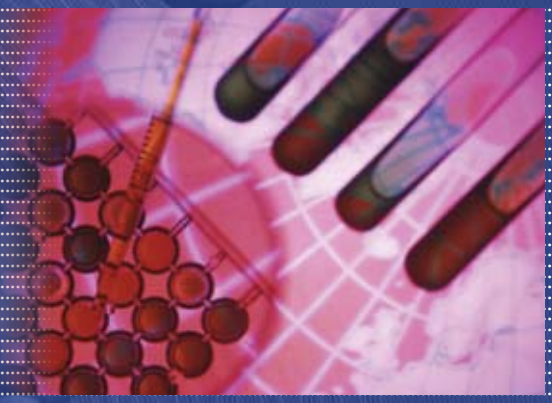

Pharmaceutical, Chemical and Biotech Year in Review 2007

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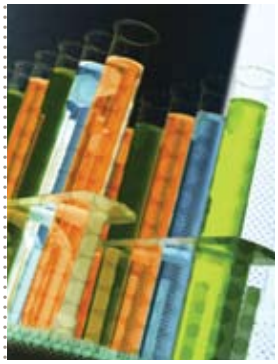

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Introduction

In 2005 and 2006, we explained how the United States Court of Appeals for the Federal Circuit ("the Federal Circuit") transformed the law of anticipation by creating a new "obviousness" inherency whereby selection situations previously analyzed under the banner of obviousness would now be analyzed as anticipatory. The year 2007 brought a similar transformation in the area of obviousness. The most noteworthy change was that wrought by the Supreme Court in *KSR*, wherein the high court rejected the Federal Circuit's rigid application of the "teaching, suggestion or motivation" test for combining references. More nuanced, however, has been the Federal Circuit's application of non-prior art to invalidate pharmaceutical patents for anticipation and obviousness. So-called secret prior art, particularly that based on the testimony of hired gun experts, is now routinely being used to invalidate patents.

On issues of patentability and validity, especially with regard to novel formulations of known actives (i.e., different purities, optical isomers, new compositions or new salt forms), 2007 was a record year. The Federal Circuit compiled a near perfect record of invalidating formulation cases. On the other hand, in the only case in 2007 involving a claim drawn to a novel active, the court sustained the claim's validity, even though the compound was a positional isomer and homolog of the prior art. Thus, we have "A Tale of Two Courts" when it comes to pharmaceutical patents. The first court resolves every doubt against any novel formulation of an old active; the second court resolves every doubt in favor of a novel active itself.

Two other areas that saw great change, and in some instances surprise, were declaratory judgments and inequitable conduct. The Supreme Court's *Medimmune*[1] decision fundamentally lowered the bar in terms of the level of threat required to trigger declaratory judgment jurisdiction. In the area of inequitable conduct, the *McKesson*[2] decision imposed a new level of vigilance on patent applicants, requiring not only citation to co-pending related applications, but also citation to art of record and actions taken in those related co-pending applications as well. At the same time, however, the PTO is proposing to limit the number of references an applicant will be able to cite to as a matter of right.

Meanwhile, once-controversial areas, such as written description, claim construction and application of the doctrine of equivalents, seem to have become much more settled.

[1] *Medimmune, Inc. v. Genentech, Inc.* 127 S. Ct. 764 (2007), 81 U.S.P.Q.2d 1225.

[2] *McKesson Information Solutions, Inc., v. Bridge Medical, Inc.,* 487 F.3d 897, 82 U.S.P.Q.2d 1865 (Fed. Cir. 2007).

I. Obviousness and Anticipation

In KSR, Supreme Court rejected Federal Circuit's rigid application of teaching-suggestion-motivation test for obviousness, replacing it with more flexible standard.

In *KSR Int'l Co. v. Teleflex, Inc.,* 127 S. Ct. 1727, 82 U.S.P.Q.2d 1385 (2007), the Supreme Court dusted off that old mainstay of obviousness jurisprudence, *Graham v. John Deere*[3]. The Court endowed that decision with new vigor while reminding the Federal Circuit of just who has the final say, wrapping up a two year period of heightened Supreme Court scrutiny of Federal Circuit cases. In *KSR*, Teleflex claimed that one of KSR's products infringed its patent claim directed to connecting an adjustable vehicle control pedal to an electronic throttle control. KSR argued that combining these two elements was obvious and thus unpatentable. KSR prevailed at the district court level, but the Federal Circuit reversed. KSR appealed the decision to the Supreme Court, which on April 30, 2007 unanimously reversed the Federal Circuit.

In doing so, it rejected the Federal Circuit's rigid application of its long-established teaching-suggestion-motivation (TSM) test for obviousness. Relegating the TSM test to its proper place vis-a-vis the *Graham* factors, the Court stated that "[t]he obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation . . . ." *KSR,* 127 S. Ct. at 1741. The Court added that any teaching, suggestion or motivation may be implicit, and that courts may consider the inferences and creative steps a person of ordinary skill in the art may employ: "A person of ordinary skill is also a person of ordinary creativity, not an automaton." *Id.* at 1742 (emphasis added).

In proposing a new, more flexible approach to obviousness, the Supreme Court held that "neither the particular motivation nor the avowed purpose of the patentee controls. What matters is the objective reach of the claim. If the claim extends to what is obvious, it is invalid under § 103." *Id.* at 1741-1742. The Court then pronounced several "principles," in addition to the TSM test, that courts may consider in determining whether any given claim is obvious: (1) "The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results;" (2) "If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability;" and (3) "One of the ways in which a patent's subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims." *Id.* at 1739, 1740, 1742.

Applying its newly-minted standard to the facts before it, the Court suggested that "[t]he proper question to have asked was whether a pedal designer of ordinary skill, facing the wide range of needs created by developments in the field of endeavor, would have seen a benefit to upgrading [a prior art patent] with a sensor." *Id.* at 1744. Answering its own question in the affirmative, the Court held that Teleflex's patent was obvious. *Id.* at 1745.

[3] *Graham v. John Deere Co. of Kansas City*, 383 US 1, 148 U.S.P.Q. 459 (1966).

Don't worry about prior art—expert testimony that claimed besylate salt avoided degradative reaction associated with prior art maleate salt sufficient to show motivation to substitute salts and thus obviousness.

In *Pfizer Inc. v. Apotex Inc.,* 480 F.3d 1348, 82 U.S.P.Q.2d 1321 (Fed. Cir. 2007), the Federal Circuit reviewed the validity of Pfizer's patent covering amlodipine besylate tablets sold commercially under the name Norvasc®. Although the court decided this case shortly before *KSR*, the court seemed to sense that the Supreme Court would reject its TSM test. The prior art, Pfizer's own prior patent, disclosed amlopidine salts generally and the maleate salt of amlopidine specifically. A secondary reference disclosed besylate salts as commercially useful salts for pharmaceutical formulations. The court rejected Pfizer's argument that since none of the anions listed in the prior patent had a cyclic structure like besylate, there would have been no "motivation" to combine the prior art references. *Pfizer,* 480 F.3d at 1364. Citing *Dystar*,[4] the court held that "[a] suggestion, teaching, or motivation to combine the relevant prior art teachings to achieve the claimed invention does not have to be found explicitly in the prior art references sought to be combined," but "may be found in any number of sources, including common knowledge, the prior art as a whole, or the nature of the problem itself." *Id.* at 1362 (emphasis added). Here, the court found motivation in light of the testimony of Apotex's expert because the prior art maleate, unlike the claimed besylate, has a double bond subject to degradation by a Michael reaction. The court was thus convinced by the expert testimony that the skilled artisan actually would have been encouraged, rather than discouraged, to choose an anion without the same double bond to avoid the Michael reaction. See *Id.*

The problem with this analysis, even post-*KSR*, is that it would make every combination exhibiting improved properties *prima facie* obvious, with the possible exception of where there is a teaching away. Improvements relating to a particular property are ultimately tied to the structure of the compound. Furthermore, an expert invariably will be able to compare the claimed and prior art compounds and propose a chemical explanation for the improved property.

Use of "routine experimentation" to confirm efficacy of new combination (of a besylate as opposed to maleate salt of a drug) is sufficient to show a reasonable expectation of success even if there was "some degree of unpredictability."

The court also rejected Pfizer's argument that even if there was a motivation to combine the prior art, there would have been no reasonable expectation of success, concluding instead "that case law is clear that obviousness cannot be avoided

[4] *Dystar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 80 U.S.P.Q.2d 1641, 464 F.3d 1356 (Fed. Cir. 2006).

simply by a showing of some degree of unpredictability in the art so long as there was a reasonable probability of success." *Pfizer,* 480 F.3d at 1364. Here, the evidence was convincing "that an acid addition salt of besylate would form and would work for its intended purpose" because "as soon as tablet processing problems arose with the amlodipine maleate tablet formulations" of the prior art, one of the inventors "readily compiled a list of seven alternative anions—including the besylate—each of which he expected would form an amlodipine acid addition salt." *Id.* The court concluded: "While the pharmaceutical industry may be particularly adversely impacted by an 'obvious to try' analysis . . . , that Pfizer had to verify through testing the expected traits of each acid addition salt is of no consequence because it does not compel a conclusion of non-obviousness here." *Id. at 1367*. Here, "the prior art provided not only the means of creating acid addition salts but also predicted the results, which Pfizer merely had to verify through routine testing" the properties of each salt "and Pfizer's scientists used standard techniques to do so." *Id.* (citation omitted).

In the final analysis, the court analogized Pfizer's invention to no more than "the discovery of an optimum value of a variable in a known process" which "is usually obvious." *Id.* "Similarly, we hold that the optimization of the acid addition salt formulation for an active pharmaceutical ingredient would have been obvious where as here the acid addition salt formulation has no effect on the therapeutic effectiveness of the active ingredient and the prior art heavily suggests the particular anion used to form the salt." *Id.* at 1368.

Where the "unexpected result" for a new drug relates to efficiency in its manufacture as opposed to improvements in the drug itself, it is merely the result of "common sensical" routine experimentation, which is obvious.

The Federal Circuit also rejected Pfizer's contention that the besylate was unexpectedly superior to the prior art maleate salt. The court disparaged the fact that *Pfizer* had discarded the maleate not because it failed to exhibit an adequate combination of solubility, pH, stability in capsule form and non-hygroscopicity, but because it could not be easily manufactured. *Pfizer*, 480 F.3d at 1371. Finding that the prior art maleate salt, like the besylate salt, worked for its intended purpose, even though somewhat inferior in ease of tableting and projected shelf-life, the court concluded that *Pfizer* had merely engaged in routine optimization to ease its commercial manufacturing and marketing of the tablet form of the therapeutic amlodipine. *Id.* Creating a "product or process that is more desirable, for example, because it is stronger, cheaper, cleaner fast, lighter, smaller, more durable, or more sufficient . . . to enhance commercial opportunities . . . is universal—and even common-sensical." *Id.*

It is noteworthy that the court disparaged the fact that the result related not to the ultimate efficacy of the drug, but rather to the efficiency of its manufacture. One wonders, had the invention related to a new salt in a rubber composition for tires that made tire manufacturing more efficient, would the court have reached the same judgment? And if not, one must also wonder about the wisdom of the court making what is essentially a legislative determination, that is, deciding which properties of compounds are more meritorious than others (efficacy vs. efficiency).

This legislative encroachment was cited as contrary to precedent by dissenters to the court's refusal to reconsider the case en banc.[5] U.S.P.Q.

Where strong case of obviousness is made, showing of unexpected results cannot overcome it.

The court also noted that even if Pfizer had shown that amlodipine besylate exhibited unexpectedly superior results, this secondary consideration would not overcome the strong showing of obviousness. *Pfizer*, 480 F.3d at 1372. Although secondary considerations must be taken into account, they do not necessarily control the obviousness conclusion. Here, the record establishes such a strong case of obviousness that Pfizer's alleged unexpectedly superior results were ultimately insufficient. *Id.* Not surprisingly, the court cited no precedent for this.

Court invalidates patent to controlled release drug based on foreign secret prior art and admissions made with respect to that secret art.

In *In re Omeprazole Patent Litigation*, 483 F.3d 1364, 82 U.S.P.Q.2d 1643 (Fed. Cir. 2007), the court invalidated Astra's patent directed to Prilosec® based on the doctrine of inherency. The claim at issue recited a process for preparing an oral pharmaceutical formulation comprising the steps of forming a core material including at least one alkaline reacting compound and applying an enteric coating polymer layer so as to surround the core material thereby forming *in situ* a separating layer as a water soluble salt product between the alkaline compound and the enteric coating polymer.

[5] *Pfizer v. Apotex, Inc.*, 488 F.3d 1377, 82 U.S.P.Q.2d (Fed. Cir. 2007).

The prior art was a Korean patent application filed by a Korean company, the Chang Kun Dan Corp. ("CKD"). The CKD application did not expressly disclose the *in situ* formation of a separating layer. In fact, the CKD application did not set forth any process whatsoever as CKD was maintaining its process as a trade secret. Nonetheless, the filing of such application by CKD prompted Astra to accuse CKD of infringing Astra's product patent in Korea. CKD's defense was that its products did not have the separating layer (or sublayer). Astra's inventors later postulated that a coating may form *in situ* even if not separately applied, although the process conditions they ultimately received from CKD did not result in such *in situ* formation. It was only when Astra modified the process in accordance with its later process patent that such *in situ* formation resulted.

Based on the statements made by Astra in Korea, the court held that "[t]he record shows formation of the *in situ* separating layer in the prior art even though that process was not recognized at the time. The new realization alone does not render that necessary prior art patentable." *Id. at 1373*. The court cited the testimony of Astra's experts in a Korean proceeding that the formation of separating layer "was a natural result flowing from the combination of certain ingredients listed in the Method A," and that the "ingredients and protocols" that were given to the Korean Patent Office "necessarily resulted in *in situ* formation of a separating layer." *Id.* Thus, the Federal Circuit concluded that the trial court "correctly found inherent anticipation." *Id.*

This case is disturbing on so many levels that it is difficult to know where to begin. Yes, Astra made "admissions" about *in situ* formation of a sublayer, but these admissions related to products and process conditions that were not even set forth in CKD's application, which, after all, was the invalidating prior art. As for the process conditions that CKD ultimately divulged to Astra in the Korean litigation, Astra could get an *in situ* sublayer to form only when it altered the processing conditions in accordance with Astra's teachings. This hardly makes the *in situ* layer the "natural result" of following the CKD application. Even Andrx's expert acknowledged that he never tested products in the CKD application in rendering his opinion that the process was inherent, but instead relied on Astra's admissions. As Judge Newman pointed out in her dissent:

> My colleagues speculate that CKD practiced a sublayer-producing process in secrecy, although the Korean inventors denied such practice in the proceedings in the Korean Patent Office and also in the Seoul District Court. Whatever may or may not have been done in secret in Korea does not convert a secret and still unknown process into prior art. "Anticipating" subject matter must be known, and the knowledge must be sufficient to place enabling information in the possession of the public.

Id. at 1380.

Without citation of any prior art, court finds a dependent claim obvious based solely on testimony of defendant's expert.

To add insult to injury, the court further invalidated dependent claim 9 drawn to the alkaline reacting compound as an alkaline salt of phosphoric acid, carbonic acid or silicic acid. *In re Omeprazole*, 483 F.3d at 1374. The Federal Circuit agreed with the district court that it would have been obvious to substitute one alkaline reacting compound for another (the arginine in the CKD application). *Id.* The court, to a large extent, again relied on Astra's "admissions," although Astra pointed out that these admissions were made regarding a product patent and not the process patent at issue. *Id.* Nonetheless, the Federal Circuit concluded that "Astra still admitted that an ARC could easily replace CKD's L-arginine." *Id.* Interestingly, and as pointed out by Judge Newman, no reference was even provided suggesting this interchangeability. *Id.* at 1381. As discussed previously, reliance on non-prior art to invalidate patents is a new and disturbing trend in this court.

Relying on "admissions" in the specification, court discounts patentee's expert testimony that one of ordinary skill in the art would not have predicted the presence of stem cells in placenta or umbilical cords.

In *PharmaStem Therapeutics, Inc. v. ViaCell Inc.,* 491 F.3d 1342, 83 U.S.P.Q.2d 1289 (Fed. Cir. 2007), the court addressed the validity of both composition and method claims employing hematopoietic stem cells derived from the umbilical cord blood or placental blood of a human collected at birth. The inventors discovered that such stem cells are useful for rebuilding an individual's blood and immune system after it has been compromised by disease or medical treatment such as chemotherapy. The inventors further found that such cells could be preserved in a composition including a cryopreservative.

In concluding that there would have been a "reasonable expectation of success" that (1) stem cells would be found in umbilical cords or placenta;

(2) such cells could be used as transplant cells to induce hematopoietic reconstitution; and (3) such cells could be cryopreserved, the court pitted the testimony of Phamastem's expert against the disclosure of Pharmastem's specification and concluded that the specification trumped the expert. *PharmaStem*, 491 F.3d at 1367. Pharmastem's expert testified that those skilled in the art did not even know of the presence of stem cells in cord blood and, moreover, that those skilled in the art would not have expected cord blood to be a successful transplant tissue. In rejecting the testimony, the court found that "it cannot be reconciled with statements made by the inventors in the joint specification and with the prior art references themselves." *Id. at 1361*. In particular, the court found that the specification "acknowledged that it was previously known that the properties of cord blood are quite different from those of adult blood and that hematopoietic stem cells had been found in cord blood in much greater concentrations than in adult blood." *Id.* The court noted that "[a]dmissions in the specification regarding the prior art are binding on the patentee for purposes of a later inquiry into obviousness." *Id.* at 1362.

