

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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E.I. DU PONT DE NEMOURS AND COMPANY,  
Petitioner,

v.

MONSANTO TECHNOLOGY LLC,  
Patent Owner.

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Case IPR2014-00331  
Patent 8,312,672 B2

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Before LORA M. GREEN, SHERIDAN K. SNEDDEN, and  
SUSAN L. C. MITCHELL, *Administrative Patent Judges*.

MITCHELL, *Administrative Patent Judge*.

DECISION  
Denying Institution of *Inter Partes* Review  
*37 C.F.R. § 42.108*

## I. INTRODUCTION

### A. Background

Petitioner E.I. du Pont de Nemours and Company (“Petitioner”) filed a Petition (Paper 4, “Pet.”) to institute an *inter partes* review of claims 1-26 (the “challenged claims”) of U.S. Patent No. 8,312,672 B2 (Exhibit 1001, “the ’672 patent”). See 35 U.S.C. §§ 311-319. Patent Owner, Monsanto Technology LLC (“Patent Owner”), filed an Amended Preliminary Response. Paper 19 (“Prelim. Resp.”). The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides as follows:

(a) THRESHOLD.—The Director may not authorize an *inter partes* review to be instituted unless the Director determines that the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.

35 U.S.C. § 314(a).

For the reasons discussed below, we conclude that Petitioner has not established a reasonable likelihood that it would prevail in showing the unpatentability of any challenged claim of the ’672 patent. Therefore, we do not authorize an *inter partes* review for any claim of the ’672 patent.

### B. Related Proceedings

Petitioner identifies the following related district court proceeding, *Monsanto Co. v. Pioneer Hi-Bred International, Inc.*, 4:12-cv-1090-CEJ (E.D. Mo.). Pet. 2-3. Petitioner also identifies petitions for *inter partes* review involving U.S. Patent Nos. 7,832,143; 8,028,469; 8,071,845; and 8,245,439. *Id.* at 3; see IPR2014-00332; IPR2014-00333; IPR2014-00334; IPR2014-00335.

*C. The '672 Patent (Ex. 1001)*

The '672 patent is directed to a method for analyzing a population of haploid seeds, where tissue samples are removed from a plurality of these seeds using an automated seed sampler system, while germination viability of these seeds is preserved, and analyzing the samples for characteristics indicative of genetic or chemical traits. Ex. 1001, Abstract. According to the Specification of the '672 patent, several patent applications, including U.S. Patent Application Ser. No. 11/213,435 (*see* Ex. 1024), filed on August 26, 2005, which are incorporated by reference in their entirety, “disclose apparatus and systems for the automated sampling of seeds as well as methods of sampling, testing, and bulking seeds.” Ex. 1001, 1:50-59.

*D. Illustrative Claim*

Claim 1, the sole independent claim of the '672 patent, is illustrative of the claimed subject matter. Claim 1 is reproduced below.

1. A method for analyzing a population of haploid seeds, the method comprising:
  - removing tissue from individual seeds in a population of haploid seeds using an automated seed sampler system while preserving germination viability of the seeds; and
  - analyzing the removed tissue for the presence or absence of one or more traits of interest.

*Id.* at 17:2-8.

*E. Prior Art References Applied by Petitioner*

Petitioner challenges the patentability of claims 1–26 of the '672 patent on the basis of the following items of prior art:

References	Patents/Printed Publications	Date	Exhibit
Horigane <sup>1</sup>	<i>Two-dimensional Analysis of Kernels Using a New Sample Preparation Method</i> , 41 CHEMISTRY AND BIOLOGY 398-402	June 25, 2003	1003
Sherba	EPA 0 127 313 B1	July 19, 1989	1004
Churchill	<i>William Johannsen and the Genotype Concept</i> , 7 J. OF THE HISTORY OF BIO. 5-30	1974	1005
Eder	<i>In vivo Haploid Induction in Maize</i> , 104 THEORETICAL AND APPLIED GENETICS 703-708	2002	1006
Chunwongse	<i>Pre-germination Genotypic Screening Using PCR Amplification of Half-Seeds</i> , 86 THEORETICAL AND APPLIED GENETICS 694-698	1993	1007
Sangtong	<i>Serial Extraction of Endosperm Drillings (SEED)—A Method for Detecting Transgenes and Proteins in Single Viable Maize Kernels</i> , 19 PLANT MOLECULAR BIOLOGY REPORTER 151-158	2001	1008
Groos	<i>Study of the Relationship Between Pre-harvest Sprouting and Grain Color by Quantitative Trait Loci Analysis in a WhitexRed Grain Bread-wheat Cross</i> , 104 THEORETICAL AND APPLIED GENETICS 39-47	2002	1009

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<sup>1</sup> Petitioner relies upon a certified translation for Horigane (Ex. 1003), and provides an affidavit attesting to the accuracy of the translation. See Ex. 1003; 37 C.F.R. § 42.63(b).

References	Patents/Printed Publications	Date	Exhibit
Concibido	<i>Introgression of a Quantitative Trait Locus for Yield from Glycine Soja into Commercial Soybean Cultivars</i> , 106 <i>Theoretical and Applied Genetics</i> 575-582	2003	1010
Frisch	<i>Comparison of Selection Strategies for Marker-Assisted Backcrossing of a Gene</i> , 39 <i>CROP SCIENCE</i> 1295-1301	1999	1011
Kisha	<i>Genetic Diversity Among Soybean Plant Introductions and North American Germplasm</i> , 38 <i>CROP SCIENCE</i> 1669-1680	1998	1012
Arumuganathan	<i>Estimation of Nuclear DNA Content of Plants by Flow Cytometry</i> , 9 <i>PLANT MOLECULAR BIOLOGY REPORTER</i> 229-241	1991	1013
Kato	<i>Chromosome Doubling of Haploid Maize Seedlings Using Nitrous Oxide Gas at the Flower Primordial Stage</i> , 121 <i>PLANT BREEDING</i> 370-377	2002	1014
Wright	<i>Commercial Hybrid Seed Production</i> , <i>HYBRIDIZATION OF CROP PLANTS</i> 161-176	1980	1015

*F. The Asserted Ground of Unpatentability*

Petitioner contends that the challenged claims are unpatentable under 35 U.S.C. § 103(a) based on the following grounds (Pet. 6-8):

References	Basis	Claims challenged
Horigane and Sherba	§ 103(a)	1, 8, 9, 16, 25, and 26
Horigane, Sherba, and Churchill	§ 103(a)	4
Horigane, Sherba, and Eder	§ 103(a)	24

References	Basis	Claims challenged
Horigane, Sherba, and Chunwongse	§ 103(a)	2, 3, 5, 10, 20, and 21
Horigane, Sherba, and Sangtong	§ 103(a)	6
Horigane, Sherba, and Groos	§ 103(a)	7 and 11
Horigane, Sherba, and Concibido	§ 103(a)	12
Horigane, Sherba, and Frisch	§ 103(a)	13
Horigane, Sherba, and Kisha	§ 103(a)	14 and 15
Horigane, Sherba, and Arumuganathan	§ 103(a)	17-19
Horigane, Sherba, Kato, and Eder	§ 103(a)	22
Horigane, Sherba, and Wright	§ 103(a)	23

## II. ANALYSIS

### A. Claim Interpretation

Consistent with the Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), we interpret a claim using the “broadest reasonable construction in light of the specification of the patent in which it appears.” 37 C.F.R. § 42.100(b); *see* Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012). Also, claim terms are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

A claim term will not be accorded its ordinary meaning, however, “if the patentee acted as his own lexicographer and clearly set forth a definition of the disputed claim term in either the specification or prosecution history.”

*CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002).

