



# *Mayo v. Prometheus*

Decided March 20, 2012

Roberte Makowski, Ph.D., J.D.

Hans Sauer, Ph.D., J.D.



CONNOLLY BOVE LODGE & HUTZ LLP  
ATTORNEYS AT LAW

IP Smart • Business Savvy • Client Connected®

# Disclaimer

- This material was published by Connolly Bove Lodge & Hutz LLP and is provided for educational and informational purposes. It is not intended and should not be construed as legal advice.
- This presentation does not represent the opinion of Connolly Bove Lodge & Hutz or BIO, clients, colleagues, or standard industry practice.
- Applying the information provided in the presentation does not mean that you will obtain a patent.
- While the material has been reviewed for accuracy, no liability exists for errors or omissions.



# Roadmap

- Prometheus' Patents
- District Court
- Federal Circuit I
- Supreme Court I
- Federal Circuit II
- Supreme Court II
- Guidance?
- Recent decisions applying *Prometheus*
- Discussion Points
- Looking Ahead - Tips



# Prometheus' Patents

- U.S. Patents 6,355,623 and 6,680,302
- methods for calibrating the proper dosage of thiopurine drugs
  - used for treating both gastrointestinal and non-gastrointestinal autoimmune diseases.



# Prometheus' Patents

Claim 1 of the '623 patent is representative and relates to

“A method of optimizing therapeutic efficacy for treatment of an immune-mediated gastrointestinal disorder, comprising” two steps

“(a) administering” one of a class of drugs (thiopurines)

(“a drug providing 6-thioguanine to a subject having said immune-mediated gastrointestinal disorder;”) and

“(b) determining the level of” a specified metabolite

(“6-thioguanine in said subject having said immune-mediated gastrointestinal disorder”),

“wherein” a level below a given threshold

(“the level of 6-thioguanine less than about 230 pmol per  $8 \times 10^8$  red blood cells”)

“indicates a need to increase the amount of said drug subsequently administered to said subject and”

“wherein the level” above the threshold

(“6-thioguanine greater than about 400 pmol per  $8 \times 10^8$  red blood cells”)

“indicates a need to decrease the amount of said drug subsequently administered to said subject.”



# The Parties

## Plaintiffs

Prometheus Laboratories, Inc.

- sole and exclusive licensee of the '623 and '302 patents
- sells diagnostic kits that embody the process the patents describe.

## Defendants

Mayo Clinic Rochester and Mayo Collaborative Services

- bought and used tests from Prometheus.
- in 2004 Mayo announced it intended to begin using and selling its own tests.
- the Mayo test measured the same metabolites, but used higher metabolite levels to determine toxicity.

# The District Court

Southern District of California, March 2008

- granted summary judgment in favor of Mayo
- the claims of the '623 and '302 patents are invalid under § 101
  - the patents effectively claim natural laws or natural phenomena
  - namely the correlations between thiopurine metabolite levels and the toxicity and efficacy of thiopurine drugs
- *Prometheus* appealed.

*Prometheus Labs, Inc. v. Mayo Collaborative Servs.*,  
No. 04-CV-1200, 2008 WL 878910 (S.D. Cal Mar. 28, 2008)



CONNOLLY BOVE LODGE & HUTZ LLP  
ATTORNEYS AT LAW

IP Smart • Business Savvy • Client Connected®

# 35 U.S.C. § 101 – Inventions Patentable

- “Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.”
- Construed broadly, but excludes laws of nature, physical phenomena, or abstract ideas.





# Federal Circuit I

- The Federal Circuit reversed the District Court.
  - held that the claimed methods satisfy the Circuit’s “machine or transformation test” for patent-eligible subject matter under § 101.
  - the administering and determining steps are transformative, not merely data-gathering
  - the presence of mental steps (the final wherein clauses) does not detract from patentability; a subsequent mental step does not, by itself, negate the transformative nature of prior steps.
- Mayo filed a petition for *certiorari*.



# Supreme Court I

- The Supreme Court granted *certiorari*, vacated the Federal Circuit judgment and remanded the case to the Federal Circuit for further consideration in light of *Bilski*.

130 S. Ct. 3543 (2010)



CONNOLLY BOVE LODGE & HUTZ LLP  
ATTORNEYS AT LAW

IP Smart • Business Savvy • Client Connected®

# Federal Circuit II

- On remand, the Federal Circuit again held that *Prometheus*' asserted method claims are drawn to statutory subject matter, and again reversed the district court's grant of summary judgment of invalidity under 35 U.S.C. § 101.
- The Federal Circuit reaffirmed that
  - the treatment methods claimed in the '623 and '302 patents satisfy the transformation prong of the machine or transformation test
  - the claims recite specific treatment steps, not just the correlations themselves and involve a particular application of the natural correlations
  - the claims do not preempt all uses of the natural correlations; they utilize them in a series of specific steps
- Mayo again filed a petition for *certiorari*.