Invention is not merely "obvious-to-try" where prior art described each step rather than merely providing general guidance and "array of possible choices."

The court distinguished previous "obvious-to-try" cases such as *In re O'Farrell*.[6] The court explained that this was not a case in which the prior art gave either no indication of which parameters were critical or no direction as to which of many possible choices is likely to be successful, nor was it one in which the prior art gave only general guidance as to the particular form of the invention or how to achieve it:

> The prior art suggested cryopreserving cord blood from a single infant and transplanting that blood into a patient to achieve hematopoietic reconstitution. . . . [T]here was [no] array of possible choices as to how to achieve that objective [nor were there] problems to be solved in implementing the prior art suggestion that were not adumbrated in the prior art. To the contrary, the joint specification indicates that each step of the cryopreservation and transplantation procedure had been spelled out in the prior art.

PharmaStem, 491 F.3d at 1364.

Surprise by others and recognition of significance of invention is insufficient to rebut prima

[6] 853 F.2d 894, 7 U.S.P.Q.2d 1673, (Fed. Cir. 1988).

facie obviousness where it is not shown that those who were surprised were aware of prior art.

The court also rejected PharmaStem's reliance on secondary considerations such as recognition by others in the field as pioneers, including both the defendants themselves and their expert. "The problem with that evidence," according to the court, "is that there was no indication that the praise for the inventors' work was based on any inventive contribution they made, as opposed to their proof, through laboratory work, that fetal blood contains large numbers of stem cells. As noted, the former is a basis for patentability; the latter is not." *PharmaStem,* 491 F.3d at 1365. The court also discounted Pharmastem's surprise evidence, noting that "there was no indication that [the group was] previously aware of the prior art references that laid the groundwork of the inventors' experiments" and that the "surprise" was due "to the success of the 1988 human cord blood transplant, not to the results reported in the patents." *Id.*

Once the Federal Circuit suggested that the "cornerstone" of PharmaStem's expert's "testimony at trial was that none of the prior art showed that cord blood contains stem cells," the deck was stacked against PharmaStem. *Id.* at 1361. The facts show that the expert's testimony was far more comprehensive, relating not only to the failure of the art to appreciate the presence of stem cells in the cord blood, but also that those working in the transplant field did not believe blood would be suitable as transplant tissue to effect hematopoietic reconstitution of a human adult, especially given the problems in the art with bone marrow and blood.

The court's conclusion that such cells could be successfully used seems to be based much more on the applicant's own specification, carrying out "routine comparisons," than it was on prior art. Indeed, there was no prior art nor any admissions that stem cells in an umbilical cord could be used as transplant tissue to effect hematopoietic reconstitution. The best that can be said of the Federal Circuit's "analysis" is that some of the art was not inconsistent with that later finding. (As Judge Newman pointed out, however, some prior art was inconsistent with this, albeit conveniently disregarded by the panel majority even though given weight by the Patent

Office, the jury and the district court judge.) Similarly, the court cited to Pharmastem's own specification in concluding that the cryopreservation step would have been routine.

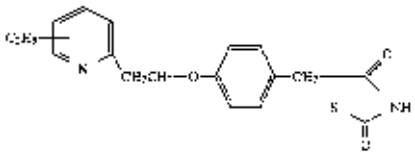
Yet again, we have an example of invalidation based on non-prior art, which seems to have become a hallmark of this court.

It is noteworthy that the court's discussion provides only the most fleeting references to the invalidating art, and the court itself is guilty of confusing progenitor cells with stem cells. As in *Pfizer*, the court once again invalidated a patent because the inventors "merely used routine research methods to prove what was already believed to be the case." *Id.* at 1363. As Judge Newman pointed out in her dissent, research is not usually undertaken blindly, but based on prior advances. It is quite possible that Judge Newman was right on the mark when she chided her colleagues for going "too far in limiting the patent system to the serendipitous and the unexpected," thus violating § 103's mandate that patentability "shall not be negatived by the manner in which the invention was made." *Id.* at 1378.

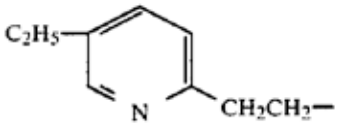
While new formulations of known components continue to be routinely invalidated, court persists in applying different standard for novel actives, including positional isomers and homologs.

In *Takeda Chemical Industries, Ltd. v. Alphapharm Pty., Ltd.,* 492 F.3d 1350, 83 U.S.P.Q.2d 1169 (Fed. Cir. 2007), the court reviewed the validity of Takeda's product ACTOS®, which is used to control blood sugar in patients. The independent claim at issue read as follows:

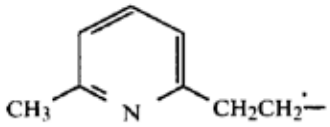
A compound of the formula:



or a pharmacologically acceptable salt thereof. Claim 2 covered a particular compound "pioglitazone" having the ethylene group at the five position of the pyridyl ring as follows:



The court had to address whether the claimed compounds were obvious in view of a prior art TZD compound identified as "compound b" in Takeda's patent, which had the following pyridyl ring structure:



Thus, unlike the prior art "compound b" compound, which had a methyl group at the 6 position of the pyridyl ring, the compound of claim 2 had an ethyl group at the number 5 position.

In rejecting Alphapharm's argument that the ethyl-substituted compound was prima facie obvious over the methyl-substituted compound, the court acknowledged that "[a] known compound may suggest its homolog, analog, or isomer because such compounds 'often have similar properties and therefore chemists of ordinary skill would ordinarily contemplate making them to try to obtain compounds with improved properties.'" *Takeda*, 492 F.3d at 1356 (quoting *In re Deuel*, 51 F.3d 1552, 34 U.S.P.Q.2d 1210 (Fed. Cir. 1995)). Nonetheless, citing to *KSR*, the court held that it is still necessary "to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does" in an obviousness determination. *Id.* "Thus, in cases involving new chemical compounds, it remains necessary to identify some reason that would have led a chemist to modify a known compound in a particular manner to establish *prima facie* obviousness of a new compound." *Id. at 1357*.

In so holding, the court rejected Alphapharm's reliance on both *KSR* and *Pfizer* for the proposition that the claimed compounds would have been obvious because "the evidence demonstrated that using the techniques of homologation and ring-walking would have been 'obvious to try.'" *Id. at 1359*. The court acknowledged the *KSR* court's remark that "[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp" and that in such circumstances, "the fact that a combination was obvious to try might show that it was obvious under § 103." *Id.* (quoting *KSR Int'l Co. v. Teleflex, Inc.,* 127 S. Ct. 1727 (2007)). However, the court distinguished KSR because here, "[r]ather than identify predictable solutions for antidiabetic treatment, the prior art disclosed a broad selection of compounds any one of which could have been selected as the lead compound for further investigation" and, significantly, "the closest prior art compound (compound b, the 6-methyl) exhibited negative properties that would have directed one of ordinary skill in the art away from that compound." *Id.* The court also noted that unlike *Pfizer*, where "the prior art provided ample motivation to narrow the genus of 53 pharmaceutically-acceptable anions disclosed by Berge to a few, including benzene sulphonate," here, "there was nothing in the prior art to narrow the possibilities of a lead compound to compound b." *Id.* at 1360.

It is rather difficult to reconcile this case with *Pfizer* except to note that one related to a novel active and the other to a novel salt. "Thus, in cases involving new chemical compounds, it remains necessary to identify some reason that would have led a chemist to modify a known compound in a particular manner to establish *prima facie* obviousness of a new compound." *Id*. at 1357.Indeed, the selection possibilities were far fewer here. In *Pfizer*, there were over fifty different salts. In this case, there was only one adjacent homolog (ethyl) to the methyl group on the ring and the experimentation to verify the properties of these known selections was certainly routine. This case also raises doubts about whether *KSR* really stands for the proposition that "obvious to try" is no longer a sufficient defense to obviousness, but perhaps only in the compound context.

That prior art taught equivalence of whole antibodies and antibody fragments for detecting snake venom was sufficient to suggest that whole antibody for treatment of snakebites would be effective when employed as a fragment.

In *In re Sullivan*, 498 F3d 1345, 84 U.S.P.Q.2d 1034 (Fed. Cir. 2007), the court considered the patentability of a claim directed to "[a]n antivenom pharmaceutical composition for treating a snakebite victim, comprising Fab fragments . . . [which] neutralizes the

lethality of the venom of a snake of the Crotalus genus." *Id.* at 1349.

The court agreed that the composition was *prima facie* obvious because the primary reference taught whole antibodies for use against rattlesnake venom and the secondary reference taught using Fab fragments to detect venom of a different snake. It noted that "[i]t was not unreasonable for one skilled in the art of snake venom to consider that a Fab fragment of a whole antibody that neutralizes one type of venom might be used to neutralize the venom of another species." *Id.* at 1351. Sullivan pointed out that the so called teaching of equivalency between the whole antibody and the fragment was in the context of detecting, whereas the invention employed the partial fragment in treatment. In response, the court referred to the *KSR* court's holding that that "if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill." *Id.*

Conspicuously absent from the court's discussion is the basis on which "a person skilled in the art would recognize" that the "technique" (i.e., forming Fab fragments) "used to improve one device" (i.e., detection of venom) "would improve similar devices" (i.e., treatment of snakebite). One almost gets the sense reading this decision that the Federal Circuit, unhappy with the Supreme Court's disparagement of its teaching-suggestion-motivation test for obviousness in *KSR*, is intent on reading KSR so broadly so as to render nearly every invention obvious, thus forcing the Supreme Court to question the wisdom of *KSR* and revisit the issue.

Where claimed composition is not "known" but merely prima facie obvious, declarations purporting to show an unexpected result from use of claimed composition cannot be dismissed as merely relating to new use for an old or obvious composition.

The *Sullivan* court, however, criticized the Board of Patent Appeals and Interferences' (the "Board") failure to consider declarations filed by applicants to rebut the *prima facie* case, noting that "the Board was mistaken to assert that the declarations only relate to the use of the claimed composition." *Sullivan,* 498 F3d at 1353. According to the court, "[t]he declarations do more than that; they purport to show an unexpected result from use of the claimed composition, how the prior art taught away from the composition, and how a long-felt need existed for a new antivenom composition." *Id.* The court focused on the fact that "the claimed composition was not known" thus distinguishing this case from those such as *In re Zierden*,[7] cited by the Patent Office, where the "applicant conceded that his composition was distinguished from the composition disclosed in a prior art patent only by the statement of intended use." *Id.* The court concluded that "[t]he issue here is not whether a claim recites a new use, but whether the subject matter of the claim possesses an unexpected use." *Id.*

Prior art which unsuccessfully attempted to make the claimed pharmaceutical (+) enantiomer and incorrectly predicted greater activity for the (-) enantiomer did not anticipate a claim directed to the (+) enantiomer.

In Forest Laboratories Inc. v. Ivax Pharmaceuticals Inc., 501 F.3d 1263, 84 U.S.P.Q.2d 1099 (Fed. Cir. 2007), Ivax challenged Forest's claims directed to the (+) enantiomer of citalopram, the active ingredient in the anti-depressant Lexapro®. The district court found the cited reference non-enabling and therefore non-anticipatory because (1) the technique used to isolate the (+) enantiomer was relatively new and unpredictable at the time of the invention, (2) the prior art author had tried and failed to make the claimed (+) enantiomer; and (3) numerous others had also tried and failed to make the claimed (+) enantiomer. The Federal Circuit found "no error in the district court's conclusion that [the] reference is not enabled with respect to the (+)-citalopram." *Forest Laboratories,* 501 F.3d at 1268. The court also noted that the prior art reference "predicts, incorrectly, that the . . . (-) enantiomer . . . would be far more potent as a serotonin reuptake inhibitor. *Id.*

This case is very instructive in that it underscores an important distinction between non-enablement in terms of making a compound versus non-enablement in terms of using a compound. In the context of using a compound, the court in *Rasmusson*[8] and *Impax*[9] held that the prior art did not have to be enabling in a 112, ¶ 1 sense in order to show, for example, that a compound was effective against a disease to anticipate a claim to a method for treating that disease. Indeed, even very speculative assertions were accepted as anticipatory in these two cases. By contrast, in *Forest*, where there were documented failures

[7] 411 F.2d 1325, 162 U.S.P.Q. 102 (CCPA 1969).

[8] *Rasmusson v. SmithKline Beecham Corp,* 413 F.3d 1318, 75 U.S.P.Q.2d 1297 (Fed. Cir. 2005).

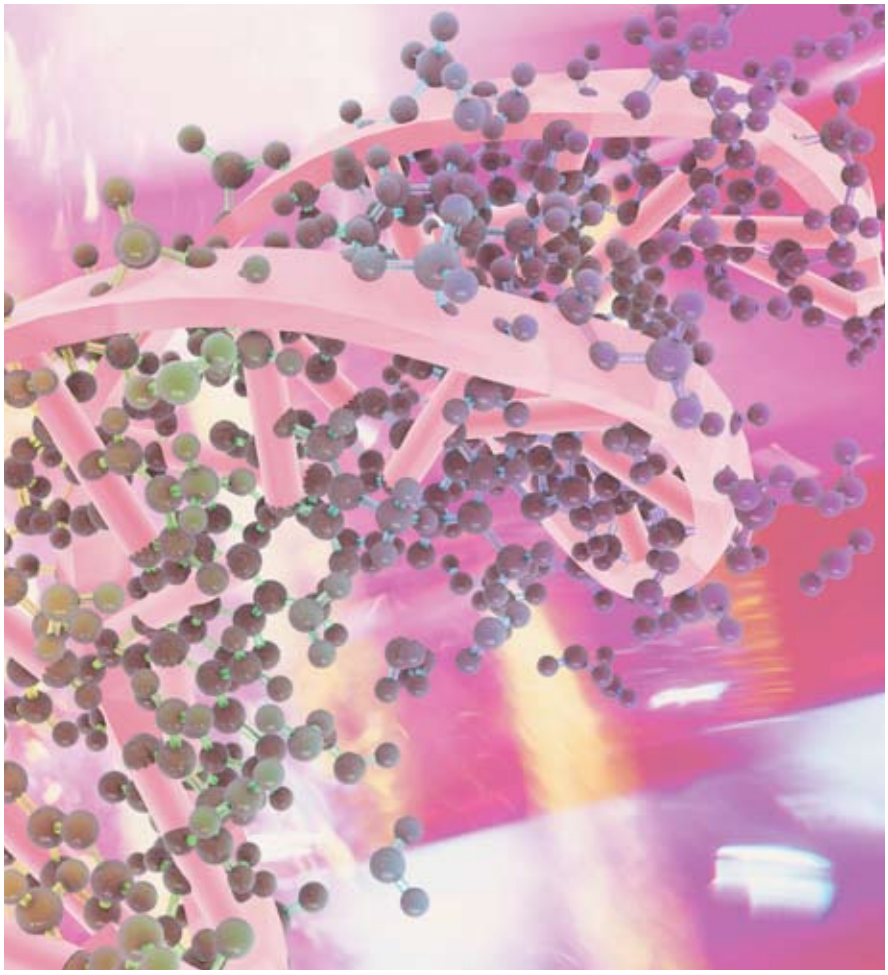
[9] *Impax Laboratories, Inc. v Aventis* Pharmaceuticals Inc., 468 F.3d 1366, 81 U.S.P.Q.2d 1001 (Fed. Cir. 2006).

in making a compound, there was no anticipation because the cited reference was deemed to be non-enabling.

Prima facie case of obviousness of (+) enantiomer of pharmaceutical compound rebutted by showing (1) it was difficult to separate the enantiomers and (2) the (+) enantiomer unexpectedly had all the therapeutic activity of the compound.

The court also addressed the alleged obviousness of the claimed (+) citalopram. Ivax argued that the compound was obvious in light of racemic citalopram, descriptions of techniques available to separate enantiomers from their racemates and the general expectation in the art that one enantiomer would be more potent than the other. But the court rejected Ivax's argument, holding that any showing of *prima facie* obviousness based on racemic citalopram was rebutted by the evidence demonstrating the difficulty of separating the enantiomers and the unexpected properties of (+) citalopram, such as the fact that all of the therapeutic benefit of citalopram resides in the (+) enantiomer, resulting in a product having twice the potency of the racemic mixture. *Forest Laboratories,* 501 F.3d at 1269.

While still necessary post-KSR to show a reason to modify a reference, there was reason to purify a single component from a mixture based on knowledge that "some desirable property of the mixture" derives from the single component.



In Aventis Pharma Deutschland GmbH v. Lupin Ltd., 499 F.3d 1293, 84 U.S.P.Q.2d 1197 (Fed. Cir. 2007), the court reviewed a claim directed to the 5(S) stereoisomer of ramipril in a form substantially free of other isomers for treating hypertension. The prior art was an example in a Schering patent that obtained the 5(S) stereoisomer in combination with other stereoisomers. In a later experiment, a mixture apparently containing the 5(S) and SSSSR isomers was produced. The district court concluded that the 5(S) enantiomer would not have been obvious over the prior art mixture because a person of ordinary skill in the art would not have been motivated to carry out the required purification.

