of the '555 patent before the Patent Office.

COUNT III: DECLARATORY JUDGMENT OF INFECTIOUS UNENFORCEABILITY OF THE '745 PATENT

89. Bayer restates and incorporates by reference each of the foregoing paragraphs as if fully set forth herein.

90. The ’745 patent is related to the ’555 patent. The ’745 patent issued from U.S. Appl. No. 17/403,476, which was filed on August 16, 2021, as a continuation of the application that issued as the ’283 patent. A true and accurate copy of the ’745 patent is attached hereto as Ex. 23. The ’745 patent also claims priority through the same chain of applications as the ’283 patent to Patent Cooperation Treaty Appl. No. PCT/US2005/014737, filed May 2, 2005, and to U.S. Provisional Appl. No. 60/567,052, filed April 30, 2004.

91. The claims of the ’745 patent generally relate to transgenic soybean plant cells or plants comprising genes that encode the same “AAD-1 protein” claimed and described in the ’555 patent. Like claim 1 of the ’555 patent, claim 1 of the ’745 patent requires “activity [that] enzymatically degrades a phenoxy auxin herbicide and an (R)-aryloxyphenoxypropionate herbicide,” the same “AAD-1 motif” and the “at least 85%,” except limited to transgenic soybean plant parts. Ex. 23 at 167:9–33.

92. The Examiner of the ’745 patent was also the Examiner of the ’555 patent. Ex. 23 at 1; Ex. 3 at 1.

93. The Federal Circuit’s doctrine of infectious enforceability permits a finding of inequitable conduct for a patent to apply to related patents, provided that the applicant “engaged in inequitable conduct with respect to the prosecution of an earlier related application in the chain leading to the challenged patent” and that this earlier inequitable conduct bears “a direct relation” to the claims at issue in the later patents. *Consol. Aluminum Corp. v. Foseco Int’l Ltd.*, 910 F.2d 804, 812 (Fed. Cir. 1990); *see also, e.g., IOENGINE, LLC. v. PayPal Holdings, Inc.*, 2019 WL 2121395, at *4–5 (D. Del. May 15, 2019); *Collaboration Props., Inc. v. Tandberg ASA*, 2007 WL 205065, at *3 (N.D. Cal. Jan. 25, 2007).

94. The misconduct committed during the prosecution of the ’406 Application occurred during a prosecution that led to the ’745 patent and bears a direct relation to the issued claims of those later patents. As discussed *supra* in Count I, Dr. Wright committed pervasive inequitable conduct during the prosecution of the ’555 patent, which issued from an ancestor application to the application underlying the ’745 patent and was reviewed by the same Examiner for the ’745 patent. Such inequitable conduct related directly to the limitations directed to “activity [that] enzymatically degrades a phenoxy auxin herbicide and an (R)-aryloxyphenoxypropionate herbicide,” the AAD-1 motif, and the “at least 85%” sequence identity present in issued claim 1 of the ’745 patent.

95. Under the doctrine of infectious unenforceability, the claims of the ’745 patent are unenforceable due to the inequitable conduct committed during the prosecution of the ’555 patent before the Patent Office.

* * *

WHEREFORE, Defendants Monsanto Company and Bayer CropScience LP respectfully request the following relief:

a. A judgment dismissing with prejudice Corteva’s Complaint and each Request for Relief therein;

b. A declaration that the claims of the ’555, ’283, and ’745 patents are unenforceable against Bayer due to inequitable conduct before the Patent Office;

c. A declaration that this is an exceptional case and an award of Defendants’ attorneys’ fees pursuant to 35 U.S.C. § 285;

d. An award to Defendants of their costs and expenses in this action; and

e. Such further and additional relief as this Court deems just and proper.

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August 4, 2023

CERTIFICATE OF SERVICE

I hereby certify that on August 4, 2023, I caused the foregoing to be electronically filed with the Clerk of the Court using CM/ECF, which will send notification of such filing to all registered participants.

I further certify that I caused copies of the foregoing document to be served on August 4, 2023, upon the following in the manner indicated:

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