United States District Court,
N.D. California.

BOARD OF TRUSTEES OF the LELAND STANFORD JUNIOR UNIVERSITY,
Plaintiff.
v.
ROCHE MOLECULAR SYSTEMS, INC., et al,
Defendants.

No. C 05-04158 MHP

Nov. 27, 2007.

Background: Patent owner university and its board of trustees sued molecular research company, alleging infringement of patents involving correlating measurements of Human Immunodeficiency Virus (HIV) nucleic acids obtained via polymerase chain reaction (PCR) assay with determining whether antiretroviral therapy was effective.

Holdings: The United States District Court, Marilyn Hall Patel, J., held that:
(1) patent owner was not required to make expert available whose testimony was not used in briefing;
(2) patent owner improperly instructed expert not to answer deposition questions; and
(3) disputed term, an antiretroviral agent, meant at least one substance having or capable of having effect against retrovirus, such as HIV.

Ordered accordingly.

5,968,730, 6,503,705, 7,129,041. Construed.

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MEMORANDUM & ORDER

MARILYN HALL PATEL**, District Judge.**

On October 14, 2005 plaintiff Board of Trustees of the Leland Stanford Junior University ("plaintiff" or "Stanford") brought this action against Roche Molecular Systems, Inc., Roche Diagnostics Corporation, Roche Diagnostics Operations, Inc., and Roche Diagnostic Systems, Inc. FN1 (collectively "defendants" or "Roche") alleging infringement of U.S. Patents Nos. 5,968,730 ("the '730 patent") and 6,503,705 ("the '705 patent"). On November 17, 2005 Roche filed a counterclaim against Stanford, naming Dr. Thomas Merigan as an additional counterclaim defendant. In June 2006, Roche amended its counterclaim without objection to add Dr. Mark Holodniy as a counterclaim defendant. On March 26, 2007, Stanford amended its complaint to also allege infringement of U.S. Patent No. 7,129,041 ("the '041 patent"). Now before the court are the parties' claim construction briefs, filed pursuant to Patent Local Rule 4-5. Having considered the parties' arguments and submissions, and for the reasons set forth below, the court construes the disputed terms as follows.

FN1. Roche Diagnostic Systems, Inc. was dismissed as a defendant without prejudice by stipulation of the parties entered on November 17, 2005.

BACKGROUND

This patent dispute concerns the application of Polymerase Chain Reaction ("PCR") technology in the context of research related to the Human Immunodeficiency Virus ("HIV") and the Acquired Immunodeficiency Syndrome ("AIDS"). Stanford currently owns three patents titled "Polymerase Chain Reaction Assays for Monitoring Antiviral Therapy and Making Therapeutic Decisions in the Treatment of Acquired Immunodeficiency Syndrome." The patents involve correlating measurements of HIV nucleic acids obtained via a PCR assay with determining whether or not a therapy is effective. The results can also be helpful in determining whether the patient has developed a strain of HIV that is resistant to the particular therapy the patient is undergoing.

Claims 1, 5-9, 13-14, 18-19, and 23 of the '730 patent; Claims 1 and 5-10 of the '705 patent; and Claims 1-4 and 8 of the '041 patent are asserted in this litigation. In general, there are two types of method claims in these patents. The first type includes a step for measuring the HIV copy number. *See* '730 patent, Claims 9, 14, and 19; '705 patent, Claims 1 and 8. Claim 9 of the '730 patent reads:

9. A method of evaluating the effectiveness of anti-HIV therapy of a patient comprising

(i) collecting a plasma sample from an HIV-infected patient who is being treated with an antiretroviral agent;

(ii) amplifying the HIV-encoding nucleic acid in the plasma sample using HIV primers in about 30 cycles of PCR; and

(iii) measuring the HIV RNA copy number using the product of the PCR, in which an HIV RNA copy number greater than about 500 per 200 ul of plasma correlates positively with the conclusion that the antiretroviral agent is therapeutically ineffective.

Similarly, Claim 1 of the '705 patent reads:

1. A method of evaluating the effectiveness of anti-HIV therapy of an HIV-infected patient comprising:

a) collecting statistically significant data useful for determining whether or not a decline in plasma HIV RNA copy numbers exists after initiating treatment of an HIV-infected patient with an antiretroviral agent by:

(i) collecting more than one plasma sample from the HIV infected patient at time intervals sufficient to ascertain the existence of a statistically significant decline in plasma HIV RNA copy numbers;

(ii) amplifying the HIV-encoding nucleic acid in the plasma samples using HIV primers via PCR for about 30 cycles;

(iii) measuring HIV RNA copy numbers using the products of the PCR of step (ii);

(iv) comparing the HIV RNA copy numbers in the plasma samples collected during the treatment; and

b) evaluating whether a statistically significant decline in plasma HIV RNA copy numbers exists in evaluating the effectiveness of anti-HIV therapy of a patient.

The other type of method claims do not include a measuring step, but instead include a step testing for the presence or absence of detectable HIV-encoding nucleic acid. *See* '730 patent, Claims 1, 6, 7, and 8; '041 Patent, Claim 1. Claim 1 of the '041 patent reads:

1. A method of evaluating the effectiveness of anti-HIV therapy of a patient comprising correlating the presence or absence of detectable HIV-encoding nucleic acid in a plasma sample of an HIV infected patient with an absolute CD4 count, wherein the presence or absence of said detectable HIV-encoding nucleic acid is determined by

(i) collecting a plasma sample[ ] from an HIV-infected patient who is being treated with an antiretroviral agent;

(ii) amplifying HIV-encoding nucleic acid that may be present in the plasma sample using HIV primers via PCR and;

(iii) testing for the presence of HIV-encoding nucleic acid sequence in the product of the PCR.