Reversing the district court, the Federal Circuit referred to *KSR*, which "counsels against applying the 'teaching, suggestion or motivation' ('TSM') test as 'a rigid and mandatory formula,'" *Aventis, 499 F.3d at 1301-1302 (quoting KSR Int'l Co. v. Teleflex, Inc.,* 127 S. Ct. 1727, 1741 (2007)). The court acknowledged that, even after *KSR*, "[i]t remains necessary to show 'some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness,' but such reasoning 'need not seek out direct teachings directed to the specific subject matter of the challenged claim.'" *Id.* at 1302. (quoting *KSR,* 127 S. Ct. at 1741). Noting that "[i]n the chemical arts, we have long held that 'structural similarity between claimed and prior art subject matter, proved by combining references or otherwise, where the prior art gives reason or motivation to make the claimed compositions, creates a *prima facie*

case of obviousness.'" *Id.* The court found that such motivation existed:

> [W]here, as here, a claimed composition is a purified form of a mixture that existed in the prior art. Such a purified compound is not always *prima facie* obvious over the mixture; for example, it may not be known that the purified compound is present in or an active ingredient of the mixture, or the state of the art may be such that discovering how to perform the purification is an invention of patentable weight in itself. However, if it is known that some desirable property of a mixture derives in whole or in part from a particular one of its components, or if the prior art would provide a person of ordinary skill in the art with reason to believe that this is so, the purified compound is *prima facie* obvious over the mixture even without an explicit teaching that the ingredient should be concentrated or purified.

Id.

The court noted that "ordinarily, one expects a concentrated or purified ingredient to retain the same properties it exhibited in a mixture, and for those properties to be amplified when the ingredient is concentrated or purified." It added, "isolation of interesting compounds is a mainstay of the chemist's art. If it is known how to perform such an isolation, doing so 'is likely the product not of innovation but of ordinary skill and common sense.'" *Id.* (citing *KSR,* 127 S. Ct. at 1742)

Presence of component in mixture provides reason to isolate it from mixture even where prior art did not recognize that component's presence.

The above quoted language indicates that purification of a component from a mixture is *prima facie* obvious unless, for example, it was not known that the composition was present or an active ingredient, or where the art could not have carried out the purification. It is thus peculiar that the court continued by stating that, even if the prior art did not recognize that the 5(S) form was the mixture's therapeutically active ingredient, the prior art "provides a sufficient reason to look to the 5(S) configuration," pointing out that the prior art composition "contained only the 5(S) and SSSSR stereoisomers of ramipril." *Aventis*, 499 F.3d at 1302. However, the court did not address how one would have known that only those two components were present in the mixture. Obviously, whenever one of ordinary skill in the art purifies a single component from a mixture, that component was necessarily present in the mixture. It seems circular logic to state, as the court did, that even without knowledge of what components were in the mixture, the inclusion of "only those two components" in the mixture provided the reason for purifying one of the components from the mixture. Consistent with *Pfizer*, the court seems to err on the side of obviousness whenever routine methodology is employed to obtain a new composition form.

Unexpected results for pure 5(S) stereoisomer must be established by comparison against closest prior art structurally (the SSSSR and 5(S) stereoisomer mixture), not against closest art in terms of potency (the RRSSS stereoisomer).

Aventis also argued that purified 5(S) ramipril exhibited unexpected results in the form of increased potency. The company argued, for example, that 5(S) ramipril is eighteen times more potent than the next most potent isomer, the RRSSS form. But the court rejected this evidence as "the wrong comparison," finding that "[t]he prior art supporting *prima facie* obviousness included the [prior art] mixture [of 5(S) and SSSSR ramiprils], and so Aventis must show that 5(S) ramipril had unexpected results not over all of its stereoisomers, but over that mixture which did not contain the RRSSS form." *Aventis*, 499 F.3d at 1303. According to the court, "the potency of pure 5(S) ramipril is precisely what one would expect, as compared to a mixture containing other, inert or near-inert stereoisomers." *Id.* The court also noted that the 3(S) form of the related compound, enalapril, was far more potent than the SSR form and that "[t]he close structural analogy between 5(S) and SSSSR ramipril and SSS and SSR enalapril would have led a person of ordinary skill to expect 5(S) and SSSSR ramipril to differ similarly in potency." *Id.*

Comparing the holdings in *Forest* and *Aventis*, which both addressed the obviousness of an optically pure compound, it appears that it was only the non-enablement of obtaining the (+) enantiomer that saved the day for Forest. Indeed, the selection of the (+) enantiomer from the (-) enantiomer in *Forest* was far less arduous than the selection of the 5(S) enantiomer in *Aventis*, especially given that it was unclear what compounds the prior art mixture in *Aventis* even contained.

One of "ordinary" skill in art of treating ear infections is person engaged in developing new pharmaceuticals—and not pediatrician—such that prior art directed to the former is relevant.

In Daiichi Sankyo Co. v. Apotex, Inc., 501 F.3d 1254, 84 U.S.P.Q.2d 1285 (Fed. Cir. 2007), the court reviewed the validity of a claim directed to a method for treating bacterial ear infections (otopathy) comprising "the topical otic administration of an amount of ofloxacin or a salt thereof effective to treat otopathy in a pharmaceutically acceptable carrier to the area affected with otopathy." *Id.* at 1256. The prior art disclosed the use of a related antibiotic, ciprofloxacin, to treat middle ear infections without side effects. Apotex's expert explained that ciprofloxacin is an antibiotic that is in the same family as ofloxacin and thus the safety and efficacy of ciprofloxacin would have suggested the same properties for ofloxacin.

The district court upheld the validity of the patent, concluding that one of ordinary skill in the art would be, for example, a pediatrician rather than a pharmaceutical chemist. Since the prior art reported the use of gyrase inhibitors such as ciprofloxacin "only in difficult cases and exclusively by the otologist," and because an otologist was "outside the level of ordinary skill in the art," the district court concluded that "the reference did not support Apotex's argument that ofloxacin, a gyrase inhibitor like ciprofloxacin, was effective and safe to treat bacterial ear infections topically." *Id.* at 1257.

The Federal Circuit reversed,holding that:

> [W]hile the general practitioner or pediatrician could (and would) prescribe the invention of the . . . patent to treat ear infections, he would not have the training or knowledge to develop the claimed compound absent some specialty training such as that possessed by the . . . patent's inventors. Accordingly, the level of ordinary skill in the art of the patent is that of a person engaged in developing pharmaceutical formulations and treatment methods for the ear or a specialist in ear treatments such as an otologist, otolaryngologist, or otorhinolaryngologist who also has training in pharmaceutical formulations.

Id.

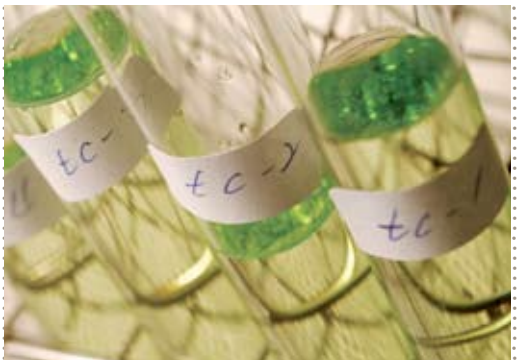
Given the facts of this case, one might expect the patentee to have argued that a teaching of effectiveness of ciprofloxacin for ear infections would not have suggested the effectiveness of the related ofloxacin for ear infections, but such argument does not appear to have been made. Rather, Daiichi seemed content to rely solely on the fact that the article was directed to a highly sophisticated audience beyond one of ordinary skill in the art. Of course, after *KSR*, the wisdom of this approach is dubious, and cases decided since *KSR*, discussed below, confirm that this approach is unlikely to prevail.

Consistent with some of the other cases discussed, the "evidence" the court relied on in finding that ciprofloxacin and ofloxacin were sufficiently related so as to suggest interchangeability in therapeutic methods once again derived from the testimony of a hired expert rather than the prior art.

Under "broadest reasonable construction" standard applicable to the PTO, a "flexible" polyurethane foam reaction mixture is not anticipated by mixture that forms "rigid" foam even though such rigid foam can be crushed into flexible foam.

In *In re Buszard*, 501 F.3d 1263, 84 U.S.P.Q.2d 1749 (Fed. Cir. 2007), the court addressed the scope of a patent application claim under the "broadest reasonable construction" standard applicable at the Patent Office. The applicant, Buszard, claimed a "flame retardant composition comprising" an ester component, a flame-retardant component and "a flexible polyurethane foam reaction mixture." The prior art prepared a rigid foam by chemically reacting compounds that form a rigid foam and also disclosed preparation of a flexible foam by crushing the rigid foam. Finding that the applicant's "flexible" polyurethane foam reaction mixture "includes any reaction mixture which produces, at least ultimately, a flexible polyurethane foam," the Board found the claims to be anticipated. The Federal Circuit reversed, holding that "[n]o matter how broadly 'flexible foam reaction mixture' is construed, it is not a rigid foam reaction mixture. . . . This description cannot reasonably be construed to describe, and thus to 'anticipate,' the flexible foam product of a flexible foam reaction mixture." *Id.*at 1367.

II. On-Sale Bar



Letter setting forth quantities of product to be delivered, unit price of that product and delivery terms evinces a "commercial offer for sale" viewed only as a ramp up to a business relationship.

In *Cargill Inc. v. Canbra Foods Ltd.,* 476 F.3d 1359, 81 U.S.P.Q.2d 1705 (Fed. Cir. 2007), the Federal Circuit addressed the issue of the on-sale bar. As evidence of a commercial offer for sale, Canbra cited a letter explicitly setting forth an amount of oil to be delivered to the customer at a specified unit price and under a standard contract designation, FOB, which allocates the risks and responsibilities of a buyer and a seller. The Federal Circuit agreed with the district court's conclusion that this letter constituted "powerful evidence of a sales transaction." *Id.* at 1369. The court rejected Cargill's position that the seller was merely providing the customer with a sample of the claimed oil for testing purposes in an effort to ramp up to a business relationship: "[E]xpressing a desire to do business in the future does not negate the commercial character of the transaction then under discussion." *Id.* at 1370.

Invention is "ready for patenting" so long as seller appreciates at the time the general utility of the product even absent a recognition of all the specific characteristics that made the product useful.

The court in Cargill also addressed whether the oil offered for sale was "ready for patenting." Cargill argued that an invention is only reduced to practice when it is shown to work for its intended purpose and that, at the time of the sale, it was not known whether the oil had the advantages later touted, such as oxidative stability. Citing *Abbott Laboratories v. Geneva Pharmaceuticals, Inc.,*[10] the Federal Circuit rejected this argument, noting that there is no requirement that a sales offer specifically identify all of the characteristics of an invention offered for sale or that the parties recognize the significance of all of these characteristics at the time of the offer. *Cargill*, 476 F.3d at 1371. Here, because the seller "knew of the general utility of the claimed oil, it was reduced to practice" and the seller "did not need to be aware of the specific characteristics that made the oil useful." Accordingly, even if the sale was "for purposes of continued testing, it does not prevent a finding that the oil had already been reduced to practice." *Id.*

[10] 182 F.3d 1315, 51 U.S.P.Q.2d 1307 (Fed. Cir. 1999).

III. Obvious Double Patenting

Critical inquiry in obviousness-type double patenting is whether claim of application defines obvious variation over claim of earlier patent, and not whether claims are in genus/species or element/combination relationship.

In *In re Metoprolol Succinate Patent Litigation*, 494 F.3d 1011, 83 U.S.P.Q.2d 1545 (Fed. Cir. 2007), Astra sued Andrx and Eon Labs after they filed an Abbreviated New Drug Application ("ANDA") to make generic versions of Astra's Toprol-XL® for treatment of angina, hypertension and congestive heart failure. At issue was whether Astra's patent application claiming the specific compound "metoprolol succinate" was obvious over the claim of Astra's earlier patent claiming a composition including (1) a core comprising a listing of alternative compounds including metoprolol succinate in combination with (2) a first inner layer and (3) a second outer layer. At the outset, the court dismissed as "irrelevant" Astra's argument that the claims of the application and earlier patent recited an "element/combination relationship" rather than "a species/genus relationship." It held that such disputes about the characterization of the relation between the two claims in a double patenting context are irrelevant. *In re Metoprolol*, 494 F.3d at 1016-1017. Instead, the critical inquiry remains whether the claims of the earlier patent define an obvious variation of the invention claimed in the application. *Id.*

Claim to single compound is obvious in view of earlier patent claiming composition including (1) inner core including claimed compound among listing of alternative compounds, (2) inner layer and (3) outer layer.

The court in *Metoprolol* invalidated the claim for obviousness-type double patenting, citing its earlier holding in *In re Emert*,[11] which found an oil soluble dispersant comprising B_1 was obvious over a patent claiming a combination of A and B given patentee's concession that B_1 was obvious over B. *In re Metoprolol*, 494 F.3d at 1017. The court pointed out that "the omission of the known elements from the composition in this case is 'the product not of innovation but of ordinary skill and common sense.'" *Id.* (quoting *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1742 (2007)). In so holding, the court accepted Astra's argument "that the disclosure of a patent cited in support of a double patenting rejection cannot be used as though it were 'prior art,' even where the disclosure is found in the claims." *Id.* at 1018. However, the court noted that "what is claimed, as opposed to what is disclosed to one skilled in the art, remains critical." *Id.* Adopting Astra's argument, according to the court, "would require that this court eviscerate obviousness-type double patenting, thereby reducing invalidity based on double patenting to the § 101 statutory prohibition against claims of the same invention." *Id.* at 1018.

[11] 124 F.3d 1458, 44 U.S.P.Q.2d 1149 (Fed. Cir. 1997).

IV. Enablement

Failure to recite upper limit in a claim is not fatal to enablement where there is an inherent, albeit not precisely known, upper limit.

In *Andersen Corp. v. Fiber Composites LLC,* 474 F.3d 1361, 81 U.S.P.Q.2d 1545 (Fed. Cir. 2007), the patent at issue claimed structural members with a particular level of tensile strength—a Young's modulus rating of greater than 500,000 or 750,000. Fiber Composites argued that without an upper limit, the patents necessarily covered more than they enabled and more than the inventors actually invented. The company noted that one of the inventors testified that in the experiments leading up to the invention, he did not obtain results with a modulus value of greater than 1.2 million. The court disagreed, observing that under its precedent, open-ended claims are not inherently improper. "Rather, their appropriateness depends on the particular facts of the invention, the disclosure and the prior art. They may be supported if there is an inherent, albeit not precisely known, upper limit and the specification enables one of ordinary skill in the art to approach that limit." *Id.* at 1376-1377. The court found that the patent fully enabled a person of ordinary skill in the art to practice the invention, and that the upper limit of the Young's modulus of the structural member would be understood to lie somewhere between the Young's modulus of the wood fiber and that of the polymer used in the composition. *Id.*

Chimeric plant gene conferring glyphosate resistance to "plant cells" is not enabled where only dicot, and not monocot, plants could be transformed at time application was filed.

In *Monsanto Co. v. Syngenta Seeds Inc.,* 503 F.3d 1352, 84 U.S.P.Q.2d 1705 (Fed. Cir. 2007), the claim at issue recited a chimeric plant gene that confers glyphosate resistance to plant cells comprising "a promoter sequence which functions in plant cells" and"a coding sequence." Although the claim covered a gene that functions in any plant cell, including both dicots and monocots, the patent was filed before transformation of monocot cells was possible. The court held that "[w]ithout the ability to transform a monocot cell, one skilled in the art could not determine whether the plant gene could carry out the claimed functions and thus fall within the scope of the claim." *Id.* at 1361. The court rejected Monsanto's argument that the term "plant cell" should not convert chimeric gene claims into claims directed to plants or plant cells transformed with the claimed gene because the patent recites broad functional language in its claims. *Id.* The court referenced its earlier decision, *Plant Genetic Systems, N.V. v. Dekalb Genetics Corp.*,[12] which had held that practicing stable gene transformation for monocot cells in 1987 required undue experimentation, where ironically it was Monsanto who had urged non-enablement of a chimeric gene in view of non-enablements in monocots, *Id.*

[12] 315 F.3d 1335, 65 U.S.P.Q.2d 1452 (Fed. Cir. 2003).

V. Conception and Reduction Practice

Count not reciting specific dissolution rate does not require proofs with specific dissolution rate, and appreciation of more rapid rate required by count may be by non-inventor.

