

The opinion in support of the decision being entered is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Ex parte BRUCE ALAN SULLENGER
and THOMAS ROBERT CECH¹

Appeal No. 2006-0735
Reexamination Control No. 90/006,036

HEARD: 4 April 2006

Before TORCZON, LANE, and NAGUMO, Administrative Patent Judges.

LANE, Administrative Patent Judge.

DECISION ON APPEAL-37 CFR § 41.50

I. Introduction

The patent under reexamination is U.S. Patent 5,854,038, issued on 29 December 1998 from application 08/324,362, filed 14 October 1994.

Claims 1-4, 6-10, 12, and 13 have been rejected by the examiner under 35 U.S.C. § 102(e) and 35 U.S.C. § 102(b). We AFFIRM the rejection under 35 U.S.C. § 102(e) and REVERSE the rejection under 35 U.S.C. § 102(b).

¹ According to patentee, the real party in interest is Sima Therapeutics, Inc., which is the licensee of the University of the Board of Regents of the University of Colorado, to whom the invention is assigned. (Appeal Brief (“Brief”) at 4).

Claims 5 and 11, which depend from claims that were amended during prosecution, have been rejected by the examiner under 35 U.S.C. 112, ¶ 1. We REVERSE this rejection. However, we enter a NEW GROUND OF REJECTION for amended claims 6, 9, and 11.

II. Findings of fact

The record supports the following findings of fact by at least a preponderance of the evidence.

1. The 5,854,038 patent ('038), issued on 29 December 1998 from application 08/325,362 ('362), filed 14 October 1994.
2. '362 is said to be a continuation of application 07/077,745, filed 22 January 1993. ('038, 1:1-5).
3. The claims of the '038 patent that are the subject of the reexamination are directed to a method for enhancing the effect of a viral therapeutic agent in a cell in vitro and the therapeutic agent used in the method.

The patent claims

4. The patentee concedes that claims 1-4, 6-10, 12, and 13, all of which are rejected over prior art, stand or fall together. (Brief at 6).
5. The patentee concedes that claims 5 and 11, rejected for failure to comply with the written description requirement of 35 U.S.C., § 112, ¶ 1, stand or fall together. (Brief at 6).
6. We find claim 1, reproduced below, to be representative of the claims:

A method for enhancing the effect of a viral therapeutic agent in a cell in vitro on the viral target of said agent, wherein the viral therapeutic agent is a nucleic acid, comprising the step of:

tethering a localization signal to said therapeutic agent, wherein said localization signal causes said therapeutic agent to be localized with said viral target in a cellular or viral compartment of said cell.

7. According to the '038 specification:

Prior localization of inhibitory RNAs which may be left in or transported to the nucleus attempt to flood a large organelle, approximately 10 μ M in diameter...with either antisense or decoy RNA inhibitors. These strategies do not specifically localize such inhibitors with any specific mRNA and pre-mRNA target even though approximately 10^5 - 10^6 different targets exist inside the nucleus.

The present invention however, localizes an inhibitory RNA to a much smaller compartment, e.g., the core of a retroviral particle approximately 50 nM in diameter and 10^{-6} to 10^{-7} the volume of the nucleus, in which a single large RNA or DNA species, the viral genomic RNA or DNA exists...This million fold difference in localization specificity is achieved by targeting the therapeutic to a sorting pathway which distinguishes viral genomic RNAs and DNAs from the rest of the RNAs and DNAs in the cell.

('038 at 1:40-62).

8. Regarding the "targeting" of the therapeutic agent, the '038 specification states the following:

Those in the art will recognize that many methods can be used for modification of existing therapeutic agents such that they are caused to be localized in an appropriate compartment with a viral target. Thus for example, RNA molecules (all of which are well known in the art) such as decoy RNAs, ribozymes, antisense RNA or DNA molecules can be synthesized in vivo from DNA molecules (or formed in vitro) such that they are covalently bonded with a viral targeting agent, examples of which are provided below. These agents are termed "localization signals".

(‘038, col. 2, lines 38-48).