The present dispute boils down to four specific terms which are used in various contexts throughout the patents. The terms are: 1) "therapeutically effective" or "therapeutically ineffective"; 2) "an antiretroviral agent"; 3) "measuring the HIV RNA copy number"; and 4) "presence of detectable HIV-encoding nucleic acid" or "absence of detectable HIV-encoding nucleic acid."

LEGAL STANDARD

I. ***Claim Construction***

[1] [2] [3] [4] [5] Under Markman v. Westview Instruments, Inc., 517 U.S. 370, 389-90, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996), the court construes the scope and meaning of disputed patent claims as a matter of law. The first step of this analysis requires the court to consider the words of the claims. Teleflex, Inc. v. Ficosa N. Am., 299 F.3d 1313, 1324 (Fed.Cir.2002). According to the Federal Circuit, the court must "indulge a

'heavy presumption' that a claim term carries its ordinary and customary meaning." CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1366 (Fed.Cir.2002). To determine the ordinary meaning of a disputed term, the court may review a variety of sources including the claims themselves, other intrinsic evidence such as the written description and prosecution history, and dictionaries and treatises. Teleflex, 299 F.3d at 1325. The court must conduct this inquiry not from the perspective of a lay observer, but rather "from the standpoint of a person of ordinary skill in the relevant art." Id. (citing Zelinski v. Brunswick Corp., 185 F.3d 1311, 1316 (Fed.Cir.1999)).

[6] [7] [8] [9] [10] Among the sources of intrinsic evidence, the specification is "the single best guide to the meaning of a disputed term." Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed.Cir.1996). By expressly defining terms in the specification, an inventor may "choose[ ] to be his or her own lexicographer," thereby limiting the meaning of the disputed term to the definition provided in the specification. Johnson Worldwide Assocs., Inc. v. Zebco Corp., 175 F.3d 985, 990 (Fed.Cir.1999). In addition, "[e]ven when guidance is not provided in explicit definitional format, the specification may define claim terms 'by implication' such that the meaning may be 'found in or ascertained by a reading of the patent documents.' " Irdeto Access, Inc. v. Echostar Satellite Corp., 383 F.3d 1295, 1300 (Fed.Cir.2004) (quoting Bell Atl. Network Servs., Inc. v. Covad Commc'ns Group, Inc., 262 F.3d 1258, 1268 (Fed.Cir.2001)). "The specification may also assist in resolving ambiguity where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone." Teleflex, 299 F.3d at 1325. At the same time, the Federal Circuit has cautioned that the written description "should never trump the clear meaning of the claim terms." Comark Comms., Inc. v. Harris Corp., 156 F.3d 1182, 1187 (Fed.Cir.1998) (citations omitted); *see also* Tate Access Floors, Inc. v. Maxcess Techs., Inc., 222 F.3d 958, 966 (Fed.Cir.2000) ("Although claims must be read in light of the specification of which they are part, ... it is improper to read limitations from the written description into a claim ....").

[11] [12] [13] Likewise, the prosecution history may demonstrate that the patentee intended to deviate from a term's ordinary and accustomed meaning. Teleflex, 299 F.3d at 1326. "Arguments and amendments made during the prosecution of a patent application and other aspects of the prosecution history, as well as the specification and other claims, must be examined to determine the meaning of terms in the claims." Southwall Techs., Inc. v. Cardinal IG Co., 54 F.3d 1570, 1576 (Fed.Cir.1995), *cert. denied,* 516 U.S. 987, 116 S.Ct. 515, 133 L.Ed.2d 424 (1995). "In particular, 'the prosecution history (or file wrapper) limits the interpretation of claims so as to exclude any interpretation that may have been disclaimed or disavowed during prosecution in order to obtain claim allowance.' " Teleflex, 299 F.3d at 1326 (quoting Standard Oil Co. v. Am. Cyanamid Co., 774 F.2d 448, 452 (Fed.Cir.1985)).

[14] [15] [16] Dictionary definitions and other objective reference materials available at the time that the patent was issued may also provide evidence of the ordinary meaning of a claim. Phillips v. AWH Corp., 415 F.3d 1303, 1322 (Fed.Cir.2005) (en banc); Texas Digital Sys., Inc. v. Telegenix, Inc., 308 F.3d 1193, 1202 (Fed.Cir.2002). A dictionary "has the value of being an unbiased source, accessible to the public in advance of litigation." Phillips, 415 F.3d at 1322 (internal quotation omitted). Thus, district courts "are free to consult such resources at any time in order to better understand the underlying technology and may also rely on dictionary definitions when construing claim terms, so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents." Vitronics, 90 F.3d at 1584 n. 6. A court should be cautious, however, not to place too much reliance on dictionaries, as the resulting construction may be too broad. Phillips, 415 F.3d at 1321.

[17] [18] [19] Federal Circuit decisions take a less favorable view of other forms of extrinsic evidence, such as expert testimony and prior art not cited in the specification or the prosecution history, noting that "claims should preferably be interpreted without recourse to extrinsic evidence, other than perhaps dictionaries or reference books, and that expert testimony should be received only for the purpose of educating the judge." EMI Group N. Am., Inc. v. Intel Corp., 157 F.3d 887, 892 (Fed.Cir.1998), *cert. denied,* 526 U.S. 1112, 119 S.Ct. 1756, 143 L.Ed.2d 788 (1999). Although "extrinsic evidence in general, and expert testimony in particular, may be used ... to help the court come to a proper understanding of the claims [,] it may not be used to vary or contradict the claim language .... Indeed, where the patent documents are unambiguous, expert testimony regardingthe meaning of a claim is entitled to no weight." Vitronics, 90 F.3d at 1584.

