Enablement for Validity Versus Enablement for Anticipation: Lessons from *Agilent Technologies, Inc. v. Synthego Corp.*

By Clint South[72]

In June 2025, the Federal Circuit affirmed the PTAB's invalidation of two CRISPR-Cas gene editing patents in *Agilent Technologies, Inc. v. Synthego Corp*.[73] The decision is noteworthy not for breaking new doctrinal ground, but for its clear articulation of a distinction that chemical and biotech practitioners encounter regularly: the difference between enablement under 35 U.S.C. § 112 and enablement for prior art anticipation under 35 U.S.C. § 102. For practitioners drafting specifications, challenging patents in IPR, or defending against anticipation, *Agilent* offers a practical roadmap, and a reminder that a modest prior art disclosure can topple broad claims even where the patentee's own specification might survive a § 112 challenge.

I. The Case at a Glance

Synthego filed IPR petitions challenging Agilent's U.S. Patent Nos. 10,337,001 and 10,900,034, both directed to chemically modified guide RNAs ("gRNAs") for use in CRISPR-Cas systems. The patents claim priority to December 3, 2014 provisional applications. Representative claims recite a synthetic gRNA with chemical modifications near its 5′ or 3′ ends, wherein the gRNA retains "gRNA functionality comprising associating with a Cas protein and targeting the gRNA:Cas protein complex to a target polynucleotide."[74] Dependent claims narrow the modifications to specific types, including phosphonoacetate ("PACE") and thiophosphonoacetate ("thioPACE") groups.[75]

The Board found all claims unpatentable, holding that Pioneer Hi-Bred (an international patent application filed August 20, 2014, titled "Genome Modification Using Guide Polynucleotide/Cas Endonuclease Systems and Methods of Use") anticipated most claims and that certain dependent claims were obvious over Pioneer Hi-Bred when combined with other references.[76] The Federal Circuit affirmed in a unanimous opinion.

II. The Core Distinction: § 112 Versus § 102 Enablement

The heart of the decision is the court's treatment of enablement. The Federal Circuit drew a clear line between two inquiries that patent practitioners must keep separate.

Section 112 enablement requires a patent specification to teach a skilled artisan to both "make" and "use" the claimed invention across the full scope of the claims.[77] As the Supreme Court emphasized in *Amgen Inc. v. Sanofi*, "the more a party claims, the broader the monopoly it demands, the more it must enable."[78] Section 112 enforces the patent system's quid pro quo: exclusive rights in exchange for meaningful public disclosure.

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[73] 139 F.4th 1319 (Fed. Cir. 2025), *cert. denied*, No. 25-570, 2026 WL 858431 (U.S. Mar. 30, 2026).
[74] *Id.* at 1322.
[75] *Id.* at 1321-22.
[76] *Id.* at 1323.
[77] 35 U.S.C. § 112(a).
[78] 598 U.S. 594, 613 (2023).

Section 102 enablement demands less. The anticipation statute contains no requirement that a prior art reference enable the "use" of an invention; it requires only that the reference enable a skilled artisan to "make" the claimed subject matter.[79] As the *Agilent* court stated: "The reason for this distinction 'is that [§] 112 provides that the specification must enable one skilled in the art to "use" the invention whereas [35 U.S.C. §] 102 makes no such requirement as to an anticipatory disclosure.'"[80]

The seminal articulation of this principle appeared in *In re Hafner*, where the Court of Customs and Patent Appeals held that a disclosure lacking utility teaching is "entirely adequate to anticipate a claim" yet "entirely inadequate to support the allowance of such a claim."[81] The *Agilent* court reaffirmed this line of authority, stating plainly that § 112 and § 102 enablement "are two separate inquiries."[82]

This divergence reflects the different purposes of the two provisions. Section 112 ensures that patentees earn the scope of their monopoly through adequate disclosure. Section 102 prevents the patenting of subject matter the public could already practice. Requiring prior art to meet the same rigorous standard as patent specifications would improperly extend monopolies over subject matter already technically accessible to skilled artisans.

A. Principles of Prior Art Enablement

Agilent reaffirmed several established principles that, taken together, make prior art enablement a significantly lower bar than § 112 enablement.

No actual reduction to practice required. Anticipation "does not require the actual creation or reduction to practice of the prior art subject matter; anticipation requires only an enabling disclosure."[83] A reference need not prove that anyone actually made or tested the disclosed invention.

No proof of efficacy. The Federal Circuit has consistently held that "proof of efficacy is not required in order for a reference to be enabled for purposes of anticipation."[84] The reference need only show that a skilled artisan *could* practice the disclosure, not that it actually works or works well.

