Sterne Kessler
STERNE KESSLER GOLDSTEIN & FOX

Intellectual Property Breakfast

Jorge A Goldstein and Mike B Ray

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Technical Minds. Legal Muscle.

Goldstein

Biotech Patents and Hot IP Issues of Relevance to Life Sciences Entrepreneurs

Sterne Kessler
STERNE KESSLER GOLDSTEIN & FOX

Outline

- Introduction to biotech patent law
- Hot issues in the U.S.
  - Eligibility: Natural products – Diagnostic correlations
  - Precision medicine claims
    - Multi-party claims: Divided infringement
    - Obviousness (lack of inventive step)
  - Written description of broad genus claims
    - Evidence of after-arising embodiments
    - The “antibody exception” to written description

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Outline (cont'd)

- Combination Therapies in the treatment of cancer
  - What will be the optimal agreement between partner(s)
  - How can new biotech / immunotherapy providers best position themselves versus big pharma
- International patent exhaustion

- Lukewarm issues in the U.S.
  - Best mode
  - Inventorship: simultaneous conception and reduction to practice

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What is so special about biotech patent law? … Lack of predictability !

- In the U.S, unpredictability has patent impact on:
  - Scope of claims (harder to get broad claims)
  - Non-obviousness (easier to argue inventive step for narrow claims)
  - But… *very dangerous* to argue unpredictability for both non-obviousness and broad claim scope at the same time
  - Deposits may be required for specific microbes or cells
  - Utility (industrial application) may have to be proven
  - Hard to prove infringement under the Doctrine of Equivalents
  - Inherency issues in priority documents (☺) and in the prior art (☹)

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Hot biotech IP issue in the U.S.: Eligibility

- ***Myriad Genetics*** (S. Ct. 2013): Isolated genes are not eligible
- But what about product claims to a natural antibiotic X ?
- "Purified…" or "Isolated…" antibiotic X ? = Not OK
- A covalent modification of antibiotic X ? = OK
- "Combination of antibiotic X with a non–natural carrier" ? = OK
- "Antibiotic X with a Specific Activity (SA) > Y units/mg" ? = Probably OK …
  - If "Y units/mg" exceeds the SA of the antibiotic in nature
  - Careful! If the claim is open ended it may lack enablement

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Hot issue: Eligibility (cont'd)

- ***Mayo v. Prometheus*** (S. Ct. 2013): Natural correlations (such as diagnostic correlations) are not eligible

  "Detecting mutation X and thereby establishing effectiveness of medication Y" = not OK

- To make them eligible you need to:
  - Narrow the claim to a non-routine, non-conventional method of measuring : "Detecting mutation X *by DNA amplification using primers P_1 and P_2,* and thereby…," or
  - Add a post correlation treatment step : "…establishing effectiveness of medication Y *and thereafter administering medication Y to the patient*."

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Hot issue: Precision medicine claims

- Two-party claims are eligible:

  Method of treating disease X comprising, (1) detecting mutation Y and, if present, (2) administering drug Z."

  - First party (a clinical lab) detects the mutation in step (1);
  - Second party (a doctor) administers the drug in step (2).
  - But, while eligible, such claims lead to divided infringement
  - Only way to succeed then is to prove that:
    - One party is the agent of the other (rarely happens in a clinical setting) (***Cleveland Clinic v True Health***, Fed. Cir. 2017); or
    - One party acts only on condition of certain actions by the other party (more likely) (***Lilly v Teva***, Fed. Cir. 2017)

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Hot issue: Precision medicine/obviousness

Prometheus v Roxane (Fed. Cir. 2015)

Claim 5. A method for treating a diarrhea-predominant female IBS patient, while excluding those with predominant constipation, said method comprising:

> ***assessing*** whether said diarrhea-predominant female IBS patient has experienced symptoms for at least six months; and
>
> ***administering*** an effective amount of alosetron or a pharmaceutically acceptable derivative thereof to said patient who has experienced symptoms for at least six months, wherein said effective amount is dependent on the condition of the patient and is at the discretion of the attendant physician.

Dyk, J: The genus-species distinction may have particular relevance in the field of personalized medicine, where, for example, a particular treatment may be effective with respect to one subset of patients and ineffective (and even harmful) to another subset of patients … Singling out a particular subset of patients for treatment (for example, patients with a particular gene) may reflect a new and useful invention that is patent eligible despite the existence of prior art or a prior art patent disclosing the treatment method to patients generally. An obviousness rejection likely would not be appropriate where the new patient subset displayed unexpected results.

