Practical Insights from Recent Federal Circuit 112 Decisions

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Today’s Agenda

- Case Study
- 112 Standards
- Recent Federal Circuit Developments in 112

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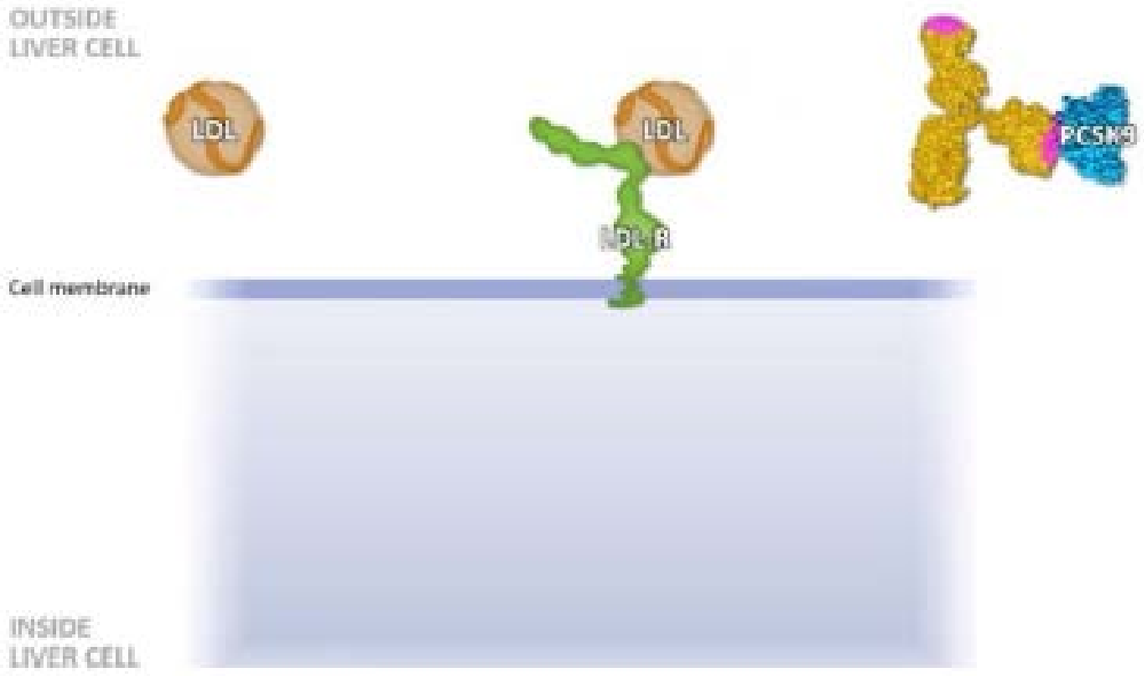
- ***Case Study***
- 112 Standards
- Recent Federal Circuit Developments in 112