A single enabled embodiment suffices. This is perhaps the most consequential distinction. For § 102 purposes, "a prior-art reference to be enabling . . . need not enable the [challenged] claim in its entirety, but instead the reference need only enable a single embodiment of the claim."[85] Contrast this with § 112, which requires enabling "the full scope of the invention as defined by its claims."[86] The *Agilent* court invoked this distinction directly: "In the § 112 context, enablement ensures the patentee does not obtain a broader monopoly than the specification teaches. That is not a concern in the enabling anticipatory prior art context."[87]

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[79] *In re Hafner*, 410 F.2d 1403, 1405 (C.C.P.A. 1969)
[80] *Agilent*, 139 F.4th at 1329 (quoting *Rasmusson v. SmithKline Beecham Corp.*, 413 F.3d 1318, 1325 (Fed. Cir. 2005)).
[81] *In re Hafner*, 410 F.2d at 1405.
[82] *Agilent*, 139 F.4th at 1328-29.
[83] *Id.* at 1327 (quoting *Schering Corp. v. Geneva Pharms.*, 339 F.3d 1373, 1380 (Fed. Cir. 2003)).
[84] *Id.* (quoting *Rasmusson*, 413 F.3d at 1326).
[85] *In re Morsa*, 803 F.3d 1374, 1377 (Fed. Cir. 2015).
[86] *Amgen*, 598 U.S. at 610.
[87] *Agilent*, 139 F.4th at 1329 n.10.

Presumption of enablement. Prior art patents and printed publications are presumptively enabled.[88] The burden falls on the patent holder to affirmatively demonstrate that undue experimentation would be required to practice the reference, a burden that proved insurmountable in *Agilent*.[89]

These principles combine to create significant exposure for broad functional claims common in chemical and biotech patents. A genus claim that encompasses millions of embodiments falls if prior art enables just one species within the genus, even if that species was never actually made or tested.

B. How the Court Applied These Principles

The Board's enablement analysis centered on whether a person of ordinary skill in the art, as of December 2014, could practice Pioneer Hi-Bred's disclosures without undue experimentation. While acknowledging that "the use of gRNA in a CRISPR/Cas system was a relatively new discovery first published in mid-2012," the Board found that by December 2014 the art "was far from a blank slate."[90] A POSITA would have understood how CRISPR-Cas components function together, which chemical modifications reduce RNA degradation while preserving functionality, and standard synthesis techniques for making the disclosed modified gRNAs.[91]
The Federal Circuit rejected each of Agilent's challenges to this finding.

Prophetic examples. Agilent argued that the prophetic nature of certain Examples in Pioneer Hi-Bred undermined the enablement presumption. The court disagreed, holding that "that fact alone does not undermine the presumption that Pioneer Hi-Bred is enabled."[92]

Non-working examples. The court held that "the disclosure of some non-working examples in Pioneer Hi-Bred does not undermine the disclosure of other examples that were disclosed as functional."[93] One enabled embodiment is sufficient.

Theoretical breadth. Most notably, Agilent argued that Pioneer Hi-Bred theoretically encompassed "over a quadrillion quadrillion" possible combinations. The court found this framing "not consistent with our case law."[94] The relevant question is whether undue experimentation is required "to make and use a gRNA with the claimed chemical modifications and functionality given the relevant disclosures in Pioneer Hi-Bred"; the question is not whether the reference mathematically encompasses a vast number of permutations.[95]

Distinguishing *Impax*. The court distinguished *Impax Laboratories, Inc. v. Aventis Pharmaceuticals*, where the prior art disclosed "hundreds or thousands of compounds and

[88] *Impax Lab'ys, Inc. v. Aventis Pharms., Inc.*, 545 F.3d 1312, 1316 (Fed. Cir. 2008); *In re Antor Media Corp.*, 689 F.3d 1282, 1288 (Fed. Cir. 2012).
[89] 139 F.4th at 1327.
[90] *Id.* at 1327.
[91] *Id.*
[92] *Id.*
[93] *Id.* at 1326.
[94] *Id.* at 1329 n.11.
[95] *Id.*

several diseases" without sufficient guidance.[96] Pioneer Hi-Bred, by contrast, "exemplifies particular crRNA sequences having the recited chemical modifications at the recited locations" in its Tables 7 and 8, providing specific examples of modified crRNAs.[97]

Distinguishing *Amgen*. The court identified two grounds for distinguishing the Supreme Court's 2023 decision. First, *Amgen* addressed § 112 enablement, "not whether a prior-art reference was enabling and could thus support anticipation."[98] Second, unlike *Amgen*, where the patents required "painstaking experimentation to see what works," here the Board found that skilled artisans understood how CRISPR-Cas elements function together.[99] *Amgen*'s rigorous full-scope analysis applies to the patentee's own specification, not to the prior art.

III. Practical Lessons for Chemical and Biotech Practitioners

Agilent offers actionable guidance at every stage of patent practice.

A. Drafting and Prosecution

Practitioners must ensure that specifications enable the full scope of the claims, recognizing that *Amgen* demands correspondingly broad enablement for broad claims. Including multiple working examples that span the claim scope remains essential. At the same time, practitioners should be mindful that prior art references will be judged under a more forgiving standard. Comprehensive prior art searches should account for references that disclose relevant subject matter even without demonstrating utility or efficacy. Such references may anticipate claims under § 102 even if they could never support a patent under § 112.