9. Regarding the localization signal, the examiner directs us to that portion of the ‘038 specification indicating that the localization signal tethered to the therapeutic agent may be a “viral packaging signal, or other equivalent element, to place the inhibitory RNA in the same location as the target RNA.” (Examiner’s Answer (“Answer”) at 5, directing us to col. 2, lines 21-25 of ‘038).
10. Further regarding the localization signal, the ‘038 specification states that “[l]ocalization signals include any proteinaceous or nucleic acid component which naturally becomes localized in the desired compartment, for example, a viral packaging signal or its equivalent (‘038 at col. 3, lines 8-11) and that “[e]xamples of useful localization signals and cell compartments include viral genomic packaging signals, for example, for **RNA viral genomes, including, retroviruses (HIV...)**...”(‘038 at col. 3, lines 8-30, emphasis added).
11. Regarding antisense RNA as therapeutic agents, the ‘038 specification states that methods of the invention work by tethering the antisense RNA “to an appropriate localization signal to sort them to the therapeutically important intracellular and viral location where the viral replication machinery is active.” (‘038 at 4:1–3).
12. According to the ‘038 specification, the enhanced therapeutic effect is achieved by “causing the agent to be located in a small defined compartment within the target (e.g., within a viral particle), or to be located in the same space within a compartment, e.g., in a nucleus at the location of synthesis of the target”. (‘038 at col. 3, lines 2-7).
13. The ‘038 specification states that, as an example, “to improve ribozyme and other RNA-based inhibition of HIV replication, the HIV packaging signal...can be placed

adjacent an inhibitory RNA to colocalize it with an HIV RNA to be destroyed.”

(‘038 at 4: 4-9).

14. Neither the examiner nor the patentee has directed us to a specific definition of the term “cellular or viral compartment” in the ‘038 specification.

The Hu reference

15. The examiner has rejected claims 1-4, 6-10, 12, and 13 under 35 U.S.C. § 102(e) as being anticipated by US Patent 6,107,062 to Hu et al. (“Hu”).

16. Hu issued on 22 August 2000 from application 07/921,104, filed 30 July 1992.

17. Hu is directed to antisense viruses and antisense ribozyme viruses used in preventing and treating viral infections.

18. The examiner points out that one of the objects of the Hu invention is “to provide therapeutic agents for the treatment and prevention of AIDS having...the ability to target HIV...” (Answer at 5, citing Hu at 4:19-34).

19. The examiner also directs us to col. 11, lines 40-48, of Hu, which states that (emphasis added):

An HIV-1 antisense proviral molecular clone is made from a functional (infectious) HIV-1 molecular clone. **It retains all of the natural HIV-1 structures and machinery except a part (or parts) of the genome has been turned antisense by sequence inversion.** The antisense proviral clone is basically an intact molecular clone but the sequence inversion inactivates some functionally critical gene(s) and renders the whole clone replication-defective.

(Answer at 6).

20. Hu notes that:

The antisense virus is infectious and has the same “targeting” or “homing” specificity as the naturally occurring (wild type) virus. The antisense HIV-1 is able to attach to and enter CD4(+) cells, mediated by its normal envelope protein (gp 120 and gp41) just as the natural virus. Once inside the cells, the viral nucleocapsid reverse-transcribes the RNA genome into DNA, then integrates the

viral DNA into the host genome, just as the natural virus does. But the antisense virus is non-replicative, hence non pathogenic, in the absence of the gene product(s) that the antisense virus is missing. In the case where the antisense virus enters a healthy cell where no viral protein is being synthesized for functional complementation, the antisense virus will not replicate. ('038 at col. 11:65 to 12:11).

21. The examiner reasoned that Hu anticipates the claimed invention since Hu teaches both a therapeutic agent which is a nucleic acid (e.g., an antisense RNA or antisense/ribozyme) and a localization signal (e.g., the native HIV viral packaging signal), where “the ψ sequence located in the HIV-1 genome functions by guiding the RNA form of the genome carrying the antisense/ribozyme molecule to the inner surface of the cytoplasmic membrane where virion assembly and budding take place.” (Answer at 6).

22. We understand the examiner to argue that Hu teaches a localization signal (i.e., the HIV packaging signal) that inherently would cause the therapeutic agent to be localized with the viral target in a “cellular or viral compartment of the cell”.

The Dropulic reference

23. The examiner also rejected claims 1-4, 6-10, 12, and 13 under 35 U.S.C. §102(b) as being anticipated by a reference to “Dropulic, B., *et al.*, 1991” that is described by the examiner as “Abstracts of papers presented at the 1991 meeting on RNA TUMOR VIRUSES, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York”. (Dropulic).