The Federal Circuit recently revisited the basic approach to claim construction in Phillips. Although Phillips consists largely of an affirmation of ten years of claim construction jurisprudence, it provides at least two pieces of additional guidance. First, the Federal Circuit rejected a line of cases suggesting that claim interpretation must begin with a dictionary definition of the disputed terms. Phillips, 415 F.3d at 1320-21. Second, the Federal Circuit emphasized that claim terms must be interpreted in light of their context, especially the language used in other claims and the specification. Id. at 1321. Taken as a whole, Phillips appears to signal a small retreat from formalism and bright-line rules in claim construction. As a result, the court will focus primarily on the intrinsic record before it. Cases cited by the parties in support of fixed "rules" of claim construction will accordingly be given somewhat less weight.

DISCUSSION

I. ***Level of Ordinary Skill***

[20] "Factors that may be considered in determining level of ordinary skill in the art include: (1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field." Envtl. Designs, Ltd. v. Union Oil Co., 713 F.2d 693, 696 (Fed.Cir.1983) (citing Orthopedic Equip. Co. v. All Orthopedic Appliances, Inc., 707 F.2d 1376, 1381-82 (Fed.Cir.1983)). These factors are not exhaustive and merely provide guidance when determining the level of ordinary skill in the art.

Stanford claims that a person of ordinary skill in the art is a medical doctor working on clinical HIV research involving antiretroviral agents or a Ph.D. researcher working on molecular methods relating to clinical HIV research involving antiretroviral agents. Roche claims that a person of ordinary skill in the art is one with a medical degree or graduate degree in biochemistry or a related field and who has had at least two years of relevant laboratory bench experience conducting PCR assays.

[21] The art involved in these patents is the use of PCR assays to determine HIV viral load in a sample so that the information may be used to determine the effectiveness of the antiretroviral therapy regimen that the sample is undergoing. There does not seem to be a significant difference between the parties' competing formulations except for Stanford's requirement that one of skill have experience with antiretroviral agents. A medical doctor without experience with antiretroviral agents would not have the level of ordinary skill required because the patents in question relate directly to the effectiveness or ineffectiveness of antiretroviral agents.

The individuals included in Stanford's definition will certainly have experience with antiretroviral agents, but may or may not be experienced in conducting PCR assays. The patents at issue, however, all relate to

the use of PCR assays used to generate data for the purpose of evaluating the effectiveness of anti-HIV therapy. Since knowledge of PCR assays is a prerequisite to understand, let alone practice, the patents in question, the court is convinced that knowledge of PCR assays is required.

The person of ordinary skill is thus defined as: A medical doctor working on clinical HIV research involving antiretroviral agents or a Ph.D. researcher working on molecular methods relating to clinical HIV research involving antiretroviral agents. Any person of ordinary skill in the art must have conducted numerous PCR assays in conjunction with his research.

II. ***Discovery Abuses***

Roche claims two instances of discovery abuse by Stanford, each related to one of Stanford's two experts. First, that Stanford improperly failed to make its expert Dr. Kramer available for deposition, and second, that Stanford improperly instructed its expert Dr. Volberding not to answer certain questions during his deposition.

[22] On August 2, 2007 the court issued an order regarding expert depositions in conjunction with claim construction. *See* Docket No. 175. The court stated that the expert's deposition could be canceled if either party did not intend to rely upon the testimony of that expert in its briefing. *Id*. Soon thereafter, Stanford informed Roche that Dr. Kramer's August 15, 2007 deposition was being cancelled because it did not intend to use his testimony in its opening brief. *See* Docket No. 184, Exhs B & D; Rhyu Supp. Dec., Exh. 32. Nonetheless counsel for Roche traveled to Boston to take the deposition. *See generally* Kramer Dep. On August 15, 2007 this court ruled that if Stanford intended to rely on Dr. Kramer's testimony, it would have to make him available for deposition if requested by Roche. *See* Docket No. 186. Stanford did not use Dr. Kramer's testimony in any of its briefing and thus its actions were proper.

[23] Stanford, however, did rely on Dr. Volberding's opinion. Specifically, Dr. Volberding opined on the meaning of "therapeutically effective" and "therapeutically ineffective." Volberding Dec., para.para. 7-12. Thus, in accordance with the court's order, Mr. Volberding's deposition was taken by Roche on August 19, 2007. At this deposition, counsel for Stanford did not let Mr. Volberding answer questions regarding which other parties, if any, currently make recommendations about HIV-therapy or its effectiveness for a particular patient. *See* Cannon Dec., Exh. A at 83:5-88:8. Roche requests, as a remedy, that the court strike Dr. Volberding's declaration and that Stanford be precluded from challenging Roche's construction of the terms "therapeutically effective" and "therapeutically ineffective."

[24] Roche claims that one hotly contested issue in this litigation is who performs the assay and who makes evaluations about effectiveness. It relies upon Wilson Sporting Goods Co. v. Hillerich & Bradsby Co., 442 F.3d 1322, 1326-27 (Fed.Cir.2006), to claim the appropriateness of raising infringement issues during claim construction. Wilson, however, did not allow infringement issues to be raised or decided during claim construction. Instead, it allowed infringement issues to identify claims that needed construction. Id. ("While a trial court should certainly not prejudge the ultimate infringement analysis by construing claims with an aim to include or exclude an accused product or process, knowledge of that product or process provides meaningful context for the first step of the infringement analysis, claim construction."). Providing context is not the same as raising infringement issues for resolution. In fact, "[a] claim is construed in light of the claim language, the other claims, the prior art, the prosecution history, and the specification, *not* in light of the accused device." SRI Int'l. v. Matsushita Elec. Corp. of Am., 775 F.2d 1107, 1118 (Fed.Cir.1985). Roche also argues that Stanford initially put this particular issue in contention. Again, if the questions during

discovery did not pertain to claim construction, who put the issue into contention is irrelevant.