Practitioners should also consider whether narrowing functional claim language may reduce exposure. In *Agilent*, the broad "gRNA functionality" limitation swept in embodiments disclosed in Pioneer Hi-Bred. More specific structural limitations might have avoided anticipation, though at the cost of narrower coverage. This trade-off is inherent in claim drafting, but *Agilent* reminds us that functional breadth comes with anticipation risk.

B. IPR Petition Strategy

Petitioners benefit from the enablement asymmetry in several ways. They can rely on relatively sparse disclosures that plausibly enable one embodiment. They need not show the prior art actually worked or was reduced to practice. And the presumption of enablement shifts the burden to the patent owner.

Expert testimony is critical. In *Agilent*, Synthego's expert explained what a skilled artisan would have understood about CRISPR-Cas systems, RNA modifications, and synthesis techniques as of December 2014.[100] This testimony supported the Board's conclusion that practicing Pioneer Hi-Bred's disclosures would not require undue experimentation. Petitioners should anticipate the need for expert declarations addressing the *Wands* factors and explaining why the prior art is enabling in light of contemporaneous knowledge.

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[96] *Agilent*, 139 F.4th at 1328 (quoting *Impax*, 545 F.3d at 1315).
[97] *Id.*
[98] *Id.*
[99] *Id.*
[100] *See id.* at 1331-32.

C. Defending Against Anticipation

Patent owners face a steep climb. Overcoming the presumption of enablement requires affirmative evidence of true impossibility or undue experimentation, not arguments about theoretical breadth. *Agilent* illustrates several unsuccessful strategies: invoking vast numbers of theoretical combinations, pointing to prophetic examples, and highlighting non-working embodiments. None succeeded when the reference also disclosed functional embodiments with specific guidance.[101]

Successful defenses likely require demonstrating that the state of the art was genuinely nascent, meaning that skilled artisans lacked the foundational knowledge to practice the prior art's disclosures. In *Agilent*, the Board found the art "was far from a blank slate" by December 2014.[102] Patent owners must present robust expert testimony and contemporaneous evidence establishing that the field truly lacked the knowledge necessary to practice the reference.

D. Litigation Considerations

In district court, challengers should ensure that jury instructions clearly convey the enablement asymmetry. Fact-finders may assume that prior art must meet the same standard as patent specifications, a misconception that disadvantages the challenger. Clear instructions explaining that anticipation requires only an enabling disclosure of a single embodiment, without proof of efficacy or commercial viability, are essential.

E. Broader Significance

Agilent arrives at a moment of heightened attention to enablement doctrine. The Supreme Court's 2023 *Amgen* decision reinvigorated § 112 enablement as a meaningful constraint on claim scope, particularly for functionally defined genus claims. *Agilent* complements *Amgen* by clarifying what it does *not* hold: its rigorous enablement analysis applies to § 112, not to anticipation under § 102. A reference that would fail *Amgen*'s full-scope requirement may nonetheless anticipate claims because § 102 demands only that the reference enable a single embodiment.

For CRISPR-related disputes, the decision suggests that early prior art disclosures, even prophetic ones lacking experimental validation, may prove potent tools for challenging later-filed patents. The court found that by December 2014, "substantial research into such systems had been published" sufficient to enable practice of references like Pioneer Hi-Bred.[103] Patent owners in this space should carefully evaluate their exposure to early-filed references, particularly given the rapid development of CRISPR technology between 2012 and 2015.

More broadly, *Agilent* confirms a durable feature of patent law that chemical and biotech practitioners must account for: the enablement asymmetry between § 112 and § 102 is doctrinally sound and well-entrenched. Practitioners should structure their prosecution, IPR, and litigation strategies accordingly.

IV. Key Takeaways

[101] *Id.* at 1326.
[102] *Id.* at 1327.
[103] *Id.*

The core lessons from *Agilent* for chemical IP practitioners are straightforward:

1. **Section 112 and § 102 enablement are distinct inquiries.** Section 112 requires enabling a skilled artisan to "make and use" the invention across the full claim scope. Section 102 requires only enabling one to "make" a single embodiment.

2. **Prior art need not demonstrate utility, efficacy, or actual reduction to practice.** Prophetic disclosures and theoretical teachings can anticipate claims if they enable a skilled artisan to make the invention.

3. **Prior art is presumptively enabled.** The burden falls on the patent owner to show otherwise, and arguments based on theoretical breadth or non-working examples are unlikely to carry that burden.

4. ***Amgen*'s rigorous full-scope analysis applies to § 112, not § 102.** Practitioners should not assume that *Amgen* raised the bar for prior art enablement.

5. **Broad functional claims are especially vulnerable.** Claims defining inventions by function rather than structure encompass vast numbers of embodiments, any one of which can be anticipated by an enabling prior art reference.

Agilent does not rewrite the rules, but its thorough application of established principles to a high-profile CRISPR dispute, and its express distinction of *Amgen*, provides valuable clarity. As gene editing technology advances and patent disputes intensify, the enablement asymmetry will remain a critical battleground. *Agilent* offers practitioners on both sides a clear roadmap for navigating the terrain.