628 F.3d 1347 (Fed. Cir. 2010)



CONNOLLY BOVE LODGE & HUTZ LLP  
ATTORNEYS AT LAW

IP Smart • Business Savvy • Client Connected®

# Supreme Court II

- Opinion by Justice Breyer
- Unanimous court
- Questions to decide –
  - “whether the claims do significantly more than simply describe these natural relations”
    - relationships between concentrations of certain metabolites in the blood and the likelihood that a dosage will prove ineffective or cause harm
  - “do the patent claims add *enough* to their statements of the correlations to allow the processes they describe to qualify as patent-eligible processes that *apply* natural laws?”



# Supreme Court II

- Focus on difference between claims to laws of nature themselves - not patent eligible and claims to specific applications of such laws - patent eligible.
  - Monopolization of laws of nature, mental processes and abstract intellectual concepts through the grant of a patent might tend to impede innovation more than it would tend to promote it.
  - An application of a law of nature or mathematical formula to a known structure or process may be deserving of patent protection.
  - However, to transform an unpatentable law of nature into a patent-eligible application of such a law, one must do more than simply state the law of nature while adding the words “apply it.”



# Supreme Court II

- relied on *Diamond v. Diehr*, 450 U.S. 175 (1981) and *Parker v. Flook*, 437 U.S. 584 (1978) to show the difference between a non-patentable method and a patent-eligible method that represents an application of a natural law.
- methods in *Diehr* and *Flook* were analyzed by examining each step of the method separately to determine its effect and to determine whether it was well-known or conventional in the relevant art, and examining the steps of the method as a whole.



# Court's analysis based on *Diehr & Flook*

## *Diehr* process – patentable

Method for molding raw, uncured rubber into cured, molded products.

The process

- (1) continuously monitoring the temperature on the inside of the mold,
- (2) feeding the resulting numbers into a computer, which would use the Arrhenius equation to continuously recalculate the mold-opening time, and
- (3) configuring the computer so that at the appropriate moment it would signal a “device” to open the press.

## *Flook* process – not patentable

Method for improved system for adjusting “alarm limits” in the catalytic conversion of hydrocarbons.

The process

- (1) measuring the current level of the variable, *e.g.*, the temperature;
- (2) using an apparently novel mathematical algorithm to calculate the current alarm limits; and
- (3) adjusting the system to reflect the new alarm-limit values.



# Court's analysis based on *Diehr & Flook*

## *Diehr* process – patentable

The combination of steps was NOT obvious, already in use or purely conventional.

The additional steps of the process integrated the equation into the process as a whole.

## *Flook* process – not patentable

The steps of the method were well-known to the point that, putting the formula to the side, there was no “inventive concept” in the claimed application of the formula.

The process did not limit the claim to a particular application.





# Court's analysis of the claims

Analysis of the claims went through four steps:

- 1. the Court observed that the administering step just defines “the relevant audience” —doctors who treat patients with thiopurine drugs.
- 2. “the ‘wherein’ clauses simply tell a doctor about the relevant natural laws.”
- 3. the determining step does not specify any particular process, but merely invites doctors “to engage in well understood, routine, conventional activity.’
- 4. “to consider the three steps as an ordered combination adds nothing to the laws of nature that is not already present when the steps are considered separately.”



# Court's analysis of the claims

- Concluded that these instructions add nothing specific to the laws of nature other than what is well-understood, routine, conventional activity, previously engaged in by those in the field; and
- the steps of the method, when viewed as a whole, add nothing significant beyond the sum of their parts taken separately.
- The effect of the steps is simply to tell doctors to apply the law of nature somehow when treating their patients.



# Supreme Court II

- In sum, “the three steps simply tell doctors to gather data from which they may draw an inference in light of the correlation.”
- The three steps “are not sufficient to transform unpatentable natural correlations into patentable applications of those regularities.”
- To allow such a patent could “inhibit further discovery by improperly tying up the future use of laws of nature.”
- Application of a law of nature is patentable, but
  - “simply appending conventional steps, specified at a high level of generality, to laws of nature, natural phenomena, and abstract ideas cannot make those laws, phenomena, and ideas patentable.”
  - When “putting” the law of nature step “to the side, there was no ‘inventive concept’ in the claimed application” of the law of nature and “the other steps in the process did not limit the claim to a particular application.”
  - something more is required.