24. Dropulic appears to be a one page abstract entitled “RIBOSYME MEDIATED SUPPRESSION OF HIV EPXRESSION IN TISSUE CULTURE.”

The complete paper that was presented at the 1991 meeting is not relied upon by the examiner in making the rejection and does not appear to be before us.¹

25. The copy of the one page abstract on the record before us is not dated, however, there appears to be no dispute that the publication date of the article is such that it qualifies as prior art under 35 U.S.C. § 102(b).

26. The entirety of the Dropulic abstract is set out below:

Ribozymes are catalytic RNA molecules that display specific cleavage reactions to complementary RNAs. They are potentially useful as therapeutic agents against HIV. We have designed ribozymes targeted to various regions of the HIV-1 genomic RNA. When T-cells that are chronically infected with HIV-1 are co-cultured with cloned packaging cells producing amphotropic ribozyme-containing retrovirus, a suppression of HIV-1 replication is seen. We have also generated two types of ribozymes that have been integrated into the HIV genome at the *nef* gene. These two types of ribozymes are a *cis* self cleaving RNA sequence and a RNA sequence that is capable of cleaving in trans the HIV-1 U5 RNA. In both cases, replication of the ribozyme-containing HIV-1 was dramatically reduced. These results suggest that catalytic RNAs can be designed to specifically destroy HIV-1 RNA.

27. The examiner notes that Dropulic reference teaches the incorporation of a nucleic acid therapeutic agent (i.e., a ribozyme) into the *nef* coding region of the HIV-1 genome. (Answer at 4).

28. The examiner argues that “[t]he HIV-1 genome inherently contains an RNA packaging/encapsidation signal (ψ) that localizes the viral genome to the inner surface of the cytoplasmic cell membrane prior to encapsidation into the virion..” (Answer at 4).

¹ Patentee has submitted a paper that it says “disclose[s] the details of the Dropulic abstract”, i.e., Dropulic et al., *Journal of Virology*, 66:1432 (1992). but has provided no evidence that this is the paper presented at the 1991 meeting. (Brief at 15). In any event, the examiner has not rejected the claims over the complete paper-only over an abstract of the paper presented at the meeting.

29. In other words, the examiner argues that Dropulic teaches a localization signal (i.e., the HIV packaging signal) that inherently would cause the therapeutic agent to be localized with the viral target in a “cellular or viral compartment of the cell.”
30. Unlike Hu, Dropulic does not indicate that the HIV-1 genome contains “all of the natural HIV-1 structures and machinery” but for the therapeutic portion nor that it “has the same ‘targeting’ or ‘homing’ specificity as the naturally occurring (wild type) virus.” (‘See ‘038 at 11:41-45 and 65-67).

The 112 rejection

31. Claims 5 and 11 are dependent claims that require that the localization signal comprises “a protein component”.
- Claim 5 depends from claim 1 reproduced *supra*, while claim 11 depends from either claim amended 6 or amended 9.
32. According to the examiner, claims 5 and 11 lack written descriptive support since the disclosure “fails to describe the preparation, characterization, and use of a single therapeutic agent comprising a proteinaceous signal sequence tethered to a therapeutic nucleic acid” (Answer at 7).
33. The examiner states that “for purposes of this rejection, the Examiner is interpreting the claim language to reasonably reference a nucleic acid and proteinaceous component that have been chemically linked to one another.” (Answer at 7-8).
34. According to the examiner, “...the disclosure fails to provide any structural or functional guidance pertaining to suitable chemical linkages that can be employed in the aforementioned invention” and “fails to provide even one working embodiment

involving a proteinaceous signal sequence tethered to a therapeutic nucleic acid.”

(Answer at 8).

35. The examiner states that the “skilled artisan would reasonably conclude that the applicants were not in possession of the claimed invention at the time of filing.

(Answer at 8).

36. The ‘038 specification states that:

Localization signals include any proteinaceous or nucleic acid component which naturally becomes localized in the desired compartment...”

(‘038 at 3:8-10), and

Antiviral agents can be targeted to virally important intracellular locations by use of artificially evolved RNAs and/or protein decoys....These evolved molecules are selected to bind to a viral protein and may be used to colocalize a selected inhibitor with a viral target by tethering the inhibitor to such a decoy.

(‘038 at 4:19-25).