Case Study – Claim Coverage

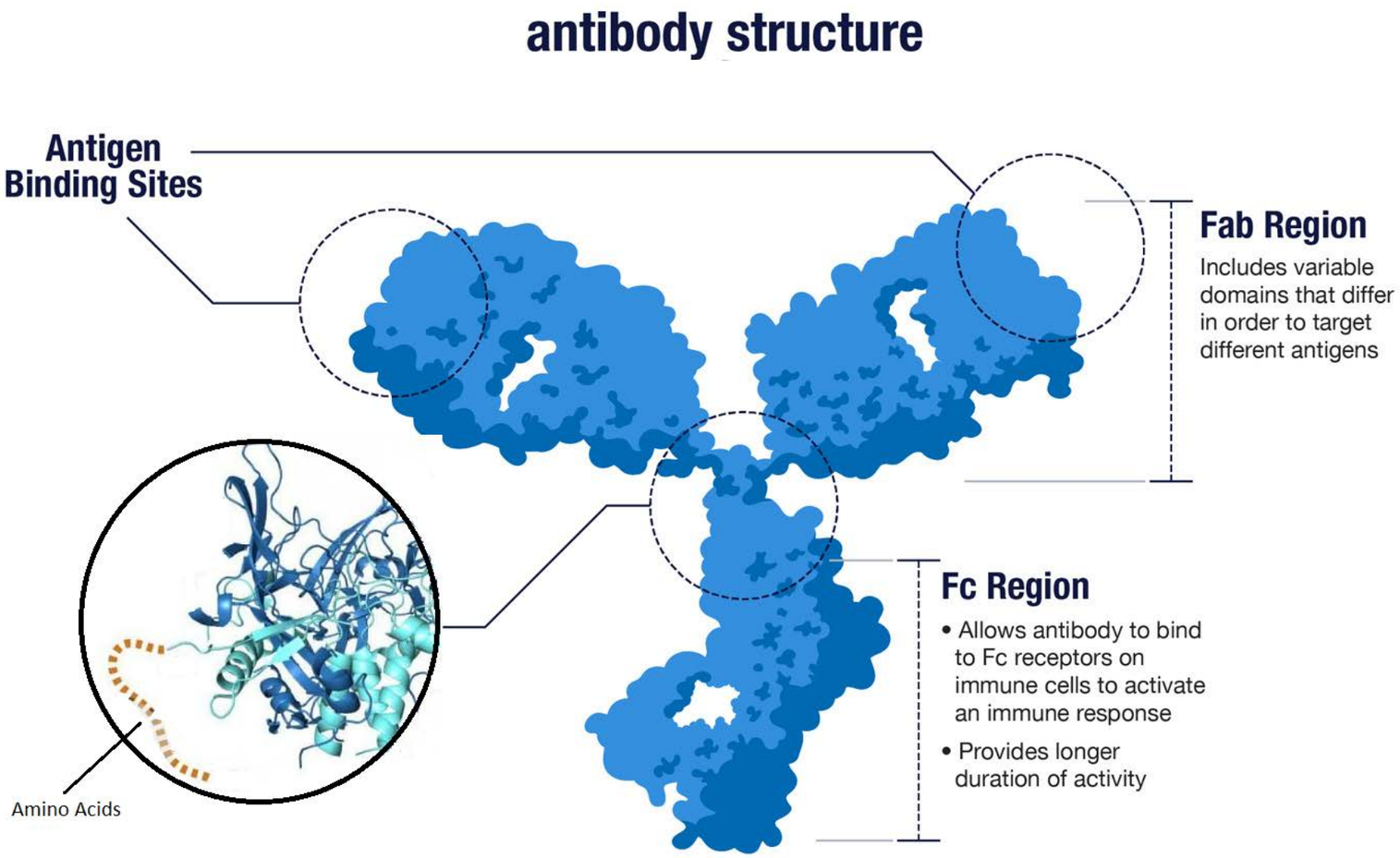
- ***Representative Claim:*** An isolated antibody capable of binding to PCSK9 on at least one of the following residues: S153, I154, P155, . . . , and wherein the antibody blocks binding of PCSK9 to LDLR.
  - ***Antibody*** – man-made protein that binds to other proteins in the body
  - ***PCSK9*** – naturally occurring protein in the body that binds to liver cell receptors necessary for removing LDL cholesterol from the body
  - ***Residues*** – binding sites on PCSK9
  - ***LDLR*** – LDL cholesterol receptors for binding and reducing LDL

Case Study – Claim Coverage and Technical Background

- An antibody that
  - Function 1: attaching to certain binding sites on PCSK9 protein
  - Function 2: blocking binding of PCSK9 to LDL receptors on liver cells by carrying it away



Case Study- Technical Background



Case Study – Key Written Description Disclosures

- ***Detailed Description***
  - Discloses the structure of 26 representative antibodies with complete amino acid sequences, including their Fab regions.
  - Discloses how to make and test the antibodies for PCSK9 binding with routine methods known in the art.

- ***Experimental Examples:*** A total of 41 examples
  - Examples 4-6 include directions for making two antibodies falling within the claims (31H4 and 21B12).
  - A POSA can take the different examples to create a “roadmap” of how to make and test the antibodies through routine steps.