Roche's proposed construction relies on its argument that it is the physician, and nobody else, that makes evaluations about the overall effectiveness of an antiretroviraltherapy. This, they claim, has been the case since May 1992. Since the objected to questions were within the scope of this construction, they were properly asked of Dr. Volberding. The court, with respect to claim construction, will therefore assume that Stanford has waived any argument regarding who makes decisions about whether a particular therapy is effective overall. Namely, for the purposes of claim construction, it will be considered admitted that the physician generally makes the decision regarding a particular therapy's overall effectiveness.

III. *Claim Construction*

The following chart summarizes the court's construction of the disputed terms. FN2 The full analysis supporting each construction is below.

FN2. Roche has agreed to Stanford's proposed definitions of "collecting statistically significant data useful for determining whether a decline in HIV RNA copy numbers exists," "statistically significant data," and "statistically significant decline."

Term	Construction
"therapeutically effective" or "therapeutically ineffective"	No construction necessary.
"an antiretroviral agent"	"At least one substance having or capable of having an effect against a retrovirus, such as HIV"
"measuring the HIV RNA copy number"	No construction necessary.
"presence of detectable HIV-encoding nucleic acid" or "absence of detectable HIV-encoding nucleic acid"	No construction necessary.

A. "*Therapeutically effective*" *or* "*therapeutically ineffective*"

Stanford claims that these terms need not be construed because the plain meaning of these terms is sufficiently clear. As stated above, the court must "indulge a 'heavy presumption' that a claim term carries its ordinary and customary meaning." CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1366 (Fed.Cir.2002). Specifically, the Federal Circuit has held that if commonly understood words are used, then the "ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words." Phillips v. AWH Corp., 415 F.3d 1303, 1314 (Fed.Cir.2005) (en banc). The terms "therapeutically effective" or "therapeutically ineffective" are commonplace-a juror can easily use these terms in her infringement fact-finding without further direction from the court.

[25] [26] These terms do not need to be construed because they are neither unfamiliar to the jury, confusing to the jury, nor affected by the specification or prosecution history. *See* United States Surgical Corp. v. Ethicon, Inc., 103 F.3d 1554, 1568 (Fed.Cir.1997) ("Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the

claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy."). First, the terms will not be unfamiliar to the jury since "therapeutic," "effective," and "ineffective" are all familiar words. The court will only rely on extrinsic evidence if the totality of the intrinsic evidenceis insufficient to construe the claims. Here, it is clear that the patents in suit were designed to determine whether or not the anti-retroviral therapy was assisting in decreasing the amount of HIV in the sample ("the viral load"). The court, therefore, need not resort to dictionary definitions. Second, these terms are not confusing. Conducting this inquiry from the perspective of a person of ordinary skill in the art, the court is convinced that the meanings of these words would be clear to her. Third, there is no evidence that the specification or the prosecution history intended a different meaning be attached to these terms. In sum, the court is not persuaded that the terms are ambiguous.

Roche's proposed constructions for "therapeutically effective" and "therapeutically ineffective" are: "elicits the medical effect intended by the treating physician such that the course of treatment is not modified" and "fails to elicit the medical effect intended by the treating physician as a result of drug resistance such that the course of treatment is modified." These constructions do not address the ordinary and customary meaning of these terms and fail due to two specific flaws. First, Roche integrates a physician's mental or subjective state, namely an intended medical effect into the construction. Roche also limits the construction to a particular physician-the "treating" one-not just any physician. Second, Roche requires a particular course of action by the physician.

Roche's arguments combine three facts that are generally not in dispute. First, the only person who evaluates whether anti-HIV therapy for a patient is therapeutically effective or ineffective is the treating physician. Second, the patents in question relate to a decision about the effectiveness of the therapy. *See* Title of '730 patent. Third, the patent is silent as to what is therapeutically effective and ineffective. Thus, Roche contends, one of ordinary skill in the art would consider these terms to refer to the medical effect intended by the treating physician with respect to the prescribed treatment. Each premise is discussed below followed by a discussion of Roche's conclusion.

First, Roche makes great attempts, both in its brief and its expert declarations, to demonstrate that the treating physician is the one who makes decisions regarding the patient's drug regimen. There is little doubt that it is the treating physician who usually makes determinations regarding a patient's treatment regimen and whether it is therapeutically effective. Neither Stanford nor the court disputes this. Indeed, the patent itself states that "[i]f a patient being treated with an antiretroviral therapeutic agent exhibits an increase in plasma HIV RNA copy number, a physician should consider altering the patient[']s treatment regimen." '730 patent at 2:45-49. The patent, however, does not limit itself to the treating physician. Therefore, the decision does not necessarily have to be made by the treating physician and could be made by other medical professionals.

Second, the patents are clear regarding their purpose-to determine if the given anti-retroviral regimen is aiding in the decrease of HIV viral load. The physician is told by the specification what should or should not be considered therapeutically effective. *See, e.g.,* '730 patent Claim 1 ("the absence of detectable HIV-encoding nucleic acid correlates positively with the conclusion that the anti-retroviral agent is therapeutically effective."). It is clear that physicians take multiple factors into account when determining whether a particular antiretroviral therapy is effective or not and the result of the patented method would be but one of those factors.

Third, the patent is indeed silent as to what is to be considered therapeutically effective or ineffective. As

discussed above, this ordinarily would be within the purview of the physician. The patents merely aid the physician in that determination by pointing her in the right direction-correlating certain results with effectiveness or ineffectiveness.