37. The patentee notes that its specification discloses that “localization signals may be tethered to the therapeutic agent by any desired procedure, for example....covalent or ionic bond formation between two moieties” (Brief at 20, citing to ‘038 at 3:15-20).

New ground of rejection

38. We enter a new ground of rejection under 37 CFR §41.50(b). In particular, we reject claims 6, 9, and 11 under 35 U.S.C. § 112, ¶ 2.

39. Claims 6, 9, and 11, are reproduced below.

6. A viral therapeutic agent comprising at least one localization signal able to localize said agent in the same cellular or viral compartment with a viral target of said therapeutic agent in a cell in vitro, wherein the viral therapeutic agent is a nucleic acid.

9. A therapeutic agent comprising a localization signal, wherein the therapeutic agent is a nucleic acid and wherein said localization signal is capable

of localizing said therapeutic agent in the same cellular compartment as the target molecule of said therapeutic agent in a cell *in vitro*.

11. The therapeutic agent of any of claims 6 or 9, wherein said localization signal comprises a protein component.

40. While claims 6 and 9 limit the therapeutic agent, which comprises the localization signal, to a nucleic acid, claim 11 requires that the localization signal comprise a protein component.

III. Discussion

Anticipation

A claim is anticipated only when a single prior art reference discloses each and every limitation of the claim. *Glaxo, Inc. v. Novopharm, Ltd.*, 52 F.3d 1043, 1047, 34 USPQ2d 1565, 1567 (Fed. Cir. 1995). "An anticipatory reference, however, need not duplicate word for word what is in the claims. Anticipation can occur when a claimed limitation is 'inherent' or otherwise implicit in the relevant reference." *Standard Havens Prods., Inc. v. Gencor Indus., Inc.*, 953 F.2d 1360, 1369, 21 USPQ2d 1321, 1328 (Fed. Cir. 1991).

In analyzing whether patentees claims are anticipated by the prior art, we give the claims their broadest reasonable interpretation consistent with the specification as it would be interpreted by one of ordinary skill in the art. *In re Morris*, 127 F.3d 1048, 1054, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); *In re Sneed*, 710 F.2d 1544, 1548, 218 USPQ 385, 388 (Fed. Cir. 1983). Even though we may look to the specification to understand the scope of the claims, we are mindful that limitations are not to be read into the claims from the specification. *In re Van Geuns*, 988 F.2d 1181, 1186, 26 USPQ2d 1057, 1059 (Fed. Cir. 1993).

The Hu reference

The examiner has rejected claims 1-4, 6-10, 12, and 13 under 35 U.S.C. § 102(e) as being anticipated by US Patent 6,107,062 to Hu et al. (Hu).

As we understand it, the examiner's position is that the HIV-1 molecular clone described in Hu anticipates the claim 1 method because the clone:

(1) contains a therapeutic agent that is a nucleic acid (i.e., the antisense or antisense/ribozyme portion of the genome of the clone),

(2) contains a localization signal (i.e., the HIV-1 packaging signal of the clone),

where the two are tethered together within the genome of the clone and where the HIV-1 packaging signal functions to cause the therapeutic agent to be localized with the HIV-1 target virus in a cellular or viral compartment of the cell and thereby cause its effect to be enhanced. (Answer at 5-6).

The patentee concedes that Hu teaches the delivery of a nucleic acid therapeutic agent to a cell within a virus that is "similar to naturally occurring viruses except for these [antisense] fragments and [which] enter[s] the host cell in the same manner as the naturally occurring viruses. (Brief at 10). The patentee does not contest that the antisense fragment and the remainder of the HIV genome would be "tethered" to one another.

However, according to the patentee, "the Office Action appears to confuse the delivery of a therapeutic agent to a cell with the localization of a therapeutic agent with its viral target in a cellular or viral compartment of the cell." (Brief at 9). Patentee argues that the Hu reference "does not teach or suggest a localization signal tethered to a

therapeutic agent, wherein the localization signal causes the therapeutic agent to be localized with a viral target in a cellular or viral compartment of the cell” (Brief at 10). In particular, it is patentee’s position that Hu does not teach that an HIV-1 packaging signal is tethered to the therapeutic agent. (Brief at 9).

