Filed: October 16, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BAYER CROPSCIENCE LP AND MONSANTO COMPANY,
Petitioners,

v.

CORTEVA AGRISCIENCE LLC,
Patent Owner.

IPR2023-01036
U.S. Patent No. 10,947,555

PATENT OWNER'S SUR-REPLY

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I. Section 325(d) Denial of Grounds IA and IB Is Warranted

A. Petitioners Present Written Description and Priority Issues that the Office Previously Considered

The Office evaluated written description and priority during prosecution, including in the context of a rejection based on EP 1740039, the European equivalent of Petitioner's asserted reference, WO '437. Ex. 1008, -0267-78, -0479-515, -0557-89, -0629-42, -0676-93. Like the Petition, the Office focused on written-description support for the claimed genus of AAD-1 proteins (*id.*), which satisfies the first part of *Advanced Bionics*. *Boehringer Ingelheim Animal Health USA Inc. v. Kan. State Univ. Rsch. Found.*, PGR2022-00021, Paper 13 at 16-21 (PTAB Mar. 22, 2023) (applying § 325(d) where petitioner's written-description arguments regarding "support for the claimed genus" overlapped with the issues in prosecution).

Petitioners fail to distinguish their arguments from the written-description issues previously before the Office, as *Becton Dickinson* factor (d) requires. Reply, 1-2; *Becton Dickinson*, IPR2017-01586, Paper 8 at 23 (a petitioner must distinguish *its arguments* from those previously considered). Petitioners instead rely on Corteva's POPR, which is the wrong focus under § 325(d). *Boehringer* at 16 (evaluating the *petition*).

Nonetheless, as Petitioners acknowledge (Reply, 1), the Office expressly considered the specification's "highly identical" and "similar properties" disclosures that Corteva cited in the POPR, including by quoting that language. Ex. 1008, -0492,

-0509 ("Applicant argues … only sequences with high homology would be expected to retain similar properties…."), -0576, -0683-84. Petitioners' argument that these disclosures had to be referenced in a written-description rejection fails, as use in a rejection is not required under part one of *Advanced Bionics*. *See* POPR, 58-59.

Petitioners' related argument for Office error (Reply, 2-3)—i.e., alleging that another amino acid (R285) is required for activity—is insufficient to establish lack of function-correlated common structure under *Ajinomoto*. 932 F.3d at 1360 (such allegations "assume[] too strict a legal standard"); POPR, 30-35. Indeed, Petitioners fail to cite any case requiring disclosure of *all* amino acids potentially relevant to function, which would impermissibly amount to the "perfect correspondence" standard that *Ajinomoto* held is not required. *Id.*, 30, 32, 34; *Ajinomoto*, 932 F.3d at 1360. The Petition and Reply consistently ignore *Ajinomoto*'s legal standard for common, function-correlated structure.

B. Petitioners' (*R*)-Stereospecificity Argument Shows No Error

Petitioners do not dispute that the AAD-1 motif—i.e., the enzyme's *active site*—is directly involved in and essential to the AAD-1 enzyme-catalyzed reaction that degrades phenoxy auxin and FOP herbicides. *See Lifescan*, PGR2019-00032, Paper 11, 29 (crediting a six amino acid sequence "necessary" for the claimed function as supporting common, function-correlated structure); Ex. 1042, 5362 (the RdpA/AAD-1 motif is "functionally important"). Petitioners instead assert a red

herring argument in demanding disclosure of residues important to (*R*)-stereospecificity generally (the Reply also refers to this as (*R*)-enantioselectivity or (*R*)-enantiospecific activity). This argument fails to demonstrate Office error.

First, Petitioners' generalized *(R)*-stereospecificity argument disregards the claim language, which requires activity against two particular classes of herbicides: phenoxy auxin and *(R)*-aryloxyphenoxypropionate (FOP) herbicides. The phenoxy auxins include achiral herbicides such as 2,4-D, not just *(R)*-enantiomers. Ex. 1001, 8:11-17, claim 15.