Summ. J. Arguments

Challenger – Controlling Federal Circuit Precedent

- Even “routine” experimentation can be “undue” if it involves laborious iterative testing. *See Wyeth & Cordis Corp. v. Abbot Laboratories*, 720 F.3d 1380, 1384-85 (Fed. Cir. 2013).

- An “iterative, trial-and-error process” to test thousands of unpredictable candidate compounds is non-enabling as a matter of law. *Idenix Pharmaceuticals LLC v. Gilead Sciences Inc.,* 941 F.3d 1149, 1157-59 (Fed. Cir. 2019).

- *See also Enzo Life Sciences, Inc. v. Roche Molecular Systems,* 928 F.3d 1340, 1347 (Fed. Cir. 2019) (finding non-enablement because the patent required testing tens of thousands of unpredictable compounds).

Challenger – Wands Factors

- ***Breadth of the Claims*** - The claims cover millions of permutations of different antibodies. This includes millions of antibodies with point mutations to a single amino acid.

Challenger – Wands Factors (con'd)

- ***Nature of the Invention, State of the Art and Level of Skill*** – While the antibody art is developed and a POSA is at least a PhD, antibody function is highly unpredictable.

- ***Level of Predictability*** – A POSA cannot predict whether a given antibody will bind to PCSK9 at all, let alone bind to the specific binding sites recited by claim 1.

- ***Amount of Direction*** – While the patent provides guidance concerning how to make and test the antibodies, it provides zero guidance or predictions concerning which would and would not work.

Challenger – Wands Factors (con’d)

- ***Existence of Working Examples –*** Patent only provides two examples of antibodies that satisfy the claims.

- ***Quantity of Experimentation*** – A POSA would have to test each and every one of the millions of claimed antibodies with each test running for weeks at a time.

Patentee – Controlling Federal Circuit Precedent

- Over thirty years ago, the Federal Circuit upheld genus claims to monoclonal antibodies. The claims were functional claims covering antibodies that bind to Hepatitis B surface protein. *In re Wands,* 858 F.2d 731, 734 (Fed Cir. 1988).

- "The test is not merely quantitative, since a considerable amount of experimentation is permissible, if it is merely routine." *Id.*

- "No evidence was presented by either party on how many hybridomas [potentially exist]. . . However, it seems unlikely that undue experimentation would be defined in terms of the number of hybridomas that were never screened." *Id.*

Patentee – Wands Factors

- ***Breadth of Claims*** – The claims are narrow, only covering 400 different antibodies that bind to the claimed residues.
  - The inventors isolated 384 antibodies and Defendants made about 10.
  - Antibodies contain thousands of amino acids, and point mutations of one or two amino acids do not give rise to new antibodies. A POSA would make intelligent substitutions.

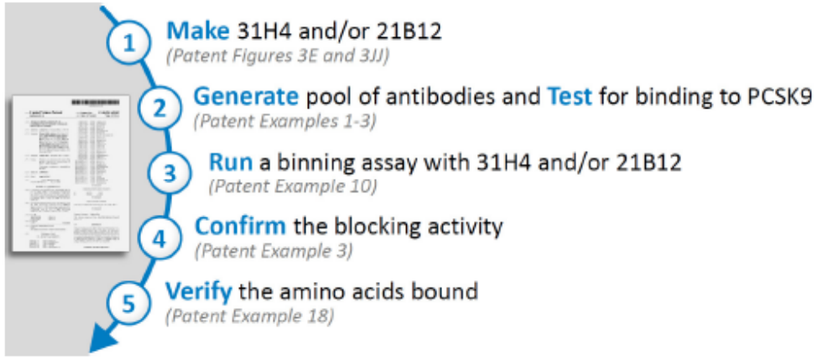
- ***Nature of the Invention*** – By the priority date of the patents in-suit, 8/23/07, the field of monoclonal antibodies was well-developed.