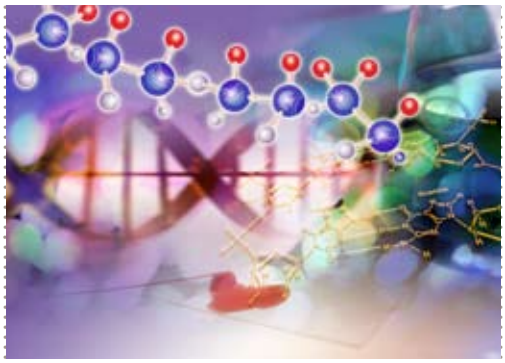
In *Henkel Corp. v. Procter & Gamble Co.,* 485 F.3d 1370, 82 U.S.P.Q.2d 1784 (Fed. Cir. 2007), the Federal Circuit reviewed whether Henkel demonstrated conception or reduction to practice of a count directed to a detergent composition having a certain dissolution rate. The Board had found against Henkel because the company had not demonstrated that its named inventors had appreciated that which they had invented contemporaneously with their conception and reduction to practice. On appeal, the Federal Circuit reversed, holding that "an explicit calculation or measurement of quantitative dissolution rates is unnecessary." *Id.* at 1374. It explained, "[t]he count itself does not require specific ranges of dissolution rates; it simply requires that the dissolution rate of the compressed region be 'greater' than the dissolution rate of the other region." *Id.* The court also noted that, while it was technicians and not the inventors who made this observation, "such a formulaic affirmation is unnecessary" because "the limitation in question is a discernible property of the invention that was directly observed by a technician working under the close supervision of one of the inventors." *Id.* at 1375. The court added that "[t]o require more would undermine our holding in *Mycogen*[13] "that an inventor can demonstrate appreciation without enunciating the precise language of the interference count." *Id*. at 1376.

Reduction to practice of count directed to capsid produced by expression of L1 protein is not negated by fact that original application disclosed such capsid to be expression product of both L1 and L2 protein.

In *Frazer v. Schlegel,* 498 F.3d 1283, 83 U.S.P.Q.2d 1850 (Fed. Cir. 2007), the Federal Circuit reviewed the Board's denial of a party's entitlement to the date of the Australian patent application for a count reciting a papillomavirus virus-like particle. The Board had held that the party's priority application was deficient because at the time of the application the party had "believed that both the L1 and L2 genes had to be expressed together from the same plasmid," whereas "later work shows that only L1 protein was necessary." *Id.* at 1287. The Federal Circuit reversed, holding that the application "depicts the papillomavirus-like particles of the count with full disclosure of how to produce it" and "includes the DNA sequences encoding the papillomavirus L1 and L2 proteins." *Id.* at 1288. The court dismissed the Board's concern that the Australian application reported the expression of both the papillomavirus L1 protein and the papillomavirus L2 protein, noting that the inventor's "later discovery that either the L1 protein or both the L1 and L2 proteins led to capsid formation does not negate or contradict his disclosure and constructive reduction to practice of the method of the count that produced the papillomavirus-like particle of the count." *Id.* at 1287.

[13] *Mycogen Plant Sci., Inc. v. Monsanto Co.,* 243 F.3d 1316, 58 U.S.P.Q.2d 1030 (Fed. Cir. 2001).

VI. Claim Construction



Although cases relating to obviousness indisputably took center stage in 2007, the court addressed a number of claim construction issues. The cases that follow are fairly nuanced and continue to apply the earlier precedent set in the en banc *Phillips*[14] case.

Description of suitable polymers for invention as part of "Markush" group in specification did not compel restricting claims that do not recite the Markush group to that group of polymers.

In *Abbott Laboratories v. Andrx Pharmaceuticals Inc.,* 473 F.3d 1196, 81 U.S.P.Q.2d 1289 (Fed. Cir. 2007), the district court focused on the Markush language in the specification—"selected from the group consisting of"—in holding that Abbott's claim was limited only to the listed polymers even though the claim itself recited a "pharmaceutically acceptable polymer." *Id.* at 1210. The Federal Circuit reversed, explaining that "[a] Markush group is a form of drafting a claim term that is approved by the PTO to serve a particular purpose when used in a claim—to limit the claim to a list of specified alternatives. The term 'Markush group' does not have any meaning within the context of a written description of a patent and therefore to the extent the district court relied on the Markush group language to limit its construction, to the compounds listed in the written description, it erred." *Id.* (citation omitted).

Sometimes, claim construction depends on what the meaning of "is" is.

Also in *Abbott*, the district court had limited the claimed "pharmaceutically acceptable polymer" to specific polymers based on Abbott's statement in the specification that "a pharmaceutically acceptable polymer is" a specific subset of polymers. The Federal Circuit noted that "[t]he word 'is' may signify that a patentee is serving as its own lexicographer. However, there is significant evidence . . . to believe that the patentee here was not providing a definition of the 'pharmaceutically acceptable polymer' in the written description" because (1) the specification unambiguously defines other claim terms but not the polymer; (2) neither party's expert stated that the language in the written description is purely definitional from the point of view of one of skill in the art; (3) if the definition was limited to a "water-soluble hydrophilic polymer," it would not cover some of the very polymers listed because they are not water-soluble. *Abbott*, 473 F.3d at 1210-1211.

By defining claimed "controlled amount" in quotes and setting forth what such controlled amount "is," patentee clearly and precisely defined such "controlled amount" and limited it to an amount of water up to 4%.

In *Sinorgchem Co. v. International Trade Commission*, 511 F.3d 1132, 85 U.S.P.Q.2d 1415 (Fed. Cir. 2007), the Federal Circuit reviewed the International Trade Commission's (ITC) construction of a claim directed to "[a] method of producing alkylated p-phenylenediamines (6PPD)" including a step of "reacting the aniline and nitrobenzene in a confined zone at a suitable temperature, and in the pres-

[14] *Phillips v. AWH Corp.*, 415 F.3d 1303, 75 U.S.P.Q.2d 1321 (Fed. Cir. 2005).

ence of a suitable base and controlled amount of protic material to produce one or more 4-ADPA intermediates." At issue was the meaning of "controlled amount," defined in the specification as "an amount up to that which inhibits the reaction of aniline with nitrobenzene, e.g., up to about 4% H_2O based on the volume of the reaction mixture when aniline is utilized as the solvent." The ITC held that the claim language, informed by the specification (which included an example showing a percentage of water above 4%), did not limit the percentage of water to an upper limit of 4%, as urged by Sinorgchem. *Id.* at 1135.

The Federal Circuit reversed, finding that "the drafter clearly, deliberately, and precisely defined the term 'controlled amount' of protic material as 'an amount up to that which inhibits the reaction of aniline with nitrobenzene, e.g., up to about 4% H_2O based on the volume of the reaction mixture when aniline is utilized as the solvent.'" *Sinorgchem*, 511 F.3d at 1136. The court noted that by setting forth the phrase "controlled amount" between quotation marks and using the word "is," the patentee was acting as its own lexicographer, consistent with *Abbott* (discussed above). *Id.* Whereas the ITC dismissed the 4% limit as merely an example that did not apply to all situations, the Federal Circuit disagreed: "This vague language cannot override the express definitional language. . . . When aniline is used as the solvent, the express definition is neither ambiguous nor incomplete." *Id.* at 1138 (citation omitted).

Claim is properly construed to exclude examples disclosing multiple embodiments where such embodiments are inconsistent with the patent's specification and file history.

Also in *Sinorgchem*, the fact that the specification included an example using more than 10% water in a reaction failed to sway the court. "Where, as here, multiple embodiments are disclosed, we have previously interpreted claims to exclude embodiments where those embodiments are inconsistent with unambiguous language in the patent's specification or prosecution history." *Id*. The court also attached significance to the fact that the example did not specifically disclose the amount of water used in the reaction and could only be determined by "complex calculation," whereas other examples "specifically disclose the amount of water used in those reactions." *Id.* at 1139.

Claim differentiation inapplicable where narrower construction of independent claim is consistent with embodiments recited in dependent claim.

Finally, the court in *Sinorgchem* rejected the patentee's claim differentiation argument, noting that such an argument might have some merit if the independent claim referred only to "aniline solvents," rather than referring generally to "a suitable solvent system," which can include numerous other sol-

vents. “Because the [dependent claim] refers merely to a subset of the solvent systems described in the [independent claim], and is significantly narrower in scope, the claims are not rendered identical and present no claim differentiation problem.” *Id.* at 1140.

Once again, Judge Newman dissented. She correctly pointed out that the panel majority selectively focused on those parts of the specification showing water in the 4% range, and ignored the description and examples that show other amounts of water. “When the entire specification including the specific examples is consulted, rather than selected snippets, the correct claim scope is apparent from the specifications.” *Id.* at 1145. Significant to Judge Newman was the fact that the specification’s definition of “controlled amount” included the term “e.g.,” thus contradicting the majority’s assertion that the patentee had “deliberately and precisely” defined the amount of water as only “up to 4%.”

The *Sinorgchem* opinion raises other questions as well. For one, what happened to the oft-cited canon of claim construction that a construction that does not encompass a preferred embodiment is “rarely, if ever, correct”?[15] And why was it so significant that the 10% water in the example had to be calculated rather than being explicitly set forth? Presumably, the rule that claims are rarely drafted to exclude preferred embodiments is premised on the notion that claims, which, after all, define the “invention,” should normally be construed to read on the examples of “the invention.” If true, why does it matter whether the percent of a component is or is not explicitly set forth?

If there is a lesson to be learned from the *Abbott* and *Sinorgchem* decisions, it is that one must use great caution when setting forth phrases between quotation marks and using the word “is” in a patent application. The court may well view such constructions as an indication that the patentee was acting as its own lexicographer and defining the claim term.

Claim reciting mixtures of two drugs in ratio of “about 1:5” does not cover 1:8.67 ratio where recitation of broader ranges in other claims and specification indicated inventors intended something more precise in claiming specific ratio.

In *Ortho-McNeil Pharmaceutical Inc. v. Caraco Pharmaceutical Laboratories, Ltd.,* 476 F.3d 1321, 81 U.S.P.Q.2d 1427 (Fed. Cir. 2007), the Federal Circuit reviewed the scope of the term “about” as used in a claim directed to a pharmaceutical composition comprising certain weight ratios of two known drugs, tramadol and acetaminophen. Citing precedent, such as *Pall Corp. v. Micron Separations, Inc.,*[16] the court

[15] *See, e.g., Gentry Gallery, Inc. v. Berkline Corp.*, 134 F.3d 1473, 45 U.S.P.Q.2d 1498 (Fed. Cir. 1998).

[16] 66 F.3d 1211, 36 U.S.P.Q.2d 1225 (Fed. Cir. 1995).

observed that the word "about" does not have a universal meaning in patent claims. Rather, the meaning depends upon the technological facts of a particular case. The court held that Ortho's inclusion of claims directed to both a single weight ratio, "about 1:5," as well as to ranges of weight ratios (e.g., "about 1:1 to about 1:1600") "leads to a conclusion that one of ordinary skill in the art would understand the inventors intended a range when they claimed one and something more precise when they did not." *Id.* at 1327.

The court also noted that the experiments in the specification show data points in the lower ratio quadrant of 1:1, 1:3, 1:5, 1:5.7 and 1:15, "[y]et the patentees chose to specifically claim ratios of 1:1 and 1:5. If the data suggested to the inventors that a range of ratios in the lower ratio quadrant was desirable, they could easily have claimed a ratio range of 'about 1:1 to about 1:5,' . . . but they did not." *Id.* Accordingly, Caraco's ratio of 1:8.67 was found not to infringe.

What is interesting about this literal infringement analysis is that it bears a striking resemblance to the "disclosure dedication rule" applied in a doctrine of equivalents analysis, whereby a patentee cannot claim, by equivalents, that which was disclosed in the specification but not literally included in the claims. Here, in the context of a literal infringement analysis centering on the word "about," the court refused to extend a range to cover that which was disclosed in the specification but not literally claimed using "disclosure dedication" logic. While the court made clear that each case must be assessed on its own merits, the more prudent approach would be to not use the term "about" to encompass a range that could be literally covered.

Process steps may be treated as part of product claim if patentee has made clear that the process steps are essential part of claimed invention.

In *Andersen Corp. v. Fiber Composites LLC,* 474 F.3d 1361, 81 U.S.P.Q.2d 1545 (Fed. Cir. 2007), the Federal Circuit restricted Anderson's claims directed to a thermoplastic "composite composition" to the disclosed process for making that composition. The court noted that the claim recited that the "composite composition" is "capable of extrusion into a dimensionally stable structural member." *Id.* at 1367. Furthermore, the court found "that the step of extruding the composite in pellet or linear extrudate form is" required "in order for the composite composition to be capable of extrusion into a structural member having the claimed physical properties." *Id*. Accordingly, because "the steps of linear extrusion or pelletization are not merely embodiments, but are essential features of the claimed composite composition," this did not amount to an impermissible limitation of the invention to particular embodiments. *Id.* The court found similar disclaimers on its

review of the prosecution history of the patent, noting that the applicant "further distinguished" the prior art by arguing that it did not teach the pelletizing of the composite material whereas the claimed invention first pelletizes the thermoplastic composite material, and then manufactures a structural member from the pelleted materials by melting and extruding the composite. *Id.* at 1368.

The *Andersen* opinion concludes that formation of the claimed "composite composition" by an extrusion process is an essential prerequisite to that composite being itself "capable of extrusion," thereby making it fair game to limit a product claim to the process by which the product is made. Consider, however, that the accused composite was not made by extrusion, yet was itself capable of extrusion. The very existence of the accused composite thus seems to undermine the court's entire premise for limiting the product claim to a process.

Applicant may be held to argument to distinguish reference even if such argument was not necessary.

Another interesting point in this case is that Andersen invoked multiple grounds for distinguishing a prior art reference, and thus argued that it should not be limited to its process arguments made in distinguishing its composition claim. However, the court held that "[a]n applicant's invocation of multiple grounds for distinguishing a prior art reference does not immunize each of them from being used to construe the claim language. Rather, . . . an applicant's argument that a prior art reference is distinguishable on a particular ground can serve as a disclaimer of claim scope even if the applicant distinguishes the reference on other grounds as well." *Andersen*, 474 F.3d at 1373.

There is a lesson to be learned here—do not recite properties in compound or composition claims. This is a lesson applied last year in the case of *Kim v. ConAgra,*[17] where an applicant claiming a composition characterized it as a potassium bromate "replacer" and failed in its infringement suit because it did not show that the accused composition had all the properties of the potassium bromate it replaced.

Where evidence showed effectiveness near concentration of 385 mOsmol/L, court extended range of claim reciting osmolarity between "about" 400-500 mOsmol to cover 385 mOsml.

In *Central Admixture Pharmacy Services Inc. v. Advanced Cardiac Solutions P.C.,* 482 F.3d 1347, 82 U.S.P.Q.2d 1293 (Fed. Cir. 2007), the Federal Circuit addressed the scope of a claimed range reciting an osmolarity of between "about" 400-500 mOsmol. Citing its earlier decision in *Ortho-McNeil*, discussed above, the court reiterated that the use of the word "about" avoids a strict numerical boundary to the specified parameter. *Id.* at 1356. Rather, its range must be interpreted in its technological and stylistic context giving due consideration to how the term was used in the patent specification, the prosecution history and other claims. *Id.* In this case, the court held that because the intrinsic evidence indicated that the solution begins to be effective near a concentration of 385 mOsmol/L, the

[17] *Kim v. ConAgra Foods Inc.*, 465 F3d 1312, 80 U.S.P.Q.2d 1495 (Fed. Cir. 2006).

word “about” extends the range of the claim downward to that point. *Id.*

Claim reciting “a separating layer as a water soluble salt product” does not require that layer be water-soluble, but only that it include a water soluble salt such that an accused layer including non-soluble talc infringed.

In *In re Omeprazole Patent Litigation,* 483 F.3d 1364, 82 U.S.P.Q.2d 1643 (Fed. Cir. 2007), the Federal Circuit assessed the scope of a claim drawn to a process for preparing an oral pharmaceutical formation, including “a separating layer as a water soluble salt product” between a core including an alkaline compound and an enteric coating polymer. The accused infringer, Andrx, argued that its product lacked a water-soluble separating layer, having instead a layer composed of almost 50% talc which only disintegrates in water rather than dissolves. The district court disagreed and construed the claim as to encompass talc in the separating layer. The Federal Circuit affirmed, explaining that “[t]he language of claim 1 does not claim a separating layer that is water soluble,” but instead “recites a salt product that is water soluble.” *Id.* at 1370. Relying on the specification, the court noted that (1) the general description states that the layer comprises a salt, and (2) the specific examples included an enteric layer with talc. *See Id.*

The court seems to have reached the correct conclusion, especially given that the examples included talc in the layer. However, the court did not explain whether the recitation of “a separating layer as a water soluble salt product” means that the separating layer comprises a salt product (thereby leaving it open to inclusion of other components), or whether it is such a salt product (thereby closing it to other components).

Proper construction of “anion of a mineral acid” is one “derived” from the acid, rather than one “capable” of forming an acid, where latter construction renders phrase “of a mineral acid” superfluous and inconsistent with other claims.

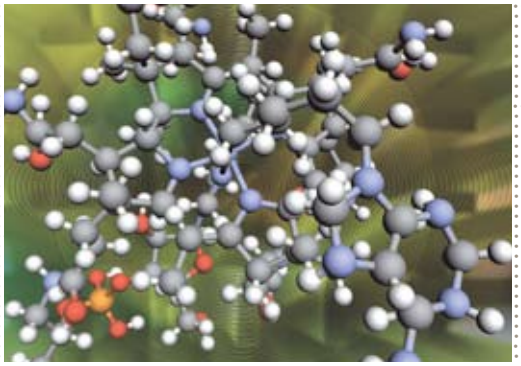
In *In re Gabapentin Patent Litigation,* 503 F.3d 1254, 84 U.S.P.Q.2d 1651 (Fed. Cir. 2007), the claim in question was directed to a pharmaceutical composition comprising:

(i) an active ingredient which is gabapentin . . . containing less than 0.5% by weight of its corresponding lactam and less than 20 ppm of an anion of a mineral acid and;

(ii) one or more pharmaceutically acceptable adjuvants that do not promote conversion of more than 0.2% by weight of the gabapentin to its corresponding lactam. . .