# Supreme Court II

- Relied on public policy considerations - preemption
  - The '623 and '302 patents tie up too much future use of laws of nature.
  - The patents tie the doctor's subsequent treatment decision regardless of whether he changes his dosage in the light of the inference he draws using the correlations
  - The patents threaten to inhibit the development of more refined treatment recommendations that combine *Prometheus'* correlations with later discoveries of features of metabolites, human physiology or individual patient characteristics
- The court did not provide guidance of what steps would be a sufficient application of the law of nature to make *Prometheus'* process patent-eligible.



# Supreme Court II – Guidance?

- Not much specific guidance of what would constitute “enough” or “sufficient” to "transform the nature of the claim" from an unpatentable law of nature
- Gave more indications of what would NOT be considered enough, based on comparisons of the claims at issue to those from precedential decisions.
- Backed away from making a determination of whether the additional steps relating to the use of the laws of nature if less conventional would be sufficient or not to invalidate the claims
  - “[w]e need not, and do not, now decide whether were the steps at issue here less conventional, these features of the claims would prove sufficient to invalidate them.”



# Supreme Court II – Guidance?

A few examples of what the Court might consider to be sufficient:

- “a novel and useful structure created with the aid of knowledge of scientific truth may be” where the scientific truth refers to the law of nature.
- if “use of a natural law also contain other elements or a combination of elements, sometimes referred to as an ‘inventive concept’” or “explained how the principle could be implemented in an inventive way.”
- the “process patent [was] eligible because of the way the additional steps of the process integrated the equation [i.e. the law of nature] into the process as a whole.”
- the process “does not merely claim a principle, but a machine embodying a principle.”
- “several unconventional steps . . . that confined the claims to a particular, useful application of the principle.”



# Supreme Court II – Guidance?

Examples of what the Court considered as not being “enough” or “sufficient”:

- the process should not “depend simply on the draftsman’s art” and would need additional features to make the process more “than a drafting effort designed to monopolize the law of nature itself.”
- just to “limit the use of the formula to a particular technological environment’ or adding ‘insignificant postsolution activity’” would not be sufficient, i.e. “post-solution activity” that is purely “conventional or obvious . . . can[not] transform an unpatentable principle into a patentable process.”
- Similarly “[p]urely “conventional or obvious” “[pre]-solution activity” is normally not sufficient.”
- “additional steps, apart from the natural laws, must not just involve well-understood, routine, conventional activities” given that here “all these steps, or at least the combination of those steps [in the present case], were in context obvious, already in use, or purely conventional.”



# Supreme Court II – Guidance?

Examples of what the Court considered as not being “enough” or “sufficient”:

- the process should not just “limit the use of the formula to a particular technological environment.”
- “to consider the three steps [in the process at issue] as an ordered combination adds nothing to the laws of nature that is not already present when the steps are considered separately.”
- “Other cases offer further support for the view that simply appending conventional steps, specified at a high level of generality, to laws of nature, natural phenomena, and abstract ideas cannot make those laws, phenomena, and ideas patentable.”
- simply a suggestion to consider test results for decisions was not sufficient, i.e. “[t]he “wherein” clauses simply tell a doctor about the relevant natural laws, adding, at most, a suggestion that they should consider the test results when making their treatment decisions.”





# Supreme Court II – Guidance?

- Although the Court explicitly rejected the approach of leaving the work of evaluating patents to sections 102, 103 and 112
  - i.e. the Court referenced sections 102 and 103 as not providing anything “about treating laws of nature as if they were part of the prior art when applying those sections.”
- It still included 102/103 concepts into analysis of 101
  - when looked at whether the steps of the application of the law of nature were “well known in the art,” “well understood, routine, conventional,” and “obvious” to eliminate them from consideration as being “enough”
  - Court did state that “in evaluating the significance of additional steps, the §101 patent-eligibility inquiry and, say, the §102 novelty inquiry might sometimes overlap.”



# Supreme Court II – Guidance?

- In its analysis, the Court separated the steps of the process into 2 groups,
  - the steps relating to the law of nature itself and
  - the additional steps relating to the use or application of the law of nature.
- Although the Court quoted *Diehr* for indicating that the claims “must be considered as a whole,” the analysis appears to be mainly based on analyzing the two groups separately and differently.
- Although the Court mentioned the combination of steps, it indicated that this
  - “adds nothing to the laws of nature that is not already present when the steps are considered separately” and
  - adding “nothing significant beyond the sum of their parts taken separately.”