Roche wants the court to insert the physician's state of mind into the construction. State of mind has been discussed by the Federal Circuit. *See* Amazon.com, Inc. v. Barnesandnoble.com, Inc., 239 F.3d 1343 (Fed.Cir.2001). The Amazon court was "not prepared to assign a meaning to a patent claim that depends on the state of mind of the accused infringer." Id. at 1353. The court there refused to "inject[ ] subjective notions into the infringement analysis." Id. Here, however, the physician's ex-ante state of mind does not determine if the patent was infringed or not. Specifically, a physician's intent is nowhere mentioned in the patents or prosecution history. The patent is infringed if the particular method is practiced, not by the physician's eventual determination of the effectiveness or ineffectiveness of the therapy. The court is thus unwilling to incorporate that limitation into the claim terms. Furthermore, even if the physician's intended effect was taken into account, there can be but one ex-ante intended effect of antiretroviral therapy-to lower the patient's HIV viral load. This intended effect is already taken into account and incorporated into the patent specifications, which positively correlate a reduction with therapeutic effectiveness and vice versa.

Roche attempts to distinguish Amgen Inc. v. Hoechst Marion Roussel, Inc., 457 F.3d 1293, *rehearing denied,* 469 F.3d 1039 (Fed.Cir.2006), with its broad definition of "therapeutically effective amount" because the patents in question there specifically listed the intended medical effects. The Federal Circuit rejected the reasoning that listing the uses of the invention restricted the scope of the invention. Id. at 1303. Roche argues that "therapeutically effective" may be limited in this scenario because the intended medical effects are not listed. There are two flaws with this rationale. First, if listing the uses does not restrict the scope of the invention, it is unclear how not listing the uses would restrict the scope. And even if it did, it is unclear how the scope would in fact be restricted. Second, the patents do list markers of therapeutic effectiveness-determination of viral load count, CD4 count, and amenability to drug resistance. '730 patent at 2:14-52; 2:64-3:6; 7:50-8:14; 12:57-13:32. Finally, the fact that the patent prompts the physician to consider altering the treatment if an increase in HIV RNA copy number is detected does not inject the physician's intended effect into the definition of "therapeutically ineffective" because, as stated above, the result of the patented method is but one input into the physician's calculus when determining whether to alter the patient's drug regimen.

Furthermore, the patent may be practiced by others not physicians. For instance, the method described in the patent may be practiced on old samples to track a patient's viral load over time. They may even be practiced after patients are deceased in order to gather data regarding the effectiveness of a particular regimen on a large sample. Neither of these instances would require a physician's ex-ante intent or the physician's participation. The patents also describe identifying patients whose infection has become resistant to a particular anti-retroviral regimen. *See, e.g.,* '730 patent at 1:21-25. The myriad ways in which the methods described in the patent can be practiced cautions against limiting the patent to the physician's intent.

Roche's construction would also require that the course of treatment be modified or not modified for the treatment to be considered therapeutically effective or not. Physicians, however, may choose to modify a course of treatment even if they consider the treatment to be effective. Similarly, a physician may choose not to modify a course of treatment even if it is not effective. For instance, the physician may want to wait and see if the treatment might become effective over a longer period of time. Roche itself states that physicians analyze multiple factors when determining a particular course of treatment. Bartlett Dec., para. 28 (listing baseline resistance of patient's HIV strain, side effects, concurrent conditions, and patient

preference as factors); *see also* Opp. Br. at 8. Thus, whether the treatment is modified or not does not necessarily demonstrate whether the treatment is therapeutically effective or not. This rationale applies equally as forcefully to the intended medical effect limitation because achieving or not achieving the intended medical effect does not necessarily determine whether a treatment is effective or not.

Reading the terms in context, it is clear that the terms are being used to describe the effectiveness of antiretroviral agents as defined by the viral load, not by subsequent actions, such as treatment modification. *See* '730 patent, Claim 9 ("A method of evaluating the effectiveness of anti-HIV therapy of a patient ... in which an HIV RNA copy number greater than about 500 per 200 ul of plasma correlates positively with the conclusion that the antiretroviral agent is therapeutically ineffective."). Treatment modification may or may not occur depending upon the methods described in the patents, but neither treatment modification nor non-modification based upon the results of the presence or absence of HIV-encoding nucleic acid are taught by the patents. The methods described serve as one factor, albeit an important one, to consider when the physician is evaluating which anti-retroviral therapy to prescribe. The patents help determine the efficacy of anti-retroviral agents and do not dictate a course of action for the attending physician, if any. *Id.*

Finally, as discussed above, the patent's suggestion that the physician may alter treatment is but one embodiment of the innovation and the court refuses to limit the patent's scope to that one embodiment.

In sum, the court holds that no construction is necessary for "therapeutically effective" and "therapeutically ineffective."

B. "***An antiretroviral agent***" FN3

FN3. The definition of "anti-HIV agent," consistent with "anti-retroviral agent," is thus "at least one substance having or capable of having an effect against HIV."

[27] Roche argues that "an antiretroviral agent" should be defined as "antiretroviral agents available to doctors for the treatment of AIDS/HIV infected patients in 1992." This construction is based on two arguments: 1) the specification defines the term to be those antiretroviral agents "known" at the time; and 2) that the terms must be given their meaning as of the time of the invention. Each argument is discussed below, followed by the three independent and fatal flaws that mar Roche's construction.