Second, Petitioners simply assume—rather than establish—that the AAD-1 *active site* motif lacks correlation to the claimed function. Reply, 2-4 (repeatedly conflating the general αKG motif residues with the specific AAD-1 motif claimed). Different αKG-dependent dioxygenases (e.g., TfdA, RdpA) were known to have different active site αKG motifs. *See* POPR, 5-9. As previously explained during prosecution, while particular motif amino acids may be shared across enzymes, the spacing of those amino acids is different. *See, e.g.*, Ex. 1008, -0570 (2nd para.); POPR, 5-9. Here, the disclosed and claimed AAD-1 proteins have unique, dual enzymatic activity and a unique AAD-1 *active site* motif. Petitioners' bare allegation that the AAD-1 active site motif is uncorrelated with the ability to degrade phenoxy auxin and FOP herbicides is insufficient to meet their burden for institution. POPR, 30-35*; Ajinomoto*, 932 F.3d at 1360.

Petitioners' remaining common-structure arguments also fail to demonstrate error. Their criticism of Dr. Nair's explanation that skilled artisans would recognize the αKG motif in the RdpA sequence (i.e., the AAD-1 motif) merely restates the same (*R*)-stereospecificity argument. *See* Reply, 2. Petitioners repeat that argument with respect to *Ajinomoto*, which requires only a *correlation* between a consensus sequence and the claimed function, not an identification of *all* potential amino acids relevant to function. Reply, 4; *Ajinomoto*, 932 F.3d at 1360; POPR, 32.

C. Petitioners' Numerosity Theory Shows No Error

In the POPR, Corteva identified many cases rejecting the type of numerosity theory Petitioners present. POPR, 36-38. Corteva further pointed out Petitioners' failure to identify *any* written-description decision holding structurally defined claims unpatentable that require a high level of sequence identity as the challenged claims have here. *Id.* The Reply again identified no such decision, and thus Petitioners' argument for Office error fails.

Indeed, Petitioners present no legal basis for rejecting Corteva's disclosed and claimed structural features under the written-description requirement. Petitioners fail to distinguish *Lifescan* and its crediting of an analogous six-residue sequence important to function, or *Campbell*, where the Board reversed a written-description rejection of claims reciting 90% sequence identity (but no active site motif, as the claims also have here). POPR, 32-34, 37-38. Instead, Petitioners continue to rely on

the genus "corner"/plot of land language from *AbbVie*, ignoring that the claims in that case had *no* sequence limitations whatsoever. Reply, 4; POPR, 39. The '555 patent claims, with their active site motif and at least 85% sequence identity structural limitations, are distinctly different.

II. Section 325(d) Denial of Grounds IIA and IIB Is Warranted

As detailed in the POPR, Grounds IIA and IIB fail to demonstrate Office error for several reasons: (1) legally deficient piecemeal obviousness analysis; (2) failure to show prior-art disclosure of all claim limitations; (3) legally deficient inherency theory; (4) factual contradiction of inherency; and (5) improper hindsight reasoning. POPR, 60. Petitioners only briefly address item (4), not disputing the other deficiencies. Reply, 5. The Reply also improperly seeks to shift the burden of proving lack of inherency to Corteva, whereas Petitioners' single-sentence inherency assertion was insufficient to meet their burden at institution. *See* POPR, 44-48; *see also* Ex. 1052, abstr., 2088 (Petitioners citing a need for RdpA/AAD-1 variants active at "higher temperature[s]").

Petitioners also nowhere relied on pages 7-12 of Saari 1998 in Grounds IIA or IIB. Those pages also do not disclose any αKG-dependent dioxygenase as degrading FOPs, failing to remedy the deficiencies of the other cited references.

Respectfully submitted,

Dated: October 16, 2023

/Pier D. DeRoo/
Pier D. DeRoo
Reg. No. 69,340

CERTIFICATE OF SERVICE

The undersigned certifies that a copy of the foregoing **Patent Owner's Sur-Reply** was served electronically via email on October 16, 2023, in its entirety on the following:

Dov P. Grossman
Ben Picozzi
Williams & Connolly LLP
680 Maine Avenue SW
Washington, DC 20024
dgrossman@wc.com
bpicozzi@wc.com

Petitioner has consented to electronic service by email.

Dated: October 16, 2023

/William Esper/
William Esper
Case Manager and PTAB Coordinator
Finnegan, Henderson, Farabow,
Garrett & Dunner, LLP