“Although an inventor is indeed free to define the specific terms used to describe his or her invention, this must be done with reasonable clarity, deliberateness, and precision.” *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). Also, we must be careful not to read a particular embodiment appearing in the written description into the claim if the claim language is broader than the embodiment. *See In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993) (“[L]imitations are not to be read into the claims from the specification.”).

Petitioner proposes constructions for the terms “automated,” “genotypic character of the seeds,” phenotypic characteristic,” “chemical trait,” “traits of interest are genetically linked with a haplotype associated with a QTL,” and “traits of interest are indicative of association with a recurrent parent to facilitate selection for marker-assisted backcrossing.” Pet. 8-10. Patent Owner proposes a construction for “automated seed sampler system.” Prelim. Resp. 18-19. For purposes of this decision, we only need to construe expressly, “seed sampler system.”

Petitioner does not provide a construction for “automated seed sampler system,” but does provide a proposed construction for “automated.” Petitioner defines automated as encompassing “partially machine driven and/or computer controlled to reduce the amount of work done by humans.” Pet. 8. Petitioner bases this proposed construction on its product that Petitioner asserts Patent Owner has accused of infringement. *Id.* at 9 (stating construction is based on Monsanto’s accusation that Pioneer’s use of its “Laser-Assisted Seed Selection” platform infringes many claims of the ’672 patent).

Patent Owner asserts that Petitioner's construction of "automated" would lead to an unreasonable result in which "a seed sampler system that is 1% computer-controlled and 99% manual" would meet that limitation. Prelim Resp. 23. Patent Owner, on the other hand, bases its construction for "automated" on the following passage of U.S. Patent No. 8,028,469 ("the '469 patent"), that is a cited reference in the '672 patent. Prelim. Resp. 21-22.

The operation of the seed sorter system 10 is generally completely controlled and *automated* by the CCS 700 such that the operations performed by the imaging station 300, the orientation station 400 and the sample and sort station 500 *occur substantially without need for human interaction, intervention, or control.*

Prelim. Resp. 22 (citing Ex. 2005, 5:35-44 ('469 patent)); *id.* at 22, n.4 (citing *V-Formation, Inc. v. Benetton Group SpA*, 401 F.3d 1307, 1311 (Fed. Cir. 2005) ("This court has established that 'prior art cited in a patent or cited in the prosecution history of the patent constitutes intrinsic evidence.'")).

In construing "automated," Petitioner improperly refers to an accused device to develop its construction. *See NeoMagic Corp. v. Trident Microsystems, Inc.*, 287 F.3d 1062, 1074 (Fed. Cir. 2002) ("It is well settled that claims may not be construed by reference to the accused device."). Patent Owner, however, notes portions of the intrinsic evidence that supports its construction.

Patent Owner further asserts that the "automated seed sampler system" is

a device that can automatically (a) take tissue samples directly from individual seeds precisely and without depriving the seed of its germination viability and (b) convey both the seed and the



seed samples to different, but corresponding locations, such as corresponding wells of separate seed trays. Thus, when the seed sample is subjected to analysis that confirms the presence of a particular trait of interest, the corresponding seed can be readily identified and grown.

Prelim. Resp. 8-9. Patent Owner proffers the following construction for “automated seed sampler system,” incorporating its construction for “automated,” as the broadest reasonable construction in light of the specification: “a system that, substantially without the need for human interaction, intervention, or control, is capable of extracting samples from seeds and conveying the seeds and seed samples to corresponding locations.” *Id.* at 19.

To arrive at this construction, Patent Owner refers to the written description of Patent Application Serial No. 11/213,435 (“the ’435 application”), which is incorporated by reference in the ’672 patent. *Id.* at 19-21. According to the ’435 application, the automated seed sampler includes

a sampling station; a sampler for removing material from a seed in the sampling station; a seed convey[or] for conveying the seed from the sampling station to a compartment in a seed tray; and a conveyor for conveying the material removed from the seed to a corresponding compartment in a sample tray. . . . The samples can be tested, and the seeds can be sorted according to the results of the testing of their corresponding samples.