- ***State of the Art, Level of Skill*** – Methods of synthesizing and testing monoclonal antibodies were well-known. The level of skill is high - at least a PhD with multiple years of experience.

Case Study – Non-Enablement

- ***Level of Predictability*** – Point substitutions of amino acids produce predictable structures and a reasonable expectation of similar binding.

- ***Amount of Direction*** – The patent in-suit provides a roadmap to make and test:



- ***Existence of Working Examples –*** The roadmap starts with two working examples and, when followed, produces claimed antibodies every time.

- ***Quantity of Experimentation*** – 400 species do not require undue experimentation; the tests were routine, processing hundreds of antibodies at once.

Case Study – Verdict

Polling Question??

Patentee ☐

Challenger ☐

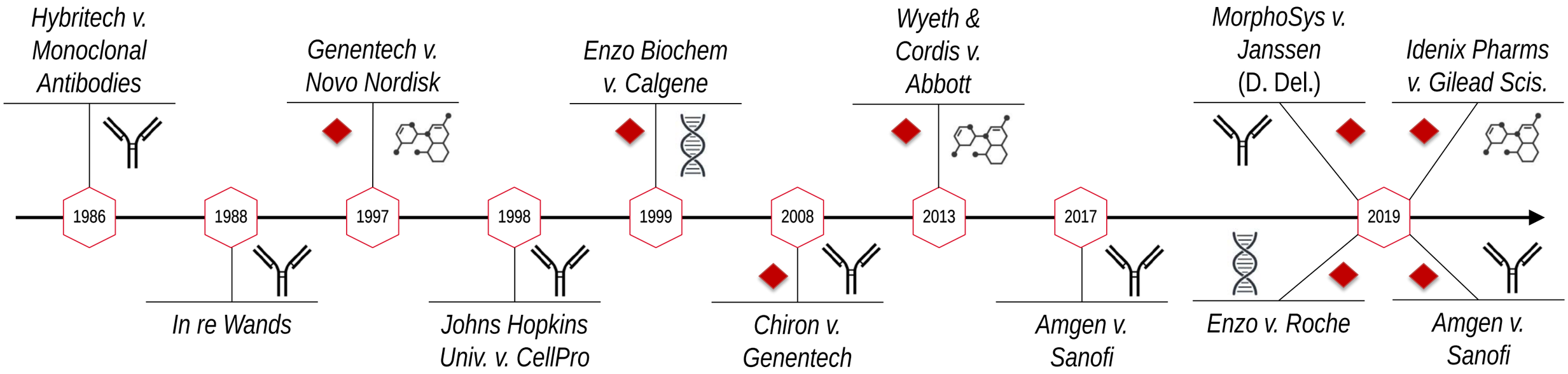
Federal Circuit Precedent

- "The test is not merely quantitative, since a considerable amount of experimentation is permissible, if it is merely routine." *In re Wands,* 858 F.2d 731, 737 (Fed Cir. 1988).

vs.

- Even "routine" experimentation can be "undue" if it involves laborious iterative testing. *See Wyeth & Cordis Corp. v. Abbot Laboratories*, 720 F.3d 1380, 1384-85 (Fed. Cir. 2013). *See also Idenix Pharmaceuticals LLC v. Gilead Sciences Inc.,* 941 F.3d 1149, 1157-59 (Fed. Cir. 2019).

Timeline of Major § 112 Enablement Cases



Unless otherwise indicated, all cases are Federal Circuit decisions

◆ = Not Enabled

Three Types of Genus Claims

- Structurally defined / functionally defined / hybrid (defined with structural and functional elements)
  - Structural – 1. An isolated antibody comprising an amino acid sequence of SEQ ID NO: X.
  - Functional – 1. An isolated antibody capable of reducing concentrations of LDL cholesterol in the blood.
  - Hybrid – 1. An isolated antibody comprising a Fab variable region with greater than 80% homology to a corresponding Fab variable region of SEQ ID NO: X and capable of reducing concentrations of LDL cholesterol in the blood.