Roche argues that the statement: "Antiretroviral agent, as used herein, includes any known antiretroviral agent including, but not limited to, dideoxynucleosides" limits the patent only to agents known at the time of the patent. '730 patent at 8:39-41. The plain meaning of the phrase, however, is the opposite. The statement is inclusive and seeks to include, without limiting the scope, agents known at the time. The specific inclusion of known agents presupposes the existence of agents unknown at the time that may also be considered to be antiretroviral agents. *See* Amgen, 457 F.3d at 1302. Kopykake Enterprises, Inc. v. Lucks Co., 264 F.3d 1377, 1382-83 (Fed.Cir.2001) is not on point because it discussed which forms of screen printing were "conventional" forms of screen printing at the time of the patent-the patent itself limited its scope to "conventional" forms. Id. at 1380. The method of printing in question existed at the time of the patent application was filed but was only later adapted for use as screen printing. Thus, the Kopykake court declined to consider it "conventional." *See* id. at 1383 ("[W]hen a claim term understood to have a narrow meaning when the application is filed later acquires a broader definition, the literal scope of the term is limited to what it was understood to mean at the time of filing."); *see also* PC Connector Solutions LLC v.

SmartDisk Corp., 406 F.3d 1359, 1364 (Fed.Cir.2005) (finding that claim language referring to an "standard input/output port" that is "traditionally connectable to a computer" or an I/O port "normally connect[a]ble to a conventional computer input/output port" is a "port that was in common use at the time of filing in 1988"). In contrast, there are no limiting words in the patents in question here.

Roche relies on Phillips v. AWH Corp., 415 F.3d 1303, 1313 (Fed.Cir.2005), for the proposition that there is a temporal context to claim construction. The language of the opinion states that "the ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention." Id. Thus, Roche argues, claims cannot be construed to cover later developed technology that was unknown at the time of the invention.

The term "antiretroviral agents" describes a category of pharmaceuticals. This is clear because Roche itself uses the term antiretroviral agents to describe new drug therapies that were unveiled in 1995. Opp. Br. at 8. In May 1992, when Stanford applied for the patents in question, those antiretroviral agents that had been developed were of the type that inhibited reverse transcription. After 1995, this category expanded to include protease inhibitors. For instance, Highly Active Antiretroviral Therapy ("HAART") combination therapy was not available until 1995-96. However, this new type of antiretroviral therapy was anticipated. Articles published in 1990 and 1991 discussed protease inhibitors, indicating they were known. It just took three or four years for their development and availability.

Roche's reliance on Phillips misses the mark because the temporal context espoused by Phillips is the *meaning* of the term to a person of ordinary skill at the time of the invention. The term in question may be a category, the contents of which expand over time. It is clear that the term "antiretroviral agents" describes a category of pharmaceuticals because Roche itself uses the term antiretroviral agents to describe new drug therapies that were unveiled in 1995. Opp. Br. at 8. It is clear from the publication history and the prolific research being conducted by HIV researchers on protease inhibitors, that a person of ordinary skill in the art would have known that the category of "antiretroviral agents" would only expand over time to include these new agents.

SuperGuide Corp. v. DirecTV Enterprises, Inc., 358 F.3d 870 (Fed.Cir.2004) is instructive. The SuperGuide court, when construing a system claim, had to decide whether "regularly received television signal" included digital signals that were not in regular use when the patentee applied for the patent. The court held that since the "claim language does not limit the disputed phrases to any particular type of technology or specify a particular type of signal format" the term should be construed as "video data that is customarily received by the television viewing public ... [t]he form of the television signal is irrelevant." Id. at 878-81. Thus, the Federal Circuit declined to limit the claim to what was actually broadcast for mass consumption at the time. Roche attempts to distinguish SuperGuide by arguing that SuperGuide only extended to technology that was known and available to skilled artisans with knowledge when the patent was granted. Thus, they argue, the patents in question here must be limited because only agents that inhibit reverse transcription were known or available before May 1992.

[28] The SuperGuide opinion focuses only on the knowledge of one skilled in the art. Specifically, "[i]t appears indisputable that it was known to those skilled in the art during the pendency of the '578 patent application that video data could be communicated in either analog or digital format. Although analog may have been the dominant format of video data when the '578 patent application was filed, we have little doubt that those skilled in the art knew of the existence of digital video data at the time." Id. at 879. In addition, the court stated that it found "no reason here to limit the scope of the claimed invention to analog

technology, when 'regularly received television signals,' i.e., video data, is broad enough to encompass both formats and those skilled in the art knew both formats could be used for video." Id. at 880. The situation here is indistinguishable. Although agents that inhibit reverse transcription may have dominated the category of antiretroviral agents in May 1992, the court has no doubt that those skilled in the art anticipated antiretroviral agents that were protease inhibitors and other inhibitors yet to be developed. *See* Bartlett Dec., Exh. B. The conceptual work for identifying antiretroviral agents other than those that had been federally approved had begun as of May 1992. *See* id. Thus, even if they were not available, these after-developed technologies were certainly known in May 1992. *See* Rhyu Supp. Dec., Exh. 27 at 28:5-24 (persons of skill in 1992 knew the steps of the HIV replication cycle and that inhibiting any of the steps could inhibit replication of HIV). Furthermore, the law "does not require that an applicant describe in his specification every conceivable and possible future embodiment of his invention." SRI, 775 F.2d at 1121. Since the ordinary and customary meanings of the words are not dependant on time, the court finds no reason to limit the scope of "antiretroviral agents" to those agents available when the patentee applied for the patent. The claims can therefore be construed to cover later developed technology that was unavailable but known at the time of the invention. In sum, even if specific agents were not available in May 1992, the conceptual framework for them had been laid and they were reasonably known to those skilled in the art.