It is the examiner’s position that “all of the constructs [of Hu] inherently contain an RNA packaging signal between the U5 portion of the LTR and the beginning of Gag.” (Answer at 6). The examiner notes that Hu teaches that the HIV-1 molecular clone that is used to make the HIV-1 antisense clone “retains all of the natural HIV-1 structures and machinery.” The examiner points to Hu’s teaching that “[t]he antisense virus is infectious and has the same ‘targeting’ or ‘homing’ specificity as the naturally occurring (wild type) virus” such that it is “able to attach to and enter CD4(+) cells...just at the natural virus.” According to the examiner, “the ψ sequence located in the HIV-1 genome functions by guiding the RNA form of the genome carrying the antisense/ribozyme molecule to the inner surface of the cytoplasmic membrane where virion assembly and budding take place.” (Answer at 6).

The examiner has convincingly shown that the construct of Hu would inherently contain the native HIV-1 packaging signal in the absence of evidence to the contrary. In other words, we agree that the examiner has set forth a *prima facie* case of anticipation based on inherency. Thus, it is up to patentee to show that the construct of Hu would not contain an HIV-1 packaging signal. In re *Swinehart*, 439 F.2d 210, 212-13, 169 USPQ 226, 229 (CCPA 1971)(stating that once a *prima facie* case of anticipation based on inherency has been established, the burden shifts to appellant to “prove that the subject matter shown to be in the prior art does not possess the characteristic relied on.”).

In this regard, patentee states that the Hu construct would not contain HIV-1 packaging signal because the Hu construct is designed to target mRNAs that are transported to the cell's cytoplasm for translation. (Brief at 8-11). Patentee does not provide any objective support for this statement and therefore, it amounts to nothing more than attorney argument. Attorney argument alone is not sufficient to overcome patentee's burden in rebutting the examiner's showing of anticipation based on inherency. *Cf. Vivid Tech., Inc. v. American Sci. & Eng'g, Inc.*, 200 F.3d 795,812, 53 USPQ2d 1289, 1301 (Fed. Cir. 1999).

Moreover, even if the Hu construct lacks HIV-1 packaging signal, there is no dispute that the construct is effective at locating the therapeutic agent, i.e., the antisense or antisense/ribozyme, into the cytoplasm of the cell. (Brief at 8). Given that we must give the claim term "compartment" its broadest, reasonable interpretation in view of the specification, we conclude that localizing the therapeutic agent in the cytoplasm meets the claim limitation of localizing the agent to a "cellular or viral compartment of said cell." While the patentee's specification gives an example of a viral particle as a small compartment compared to the cellular nucleus, , the patentee has not pointed out where the specification limits or otherwise defines "a cellular compartment" as excluding the cytoplasm.

The patentee further argues that the example describing the construction of the antisense fragments in the Hu reference does not show the association of the antisense sequence with any type of localization or other signal. (Brief at 11-13). Patentee directs us to that portion of Hu showing how to construct the antisense portion of the construct ("[b]elow is a description of a region of the tat gene being turned antisense" (Hu at 14:15-

17). We consider the entire reference in determining if the reference anticipates the claimed invention. Hu states that the construct of the invention “retains all of the natural HIV-1 structures and machinery except a part (or parts) of the genome has been turned antisense by sequence inversion”. (Hu at 11:42-45). Thus, Hu acknowledges that its constructs are only partially made up of the therapeutic agent, with the remainder being the natural HIV-1 structures and machinery.

Finally, patentee argues that Hu does “not teach or suggest [the claimed] localization signal since the therapeutic agent claimed by patentee would be active even in the absence of a localization agent” while the therapeutic agent of Hu would not. (Brief at 13). Patentee does not explain why we should limit the term “therapeutic agent” as it appears in patentee’s claims to an agent that is active in the absence of a localization agent, especially given that we must give the term its broadest reasonable interpretation in view of the specification. Thus, this argument also is unpersuasive.

We AFFIRM the examiner’s rejection of claims 1-4, 6-10, 12, and 13 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent 6,107,062 to Hu.

Dropulic

The examiner rejected claims 1-4, 6-10, 12, and 13 under 35 U.S.C. §102(b) as being anticipated by a reference to “Dropulic, B., et al., 1991” that is described by the examiner as “Abstracts of papers presented at the 1991 meeting on RNA TUMOR VIRUSES, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York”. (Dropulic).