# Supreme Court II – Guidance?

- With the emphasis that the additional steps would need to be
  - “unconventional” or “inventive in some way”appears to indicate that novelty must be integrated into a section 101 analysis for the steps dealing with the use or application of the laws of nature, but not for the steps relating to the laws of nature themselves.
- Confusion?
  - inclusion of section 102/103 in a section 101 analysis
  - application of section 102/103 to certain steps of the method but not to others in a section 101 analysis



# Supreme Court Decisions based on *Prometheus*

## ***Ass'n for Molecular Pathology v. Myriad Genetics*, 132 S. Ct. 1794 (March 26, 2012).**

- Granted *certiorari*
- Vacated and remanded to CAFC in light of *Prometheus*.
- Briefs due June 15, 2012
- Arguments on July 20, 2012

## ***Wildtangent, Inc. v. Ultramercial, LLC*. (May 21, 2012)**

- Granted *certiorari*
- Vacated and remanded to CAFC in light of *Prometheus*.



# District Court Decisions based on *Prometheus*

## ***SmartGene Inc. v. Advanced Biological Labs. S.A.*, (D.D.C. March 30, 2012)**

Claim directed to

- A method for guiding the selection of a therapeutic treatment regimen for a patient with a known disease or medical condition, said method comprising:
  - (a) providing patient information to a computing device comprising:
    - a first knowledge base comprising a plurality of different therapeutic treatment regimens for said disease or medical condition;
    - a second knowledge base comprising a plurality of expert rules for evaluating and selecting a therapeutic treatment regimen for said disease or medical condition;
    - a third knowledge base comprising advisory information useful for the treatment of a patient with different constituents of said different therapeutic treatment regimens; and
  - (b) generating in said computing device a ranked listing of available therapeutic treatment regimens for said patient; and
  - (c) generating in said computing device advisory information for one or more therapeutic treatment regimens in said ranked listing based on said patient information and said expert rules.



# District Court Decisions based on *Prometheus*

- **SmartGene Inc.** (cont.) - Discussed *Prometheus* in detail
  - claims found patent ineligible
  - claims involve the “organization of data”
  - invalid under machine or transformation (MOT) test
    - not tied to particular machine
      - “computer device referenced in the claims is incidental to the claimed invention and is not used for more than ‘insignificant postsolution activity,’ and thus does not satisfy the machine prong
    - claims do not satisfy the transformation test
      - “the patents here do not manifest any sort of physical transformation”
  - Still invalid without MOT test
    - “claims mirror the mental processes that a physician performs, and therefore embody the “basic tools of scientific and technological work’ that are free to all men and reserved exclusively to none.” (citations omitted)
    - “Furthermore, the computing device references in the defendants’ patents may be ‘programmed to perform very different tasks in very different ways,’ and therefore cannot serve as a significant limitation or constraint on the claimed invention.”



# District Court Decisions based on *Prometheus*

## ***Nazomi Commc'ns, Inc. v. Samsung Telecomms., Inc.*, No. C-10-05545 RMW, 2012 WL 967968, at \*4 (N.D. Cal. March 21, 2012).**

- Denying defendant's motion for Summary Judgment of invalidity and concluding that, in contrast to the claims at issue in *Prometheus*, the claims “do more than recite an abstract idea and say ‘apply it.’ Rather, they recite ***specific steps that confine the claims to a specific, useful application.***” (emphasis added).

## ***Advanced Software Design Corp. v. Fiserv, Inc.*, No. 4:07CV185 CDP, 2012 WL 1684495 at \*4-6 (E.D. Mo. May 15, 2012).**

- Denying defendant's motions for Summary Judgment of invalidity and concluding that the claims (“Apparatus and Method for Enhancing the Security of Negotiable Instruments”) passed the § 101 threshold.
- Citing *Prometheus* for “application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.”
- Claims found to be like those of *Diehr* and did “more than merely state that a general purpose computer be used, because it identifies a scanner and programmed data processing device, and it requires complex programming for a ***specific application to a narrow field.***” (emphasis added).



# BPAI Decisions based on *Prometheus*

*Ex parte Katzman*, No. 2011-011684, 2012 WL 1664861, at \*11 (B.P.A.I. May 10, 2012).

- Claims found to be patent ineligible. The addition of descriptive material to a package to inform the consumer of the contents and instruct him to set it up is nothing more than “simply appending conventional steps” to an abstract idea. (concurring opinion).