This case is distinguishable from Schering Corp. v. Amgen Inc., 222 F.3d 1347, 1354 (Fed.Cir.2000), where the court concluded that the claim reference to "polypeptide of the IFN-a type" did not include later-discovered species of "IFN-a" that were unknown at the time of the application. Schering defined "IFN-a," originally used to refer to a particular type of interferon but ultimately understood to refer to several categories of proteins, of which the patentee was only concerned with one. *See* Mark A. Lemley, *The* Changing Meaning of Patent Claim Terms, 104 Mich. L. Rev 101, 104 n. 12 (2005). The court held that "the [claim] term as used in the ... patent ... did not and could not enlarge the scope of the patent to embrace technology arising after its filing." Schering, 222 F.3d at 1353. Here, there is no evidence that the patentee intended to limit the patent "antiretroviral agents" to known and available technologies, nor is there evidence that the categorical term, antiretroviral agents, was ever used to refer only to agents that inhibit reverse transcription.

[29] Turning from the principles of claim construction that govern the temporal issues to Roche's construction, the court notes that first of all, it is self-referential. The purpose of claim construction is to resolve disputed meanings and technical scope in order to aid the fact-finder. *See* United States Surgical Corp. v. Ethicon, Inc., 103 F.3d 1554, 1568 (Fed.Cir.1997); *see also* Opp. Br. at 2 ("claim construction is intended to ... provide meaning to a lay juror who may not be familiar with technical terms."). Roche's construction does not help the lay juror. Defining "an antiretroviral agent" as "antiretroviral agents" available for HIV treatment in 1992 does nothing to elucidate the meaning of the disputed term. Roche's proposed construction, therefore, only seeks to insert further limitations into the term "antiretroviral agent" without defining the term itself.

Second, Roche seems to have admitted what the definition of "an antiretroviral agent" ought to be, even though it proposes that the court adopt a different construction. Roche states that "[a]ntiretroviral agents are drugs that are effective in reducing or stopping replication of retroviruses." Opp. Br. at 2, 22; Bartlett Dec., para.para. 38-41. Roche's clear and succinct definition of "an antiretroviral agent" undercuts all of their other arguments regarding any alternate construction. Furthermore, this construction is very close to Stanford's proposed construction.

Third, Roche seeks to include three limitations that are not present in the term. Specifically, Roche seeks to

limit the scope of antiretroviral agents to: 1) those available to doctors; 2) those available for the treatment of AIDS/HIV infected patients; and 3) those available in 1992. Each of these limitations fails for the same reasons described above regarding after-developed technologies-they all attempt to limit the scope of "antiretroviral agents" when there is no evidence that the patentee intended the same.

Stanford, in turn, argues that "an antiretroviral agent" should be construed as "at least one substance having or capable of having an effect against a retrovirus, such as HIV." This effect may be either positive or negative. Roche does not argue that the construction may include more than one substance as its own definition construes the term in the plural. The plain language of the term is not limited to monotherapy. Indeed, the patents in suit specifically refer to combination therapy. '730 patent at 7:63-8:14; 9:46-48; 13:9-11. This demonstrates that the inventors and those of ordinary skill in the art were aware of combination therapy.

The rest of Stanford's construction describes antiretroviral agents using generally accepted dictionary definitions. The construction closely matches the definition given by Roche, that "[a]ntiretroviral agents are drugs that are effective in reducing or stopping replication of retroviruses." Opp. Br. at 2; id. at 22; Bartlett Dec., para.para. 38-41. Roche's construction requires that the agent be effective in reducing or stopping replication of retroviruses. The same, however, goes against the patent construed as a whole. The patent is designed to measure the effectiveness of antiretroviral agents and therefore the construction must include the fact that the agent may or may not be effective in reducingor stopping replication of the retrovirus. Thus, Stanford's construction is superior because it allows for the possibility that the agent may not in fact be effective against the retrovirus. The court therefore adopts the following construction for "an antiretroviral agent": "at least one substance having or capable of having an effect against a retrovirus, such as HIV."

C. "*Measuring the HIV RNA copy number*"

Roche seeks to define this term as "techniques available in May 1992 to quantify HIV RNA copy number using PCR, specifically the assay in the 1991 JID article as set forth in the specifications." Stanford, on the other hand, argues that no construction is necessary because the plain meaning suffices to guide the jury in its fact-finding.

[30] Roche argues that Stanford's patents enable no more than the five-step end point PCR assay set forth in the 1991 JID paper and that "[t]he scope of the claims must be less than or equal to the scope of the enablement." Nat'l Recovery Techs., Inc. v. Magnetic Separation Sys., Inc., 166 F.3d 1190, 1196 (Fed.Cir.1999). Although the foregoing is true, the same confuses invalidity with claim construction. Questions as to whether the disclosure is sufficient to enable a person skilled in the art to practice the invention are best reserved for arguments alleging invalidity. As the Federal Circuit has stated, unambiguous claim terms "can be construed without the need to consider whether one possible construction would render the claim invalid while the other would not." Phillips, 415 F.3d at 1328. The ordinary and customary meaning of "measuring the HIV RNA copy number" is unambiguous and allows for any measuring technique. Since the claim terms are unambiguous, the invalidity analysis is premature.

[31] [32] Roche also seeks to limit the measuring steps used to determine the HIV RNA copy number to the techniques available in May 1992 because after-developed technologies such as real-time PCR and internal standards were not taught by the patents and unknown when Stanford applied for the patents. Specifically, Roche claims that what one of skill in the art today would understand by a method using PCR is different than it would have been in May 1992. That argument is not related to the definition of "measuring the HIV

RNA copy number" because the copy number is measured using the *product* of the PCR. Roche is again confusing claim construction issues with infringement issues. Roche may well argue, at the summary judgment stage or later, that its product does not infringe upon Stanford's patents based upon the claim limitations, but it may not inject the end point PCR limitation into the definition of "measuring the HIV RNA copy number." It is settled patent law that the claims of a patent must not be construed as being limited to the embodiment if the patent describes only one embodiment. Phillips, 415 F.3d at 1323. In fact, it is improper to read limitations from the specifications into the claim term because the same can "restrict[ ] the claims to coverage of a single embodiment." Callicrate v. Wadsworth Mfg., Inc., 427 F.3d 1361, 1368 (Fed.Cir.2005).