It is the examiner’s position that Dropulic anticipates the claimed invention because Dropulic “disclose[s] the inhibition of HIV-1 replication utilizing modified HIV-

1 genomes (nucleic acids)” where “two different therapeutic agents, or ribozymes, were introduced into the nef coding region of the viral genome” which “inherently contains an RNA packaging/encapsidation signal (Ψ) that localizes the viral genome to the inner surface of the cytoplasmic cell membrane prior to encapsulation into the virion.”

(Answer at 4).

The patentee argues, *inter alia*, that contrary to the examiner’s ascertains, Dropulic does not teach that the modified HIV-1 genome contains an HIV-1 packaging signal. According to patentee, since Dropulic does not contain an HIV-1 packaging signal, it also does not teach “the necessary signal to co-package and co-localize a therapeutic agent with the HIV-1 particle.” (Brief at 15-16).

There is no express teaching of an HIV-1 packaging in Dropulic. However, the examiner argues that an HIV packaging signal is inherent in the modified HIV-1 genome disclosed by Dropulic. Unlike Hu, Dropulic does not indicate that the HIV-1 genome contains “all of the natural HIV-1 structures and machinery” but for the therapeutic portion nor that it “has the same ‘targeting’ or ‘homing’ specificity as the naturally occurring (wild type) virus.” (‘See ‘038 at 11:41-45 and 65-67). In contrast to Hu, Dropulic contains very little information about that portion of the genome that remains after modification. Thus, we are not convinced that the examiner has shown a sound basis for believing that the modified HIV genome of Dropulic inherently contains an HIV packaging signal. See *In re Spada*, 911 F.2d 705, 708, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Since the examiner has not established a *prima facie* showing of anticipation based on inherency, we REVERSE the examiner’s rejection of claims 1-4, 6-10, 12, and 13 under 35 U.S.C. § 102(b) as being anticipated by Dropulic.

Written Description

The written description requirement of 35 U.S.C. § 112 [¶1] is separate from the enablement requirement. *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563, 19 USPQ2d 1111, 1116-17 (Fed. Cir. 1991). Adequate written description must be determined from the disclosure considered as a whole. *Reiffin v. Microsoft Corp.*, 214 F.3d 1342, 1346, 54 USPQ2d 1915, 1917 (Fed. Cir. 2000). To fulfill the written description requirement, a patent specification must describe an invention in sufficient detail that one skilled in the art can clearly conclude that the inventor invented the subject matter claimed. *Regents of the Univ. of Cal. v. Eli Lilly & Co.*, 119 F.3d 1559, 1566, 43 USPQ2d 1398, 1404 (Fed. Cir. 1997); *Lockwood v. American Airlines*, 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (Fed. Cir. 1997). The knowledge of one skilled in the art must be considered. *Bilstad v. Wakalopulos*, 386 F.3d 1116, 1126, 72 USPQ2d 1785, 1792 (Fed. Cir. 2004).

Claims 5 and 11, which depend from claims that were amended during prosecution, have been rejected by the examiner for insufficient written description. Claim 5 depends from amendment claim 1 and claim 11 depends from amended claim 6 or amended claim 9. The claims requiring that the localization signal comprise “a protein component”. According to the examiner, however, the disclosure “fails to describe the preparation, characterization, and use of a single therapeutic agent comprising a proteinaceous signal sequence tethered to a therapeutic nucleic acid.” (Answer at 7). The examiner states that “...the disclosure fails to provide any structural or functional guidance pertaining to suitable chemical linkages that can be employed in the aforementioned [at claims 5 and 11] invention” and “fails to provide even one

working embodiment involving a proteinaceous signal sequence tethered to a therapeutic nucleic acid..” (Answer at 8). The examiner determined that “the skilled artisan would reasonably conclude that applicants were not in possession of the claimed invention at the time of filing.” (Answer at 8).

The examiner does not dispute that the ‘038 specification discloses nucleic acid therapeutic agents and protein localizing agents. The examiner, however, argues that the combination of a nucleic acid therapeutic agent and a protein localizing signal is not disclosed in such a way that the patentee possessed that combination.

The examiner first argues that “...the disclosure fails to provide any structural or functional guidance pertaining to suitable chemical linkages that can be employed in the aforementioned [at claims 5 and 11] invention.”

