Lessons from Biopharma
§ 101 Ineligibility Holdings:
A Misapplication of § 101 to Claims Where
§ 102/§ 112(a) Have Historically Barred Patents?

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Assume that the following additional text had been part of § 101 in the 1952 Patent Act—

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, except that a determination that a claimed invention is ineligible for patenting under the express or any implied requirement under this section may only be made if the claim thereto has first been determined to meet—

(1) the requirements under section 112(a) for a sufficient disclosure and

(2) the novelty condition for patentability under section 102, including inherently with respect to any law or product of nature or any natural or physical phenomenon.
Also assume that the relevant precedents on § 102 and § 112(a) were rigorously applied—

• O’Reilly v. Morse, 56 U.S. 62 (1854).
• University of Cal. v. Eli Lilly & Co., 119 F. 3d 1559 (Fed. Cir. 1997).
• In re Fisher, 421 F.3d 1365 (Fed. Cir. 2005).
• Ariad Pharms., Inc. v. Eli Lilly & Co., 598 F.3d 1336 (Fed. Cir. 2010).
MAYO V. PROMETHEUS:
A method of optimizing therapeutic efficacy for treatment of an immune-mediated gastrointestinal disorder, comprising:
(a) administering a drug providing 6-thioguanine to a subject having said immune-mediated gastrointestinal disorder; and
(b) determining the level of 6-thioguanine in said subject having said immune-mediated gastrointestinal disorder,
wherein the level of 6-thioguanine less than about 230 pmoles per 8\times10^6 red blood cells indicates a need to increase the amount of said drug subsequently administered to said subject and wherein the level of 6-thioguanine greater than about 400 pmoles per 8\times10^6 red blood cells indicates a need to decrease the amount of said drug subsequently administered to said subject.

ARIOJA V. SEQUENOM:
1. A method for detecting a paternally inherited nucleic acid of fetal origin performed on a maternal serum or plasma sample from a pregnant female, which method comprises amplifying a paternally inherited nucleic acid from the serum or plasma sample and detecting the presence of a paternally inherited nucleic acid of fetal origin in the sample.

MYRIAD:
1. An isolated DNA coding for a BRCA1 polypeptide, said polypeptide having the amino acid sequence set forth in SEQ ID NO.2.
2. The isolated DNA of claim 1, wherein said DNA has the nucleotide sequence set forth in SEQ ID NO.1.
...5. An isolated DNA having at least 15 nucleotides of the DNA of claim 1.
6. An isolated DNA having at least 15 nucleotides of the DNA of claim 1.

IN RE BRCA1 & BRCA2:
A method for screening germline of a human subject for an alteration of a BRCA1 gene which comprises comparing germline sequence of a BRCA1 gene or BRCA1 RNA from a tissue sample from said subject or a sequence of BRCA1 cDNA made from mRNA from said sample with germline sequences of wild-type BRCA1 gene, wild-type BRCA1 RNA or wild-type BRCA1 cDNA, wherein a difference in the sequence of the BRCA1 gene, BRCA1 RNA or BRCA1 cDNA of the subject from wild-type indicates an alteration in the BRCA1 gene in said subject.

GENETIC TECHNOLOGIES:
1. A method for detection of at least one coding region allele of a multi-allelic genetic locus comprising:
   a) amplifying genomic DNA with a primer pair that spans a non-coding region sequence, said primer pair defining a DNA sequence which is in genetic linkage with said genetic locus and contains a sufficient number of non-coding region sequence nucleotides to produce an amplified DNA sequence characteristic of said allele; and
   b) analyzing the amplified DNA sequence to detect the allele.

CLEVELAND CLINIC:
11. A method of assessing a test subject’s risk of having atherosclerotic cardiovascular disease, comprising comparing levels of myeloperoxidase in a bodily sample from the test subject with levels of myeloperoxidase in comparable bodily samples from control subjects diagnosed as not having the disease,
said bodily sample being blood, serum, plasma, blood leukocytes selected from the group consisting of neutrophils, monocytes, sub-populations of neutrophils, and sub-populations of monocytes, or any combination thereof;
MAYO V. PROMETHEUS:
A method of optimizing therapeutic efficacy for treatment of an immune-mediated gastrointestinal disorder, comprising:
(a) administering a drug providing 6-thioguanine to a subject having said immune-mediated gastrointestinal disorder;
(b) determining the level of 6-thioguanine in said subject having said immune-mediated gastrointestinal disorder,
wherein the level of 6-thioguanine less than about 230 pmol per 8×10^6 red blood cells indicates a need to increase the amount of said drug subsequently administered to said subject and
wherein the level of 6-thioguanine greater than about 400 pmol per 8×10^6 red blood cells indicates a sufficient amount of said drug subsequently administered to said subject.