Nevertheless, the claims that state "about 30 cycles" must be limited to end-point PCR. The court can, as part of claim construction, construe the scope of "about 30 cycles." The claims' specific reference to the number of cycles of PCR must limit those claims to end-point PCR as a specific number of cycles is only germane within the context of end-point PCR. The fact that the number of cycles is irrelevant in real-time PCR further buttresses this finding.

Some of the patent claims, however, do not limit themselves to "30 cycles of PCR," but use the more generic term "PCR." *See* '041 patent, Claims 1-3, 5-8. This categorical term is distinguishable from the categorical anti-retroviral agents because there is no evidence in the record that, as of 1992, one of ordinary skill in the art knew of real-time PCR or of its conceptual framework. Thus, based on SuperGuide, the term "PCR" cannot include real-time PCR. Mass. Inst. of Tech. v. Abacus Software, 462 F.3d 1344, 1353 (Fed.Cir.2006), is also instructive. Abacus held that at the time of the patent application, a person of ordinary skill in the art would have known of two general types of scanners, drum scanners and flatbed scanners. Since both those scanners required close proximity between the color original and the scanner, the court defined the term scanner by what was known in the art at the time and included a requirement of close proximity. Id. Similarly, in 1992, a person of ordinary skill in the art did not know of real-time PCR. Defining PCR by what was known in the art at the time requires that real-time PCR be excluded.

In sum, the court holds that no construction is necessary for "measuring the HIV RNA copy number," but limits the claims stating "about 30 cycles" to end-point PCR and excludes real-time PCR from the scope of the term "PCR."

D. "*Presence of detectable HIV-encoding nucleic acid*" and "*absence of detectable HIV-encoding nucleic acid*"

Roche argues that these terms be construed as a "qualitative result indicating greater than or less than 40 copies of HIV RNA per 200 ul of sample." Stanford argues that no construction in necessary because the plain meaning is sufficient to guide the jury's fact finding.

Roche seeks to construe this term as a qualitative yes or no test based upon the lowest detection level taught by the patent, 40 copies per 200 micro-liters of sample, because these terms are in direct contrast to the claims that include a specific measuring step. Roche again attempts to interject a specific copy number limitation into the construction. This attempt fails for the same reasons as above, where a construction including a temporal limitation or particular assay limitation was rejected. The plain and ordinary meaning of "detectable" has to be an amount of substance that is higher than the lowest level of sensitivity of whatever assay is actually used in practicing the claimed methods. Furthermore, the patent demonstrates that the patentee inserted specific numerical limitations when desired. *See* '730 patent, Claim 9. The court refuses

to integrate numerical limitations into the construction where none was contemplated by the patentee.

[33] Roche argues that different terms in different claims must have different meaning and that Stanford's construction reduces "presence" and "absence" to "measuring." Roche is correct in its contention that a difference in meaning is presumed. Nystrom v. TREX Co., 424 F.3d 1136, 1143 (Fed.Cir.2005). The presumption, however, may be overcome, as in the case here. Even though the presence or absence of a substance is indeed a yes or no test, determining whether a compound is present or not is not fundamentally different from measuring the amount of compound. Presence or absence is merely a specific manifestation of measuring for the compound where the actual amount of the compound present is not of any import if the compound is indeed present.

In addition, there is no basis for Roche's claim that the detection process be a qualitativeprocess. In fact, there is evidence to the contrary-that a quantitative process was envisioned. *See, e.g.,* '730 patent at 5:53-57, 10:34-40, 12:58-60. This is further buttressed by Stanford's statements made while prosecuting the patents, which distinguish an article by Ottoman based on the fact that the article described using non-quantitative PCR assays. *See* Rhyu Dec., Exh. 25 at STAN 1435, 1458. This evidence may be relied upon in spite of Honeywell Int'l v. ITT Indus., Inc., 452 F.3d 1312 (Fed.Cir.2006). Honeywell only disallows the patentee's own statements if they are "broad and vague statement[s]" that "contradict the clear statements in the specification describing the invention more narrowly." Id. at 1318-19. That is not the case here.

A quantitative process is necessary because a minimum amount of the compound must be present for any detection method to test for the presence or absence of the compound. Thus testing for the "presence" or "absence" is really the same as "measuring," except that if the measurement reveals any amount greater than zero (or the minimum amount necessary to be detectable), the actual amount of the compound is irrelevant.

[34] Stanford's neglect in failing to define the terms is of no import and consequently the terms will not be construed against Stanford. Though the patentee may choose to be his own lexicographer, he does not have to be. In general, the claim terms will carry their ordinary and customary meaning and this court will not import limitations from the specifications into the claims unless it is clear from the specifications that the same was intended.

Finally, for reasons described above, Roche's enablement arguments are just as misplaced here as they were with respect to the other claim terms.

In sum, the court holds that no construction is necessary for "presence of detectable HIV-encoding nucleic acid" and "absence of detectable HIV-encoding nucleic acid."

CONCLUSION

For the foregoing reasons, the court construes the disputed claims in the manner described above.

N.D.Cal.,2007.
Board of Trustees of Leland Stanford Junior University v. Roche Molecular Systems, Inc.