At issue was whether the recited “anion of a mineral acid” should be limited to an anion “derived from a mineral acid,” as argued by the patentees, or construed more broadly to encompass an anion from any source capable of forming a mineral acid, as argued by the accused infringers. The court agreed with the patentees: “Had the patentees intended the anion to refer to any anion, regardless of its source, the patentees could have simply claimed ‘anions’ and omitted the phrase ‘of a mineral acid.’” *Id*. at 1263. The court also pointed out that dependent claims reciting the type of mineral acid “would be superfluous or unnecessary if the anions did not derive from mineral acids because there would be no need to identify with particularity the type of mineral acid that must be used.” *Id.*

VII. Infringement



Infringement of claim reciting particular anion concentration may be established indirectly by measurement of pH where there is evidence that pH testing can indicate anion concentration in sample.

The patentees in *In re Gabapentin* relied on pH testing to prove that the accused compositions included the claimed anion of a mineral acid at a concentration less than 20 ppm. Defendants complained that, as the patentees chose to claim their invention in terms of ppm of anion, their proofs must make such showing directly. Defendants cited *Abbott Laboratories v. TorPharm, Inc.*[18] and *Zenith Laboratories, Inc. v. Bristol-Myers Squibb Co.*[19] for the proposition that where a patentee chooses to claim its invention in terms of a particular physical property, the patentee must demonstrate infringement with respect to that particular property. The court disagreed: "Unlike the evidence relied on in *Abbott* and *Zenith*, pH testing can indicate whether a sample contains less than 20 pm of acidic chloride by measuring the pH, or acidity of the solution and comparing it against a sample with a known amount of acid." *In re Gabapentin*, 503 F.3d at 1262.

While the plaintiffs ultimately survived summary judgment relying on pH testing, it would seem the more prudent course would have been to establish infringement directly based on the property set forth in the claim (i.e., ppm of anion). Indeed, one might wonder whether a patentee's reliance on a property other than that recited in the claim to establish infringement risks susceptibility to a charge of indefiniteness, particularly if it can be shown that the claimed property is overly burdensome or impractical to test.

Non-infringement of independent claim directed to method of making transgenic plant necessarily means non-infringement of dependent claim reciting step of obtaining progeny from transgenic plant.

In *Monsanto Co. v. Syngenta Seeds Inc.,* 503 F.3d 1352, 84 U.S.P.Q.2d 1705 (Fed. Cir. 2007), the claims at issue were:

1. A process for producing a fertile transgenic Zea mays plant comprising the steps of (i) bombarding intact regenerable Zea mays cells with DNA-coated microprojectiles, (ii) identifying or selecting a population of transformed cells, and (iii) regenerating a fertile transgenic plant therefrom, wherein said DNA is transmitted through a complete sexual cycle of said transgenic plant to its progeny, and imparts herbicide resistance thereto.

4. A process comprising obtaining progeny from a fertile transgenic plant obtained by the process of claim 1 which comprise said DNA.

Even though claim 4 (directed to obtaining progeny) depended from claim 1 (directed to producing the transgenic plant), Monsanto argued that Syngenta's mere production of progeny from the transgenic plant infringed claim 4, even absent Syngenta's carrying out of the steps (i) to (iii) of claim 1. In particular,

[18] 300 F.3d 1367, 63 U.S.P.Q.2d 1929 (Fed. Cir. 2002).

[19] 19 F.3d 1418, 30 U.S.P.Q.2d 1285 (Fed. Cir. 1994).

Monsanto argued that the transgenic plant referred to in claim 4 was "a novel starting material" (a fertile transgenic plant previously obtained using the claim 1 process). Syngenta countered by noting that because claim 4 depended from claim 1, it necessarily incorporated all the limitations of claim 1 therein. Accordingly, because Syngenta did not carry out steps (i) to (iii) of claim 1, it argued that it could not infringe claim 4. Syngenta also pointed out that because steps (i) to (iii) were carried out before Monsanto's patent issued (in fact by Monsanto itself), there could be no infringement.

The Federal Circuit agreed with Syngenta. As an initial matter, it held that Syngenta did not infringe claim 4 because it did not infringe claim 1. *Monsanto*, 503 F.3d at 1359. As the court observed, one may infringe an independent claim and not infringe a claim dependent on that claim, but the reverse is not true. *Id.*

There is no infringement of process claim where three of the four steps (1) were carried out by patent holder (and therefore authorized) and (2) were carried out by patent holder before issuance of the patent.

The court also held that Syngenta did not infringe claim 4 under either § 271(a) or (g) on two additional grounds. First, because Monsanto itself had performed the first three steps of claim 1, they were not "unauthorized." *Monsanto*, 503 F.3d at 1357. Second, the first three steps of the claimed process occurred before the patent issued. *Id.* at 1359. The court reiterated that "§ 271(g) 'requires that the patent be issued and in force at the time the process is practiced and the product is made.'" *Id.* at 1360 (quoting *Mycogen Plant Science, Inc. v. Monsanto Co.,* 252 F.3d 1306 (Fed. Cir. 2001)). Thus, infringement of a multi-step method claim cannot lie prior to issuance.

An interesting "take-away" from this case is that it appears that one can only infringe a multi-step process where (1) none of the steps were authorized and (2) none of the steps were carried out before issuance of the patent. This begs the question of whether the court would have found infringement if Monsanto had presented an independent claim directed to "[a] process for obtaining progeny of a recombinant plant, said recombinant plant being obtained by the process comprising the steps (i)-(iii)" without reference to another claim.

Court does not accept "indirect" proof of infringement based on supposed "admissions" made by accused infringer where such admissions do not prove that any particular sample sold by defendant was infringing.

In *PharmaStem Therapeutics Inc. v. ViaCell Inc.,* 491 F.3d 1342, 83 U.S.P.Q.2d 1289 (Fed. Cir. 2007), the claim at issue recited a composition containing neonatal or fetal hematopoietic stem cells "in an amount sufficient to effect hematopoietic reconstitution of a human adult." PharmaStem based its allegations of infringement on ViaCell's product literature and the testimony of witnesses rather than on its own tests. While acknowledging that "there is no prohibition against using the admissions of a party . . . as evidence in an infringement action," the Federal Circuit found "[i]n this case, however, . . . none of the statements represented that the stem cells in any of the cryopreserved cord blood samples were sufficient in number to effect hematopoietic reconstitution of an adult, as is required by claim 1." *PharmaStem*, 491 F.3d at 1351. The court noted that by choosing not to try to prove infringement directly, "PharmaStem took the risk that the court would conclude that it had failed to prove that any of the defendants' cryopreserved samples infringed." *Id.* at 1354.

Expert testimony of infringement based solely on defendant's admissions was properly struck, in contrast to In re Omeprazole litigation where such expert testimony was sufficient to demonstrate invalidity.

In *PharmaStem*, the district court struck the opinion testimony of Pharmastem's expert witness, finding it unhelpful "because it consisted almost entirely of her quoting from the promotional information and other materials . . . and drawing inferences from those materials." *Id.* The Federal Circuit agreed: "[B]ecause her testimony was almost entirely based on an interpretation of the defendants' marketing materials and materials directed to investors, any expertise on Dr. Hendrix's part as a cell biologist was of no apparent help to the jury." *Id.* at 1355. This holding in isolation is not particularly remarkable, until one remembers that this same court in the *Omeprazole* litigation took the exact opposite position when Apotex's expert concluded that the prior art inherently formed *in situ* an anticipatory layer based exclusively on Astra's so-called admissions. Indeed, the parallels run even deeper, as the Korean judge and the Korean court's appointed expert both rejected the expert testimony in *PharmaStem*, just as the jury rejected it in *Omeprazole*. Judge Newman pointed this out in her dissent.

> Although the panel majority states that Dr. Banakar testified that 'if a formulator followed the CKD

process as described in the CKD Patent Application, the separating layer would form *in situ* 'each and every time,'' on cross-examination Dr. Banaker admitted that he had conducted no experiments and his conclusion was without verification. He stated that his sole basis for 'each and every time' was the Astra argument in the Korean proceedings. *Omeprazole,* 483 F.3d at 1379.

Why was expert testimony, based solely on an opponent's admissions and not on any independent testing, sufficient for anticipation in *Omeprazole* but not for infringement in *PharmaStem*? Obviously, we do not know the answer to this question, although we do know that it seems to contradict the oft-cited doctrine that "[t]hat which infringes if later anticipates if earlier."[20] Moreover, given that a presumption of validity is supposedly overcome by clear and convincing evidence, whereas infringement is overcome merely by a preponderance of the evidence, one would have thought that, all things being equal, the court would have displayed more reticence to invalidate a patent based solely on expert testimony of an opponent's admissions. One wonders if there is still a presumption of validity.

Court rejects contributory infringement claim against medical service defendant who collected and preserved cord blood as mere "bailee" for its client.

The *Pharmastem* court also addressed the question of whether Viacell contributorily infringed PharmaStem's claim directed to a "method for hematopoietic or immune reconstitution of a human" comprised of isolating the fetal blood components, cryopreserving them, thawing them and introducing them into a human host. Viacell had collected and preserved fetal cord blood, but had not actually introduced them into a human. Nonetheless, Viacell sold this cord blood to customers who did introduce them into humans. Invoking the personal property doctrine of bailment, the court concluded that cord blood is not a "a material or apparatus for use in practicing a patented process" for § 271(c) purposes (see below), but rather "the cord blood remained the property of the families throughout the period in which the defendants stored it." *PharmaStem*, 491 F.3d at 1351. Accordingly, "[t]he defendants were never owners of the blood, but instead were merely bailees; they were not free to dispose of the blood as they chose . . . ." *Id.*

Contributory infringement section, 271(c), is limited to sale of products and does not cover sale of services.

Finally, Pharmastem argued that even if ViaCell's activities were properly characterized as providing a service rather than selling a product, § 271(c) ought to extend to the sale of a services. The Federal Circuit disagreed, noting that extending the reach of § 271(c) to services would contradict "both the language and the legislative history" of the statute. *Id.* at 1357.

[20] *See, e.g., Polaroid Corp. v. Eastman Kodak Co.,* 789 F.2d 1556, 1573, 229 U.S.P.Q. 561, 574 (Fed. Cir. 1986) (citing *Peters v. Active Mfg. Co.,* 129 U.S. 530, 537 (1889)).

VIII. Doctrine of Equivalents

Where intrinsic evidence points to criticality of 1:5 ratio of two drugs, doctrine of equivalents cannot cover ranges outside.

In Ortho-McNeil Pharmaceutical Inc. v. Caraco Pharmaceutical Laboratories, Ltd., 476 F.3d 1321, 81 U.S.P.Q.2d 1427 (Fed. Cir. 2007), the court held that a claimed weight ratio of "about 1:5" could not cover under the doctrine of equivalents an accused weight ratio or 1:8.67. *Id.* at 1328. "The patent specification distinctly identifies the 1:5 ratio versus all the other ratios or ratio ranges. Under this circumstance, whether or not the 1:5 ratio's analgesic response is statistically different from that of other ratios is of no moment. The intrinsic evidence points to the desirability, and thus the criticality, of the 1:5 ratio versus other ratios." *Id.*

In assessing the "way" a function is achieved in "function/way/result" test for doctrine of equivalents, it is the "way" set forth in patent, and not in commercial literature, which controls.

In *AquaTex Industries, Inc. v. Techniche Solutions,* 479 F.3d 1320, 81 U.S.P.Q.2d 1865 (Fed. Cir. 2007), the Federal Circuit had to determine whether a claim to synthetic "fiberfill batting material" was infringed under the doctrine of equivalents by Vizorb®, a material incorporating both natural and synthetic fibers. The district court had relied on the characteristics of AquaTex's product as described on its website in determining whether there was infringement under the doctrine of equivalents. Criticizing the district court's analysis, the Federal Circuit held that "'[i]nfringement, either literally or under the doctrine of equivalents, does not arise by comparing the accused product . . . with a commercialized embodiment of the patentee.'" *Id.* at 1327 (quoting *Johnson & Johnston Assocs. Inc. v. R.E. Serv. Co.,* 285 F.3d 1046, 1052, 62 U.S.P.Q.2d 1225 (Fed. Cir. 2002) (en banc)).

When relying on doctrine of equivalents, be careful to provide particularized testimony by one skilled in the art explaining insubstantiality of differences, not generalized testimony about accused product.

Although rejecting the district court's analysis, the Federal Circuit found that AquaTex had not met its burden of showing infringement by equivalents. "[W]hen the patent holder relies on the doctrine of equivalents, as opposed to literal infringement, the difficulties and complexities of the doctrine require that evidence be presented to the jury or other fact-finder through the particularized testimony of a person of ordinary skill in the art, typically a qualified expert, who (on a limitation-by-limitation basis) describes the claim limitations and establishes that those skilled in the art would recognize the equivalents." *AquaTex*, 479 F.3d at 1329. In this case, the court found that AquaTex had failed to provide "particularized testimony from an expert that specifically addressed equivalents "on a limitation-by-limitation basis," explain the "insubstantiality of the differences between the patented method and the accused product," or "discuss the function, way, result test." *Id.* at 1328-1329. Instead, all

that AquaTex provided was "lawyer argument and generalized testimony about the accused product," which was insufficient to show infringement under doctrine of equivalents. *Id.* at 1329.

Court rejects patentee's attempt to avoid prosecution history estoppel by arguing narrower construction for its original claims.

In *Schwarz Pharma Inc. v. Paddock Laboratories Inc.,* 504 F.3d 1371, 84 U.S.P.Q.2d 1900 (Fed. Cir. 2007), the Federal Circuit addressed whether Schwarz's claims directed to a pharmaceutical composition containing an ACE inhibitor and "a suitable amount of an alkali or alkaline earth metal carbonate to inhibit cyclization and discoloration" was infringed under the doctrine of equivalents by Paddock's composition using MgO (a non-carbonate) as the inhibitor. Although its original claims recited a "metal containing stabilizer" and an "alkali or alkaline earth metal salt," Schwarz argued that it never made a narrowing amendment excluding MgO because even its original claims were limited to alkali or alkaline earth metal cations and carbonate, borate or silicate anions. The court disagreed. "The reference to borates, silicates, and carbonates reflects preferences, not limitations inconsistent with both the original claims and broader language in the specification." *Id.* at 1376. The court further found that "the amendment was made in response to an obviousness rejection by the examiner and thus is presumed to have been made for reasons of patentability." *Id.*

Be careful what you put into claim preamble, as court defines "field in which foreseeability may be considered" for the doctrine of equivalents based on the preamble.

The court in *Schwarz* also addressed whether the MgO stabilizer in the accused composition was foreseeable. Citing to *Festo*,[21] the court noted that an alternative is foreseeable "if it is known in the field of the invention as reflected in the claim scope before amendment." *Schwarz*, 504 F.3d at 1377. Schwarz did not dispute that MgO was known as a stabilizer by skilled artisans at the time of the amendment, but rather insisted "that MgO had to have been known as a stabilizer against the specific degradation pathway of cyclization or for the specific drug category of ACE inhibitors in order to have been foreseeable as an equivalent." The court again disagreed:

> While care must be taken not to sweep too broadly in defining the field of an invention, Schwarz attempts to define the field of invention too narrowly. The language of … claim 1 … began with the words "[a] pharmaceutical composition which contains," and the language of a claim defining an invention defines the field within which foreseeability may be considered. The scope of the claim supports the district court's treatment of the field of invention as pharmaceutical compositions rather than being limited to

[21] *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.,* 493 F.3d 1368, 83 U.S.P.Q.2d 1385 (Fed. Cir. 2007).

pharmaceutical stabilizers that inhibit cyclization in ACE inhibitors.

Id. at 1377.

It is hard to understand why the Federal Circuit chose to focus on the preamble of the claim as the basis for determining whether the so-called MgO equivalent was foreseeable. Are we to believe that had Schwarz claimed a "composition stabilized against ACE inhibitor degradation," rather than a "pharmaceutical composition," the MgO would mysteriously transform from foreseeable to non-foreseeable? This seems to truly elevate form over substance and ignore the fact that in the real world, foreseeability of an equivalent is directed by the invention as a whole and not the fortuitous use of more detailed language in the claim's preamble.

Narrowing amendment resulting in exclusion of accused teaching is not "tangential to patentability" merely because inventors could have relied on other distinctions to overcome art.