More Predictable Arts

- “The amount of guidance or direction needed to enable the invention is inversely related to the amount of knowledge in the state of the art as well as the predictability in the art.” *In re Fisher,* 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970).

- “If an invention pertains to an art where the results are predictable, e.g., mechanical as opposed to chemical arts, a broad claim can be enabled by disclosure of a single embodiment, and is not invalid for lack of enablement simply because it reads on another embodiment of the invention which is inadequately disclosed.” *Spectra-Physics, Inc. v. Coherent, Inc*., 946 F.2d 1528, 1530, 1533 (Fed. Cir. 1991).

Practical Takeaways

- Increased scrutiny of non-enablement and written description in life science cases

- Prosecution – Nested claims and predictions
  - Broad claims and hybrid claiming with non-limiting limitations
  - Predictions/Guidance

- Litigation
  - Assert whenever testing to satisfy functional limitations is present
  - Recognize that the predictability of the art may heavily influence 112 positions

Today’s Agenda

- Case Study
- ***112 Standards***
- Recent Federal Circuit Developments

35 U.S.C. § 112a – Enablement Standards

- Enablement – Specification allows “those skilled in the art to make and use the invention as broadly as it is claimed without undue experimentation.” *In re Cortright*, 165 F.3d 1353, 1356 (Fed. Cir. 1999).

- The *Wands* Factors

  (1) the breadth of the claims; (2) the amount of direction or guidance presented; (3) the presence or absence of working examples; (4) the quantity of experimentation necessary; (5) the nature of the invention; (6) the state of the prior art; (7) the relative skill of those in the art; and (8) the predictability or unpredictability of the art. *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988).

- Enablement to Full Scope
  - “[A]s part of the *quid pro quo* of the patent bargain, the applicant’s specification must enable one of ordinary skill in the art to practice the *full* scope of the claimed invention. . . . [If] the full scope of the claims include[s] [multiple embodiments], the inquiry bec[omes] whether one skilled in the art would have been able to make and use [those embodiments].” *Liebel-Flarsheim Co. v. Medrad, Inc.*, 481 F.3d 1371, 1380 (Fed. Cir. 2007) (internal quotations and citations omitted).

35 U.S.C. § 112a – Written Description and Enablement Standards

- Specification reasonably conveys “to those skilled in the art that, as of the filing date sought, the patentee was in possession of the invention.” *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991).

- “Specifically, the description must clearly allow persons of ordinary skill in the art to recognize that the inventor invented what is claimed.” *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010).

35 U.S.C. § 112a – Written Description Support for Claimed Genus

- ***WD Support for Genus*** - "[1]a representative number of species falling within the scope of the genus or [2] structural features common to the members of the genus so that one skilled in the art can 'visualize or recognize' the members of the genus." *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1350 (Fed. Cir. 2010) (*en banc*).

- ***Reliance on Prior Art*** - "The amount of guidance or direction needed . . . is inversely related to the amount of knowledge in the state of the art as well as the predictability in the art." *In re Fisher,* 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970).

35 U.S.C. § 112(b) – Definiteness Standard

- "A patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the inventions."

- Without "clear notice . . . [to] the public of what is still open to them . . . there would be a zone of uncertainty which enterprise and experimentation may enter only at the risk of infringement claims."

- *Nautilis Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901, 909-10 (2014).

Today’s Agenda

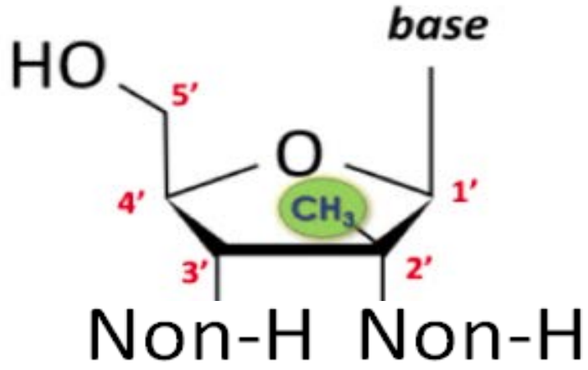
- Case Study
- 112 Standards
- ***Recent Federal Circuit Developments Under 112***

112 and Genus Coverage

The state and nature of the art impacts the level of disclosure required to support broad genus coverage under 112.