In reply, the patentee notes that its specification discloses that “localization signals may be tethered to the therapeutic agent by any desired procedure, for example....covalent or ionic bond formation between two moieties” (Brief at 20, citing to ‘038 at 3:15-20). Weighing the arguments, we find that the examiner has not explained to our satisfaction why such a disclosure would not have conveyed to one skilled in the art that patentees were in possession of the claimed invention. If it is the examiner’s position that undue experimentation would have been required to determine the appropriate procedures for tethering the particular localization signals (e.g., a protein), to a particular therapeutic agent (e.g., a nucleic acid), then perhaps a rejection for failure to provide an enabling disclosure might have been in order. However, that is not the rejection before us.

The examiner next argues that because there is no working example of a protein localization signal tethered to a nucleic acid therapeutic agent, there is insufficient written description as to claims 5 and 11. However, the absence of a working example is not fatal to written description where, as here, the specification otherwise conveys to one skilled in the art that the applicant's possessed the claimed invention at the time of filing.²

We determine that the examiner has not set forth a prima facie showing that claims 5 and 11 are not adequately described as required by 35 U.S.C. § 112, ¶ 1. We REVERSE the examiner's rejection of these claims.

New Ground of Rejection

In accordance with 37 CFR 41.50(b), we enter a new ground of rejection and reject claims 6, 9, and 11 under 35 U.S.C. § 112, ¶ 2 for failing to particularly point out and distinctly claim the subject matter of the invention.

Claims 6, 9 and 11, are reproduced below.

6. A viral therapeutic agent comprising at least one localization signal able to localize said agent in the same cellular or viral compartment with a viral target of said therapeutic agent in a cell *in vitro*, wherein the viral therapeutic agent is a nucleic acid.

9. A therapeutic agent comprising a localization signal, wherein the therapeutic agent is a nucleic acid and wherein said localization signal is capable of localizing said therapeutic agent in the same cellular compartment as the target molecule of said therapeutic agent in a cell *in vitro*.

11. The therapeutic agent of any of claims 6 or 9, wherein said localization signal comprises a protein component.

² Whether a working example is present is a factor that may be considered in determining whether undue experimentation is required to practice the invention. See *In re Wands*, 858 F.2d 731, 736, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988).

Claims 6 and 9 limit the therapeutic agent, and thereby the localization signal which is part of the therapeutic agent, to a nucleic acid. However, claim 11 requires that the localization signal comprise a protein component. It is not clear if claims 6 and 9 are incorrect in limiting the localization signal to a nucleic acid or if claim 11 is incorrect in requiring the localization signal to be something that it may not be according to the claims from which it depends. *See Scripps Res. Instit. V. Nemensen*, 78 USPQ2d 1019, 1035 (BPAI 2005) (both parent and dependent claims are indefinite if it is not apparent which contains the mistake). At any rate, all of claims 6, 9, and 11 lack sufficient definiteness and are rejected under 35 U.S.C. § 112, ¶ 2.

IV. Conclusion

Upon consideration of the record and for reasons given, it is

ORDERED that the examiner's rejection of claims 1-4, 6-10, 12, and 13 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent 6,107,062 to Hu et al. is AFFIRMED;

FURTHER ORDERED that the examiner's rejection of claims 1-4, 6-10, 12, and 13 under 35 U.S.C. § 102(b) as being anticipated by a reference to "Dropulic, B., et al., 1991" that is described by the examiner as "Abstracts of papers presented at the 1991 meeting on RNA TUMOR VIRUSES, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York is REVERSED;

FURTHER ORDERED that the examiner's rejection of claims 5 and 11 under 35 U.S.C. § 112, ¶ 1, is REVERSED; and

FURTHER ORDERED that, in accordance with 37 CFR 41.50(b), we enter a new ground of rejection and reject claims 6, 9, and 11 under 35 U.S.C. § 112, ¶ 2

for failing to particularly point out and distinctly claim the subject matter of the invention.

AFFIRMED-IN-PART

/Richard Torczon/)
Richard Torczon)
Administrative Patent Judge)
)
) BOARD OF PATENT
/Sally Gardner Lane/)
Sally Gardner Lane) APPEALS AND
Administrative Patent Judge)
) INTERFERENCES
)
/Mark Nagumo/)
MARK NAGUMO)
Administrative Patent Judge)

Appeal No. 2006-0735
Reexamination Control No. 90/006,036

MCDONNELL, BOEHNEN,
HULBERT & BERGHOFF, LLP
300 S. WACKER DRIVE
32ND FLOOR
CHICAGO, IL 60606