Federal Circuit Applies *Bilski* Standard in *Classen*, Clouding the Future for Diagnostic Method Patents

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The Federal Circuit's October 2008 decision in *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (*en banc)*, created uncertain implications for biotechnology regarding the applicable standard for patent eligibility under 35 U.S.C. § 101. In its recent one-paragraph opinion in *Classen Immunotherapies v. Biogen IDEC*, 2008 WL 5273107 (Fed. Cir. 2008), the Federal Circuit again left many issues unexplained, but it did make one thing clear: the *Bilski* standard, now being applied in the area of biomedical technology, poses a significant threat to the viability of patents claiming diagnostic methods.

In re Bilski addressed a business method claim directed toward hedging risk in commodities trading. The Federal Circuit held that the claim did not constitute patentable subject matter and, in doing so, the court articulated a new test for whether a method or process is eligible for patent protection. In its majority opinion, the Federal Circuit abandoned the decade-old *State Street Bank* patentability test that required that a claimed invention provide a "useful, concrete, and tangible result" in favor of a narrower "machine-or-transformation" test. This new test for patent eligibility, based on nearly 40-year-old Supreme Court precedent, requires that a method or process must either (1) be "tied to a particular machine" or (2) "transform a particular article to a different state or thing." Although the Federal Circuit did not directly address whether the machine-or-transformation test would be applicable to claims on biotechnological methods, it did not distinguish such medical methods from the business methods at issue in *Bilski*.

The *Classen* case involves several patents claiming methods for determining the effect of an immunization schedule on the incidence or severity of a chronic immune-mediated disorder. Classen Immunotherapies Inc., the owner of the patents, sued for infringement. Biogen then counterclaimed, asserting invalidity and unenforceability of the Classen patents as failing to meet the standards for patentable subject matter under 35 U.S.C. § 101. The claim at issue in the *Classen* patents reads:

> A method of determining whether an immunization schedule affects the incidence or severity of a chronic immune-mediated disorder in a treatment group of mammals, relative to a control group of mammals, which comprises:

> immunizing mammals in the treatment group of mammals with one or more doses of one or more immunogens, according to said immunization schedule, and
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> comparing the incidence, prevalence, frequency or severity of said chronic immune-mediated disorder or the level of a marker of such a disorder, in the treatment group, with that in the control group.

Affirming the lower court's grant of summary judgment in favor of Biogen, the Federal Circuit merely stated, "[i]n light of our decision in *In re Bilski*,…we affirm….Dr. Classen's claims are neither 'tied to a particular machine or apparatus' nor do they 'transform a particular article into a different state or thing.'"

However, viewed from the standpoint of a medical researcher, the *Classen* claim would indeed satisfy the machine-or-transformation test. The step of "immunizing mammals," as recited in the *Classen* claim, entails the transformation of mammals from a nonimmune state to an immune state. More particularly, the process of immunization, also known as vaccination, involves the transformation of naïve immune cells into mature immune cells.

When a mammal is vaccinated, a small amount of a "non-self" antigen (or immunogen), typically derived from a disease-causing organism, is introduced into the mammal's system. Upon encountering the non-self antigen, naïve T cells (a type of immune cell) are transformed into mature T cells. Mature T cells either act directly to eliminate the non-self antigen, or they effect the transformation of naïve B cells (another type of immune cell) into active B cells. Active B cells produce antibodies that attack the non-self antigen. Once B cells and T cells have been activated, some are transformed into memory cells. Memory cells serve throughout the lifetime of the mammal as reserve forces ready to attack a previously-encountered antigen. In this way, the immune response to a second and subsequent exposure to an antigen is faster and stronger, which is the purpose of immunization.

As it would be viewed by an immunologist, the immunization process is, in fact, a process of biotransformation. Naïve B cells and T cells are transformed into mature B cells and T cells. Some mature B cells and T cells are transformed into memory cells. The vaccinated mammal is transformed from a nonimmune state to an immune state. This series of transformations certainly appears to fulfill the *Bilski* machine-or-

transformation test, despite the Federal Circuit's summary opinion to the contrary in *Classen*.

Although *Classen* is a non-precedential opinion, the larger issue of how the *Bilski* standard should be applied to biotechnological methods generally, and to diagnostic methods in particular, is currently in flux. At least in the case of diagnostic methods, the *Bilski* machine-or-transformation test may require modification and/or clarification if it is to be reasonably applied in this area in the future. Like the claims in *Classen*, many diagnostic methods are not tied to a machine to the extent that the type of machine would be recited in the claim as a matter of course. Furthermore, although the *Classen* claims did involve a transformation, many diagnostic method claims do not require the conversion of substance A into substance B.

For example, consider claims to a simple blood test in which the presence of a particular substance predicts or diagnoses a disease. Such is the case for several existing patents claiming screening methods for BRCA breast cancer genes. The claims involve "comparing" genetic sequences and "diagnosing" the presence of mutations. Neither of these steps explicitly involve a machine or transformation, unless the isolation and analysis of nucleic acid from the subject is considered per se to be transformative, or to necessarily involve complex sequencing instruments. Indeed, the argument can be made that a comparison/diagnostic process involving 1) denaturing isolated DNA (converting double-stranded DNA to single-stranded DNA) and 2) incubating the DNA with a labeled probe that will hybridize (bind) to a target sequence of DNA (e.g. a mutation within the BRCA gene), surely involves transformation of matter from one state to another. However, courts may not recognize a molecular transformation such as this, or they may not consider it "central to the purpose of the claimed process," as required by *Bilski*. Thus, *Bilski* could turn out to be quite problematic for comparison-type diagnostic claims. Without some modification or clarification of the *Bilski* standard, medically important diagnostic claims, such as those involving methods of screening for genes linked to specific disorders, could easily be deemed unpatentable subject matter.

Loss of patent protection for diagnostic methods could ultimately discourage innovation and investment in biomedical research involving a host of diseases. Not only would this be a tremendous loss to society, but it would also be contrary to the purpose of

the patent system. It is likely that the Federal Circuit, or perhaps even the Supreme Court, will soon be called on to more carefully consider the threat that *Bilski* presents to diagnostic method patents; until then, the future of this area of intellectual property will remain uncertain.