Idenix Pharms. LLC v. Gilead Sciences Inc., 2019 WL 5583543 (Fed. Cir. 2019)

- ***Claim*** - A method of treating hepatitis C comprising administering a purine or pyrimidine β-D-2’ nucleoside.
- ***Claim Construction*** - The claimed nucleoside requires a sugar ring with a methyl group in the 2’ up position and non-hydrogen substituents at the 2’ and 3’ down positions:



- ***Accused Product*** - Flourine in the 2’-down position, which was not disclosed in the patent.

Idenix Pharms. LLC v. Gilead Sciences Inc., 2019 WL 5583543 (Fed. Cir. Oct. 30, 2019)

- ***Jury Verdict: Infringed and valid*** – ~$2.5B in damages

- ***Judge Stark***
  - Held: JMOL granted on non-enablement because amount of experimentation would be undue.
  - Held: JMOL denied on written description because jury was entitled to credit Idenix's expert's opinion.

Idenix Pharms. LLC v. Gilead Sciences Inc., 2019 WL 5583543 (Fed. Cir. Oct. 30, 2019)

- ***Federal Circuit Holding*** - Affirmed invalidity

- ***Non-enablement*** - Construction encompassed thousands, potentially millions of undisclosed compounds with undisclosed Hep-C efficacy, including Gilead's accused 2'-down fluoro product. *See also Enzo Life Scis., Inc. v. Roche Molecular Sys., Inc.*, 928 F.3d 1340 (Fed. Cir. 2019) (faulting the patentee for the absence of testing for functionally claimed compounds in an unpredictable field)

- ***Written description***
  - Reversed JMOL of no written description
  - Although the specification disclosed a handful of experimental examples and provided structural elements for thousands of other permutations, "it did not indicate the specific subset of 2'-methyl-up nucleosides that are effective in treating Hep C."

Centrak, Inc. v. Sonitor Techs., Inc., 915 F.3d 1360 (Fed. Cir. 2019)

- ***Claim:*** **"**A system for determining a location and an identity of a portable device, the system comprising . . . a plurality of stationary ultrasonic base stations . .
- ***Specification:***
  - WD focused on use of infrared signals.
  - Disclosure of ultrasonic components was limited to two conclusory sentences stating that ultrasonic components could also be used.
- ***Written Description:***
  - Sonitor argued that the claims lacked written description because infrared or RF components are significantly different than ultrasonic components and their substitution in the claimed system was not within the skill of the art.
  - Centrak countered that a POSA would understand how to use ultrasonic components in the claimed system.

Centrak, Inc. v. Sonitor Techs., Inc., 915 F.3d 1360 (Fed. Cir. 2019)

- ***District Court***
  - Entered summary judgment that the claims are invalid as lacking written description.
    - IR/RF and ultrasound are “fundamentally different” technologies, in part because IR/RF radiation travels approximately 1 million times faster.
    - IR/RF and ultrasound “would [thus] necessarily require a significantly different solution.”
- ***Federal Circuit*** – Vacated
  - The complexity and predictability of substituting ultrasonic for IR/RF components was a disputed material fact precluding summary judgment.

In Practice

- ***Predictability*** – Examine the state of the art and unpredictability

- **112 vs. 103** – Watch for tension between 103 and 112 predictability.
  Nuvo Pharm. v. Dr. Reddy's Labs. Inc., 923 F.3d 1368 (Fed. Cir. 2019)

IBSA Institut Biochimique v. Teva Pharm. 966 F.3d 1374 (Fed. Cir. 2020)

- ***Italian Priority*** – The Italian priority application used the term “semiliquido,” but the translation substituted “half-liquid” instead of semi-liquid

- ***Instrinsic Evidence***
  - Claim context did not clarify
  - Patent specification said what half-liquid was not but not what it was
  - Prosecution
    - Patentee added a dependent claim reciting “semi-liquid” but then withdrew it
    - Patentee distinguished prior art based on half-liquid, leading to further ambiguity

- ***Extrinsic Evidence***
  - Half-liquid not a recognized term of art
  - Patentee expert could not articulate what did and did not qualify as a half-liquid

- ***District Court –*** Indefinite

- ***Federal Circuit*** – Affirmed. “The intrinsic and extrinsic evidence fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.”

