

The opinion being written in support of the decision being entered today is not binding precedent of the Board.

Paper No. 140

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

ALBERT DE LA CHAPELLE, BERT VOGELSTEIN
and KENNETH W. KINZLER

Junior party,
(Application 08/160,295)

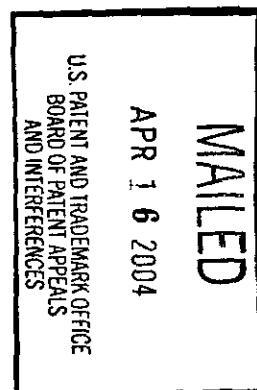
v.

RICHARD D. KOLODNER, ROBERT A.G. REENAN
and RICHARD FISHEL

Senior party,
(Application 08/465,251)

Patent Interference No. 104,063

FINAL HEARING: DECEMBER 19, 2003



Before CAROFF, ELLIS, and LORIN, Administrative Patent Judges.

FINAL DECISION
(Under 37 CFR § 1.658)

Per Curiam

This interference involves an application of the junior party, de la Chapelle et al. (Chapelle), and an application of the senior party, Kolodner et al (Kolodner). According

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to the record before us, the Chapelle application is jointly assigned to Johns Hopkins University and Albert de la Chapelle (Paper No. 8); and the Kolodner application is jointly assigned to Dana-Farber Cancer Institute, and University of Vermont and State Agricultural College (Paper No. 5).

The subject matter in issue relates to an isolated DNA sequence of a human gene associated with hereditary non-polyposis colon cancer (HNPCC) and other cancers. According to the specification disclosure of each party, the detection of a defect or alteration in this sequence can be diagnostic of a predisposition to HNPCC or other cancers. The isolated DNA molecule of interest is more particularly defined by the sole count in issue, count 1, as follows:

Count 1

An isolated DNA molecule having the sequence of SEQ ID NO: 1 (as set forth in 08/160,295) or SEQ ID NO:8 (as set forth in 08/465,251).

The claims of the parties which have been designated as corresponding to this count are:

Chapelle : Claims 1-6, 27-31 and 38-45

Kolodner : Claims 28-30, 32, 34-36, and 41-54

During the preliminary motion stage of this interference, each party filed a number of motions. In all, twenty motions were filed including a motion by Chapelle to

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deny Kolodner benefit of the filing date of application 08/154,792 (motion 11: Paper No. 27).¹

In his decision on motions (Paper No. 97), the APJ denied motion 11. As a consequence of that denial, the APJ issued an order to show cause against Chapelle since junior party Chapelle did not allege any date in its preliminary statement prior to the effective filing date accorded to Kolodner, the senior party.

Although the parties have raised issues in their briefs relating to a number of preliminary motions, we shall first review the APJ's decision regarding motion 11 since that decision, if upheld, is dispositive of many, if not all, of the other issues before us.

Each of the parties have submitted exhibits, filed briefs and appeared, through counsel, at final hearing. Only Kolodner has filed a record.²

No issue of interference-in-fact has been raised in this proceeding.

Final hearing was had before a merits panel consisting of Judges Caroff, Ellis and Lorin. Each of these three judges write separately. Judges Caroff and Lorin concur that motion 11 should be denied or dismissed. Judge Ellis dissents.

¹ We shall refer to each motion in accordance with the numbering system used by the Administrative Patent Judge (APJ) in his decision on motions to identify individual motions.

² The record, exhibits, briefs, opposition briefs and reply briefs will be respectively referred to in our decision, as appropriate, by the abbreviations R, X, B, OB, RB, preceded by a letter representing the name of the submitting party (C or K), and followed by a pertinent page or exhibit number.

It is noted that both parties also have filed proposed findings of fact and conclusions of law, which will be respectively referred to, if appropriate, by the abbreviations PFF and PCL.

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The concurring opinions of Judge Caroff and Judge Lorin, and the dissenting opinion of Judge Ellis, follow. Judgment is in order based on the concurring opinions of Judge Caroff and Lorin. A statement of the Judgment follows the judge's separate opinions.

CAROFF, Administrative Patent Judge, Concurring.

With regard to motion 11, having thoroughly evaluated all the evidence of record in light of the opposing positions taken by each party, I agree with the APJ's holding in Paper No. 97 that the motion should be denied.