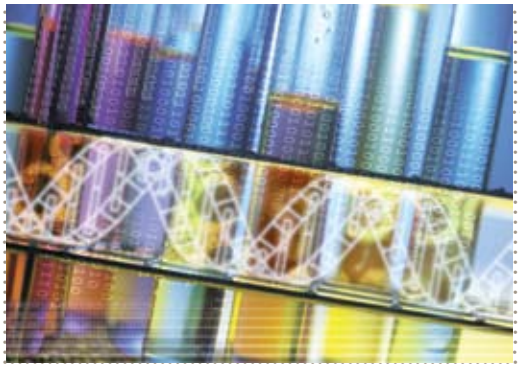
Schwarz also argued that it had rebutted the presumption of surrender. According to Schwarz, the narrowing amendment it made was no more than tangentially related to the use of MgO because the prior art did not discuss the use of a stabilizer to prevent cyclization of ACE inhibitors. Thus, the patentability of the claims could have been defended on these grounds without amending the claims. The court again disagreed with Schwarz, noting that "the use of MgO is directly implicated by the amendment of the claim language at issue because the language amended concerns the types of stabilizers by the claims and excludes MgO." *Schwarz*, 504 F.3d at 1377. The court explained, "[t]he fact that the inventors may have thought after the fact that they could have relied on other distinctions in order to defend their claims is irrelevant and speculative; the inventors chose to distinguish over [the prior art] by narrowing the range of claimed stabilizers to exclude the one disclosed in [the prior art], as well as others." *Id.* at 1377-1378.

Court's refusal to grant preliminary injunction based on finding of likely invalidity is not "full litigation and decision on the merits" invoking Blonder Tongue's prohibition against enforcing against one party a patent that has been found invalid or unenforceable against another party.

In *Abbott Laboratories v. Andrx Pharmaceuticals, Inc.,* 473 F.3d 1196, 81 U.S.P.Q.2d 1289 (Fed. Cir. 2007), Andrx alleged that Abbott was collaterally estopped from asserting its patent because Abbott had been denied a preliminary injunction in another case where the court found that Abbott was not likely to withstand a validity challenge against the same patent. Applying the law of the regional circuit, the Federal Circuit disagreed, holding that "[a] determination that there is merely a likelihood of proving invalidity is a determination made solely in terms of 'probabilities, not certainties' and is therefore not 'full litigation and decision on the merits for purposes of issue preclusion.'" *Id.* at 1206 (quoting *A.J. Canfield v. Vess Beverages,* 859 F.2d 36, 38 (7th Cir.1988)). The court noted that it would be "the rare circumstance in which a determination made during a preliminary injunction is sufficiently final to be accorded preclusive effect" under the Supreme Court's decision in *Blonder Tongue.*[22] *Abbott,* 473 F.3d. at 1207.

[22] *Blonder-Tongue Laboratories, Inc. v. University of Illinois Foundation et al.,* 402 US 313, 169 U.S.P.Q. 513 (1971).

IX. Inequitable Conduct



Where "crucial issue" during prosecution was oxidative stability of claimed oil versus prior art oil, withheld art showing that prior art oil had same or similar stability was material.

In *Cargill Inc. v. Canbra Foods Ltd.,* 476 F.3d 1359, 81 U.S.P.Q.2d 1705 (Fed. Cir. 2007), Cargill obtained a patent by arguing that the claimed IMC 130 oil had an oxidative stability that was strikingly superior to IMC 129 oil. However, art known to the applicant but undisclosed to the Patent Office contained test data indicating that three samples of the IMC 129 oil exhibited oxidative stabilities in a range similar to, and at one point, overlapping that of IMC 130. The district court found that, by not disclosing the prior art, the applicant "unilaterally withheld information that unquestionably would have been viewed as worthy of serious consideration by the PTO, and might have resulted in the patents not being issued."

On appeal, what appeared to especially concern the Federal Circuit was the fact "that a crucial issue during prosecution was whether IMC 130 possessed strikingly superior oxidative stability," which made it "quite certain that a 'reasonable examiner' would consider such test data to be important in deciding whether to allow the patents to issue." *Id.* at 1365. The court rejected Cargill's argument that the data contained in the prior art was not material because the tests underlying it were performed under unusual conditions and thus not comparable to the data submitted to the examiner. According to the court, "'[m]ateriality is determined from the viewpoint of a reasonable patent examiner, and not the subjective beliefs of the patentee.'" *Id.* at 1366 (quoting *Bristol-Myers Squibb Co. v. Rhone-Poulenc Rorer, Inc.,* 326 F.3d 1226, 1238, 66 U.S.P.Q.2d 1481 (Fed. Cir. 2003)).

This holding reinforces the holding in other cases that one must use extreme caution when relying on comparative evidence to establish patentability.

Patent applicants now have to not only disclose related applications, but prosecution and art from those related applications as well.

In *McKesson Information Solutions, Inc., v. Bridge Medical, Inc.,* 487 F.3d 897, 82 U.S.P.Q.2d 1865 (Fed. Cir. 2007), the technology at issue related to a three-node patient identification system for relating items with patients and ensuring that an identified item corresponds to an identified patient. During prosecution, the prosecuting attorney failed to disclose a prior art patent brought to his attention in a related application that he was simultaneously prosecuting. He also failed to disclose rejections and an allowance of claims in the related application. At issue was whether the prosecuting attorney's failure to disclose this information constituted inequitable conduct. The Federal Circuit concluded that it did.

The court began by noting that the prior art patent was material because it disclosed a unique identifier and a three-node system. *McKesson*, 487 F.3d at 914. Moreover, because the patent described the three-node system in greater detail than any other reference, it was deemed not to be cumulative. *Id.* 914-15.

Next, the court determined that the examiner's rejection of the three-node communication in the one application would have been important to a reasonable examiner examining the related application, especially in view of the applicant's arguments that the three-node communication was crucial to the invention. *Id* at 920. Clarifying its earlier precedent in *Dayco*,[23] which had suggested that substantial similarity was required for office actions to be material in a co-pending case, the *McKesson* panel held that so long as the evidence clearly and convincingly shows that the contrary decision would have been important to the examiner's consideration of patentability in the co-pending case, the applicant has a duty of disclosure. *Id.*

Finally, in relation to the allowed claims that were not disclosed, the Federal Circuit concluded that the applicant's failure to disclose those claims to the examiner supported a finding of inequitable conduct. "Material information is not limited to information that would invalidate the claims under examination." *Id.* at 925. The appropriate test for materiality is "'whether a reasonable examiner would have considered the information important, not whether the information would conclusively decide the issue of patentability.'" *Id.* (quoting *Li Second Family LP v. Toshiba Corp.,* 231 F.3d 1373, 1380, 56 U.S.P.Q.2d 1681 (Fed. Cir. 2000)). Thus, the allowance of claims in the related application was deemed material, and therefore should have been disclosed to the examiner. Significantly, the court further held that it was of no consequence that the allowance had been made by the same examiner whom the applicant was presently before. *Id.* Citing the Manual of Patent Examination and Procedure ("MPEP") and a 1972 Seventh Circuit decision, the Federal Circuit held that the prosecuting attorney was not entitled to assume that a busy examiner "would recall his decision to grant the claims" in the co-pending case. *Id.*

Judge Newman again dissented. She found neither clear and convincing evidence of deceptive intent in the applicant's failure to "inform the examiner of the examiner's grant of a related case of common parentage a few months earlier, a case that was examined by the same examiner and whose existence has previously been explicitly pointed out by the same applicant," nor in the applicant's failure to "cite a reference that the applicant had cited in the same related case, and that had been explicitly discussed with the same examiner in the related case." *Id.* at 926. Judge Newman warned that the court was returning "to the 'plague' of encouraging unwarranted charges of inequitable conduct, spawning the opportunistic litigation that here succeeded despite consistently contrary precedent." *Id.*

The Federal Circuit's holding in *McKesson* underscores the importance of complying with the duty of candor in the context of parallel prosecution. But perhaps the most alarming aspect of the decision, especially to the biotechnology field, is the notion that compliance with the duty of candor now requires disclosure of not just the existence of related applications, but also their course of prosecution, including cited references, office actions and allowed claims. Given the relatively large number of divisional and continuation patent applications filed in biotechnology, those prosecuting biotechnology applications will inevitably and disproportionately bear the burden and expense of complying with this heightened duty of candor.

Meanwhile, as the Federal Circuit seems to be saying "the more disclosure, the better," the Patent Office is proposing rules limiting the disclosure applicants can make. Under the PTO's proposed rules, an applicant would be limited to filing a total of twenty references, absent a special showing. This serves again to underscore the genuine disconnect between the judges on the court—nearly all of whom have no practical patent experience—and those at the PTO dealing daily with the realities on the ground.

[23] *Dayco Products, Inc. v. Total Containment, Inc.,* 329 F.3d 1358, 66 U.S.P.Q.2d 1801 (Fed. Cir.2003).

X. Patent Misuse

It is not patent misuse to prohibit farmers who purchase patented recombinant seed from planting second generation farmer-grown seed, even where claims do not specifically claim seed.

In *Monsanto Co. v. McFarling*, 488 F.3d 973, 82 U.S.P.Q.2d 1942 (Fed. Cir. 2007), the Federal Circuit revisited its earlier holding that Monsanto's sale of its patented genetically modified soybean seeds with restrictions on the farmer's use of second generation seeds grown by the farmer was not misuse.[24] McFarling argued that the court's earlier decision finding no misuse relied specifically on the fact that the patent claimed the recombinant soybean seeds, pointing to the court's statement that "the licensed and patented product (the first generation seeds) and the goods made by the licensed product (the second-generation seeds) are nearly identical copies." According to McFarling, Monsanto's assertion of a different patent—which did not claim seeds—rendered the rationale of the earlier decision inapplicable. The Federal Circuit rejected McFarling's argument:

> Although that patent does not explicitly claim seed containing a Roundup Ready genetic trait, it claims plant cells having that genetic trait, and farmer-grown Roundup Ready soybeans undisputedly contain such cells. Thus, as in the case of the [earlier] patent, the '[later] patent reads on both purchased and farmer-grown Roundup Ready soybeans and there is not patent misuse in the license terms for either patent.

Monsanto, 488 F.3d at 978.

Fact that accused plant was not "human-made" was irrelevant to infringement because chimeric gene found in plant was human made.

McFarling also argued that there could be no infringement because the "unpatented germ plasm and second generation of genetically-altered soybeans is not a 'human-made' invention." The court found no merit in this argument. "[T]he fact that the germ plasm and the soybeans are not 'human-made' is irrelevant to infringement. What is human-made are the chimeric genes claimed in the later patent, which are found in all of the infringing seeds at issue in this case. The principles of patent law do not cease to apply when patentable inventions are incorporated within living things, either genetically or mechanically." *Id.* at 978.

[24] *Monsanto Co. v. McFarling,* 363 F.3d 1336, 70 U.S.P.Q.2d 1481 (Fed. Cir. 2004).

XI. Declaratory Judgement

Absent a covenant not to sue, merely listing patent in Orange Book coupled with paragraph IV certification may be sufficient to establish declaratory judgment jurisdiction.

In last year's Year-In-Review, we discussed the Supreme Court's decision in *MedImmune*, which held that a fully paid licensee can now file a declaratory judgment action against its licensor even while fully paying royalties. *See MedImmune, Inc. v. Genentech, Inc.,* 127 S.Ct. 764 (2007), 81 U.S.P.Q.2d 1225. In 2007, the Federal Circuit took the *MedImmune* decision to new levels and significantly reduced the bar for initiation of a declaratory judgment action.

In *Teva Pharmaceuticals USA, Inc. v. Novartis Pharmaceuticals Corp.,* 482 F.3d 1330, 82 U.S.P.Q.2d 1225 (Fed. Cir. 2007), the Federal Circuit had the opportunity to apply the Supreme Court's *MedImunne* holding in the context of a declaratory judgment action brought by Teva against Novartis in a Hatch-Waxman situation. The litigation involved five Novartis patents covering the drug famciclovir marketed under the name FAMVIR®, which Novartis listed in the FDA's Orange Book. Teva filed an Abbreviated New Drug Application ("ANDA") to sell a generic version of FAMVIR®, and included with that filing a paragraph IV certification that its drug did not infringe the five Novartis patents or that those patents were invalid.

Within forty-five days of Teva's ANDA filing, Novartis exercised its right to sue under § 271(e)(2) or(3)[25] thereby invoking an automatic thirty-month stay against the granting of approval for Teva to market famciclovir. However, Novartis only sued on one of its five patents ("the first patent"), which provoked Teva to seek a declaratory judgment of non-infringement or invalidity against the remaining four Novartis patents. Applying the Federal Circuit's pre-*MedImmune* "reasonable-apprehension-of-imminent-suit" test, the district court held that Teva lacked subject matter jurisdiction for its declaratory judgment action.

The Federal Circuit reversed, noting that "[i]n *MedImmune*, the [Supreme] Court disagreed with our 'reasonable apprehension of imminent suit' test and reaffirmed that the 'actual controversy' requirement in the Declaratory Judgment Act." *Teva*, 482 F.3d at 1339 The Federal Circuit acknowledged that:

> While it is true that the suit on the [first] patent is a different 'case' than Teva's declaratory judgment action, Novartis created a present and actual 'controversy' by choosing to sue under § 271(e)(2)(A) on Teva's single act of infringement, thereby placing into actual dispute the soundness of Teva's ANDA and Teva's ability to secure approval of the ANDA.

[25] It shall not be an act of infringement to make, use, offer to sell, or sell within the United States or import into the United States a patented invention (other than a new animal drug or veterinary biological product (as those terms are used in the Federal Food, Drug, and Cosmetic Act and the Act of March 4, 1913) which is primarily manufactured using recombinant DNA, recombinant RNA, hybridoma technology, or other processes involving site specific genetic manipulation techniques) solely for uses reasonably related to the development and submission of information under a Federal law which regulates the manufacture, use, or sale of drugs or veterinary biological products.

> Thus, while Teva's declaratory judgment action and the pending [first] patent suit are different 'cases,' they arise from the same controversy created when Novartis listed its Famvir® patents in the Orange Book, Teva submitted its ANDA certifying all five Famvir® patents under paragraph IV, and Novartis sued Teva challenging the submission of Teva's ANDA."

Id. at 1340.

Because events after filing lawsuit can divest court of jurisdiction, defendant's counterclaim of invalidity was properly dismissed when plaintiff conceded, before trial, that it no longer had infringement claim.

In *Benitec Australia Ltd. v. Nucleonics, Inc.,* 495 F.3d 1340, 83 U.S.P.Q.2d 1449 (Fed. Cir. 2007), Benitec sued Nucleonics for patent infringement based on Nucleonics' activities directed to developing and submitting information to the FDA at a stage well in advance of Nucleonics filing a New Drug Application ("NDA"). Nucleonics counterclaimed for invalidity. After the complaint had been filed, the Supreme Court decided *Merck, KGaA v. Integra LifeSciences I. Ltd.*[26] Benitec conceded that Nucleonics' activities were exempt from infringement in view of the *Integra* decision and moved to dismiss the case without prejudice.

Even though the original infringement claim was moot, Nucleonics argued that the court still had jurisdiction to hear its counterclaim of invalidity against Benitec, citing *Cardinal Chemical*[27] for the proposition that a court finding a claim non-infringed still had to address outstanding validity issues with respect to that claim. The Federal Circuit disagreed, noting that "*Cardinal Chemical*, however, does not address whether subsequent events can divest the district court of jurisdiction, specifically here, over Nucleonics's counterclaims." *Benitec*, 495 F.3d at 1345. The court distinguished previous cases "because no trial of the infringement issue has taken place" here. *Id.* at 1345. Rather, Benitec "had its claims dismissed at its request before a trial and the considerable effort connected therewith had taken place." *Id.*

Evidence of defendant's potential expansion into non-exempt veterinary uses for its product was not enough to show it could be subject to claim of infringement by plaintiff and therefore did not meet Medimmune's immediacy requirements.

Also in *Benitec*, Nucleonics sought to maintain its counterclaim of invalidity by urging that it was contemplating veterinary uses for its product which would not fall with the § 271(e) exemption. The court disagreed, holding that "[t]here was no evidence before the district court that Nucleonics had made or sold any infringing product," and that "[t]he declaration of Nucleonics's president does not indicate that Nucleonics's desire to expand into animal markets has yet produced any definite offer which the unnamed 'supplier of breeding stock' could accept." *Benitec*, 495 F.3d at 1348. Thus, Nucleonics did not show that it engaged in any "use" of the patented invention that could subject it to an infringement suit by Benitech. Accordingly, the defendant did not "meet the immediacy and reality requirement of *MedImmune*." *Id.*

[26] *Merck KGaA v. Integra Lifesciences I Ltd.,* 125 SCt 2372, 74 U.S.P.Q.2d 1801 (2005).