In Practice

Hire a good translator and don’t screw up your translations, especially of claim terms.

Samsung Elecs. Am., Inc. v. Prisua Eng'g Corp., 948 F.3d 1342 (Fed. Cir. 2020)

PTAB

- *Sua sponte* raises that certain challenged claims in an IPR are indefinite.
- Characterizes the claims as reciting elements of both an apparatus and a method, and concludes the claims are indefinite for purposes of determining invalidity.
- Refuses to cancel the claims as indefinite or decide whether unpatentable based on prior art.

Federal Circuit

- Agrees PTAB does not have authority under the AIA to cancel claims as indefinite during IPRs.
- But remands to PTAB to determine whether the mixed apparatus/method claim in this case can be evaluated for anticipation and obviousness.

In Practice

- If PTAB is willing to conclude in writing (at institution or final written decision) that claims are subject to indefiniteness, consider
  - The value of such an advisory opinion in court;
  - A final written decision on this issue will not create estoppel based on prior art. *See Cochlear Bone Anchored Sols. AB v. Oticon Med. AB*, 958 F.3d 1348, 1359 (Fed. Cir. 2020) (“[i]n cases in which the Board cannot reach a final decision because it cannot ascertain claim scope with reasonable certainty, the petitioner would not be estopped from challenging those claims under sections 102 or 103 in other proceedings”).

- Monitor future decisions to see how the PTAB and courts are treating these issues.

Questions??

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The 103/112 Trap

Patentee arguments for countering obviousness may open the door to 112 defenses.

Nuvo Pharm. v. Dr. Reddy's Labs. Inc., 923 F.3d 1368 (Fed. Cir. 2019)

- ***Claim:*** A pharmaceutical dosage form comprising (a) an NSAID enterically coated to release above 3.5 in combination with (b) a partially uncoated acid inhibitor in an amount effective to raise gastric pH above 3.5.
- ***Obviousness:*** Nuvo argues that POSA would not reasonably expect an uncoated acid inhibitor to raise gastric pH to at least 3.5.
- ***Written Description:*** Reddy's counters that the patent specification failed to provide evidence that an uncoated acid inhibitor would raise gastric pH to 3.5.

Nuvo Pharm. v. Dr. Reddy's Labs. Inc., 923 F.3d 1368 (Fed. Cir. 2019)

- ***District Court***
  - Held: Non-obvious based on teaching away and no RES.
  - Held: Written description sufficient because data and explanations are unnecessary.
- ***Federal Circuit*** - Reversed WD.
  - Absence of data and reasoning leaves the claimed invention as a mere wish or hope that uncoated acid inhibitors would work.
  - "amount effective to raise gastric pH above 3.5"

"Upon Nuvo's insistence as part of its obviousness analysis, skilled artisans would not have expected uncoated [acid inhibitors] to be effective, and nothing in the specification would teach a person of ordinary skill in the art otherwise." *Id.* at 1377.

In Practice

Patentees

- Watch out for the tension between obviousness and 112.
- Be careful of 112 in prosecution and litigation. Add dependent claims covering specific embodiments.

Challengers

- Identify embodiments lacking efficacy support and trap patentees with obviousness assertions where possible.
- Identify functional claiming and liberally assert 112 defenses.

Lack of Written Description vs. Non-Enablement

- Written Description Satisfied but Non-Enablement
  - Structural features of genus disclosed but iterative testing required

- Enablement Satisfied but Written Description Lacking
  - How to make disclosed or within the art but description of claimed subject matter absent