Ex. 1024, 33 (Abstract); *see id.* at 2 ¶¶ 6-7, 6 ¶ 52 (stating achieving “one-to-one correspondence between a seed and its sample”), 14 ¶ 82 (describing sample transport system that deposits sample in unique sample holder “so that the relationship between samples and their respective seeds can be determined”).

We need not reach the question of the proper construction of “automated.” For purposes of this decision, we need only construe the scope of the term “seed sampler system.” Based on this record, we agree with Patent Owner that the broadest reasonable construction of “seed sampler system,” in light of the specification, is “a system that is capable of extracting samples from seeds and conveying the seeds and seed samples to corresponding locations.”

*B. Obviousness over Horigane and Sherba*

Petitioner contends that Horigane and Sherba, which are references common to each ground of obviousness for all challenged claims 1-26, “demonstrate that it would have been obvious to sample haploid seed tissue in an automated way that preserves the seed’s germination viability and to then analyze the sampled tissue in a variety of known ways for characteristics or traits of interest.” Pet. 15-16.

*1. Horigane*

Horigane discloses a polyspecimen analytical system, in which a seed, such as a wheat seed, may be analyzed using spectroscopic methods, such as through the use of a two-dimensional spectrophotometer or a two-dimensional elemental analyzer. Ex. 1003, Abstract. Horigane notes that in order to perform such method, it is necessary to prepare the analytical surface under the same conditions, but that it is difficult to put several kernels side by side. *Id.* at 398. Thus, Horigane discloses a kernel holder “capable of keeping the angle and height of the analytical surface of a sample relative to the analytical stage constant and developed a technique for comparing the distribution of components among individuals by preparing continuous cross-sectioned kernels.” *Id.* at 399.

Once the kernels are fixed into the holder, such as by using a light-curable resin such as those used in dentistry, the analytical portion of the kernel needs to be cut into a smooth surface. *Id.* at 399-400.

Figure 3 of Horigane is reproduced below:

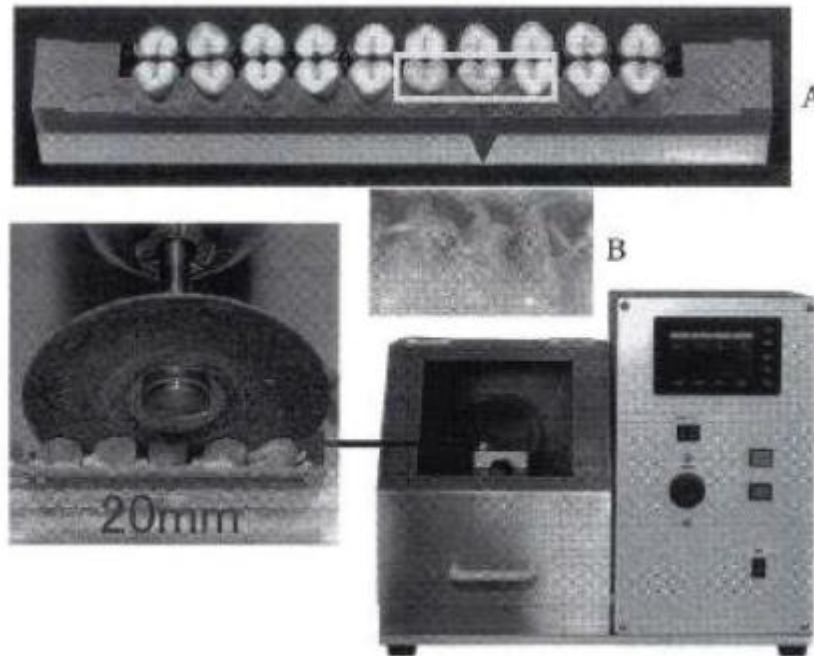


Figure 3 shows the preparation of analytical samples of a wheat kernel, and the cutting device. *Id.* at 400. The samples are cut with a diamond disc that is 22mm in diameter. *Id.* The portion of the holder that holds the wheat kernels is approximately 40 mm in length. *Id.* at 399, Figure 1 (not reproduced here). The cutting device, shown in the lower left of Figure 3, is programmed for cutting and grinding with a sequential controller. *Id.* at 400. The lower left of Figure 3 shows an enlarged view of the cut portions of wheat endosperms, as well as the diamond disc. As taught by Horigane, the embryos removed by cutting maintain their germination ability. *Id.*

2. *Analysis*

Petitioner presents an explanation and a claim chart demonstrating where the limitations of the challenged claims may be found in the cited references. *Id.* at 15-59. Petitioner also relies on the declaration of Clifford F. Weil, Ph.D. Ex. 1016. Petitioner contends that Horigane discloses a method for studying traits of interest of wheat endosperm using an automated cutting tool to remove the endosperm tissue from a population of twenty wheat kernels held in a kernel holder. Pet. 16. Specifically, Petitioner relies on Horigane to teach the limitations of claim 1 except sampling of haploid seeds, although Petitioner contends that the Horigane method is applicable to any seed type. *Id.*

Petitioner relies on Sherba to disclose analyzing haploid seeds, while retaining their germination viability. *Id.* at 16-17. Petitioner concludes that one of skill in the art would have combined Horigane with Sherba because they both analyze seeds while preserving germination viability, and the importance of haploid seeds would have motivated one of skill in the art to sample and analyze these seeds for known traits of interest. *Id.* at 17.

Patent Owner responds that Petitioner has failed to demonstrate a reasonable likelihood that it would prevail in demonstrating that the claims are rendered obvious over the combination of Horigane and Sherba “because it has failed to identify an ‘automated seed sampler system’ anywhere in the prior art.” Prelim. Resp. 26. For instance, Patent Owner asserts that Petitioner points to an automated cutting tool of Horigane as the claimed “automated seed sampler system.” *Id.* at 27. Such an automated cutting tool, Patent Owner argues, “is only a single potential part of the overall claimed system, which must also be capable of conveying seeds and seed

samples to corresponding locations such as seed and sample trays.” *Id.* Finally, Patent Owner asserts that Horigane’s process involves numerous labor-intensive and manual steps, such as tissue removal and gluing the individual seeds in the kernel holder, and therefore, is not automated. *Id.* at 28-29. Patent Owner asserts that Sherba does not cure these deficiencies. *Id.* at 33-34.

We agree with Patent Owner. Horigane does not disclose the claimed seed sampler system required by all challenged claims, much less an automated one. The kernels in Horigane remain in the kernel holder for analysis while the location of the embryos removed by cutting is not disclosed. Therefore, Horigane’s system is not capable of extracting samples from seeds and conveying the seeds and seed samples to corresponding locations, as required by all of the challenged claims. Petitioner points to none of the remaining proffered references to cure these deficiencies.

### III. CONCLUSION

For the foregoing reasons, we are not persuaded that the Petition establishes a reasonable likelihood that Petitioner would prevail in showing any of claims 1-26 of the ’672 patent are unpatentable under 35 U.S.C. § 103(a).

### IV. ORDER

Accordingly, it is

ORDERED that the Petition is *denied* as to all challenged claims of the ’672 patent.

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PETITIONER:

Todd R. Walters, Esq.  
Erin M. Dunston, Esq.  
BUCHANAN INGERSOLL & ROONEY PC  
todd.walters@bipc.com  
erin.dunston@bipc.com

PATENT OWNER:

Andrew R. Sommer  
Melinda L. Patterson  
WINSTON & STRAWN LLP  
asommer@winston.com  
mpatterson@winston.com