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Hot Issue: Written description of broad claims

- In U.S., written description (WD) is different than enablement
- Enablement has to do with *reproducibility*
- WD has to do with *possession* of the invention on priority date
- Demonstrating possession of a broad genus is done by
  - A representative number of examples, or
  - A common structure-function correlation
- Recent cases, ***AbbVie Deutschland*** (Fed. Cir. 2014) and ***Amgen v Sanofi*** (Fed. Cir. 2017), indicate that an opponent should be able to introduce evidence of *after-arising examples* to demonstrate lack of possession by the inventor of the whole genus at the earlier priority date.

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Hot issue: The "antibody exception" to written description of a genus

- **Old case law** (***Noelle v Lederman***, Fed. Cir. 2004): If the antigen was *new and fully characterized* one could get a claim to:

  "[Any] antibody that binds to the antigen."

- If the antigen was old or not well characterized, and the claim was functional (e.g., "antibody has k_{off} < x per sec") one had to show a representative number of examples
- **New case law** (***Amgen v Sanofi*** (Fed. Cir. 2017): Whether the antigen is novel and fully characterized or not is no longer relevant
  - One must always show a representative number of examples
  - And, after-arising examples can be introduced to show lack of WD

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Hot issue: Combination therapies in cancer

- Breakthrough discoveries of “checkpoint inhibitors” (CI’s), by pioneers Bristol Myers Squibb, Merck, and others
- Many ongoing trials of CI’s with other anticancer agents invented by a second entity
- Second entity gets patent on the combination
  - “Co-administering” defined broadly: simultaneous, sequential, in admixture (clinically uncommon), alternate, as part of one or more therapy cycles, etc.
- The combination therapy is dominated by the pioneer’s patents
- But pioneer cannot commercialize the combination
- Cross license is necessary if both want to commercialize
- More likely, if the clinical results are compelling, there will be a royalty-bearing license from the second entity to the pioneer big pharma company, who will commercialize

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Hot issue: International exhaustion of U.S. patents

- Patent exhaustion: the first *authorized sale* of a product *exhausts* any U.S. patent rights *embodied* by the sold product.

- Authorized sale: A sale by patent holder or a licensee

- Exhaustion of patent rights reflects the view that a patent holder is only entitled to one payment (royalty) for the sale.

- ***Impression Products v Lexmark*** (S. Ct. 2017): First authorized sale of a product *anywhere in the world* exhausts the rights of any U.S. patent embodied by the product.

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International exhaustion of U.S. patents (cont'd)

- A Norwegian biotech company first sells a therapeutic antibody A (Ab A) in Norway to a buyer, for cancer treatment
  - Adds a contractual post-sale restriction: "Not for importation to the U.S."
- Any U.S. patent of the biotech company *embodied* by the sale of Ab A is exhausted
- Examples of exhausted U.S. patents, might be:
  - On the antibody A
  - On a method of treating cancer with antibody A
- *As a matter of U.S. patent law*, the company can no longer enforce (with these exhausted U.S. patents) the restriction "not for importation to the U.S."

  ➔ The buyer could still export Ab A into the U.S. free of patent consequences

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International exhaustion of U.S. patents (cont'd)

- Biotech company may still have *breach of contract* remedies in U.S. or Norwegian Courts
- But company has no *patent infringement* remedies in the U.S. …
- …Unless biotech company still has any *non-exhausted* U.S. patents

  Therefore:
- Company should obtain multiple U.S. patents on *patentably distinct* (inventive) methods of use:
  - **Use 1**:Method of treating breast cancer with Ab A (exhausted)
  - **Use 2**:Method of treating arthritis with Ab A (not exhausted)

  ➔Importation of Ab A for use in arthritis is still actionable as patent infringement.

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Lukewarm issue in the U.S.: Best mode

- Best mode requirement has not been abolished
- It is still a requirement at the USPTO
- But it is no longer possible to invalidate a patent for hiding the best mode
- What does this mean?
- Intentional withholding of best mode with intent to mislead the USPTO could be evidence of fraud
- Very subjective standards – hard to prove:
  - Best mode must be known to the inventor
  - Must prove intent to withhold
  - Must prove intent to mislead

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Lukewarm issue: Inventorship

- Who is an inventor in the U.S.?
- Person who *conceives*, not who reduces to practice
  - Example: the AZT case *(**Burroughs Welcome v Barr,*** Fed. Cir. 1994)
- Inventor must conceive a *solution* to problem not just the problem
- Could conceive a partial solution, to be complemented by another person = Co-inventors of the complete conception
- In biotech, sometimes conception and reduction to practice are simultaneous and merge
  - Example: Unexpected discovery of an antibiotic in the soil (following the rule of ***Hitzeman v Rutter**,* Fed. Cir. 2001)
- The employer of the inventor of *even one claim* is a co-owner of the patent

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Ray