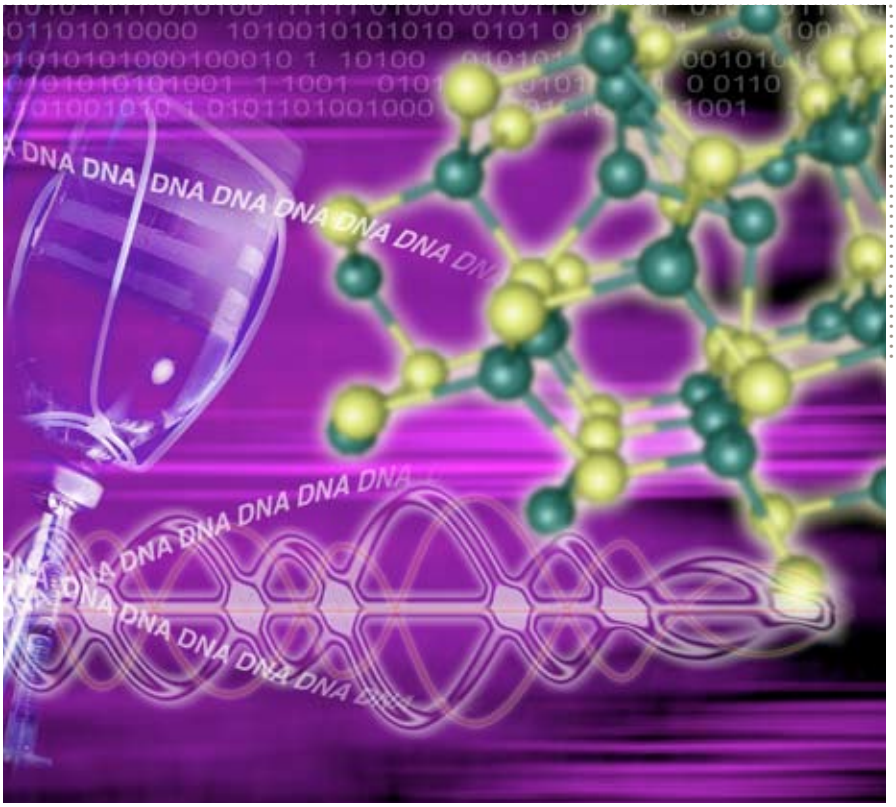
[27] *Cardinal Chemical Co. v. Morton International Inc.,* 113 S.Ct. 1967, 26 U.S.P.Q.2d 1721 (1993).

XII. Patent Term Extension

Filing of terminal disclaimer does not negate patent term extension under Hatch-Waxman, although in calculating extension, the date set by terminal disclaimer controls.

In *Merck & Co. v. Hi-Tech Pharmacal Co.,* 482 F.3d 1317, 82 U.S.P.Q.2d 1203 (Fed. Cir. 2007), the Federal Circuit addressed the question of whether a patent term extension under 35 U.S.C. § 156 may be applied to a patent subject to a terminal disclaimer. Hi Tech argued that Merck was not entitled to patent term extension under Hatch-Waxman because it had terminally disclaimed its patent over one of its own earlier patents. The court acknowledged that § 156 is silent as to the effect of a terminal disclaimer on patent term extension. Nonetheless, the court noted the express language of the statute, which states that if the requirements are otherwise met, the patent term "shall be extended." *Id*. at 1322. The court found that use of the word "shall" indicated that if the enumerated requirements are met, the patent term is entitled to extension. The court also concluded that in calculating the patent term extension, any terminal disclaimer remains effective. *Id.*

XIII. Certificate Of Correction



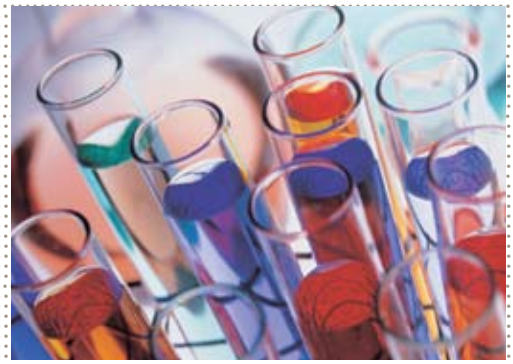
Certificate of correction is not valid where it broadens claim to correct error that would not have been "apparent to the reader."

In *Central Admixture Pharmacy Services, Inc. v. Advanced Cardiac Solutions, P.C.,* 482 F.3d 1347, 82 U.S.P.Q.2d 1293 (Fed. Cir. 2007), the patentee had obtained a Certificate of Correction to correct a claim to recite an osmolality range rather than osmolarity range. Advanced Cardiac Solutions ("ACS") argued that the change to osmolality impermissibly broadened the claim, thereby making the Certificate invalid. The Federal Circuit agreed. "Invalidating a Certificate of Correction for impermissible broadening . . . requires proof of two elements: (1) the corrected claims are broader than the original claims; and (2) the presence of the clerical or typographical error, or how to correct that error, is not clearly evident to one of skill in the art." *Id.* at 1353. In this case, the court found that both elements had been satisfied. See *Id.*

Referencing *Superior Fireplace*,[28] the court noted that there are three categories into which an error might fall, namely: (1) errors involving "mistakes that are immediately apparent and leave no doubt as to what the mistake is"; (2) errors "not apparent to the reader at all; for example, a mistake resulting in another word that is spelled correctly and that reads logically in the context of the sentence"; and (3) errors "where it is apparent that a mistake has been made, but it is unclear what the mistake is." *Central Admixture*, 482 F.3d at 1354. The court found that the error here fell into the second category because "the word 'osmolarity' is indeed 'spelled correctly and reads logically in the context of the sentence.'" *Id.* The court held that "[s]ince the error corrected here was not clearly evident to one of skill in the art and the result of its correction was to broaden the claims, ACS should be granted summary judgment that the certificate of correction is not valid," and "[t]he patent therefore continues to read as it did prior to the issuance of the certificate." *Id* at 1355.

[28] *Superior Fireplace Co. v. Majestic Products Co.,* 270 F.3d 1358, 60 U.S.P.Q.2d 1668 (Fed. Cir. 2001).

XIV. FDA Exemption



On remand from the Supreme Court, the Federal Circuit reversed its earlier holding that Merck's activities did not fall within the exemption under 35 U.S.C. § 271(e).

In *Integra LifeSciences I Ltd. v. Merck KGaA,* 496 F.3d 1334, 83 U.S.P.Q.2d 1673 (Fed. Cir. 2007), Integra had patents covering compounds including an "RGD" tripeptide as a research tool. Merck carried out a research program employing numerous such RGD tripeptides in search for anti-tumor compositions. Some of that research generated data ultimately submitted to the FDA. In its first review,[29] the Federal Circuit held that Merck was not entitled to the FDA exemption because Merck's activities (i.e., general biomedical research to identify new pharmaceutical compounds) were not reasonably related to the development and submission of information to the FDA. The Federal Circuit noted that the FDA has no interest in the hunt for drugs that may or may not later undergo clinical testing for FDA approval.

[29] *Integra lifeSciences I Ltd. v. Merck KgaA,* 331 F.3d 860, 66 U.S.P.Q.2d 1865 (Fed. Cir. 2003).

The Supreme Court reversed,[30] holding that the FDA exemption under § 271(e) is not limited to (1) testing of drugs subject to the approval process, such as generic versions of known drugs; or (2) the use of patented compounds in experiments that are ultimately submitted to the FDA. The Court thus held that the use of patented compounds in preclinical studies is protected as long as there is a reasonable basis for believing that the experiments will produce the types of information that are relevant to an IND or NDA.

On remand, Integra argued that the FDA exemption did not apply to Merck because (1) only compounds subject to an IND (two of Merck's three accused compounds were not the subject of an IND) are entitled to the exemption; (2) the only tests exempted are those directed to the compound's safety; and (3) the exemption only applies to studies that meet the FDA's "good laboratory practices" protocol. The Federal Circuit rejected all three of these arguments.

[30] *Merck KgaA v. Integra Lifesciences Ltd.,* 125 S. Ct. 2372, 74 U.S.P.Q.2d 1801 (2005).

FDA exemption applies to compounds that are never subject of FDA submission provided the particular biological process and physiological effect had been identified and the work was reasonably related to that submission and appropriate for inclusion in an IND application.

Rejecting Integra's argument that only compounds subject to an IND are entitled to the exemption, the Federal Circuit pointed out that "the FDA exemption includes experimentation on products that are not ultimately the subject of an FDA submission, provided that the particular biological process and physiological effect had been identified and the work was reasonably related to that appropriate for inclusion in an IND application." *Integra*, 496 F.3d at 1340. Noting that "[a]ll of the experiments charged with infringement were conducted for the purposes of determining the optimum candidate angiogenesis inhibitor and proceeding with commercial development of the selected candidate in compliance with regulatory procedures" the court applied the exemption. *Id.* The court further pointed out that "[t]he

criterion of whether the experimental investigation of a patented compound is reasonably related to the development of information for submission of the FDA is established at the time of the experiment, and does not depend on the success or failure of the experimentation or actual submission of the experimental results." *Id.* at 1341.

FDA exemption at IND stage is not limited to experiments conducted to show that candidate drugs can be safely administered to humans in clinical trials.

The court rejected Integra's second argument that the FDA exemption at the IND application stage applies only to experiments conducted to show that the candidate drug can safely be administered to human subjects in clinical trials. The court cited 21 C.F.R. § 312.23(a), which states that an IND should include information in addition to that relating to safety, such as the rationale for the drug, its structure, its toxicology, its mode of action, its effectiveness under different conditions, its side effects, its formulation, its administration, and similar information. *Id.*

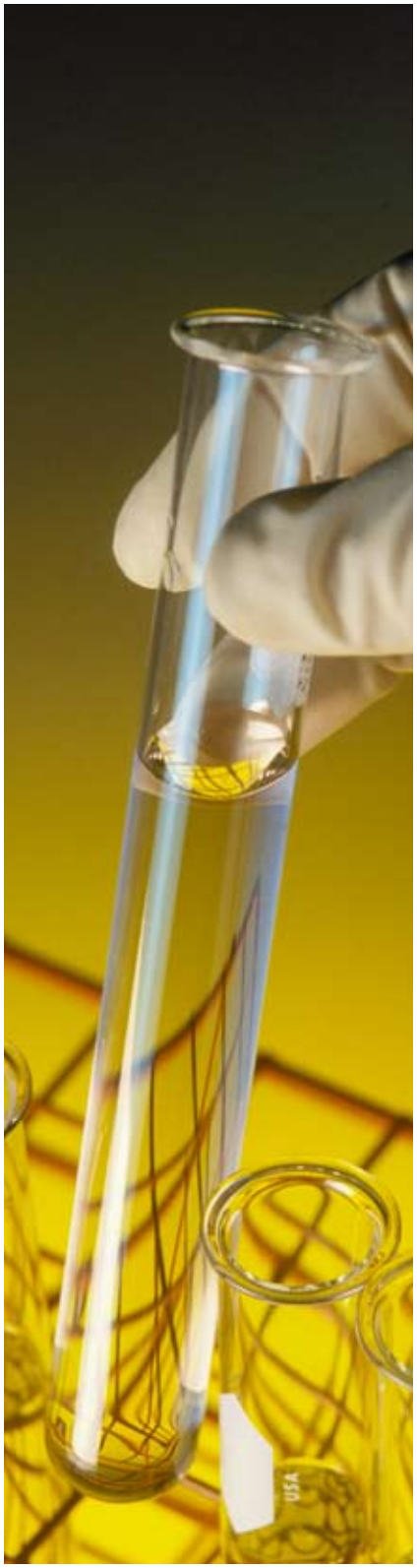
FDA exemption at IND stage is not limited to studies that meet FDA's "good laboratory practices" protocols.

The court also rejected Integra's argument that the FDA exemption can apply only to studies that meet the FDA's "good laboratory practices" protocols. *Id.* at 1342. The court observed that the FDA's Good Laboratory Practices regulations "'do not apply to preclinical studies of a drug's efficacy, mechanism of action, pharmacology, or pharmacokinetics,'" and that "'FDA regulations do not provide that even safety-related experiments not conducted in compliance with good laboratory practices regulations are not suitable for submission in an IND.'" *Id.* (quoting *Merck KGaA v. Integra Lifesciences I, Ltd.,* 545 U.S. 193, 204-05 (2005)).

Entitlement of experiments to FDA exemption depends on whether the threshold biological property and physiological activity had been recognized for the candidate drug, and not on whether experiment is classified as "discovery" or "routine."

The court also rejected Integra's argument that each of the experiments should be classified as either "discovery" or "routine," and that only those experiments devoid of discovery and entirely routine can be subject to the FDA exemption. The court held that "the safe harbor does not depend on a distinction between 'discovery' and 'routine,' but on whether the threshold biological property and physiological effect had already been recognized as to the candidate drug." *Integra*, 496 F.3d at 1347. In this case, according to the court:

> [A]ll of the challenged experiments were performed after the discovery that a cyclic RGD peptide inhibited angiogenesis. Although Merck readily agrees that the scientists never lost interest in the scientific understanding of their observations, and agrees that the various experiments enhanced that understanding, this does not negate the relevance of the studies to drug development and regulatory compliance. That the experiments contributed to scientific knowledge does not deprive them of the safe-harbor benefit of § 271(e)(1) when the requirements therefor are met.
>
> *Id.*



XV. Reissue

Claim change filed by reissue that corrects an error readily apparent to one of ordinary skill in the art is not impermissible broadening of claims in a reissue application filed more than two years after patent's issue date.

In *Forest Laboratories Inc. v. Ivax Pharmaceuticals, Inc.,* 501 F.3d 1263, 84 U.S.P.Q.2d 1099 (Fed. Cir. 2007), the Federal Circuit had to address the question of whether a change in a reissue application filed more than two years after the patent issue date was an impermissible broadening of claims. In this case, Forest changed the optical rotation sign for the diol intermediate in the claim of the patent and argued that the reissue application corrected a typographical error that was readily apparent to one of ordinary skill in the art and therefore did not result in any change in the scope of the patent. The court agreed, holding that the diagram of the reaction scheme "makes clear that it is the (-) diol that is converted to (+) citalopram and that the correction in the claim corresponds to the disclosure in the specification." *Id.* at 1271. Therefore, "the change in the optical sign during reissue does not represent a change of claim scope, but merely a correction of the claim to be consistent with the disclosure in the specification." *Id*.

Conclusion

On issues of patentability and validity, the Federal Circuit posted a near perfect record of invalidating patents directed to novel formulations of known actives in 2007. Below is a summary of the court's 2007 patent invalidations:

Case	Drug	Result
Pfizer v. Apotex	Norvasc®	INVALID
Aventis Pharma Deutschland GmbH v. Lupin, Ltd	Altace®	INVALID
In re Metroprolol Succinate Patent Litigation	Toprol-XL®	INVALID
Forest Laboratories, Inc. v. Ivax Pharmaceuticals, Inc	Lexapro®	INVALID
In re Sullivan	Rattlesnake anti-venom	INVALID[31]
Takeda v. Alphapharma	ACTOS®	VALID
PharmaStem Therapeutics, Inc. v. ViaCell, Inc.	Hematopoietic stem cell composition and method	INVALID
In re Omeprazole Patent Litigation	Prilosec®	INVALID
Daiichi Sankyo Co. v. Apotex, Inc.	Ofloxacin for ear infection treatment	INVALID

[31] The court sustained the Board's *prima facie* unpatentability rejection under § 103, but remanded for consideration of Declaration evidence.

In the one pharmaceutical case where validity was sustained, there had been four previous failed attempts to make the product and the prior art taught that the negative enantiomer would be the effective one, whereas the patentee claimed the positive enantiomer. Therefore, it took a compelling showing of non-enablement (many times over, in fact) and a clear teaching away before the Federal Circuit upheld the patent's validity, notwithstanding the statutory presumption of validity which can only be overcome by clear and convincing evidence. This spate of invalidations in 2007 continues the court's near 100% invalidation rate for 2005 and 2006 for all but novel actives.

The easy thing to do today is to blame this phenomenon on *KSR*, but the fact remains that this trend was in play well before anyone had even heard of the *KSR* case. Reviewing 2007's crop of biotech decisions *in toto*, it is difficult not to conclude that there is a political agenda threading its way through these cases. *Pfizer* told us that unexpected results, as outlined in *Graham*, are no longer sufficient by themselves to prove non-obviousness. Rather, it has to be the right sort of unexpected result, such as a therapeutic improvement. Apparently, an easier method of making a drug is no longer sufficient to establish non-obviousness.

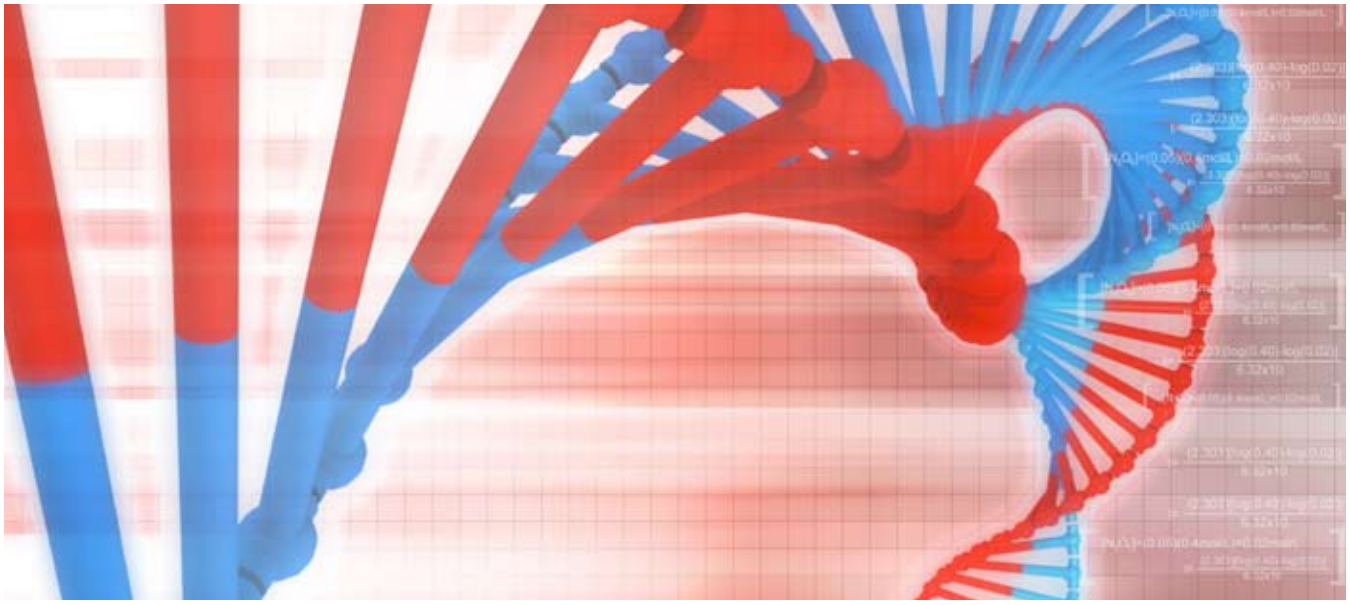
Pfizer also told us that some things are so obvious that there is no evidence sufficient to establish patentability. This is truly remarkable and finds no basis in case law or statute.