MYRIAD:
1. An isolated DNA coding for a BRCA1 polypeptide, said polypeptide having an amino acid sequence set forth in SEQ ID NO:1
2. The isolated DNA of claim 1, wherein said DNA has the nucleotide sequence set forth in SEQ ID NO:1
... 5. An isolated DNA having at least 15 nucleotides of the DNA of claim 1
6. An isolated DNA having at least 20 nucleotides of the DNA of claim 2

ARIOSA v. SEQUENOM:
1. A method for detecting a paternally inherited nucleic acid of fetal origin in a patient serum or plasma sample from a pregnant female, which method comprises
(a) amplifying paternally inherited nucleic acid from the serum or plasma sample
(b) detecting the presence of a paternally inherited nucleic acid of fetal origin in the sample.

IN RE BRCA1 & BRCA2:
A method for screening germline of a human subject for an alteration of a BRCA1 gene which comprises
1. comparing germline sequence of a BRCA1 gene or BRCA1 RNA from a tissue sample from a subject for a sequence of BRCA1 DNA made from mRNA from a subject with germline sequence of wild-type BRCA1 gene or wild-type BRCA1 DNA or
2. wherein a difference in the sequence of the BRCA1 gene, BRCA1 RNA or BRCA1 cDNA of the subject from wild-type indicates an alteration in the BRCA1 gene in said subject,

GENETIC TECHNOLOGIES:
1. A method for detection of at least one coding region allele of a multi-allelic genetic locus comprising:
(a) amplifying genetic DNA with a primer pair that spans a non-coding region sequence said primer pair being a DNA sequence which is genetically linked with said genetic locus and
(b) analyzing the amplified DNA sequence to detect the allele.

CLEVELAND CLINIC:
11. A method of assessing a test subject’s risk of having atherosclerotic cardiovascular disease, comprising
1. comparing levels of cholesterol in said bodily sample from said subject with levels of cholesterol in said bodily sample from control subjects diagnosed as having the disease.
2. said bodily sample being blood, serum, plasma, blood leukocytes selected from the group consisting of neutrophils, monocytes, sub-populations of neutrophils, and sub-populations of monocytes, or any combination thereof;
What is wrong with this picture?

• In biopharma technologies, have the courts been holding claims to be patent-ineligible simply because they are too broad—the § 101-invalidated claims either lack novelty under § 102 or fail the requirements for a sufficient disclosure under § 112(a)?

• Is the two-part test so malleable and arbitrary that it is a threat to all manner of biopharma claims for which patents should be available?

• Will remedial legislative efforts be complicated by this § 101 vs. § 102/§ 112(a) conundrum—to what extent should replacing the “implicit exception” with a more limited statutory eligibility formulation duplicate already existing limitations in the statute?
Legislative proposals, at the conceptual level, have taken a number of approaches:

- **Abrogation**: Legislatively overrule any *implicit exception* as unneeded in light of the existing statutory requirements for patentability.
- **Harmonization**: Adopt a European-style standard that incorporates a TRIPS-motivated *contribution to a field of technology* requirement.
- **Substitution**: Bar the implicit exception in favor of new explicit exceptions based on “solely in the human mind” or “some human activity” or “preemption of concept” principles.
- **Deflection**: Clarify the existing § 102/§ 112 limitations on valid claim scope with new § 112(f)-inspired claim construction limitations.
Conclusions

• It will be difficult to address in legislation the role § 101 can and should play in limiting patents without first achieving clarity (and some consensus) on the role to be played by other statutory requirements for patentability.

• Most (even all?) of the recent judicial § 101 holdings may be the product of expediency: instead of working to assure that § 102 and § 112(a) play the role they should, the courts have resorted to § 101 simply because it is simpler and easier for summarily invalidating.

• So, do we urge Congress to abrogate, harmonize, substitute, or deflect as a legislative path forward to § 101 legislative reform?