*Ex parte Skyba*, No. 2011-001204, 2012 WL 1681651, at \*3-4 (B.P.A.I. May 11, 2012).

- Claims found to be patent eligible. Finding that the holding in *Prometheus* does not apply since the claims do “far more than merely gather data and/or ‘think about’ gathered data” and “do not ‘simply tell doctors to gather data from which they may draw an inference in light of the correlations.’” Here, “[t]he pending claims are directed to a **specific process**, requiring **physical action by a human**, for altering a specific part of a medical diagnostic image.” (emphasis added).





# Discussion Points

- Applicability to *Myriad*'s method claims
- Applicability to product claims
  - only method claims at issue in *Prometheus*
- USPTO memorandum
- Preemption
  - tying up v. locking up



# Discussion Points

- *Myriad's* method claim:
  - Drawn to a method for screening potential cancer therapeutics which comprises
    - 1) ***growing*** host ***cells transformed*** with an altered BRCA1 gene in the presence or absence of a potential cancer therapeutic,
    - 2) ***determining*** the growth rate of the host cells with or without the potential therapeutic, and
    - 3) comparing the growth rate of the host cells.



# Discussion Points

- Applicability to *Myriad*'s method claims
- Applicability to product claims
  - only method claims at issue in *Prometheus*
- USPTO memorandum
- Preemption
  - tying up v. locking up



# Discussion Points

- USPTO published a memorandum on March 21, 2012 providing preliminary guidelines to Examiners:
  - a claim should include other elements or combination of elements such that, in practice the claimed ***product or process*** amounts to significantly **more than** a law of nature, a natural phenomenon, or an abstract idea with conventional steps specified at a high level of generality appended thereto.
  - more guidance to come.

[http://www.uspto.gov/patents/law/exam/mayo\\_prelim\\_guidance.pdf](http://www.uspto.gov/patents/law/exam/mayo_prelim_guidance.pdf)



CONNOLLY BOVE LODGE & HUTZ LLP  
ATTORNEYS AT LAW

IP Smart • Business Savvy • Client Connected®

# Discussion Points

- Applicability to *Myriad*'s method claims
- Applicability to product claims
  - only method claims at issue in *Prometheus*
- USPTO memorandum
- Preemption
  - tying up v. locking up



# Looking Ahead - Tips

- Consider review patented method claims
  - consider reissue if claims similar to the *Prometheus* claims
- Review method claims in pending applications
  - amend and/or add additional steps
  - claims more similar to those in *Diehr* rather than those in *Flook*
    - further step(s) where formula or law of nature integrated or applied to conduct a physical step
      - last step of *Diehr* – “opening the press automatically when a said comparison indicates equivalence”
      - compared to last step of *Flook* – “adjusting said alarm limit to said updated alarm limit value.”
  - helpful if method by which a biological molecule is administered or detected is novel



# Looking Ahead - Tips

- In process or method claims and in new applications include
  - elements or combinations of elements which themselves comprise an “inventive concept”
    - not “well-understood, routine, and conventional activity already engaged in by the scientific community”
  - active steps using the results obtained from the diagnosis assay
    - including a final administering step or
    - alternative administering steps depending on the outcome of the “determining” step
  - additional transformative step which include
    - an assay component
    - quantification techniques
    - treatment protocols



# Looking Ahead - Tips

- In process or method claims and in new applications include
  - active steps which will be more difficult to identify as “laws of nature”
    - novel determinative steps
    - what is administered is novel
    - the relationship between what is detected and a particular disease is novel
  - multiple, additional known steps must add something “significant” as a whole, beyond the sum of their parts





# Looking Ahead - Tips

- Claims should not preempt the use of the law of nature
- Keep in mind joint liability issues with multiple method steps
- Consider proof of infringement issues



CONNOLLY BOVE LODGE & HUTZ LLP

ATTORNEYS AT LAW

IP Smart • Business Savvy • Client Connected®

# Thank You

- **Roberte M. D. Makowski, Ph.D., J.D.**  
Partner, Connolly Bove Lodge & Hutz LLP  
The Nemours Building  
1007 North Orange Street, P.O. Box 2207  
Wilmington, DE 19899  
Phone: 302-888-6410  
Email: [rmakowski@cblh.com](mailto:rmakowski@cblh.com)
- **Hans Sauer, Ph.D., J.D.**  
Deputy General Counsel, Intellectual Property  
Biotechnology Industry Organization (BIO)  
1201 Maryland Avenue, SW, Suite 900  
Washington, DC 20024  
Phone: 202-962-6695  
Email: [hsauer@bio.org](mailto:hsauer@bio.org)