Nor is there any legal precedent for the court's judicially legislated holdings that it is not obvious to derive a novel active by selecting from a finite number of choices and confirming by routine testing, yet it is obvious to derive new formulations of old actives using the same process. The court is scarcely able to disguise its contempt for such inventions, rendering from the bench an essentially political judgment that if the active is the same, the new formulation is not worthy of protection.

Even issues uncontroversial in the past have been muddied by this court. For example, the court now sees fit to use admissions relating to foreign secret prior art, rejected by the foreign tribunal, to invalidate patents. The court also seems willing to accept expert testimony based on an opponent's admissions to invalidate a patent (even where those admissions were repudiated), yet it is unwilling to accept expert testimony based on an opponent's admissions to make out a case of infringement.

The effect of all this is already being felt. Filings of pharmaceutical formulations at the Patent Office are down, and in some cases investments are not being made in new, potentially life saving drugs for fear that they will not be patentable or, if patented, ultimately invalidated by a court that seems intent on resolving every benefit of the doubt against validity. Meanwhile, paragraph four certifications are on the rise at the FDA as the generics seem to have been more emboldened. No one argues against the court's need to police against overreaching. Certainly there have been instances of that by pharmaceutical companies and the Federal Circuit has appropriately invalidated such attempts. However, there are time-tested mechanisms in place to deal with that sort of overreaching, including the doctrines of inherency and double patenting. There seems little need for the court to invent novel means of invalidating patents that it deems unworthy of patent protection, such as relying on non-art or the testimony of hired gun experts. Instead, the court should return to construing the statute and leave the policy decisions to Congress.

So what is the endgame? Decisions such as *Pfizer* have already percolated their way down to industry, and it can hardly be disputed that the Federal Circuit's holding in that case has stifled the development of new drugs. It is not difficult to imagine that in the next few years the number of pharmaceutical patent invalidations may very well decrease, and the court will no doubt applaud itself for setting things straight. But unseen by the court will be the countless new and promising drugs that were never developed or patented because of the precedent that it is now setting. It may indeed be the worst of all signs when the Federal Circuit no longer invalidates any pharmaceutical patents on obviousness or anticipation grounds, for it may be a sign that those in the innovation business simply stopped trying.



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Practice includes all phases of patent law in the areas of biotechnology, pharmaceuticals and chemical inventions. Major focus in the area of patent interferences at the Patent Office and appellate level, for all types of inventions. Extensive experience in the area of clearance studies for both established and start-up companies, including analysis of validity, infringement and right-to-use. All aspects of patent prosecution, including application drafting, prosecution of applications, and appellate review. Reissue and re-examination practice experience. Special focus in recombinant plant technology, vaccines, drug delivery technology.

Relevant Experience

- Responsible for in-house case review and compilation of patent data base of Federal Circuit and Board of Appeals and Interferences decisions.
- Conducted numerous due diligence patent reviews, including validity, infringement and right-to-use studies.
- Extensive preparation and presentation of speeches both for clients and outside organizations concerning developments in intellectual property law.
- Successfully represented a plant biotechnology company in invalidating a competing patent using an interference proceeding.
- Successfully represented both junior and senior parties in biotech, chemical and electrical interferences.
- Representing substantial number of domestic and foreign chemical, pharmaceutical and biotech companies in the areas of plant biotechnology, vaccines, drug delivery, DNA screening methods, receptor binding, computer DNA analysis, and gas processing, and polymers.
- Obtained numerous commercially significant patents which have been successfully enforced in judicial proceedings.
- Hatch-Waxman experience for patent term extension and immunity from infringement during FDA approval process.

Additional Experience

Academic Qualifications

- Teaching Interference Practice at Georgetown University Law School (2002-present)

Membership

- Member, District of Columbia Bar Registered, U.S. Patent and Trademark Office
- Member, Court of Appeals for the Federal Circuit
- Member, American Intellectual Property Association

- Member, American Bar Association
- Member, Intellectual Property Owner's Association
- Member, Biotechnology Industrial Organization
- Member, Federal Circuit Inn of Court
- Awards and Professional Recognition
- Listed as one of 25 top intellectual property and technology attorneys in the December 2000 issue of Virginia Business magazine

Education

- J.D., American University, Washington College of Law, 1983
- B.S., Rutgers University, Biochemical Engineering, with honors, 1980

Languages

- French

Publications

- 2007 Co-author, "Recent Trends in Patent Practice: The Federal Circuit's Treatment of Pharmaceuticals," 442 Life Sciences Law & Indus. 1.
- Author, Is it harder to enforce Pharmaceutical Patents? The National Law Journal (08/28/06)
- Author, Patent Interferences: An Overview of Practice under the New Rules, IP Litigator, Volume 11, No. 5 (September/October 2005)
- Co-author, The Written Description Requirement, National Law Journal (05/31/04)
- Author, A Review of Significant 2003 Federal Circuit Decisions Affecting Chemical, Pharmaceutical and Biotech Inventions, (Parts. 1 and 2), Intellectual Property Technology Law Journal, Vol. 16, Nos. 3 and 4 (March and April 2004)
- Author, Can Old Products now be Patented Based on Newly Discovered Properties? (02/01/03)
- Author, Federal Circuit Raises the Bar on the Written Description Requirement as Applied to Biotech Inventions (11/01/02)
- Author, Better to Describe Than Provide: Fed. Cir. Adopts One-Size-Fits-All Approach to Genetic Inventions (05/01/02)
- Author, Justices to Decide Validity of Utility Patents on Sexually Reproduced Plants (Nov. 2001)

Speeches

- Speaker, Practicing Under New Interference Rules, AIPLA Midwinter Meeting, Orlando, FL (2005)
- Speaker, Strategic Use of Patent Interferences, American Intellectual Property Law Association Mid-Winter Meeting, Orlando, Florida (01/27/05)
- Speaker, File Wrapper Estoppel after Festo, Greater Richmond Patent Law Association, Richmond, Virginia (01/01/03)
- Speaker, Developments in Interference Practice, General Electric Annual Retreats; Crotonville, New York (2002-2003)
- Speaker, Application of Written Description and Utility Guidelines to Pharmaceutical Inventions, New Jersey Intellectual Property Law Association, Woodbridge, New Jersey (2002)
- Speaker, Recent Developments in Intellectual Property Practice, General Electric Annual Retreat, Newport, Rhode Island (1999)
- Speaker, Developments in Biotech and Pharmaceutical Practice at the Patent Office, Courts, and FDA, Association of Industrial Pharmacists Annual Meeting, Paris, France (1997, 2000)

David A. Kelly

David Kelly is an associate in the Litigation Intellectual Property & Antitrust Practice Group where he focuses on Patent Litigation.

Relevant Experience

- Participated in all aspects of complex patent infringement litigation, including pre-filing due diligence, discovery, Markman hearings, settlement discussions, trials and appeals.
- Prepared briefs, motions and legal memoranda in patent infringement litigations and patent interferences.
- Prepared formal opinions on patent validity, enforceability and infringement.
- Conducted patent clearance studies to identify potential infringement issues for new product introductions.
- Conducted intellectual property due diligence investigations of companies targeted for acquisition.
- Prepared and prosecuted patent applications for biotechnology, chemical and pharmaceutical related inventions.

Membership

- Admitted to practice in the District of Columbia Virginia and Georgia.
- Member, U.S. Court of Appeals for the Federal Circuit, American Bar Association, Virginia Bar Association and U.S. Patent and Trademark Office.

Education

- J.D., University of California–Davis, 2003
- Graduate studies, University of North Carolina at Chapel Hill, Microbiology, 1998-2000
- B.S., University of Georgia, Genetics, 1997
- B.S., University of Georgia, Microbiology, 1997

Publications

- 2008 Author, “In the Wake of *Datamize* and *Halliburton*: The Recent Spate of Patent Invalidations for Indefiniteness and the Implications for Patent Holders,” 75 Patent, Trademark & Copyright J., 1856.
- 2007 Co-author, “Recent Trends in Patent Practice: The Federal Circuit’s Treatment of Pharmaceuticals,” 442 Life Sciences Law & Indus. 1.
- 2005 Author, “What Constitutes a ‘New Use’ of a Known Composition and Should a Patentee’s Purported Objective Make Any Difference?,” S.C. Comp. & High Tech L.J. 319
- 05/31/04 Co-author, The written description requirement, National Law Journal
- 2003 Author, “The Federal Circuit Transforms the Written Description Requirement Into a Biotech-Specific Hurdle to Obtaining Patent Protection for Biotechnology Patents,” 13 ALB. L.J. Sci. & Tech. 249
- 2003 Author, “Despite a Recent Eleventh Circuit Decision, Diversity Remains a Compelling Interest In the University Admissions Process,” BYU J. Pub. L. 73

Acknowledgement

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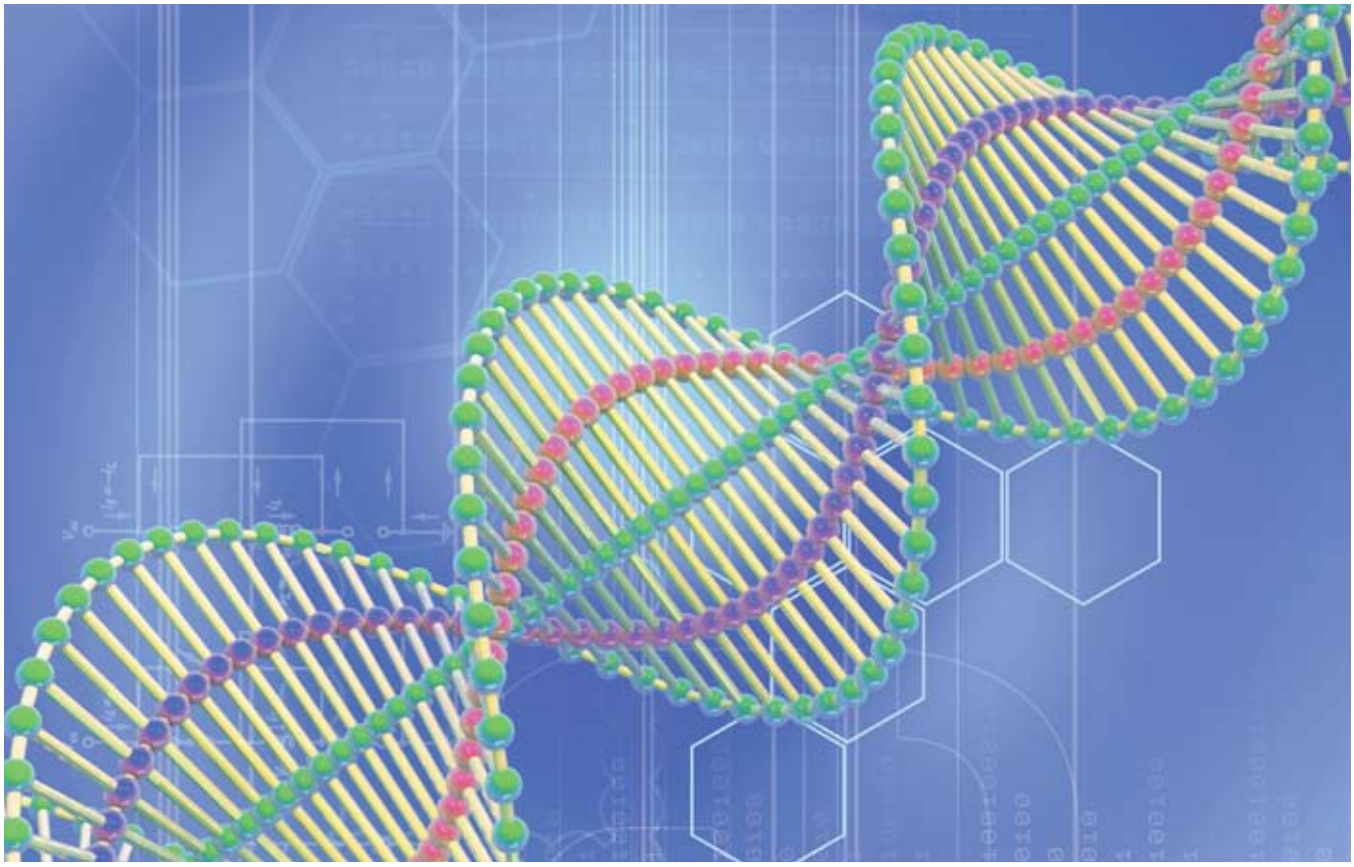

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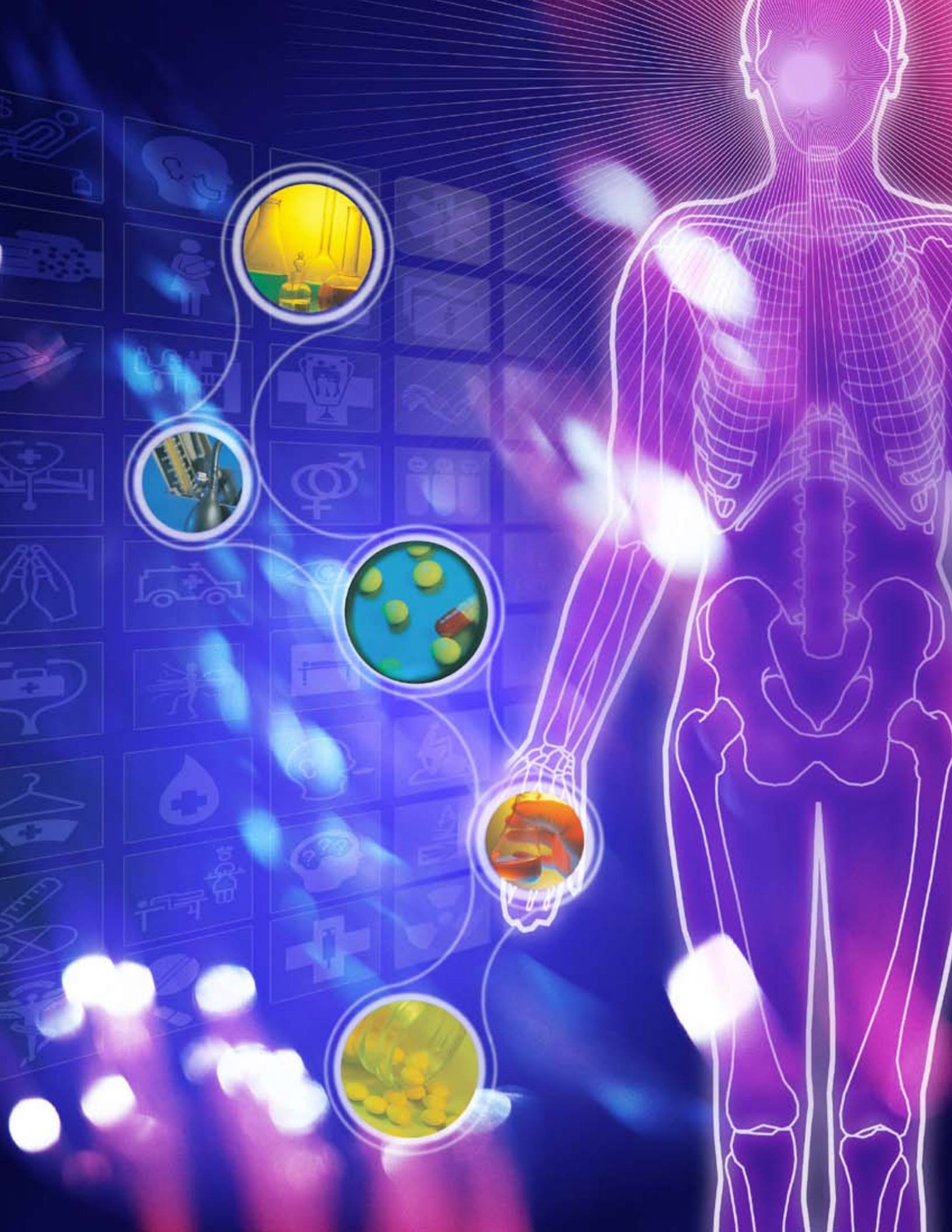

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