First of all, I note that Chapelle, as the moving party, has the burden of proof as the proponent of the proposition that Kolodner should be denied benefit of the filing date of application 08/154,792. That proposition must be supported by a preponderance of the evidence. 37 CFR § 1.637(a); Behr v. Talbott, 27 USPQ2d 1401, 1405 (Bd. Pat. App. & Int. 1992). Chapelle has failed to sustain its burden of proof.

In particular, Chapelle proposes that Kolodner be denied benefit of the filing date of its earliest filed application because that application allegedly does not contain an adequate written description of the DNA molecule defined by the count and, therefore, allegedly fails to satisfy the "description requirement" of 35 U.S.C. § 112, first paragraph.

As I see it, the specification of Kolodner's '792 benefit application attempts to describe an isolated DNA molecule within the scope of the count (SEQ ID NO: 8), both in terms of its actual nucleotide sequence (Figure), and in terms of an example

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describing the isolation of a clone designated as pDHA 11, which is said to have the cDNA sequence identified as SEQ ID NO: 8 (Example 3, pp.76-80). The disclosed nucleotide sequence is admitted to contain four nucleotide errors out of about 3,000 nucleotides (KR-30, para 6; KR-36, para. 42). A plasmid containing clone pDHA 11 was later deposited with the ATCC on January 26, 1994, approximately two months after the filing date of the '792 application. That deposit is referred to on page 79 of Kolodner's involved application 08/465,251.

I agree with Chapelle that the error-prone nucleotide sequence disclosed in the '792 application is insufficient by itself to constitute an accurate and complete description of either of the specific sequences defined by the count within the purview of the first paragraph of 35 U.S.C. § 112. As noted by Chapelle, there is nothing in the '792 application itself which suggests that there are any errors in the disclosed sequence, or where any errors might be (KR-55, II. 13-20). While the errors may be few in number, their effect on the encoded protein would no doubt be significant since the cloning and identification of specific genes involved in cancer development is admittedly difficult and unpredictable ('792 application: p. 4, first full paragraph).

Apparently, there is no way a skilled artisan would recognize that there were any errors in the disclosed sequence unless comparative sequencing or homology studies were conducted and discrepancies thereby discovered by serendipity (KR 52-53; KR 158, para. 8). However, as explained by Chapelle (CB 19-24), this type of extrinsic

discovery and identification of errors is not a proper basis for validating an otherwise deficient description of the subject matter at issue.³

Be that as it may, the inquiry does not end here. Yet to be determined is whether Kolodner may rely upon the isolation of a clone, as described in a working example included in its '792 application, in conjunction with a post-filing date deposit of that clone, to satisfy the "written description" requirement of 35 U.S.C. § 112. This issue is governed by the principles enunciated in Enzo Biochem Inc. v. Gen-Probe Inc., 296 F.3d 1316, 1325, 63 USPQ2d 1609, 1613 (Fed. Cir. 2002), and In re Lundak, 773 F.2d 1216, 227 USPQ 90 (Fed. Cir. 1985).

Again it should be noted that Chapelle, as the moving party, has the burden of establishing by a preponderance of the evidence that Kolodner's '792 application does not constitute a constructive reduction to practice of the invention defined by the count. 37 CFR § 1.637(f),(g). Consequently, Chapelle has the burden of proof with regard to the issue at hand.

There is no question that the precedent and legal principles set forth by our reviewing court, The United States Court of Appeals for the Federal Circuit, must be

³ This is not to say that the errors in the disclosed sequence in the '792 application could not have been rendered harmless and later corrected on the basis of other information contained in the specification itself. Thus, as I endeavor to point out, infra, the isolation of clone pDHA 11, as described in Example 3, coupled with later deposit of the clone in a public depository, provide sufficient descriptive support under 35 U.S.C. § 112 and could serve as a basis for correcting the disclosed sequence. In effect, the correction of sequence data in the specification has been made in subsequently filed "CIP" applications in the chain of pendency linking the '792 application with the Kolodner application now directly involved in this interference.

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followed. See Rivise and Caesar, Interference Law and Practice, Vol. IV, § 784 (Michie Co. 1948). In Enzo, the court essentially held that a reference in a specification to a deposit of biological material in a public depository, which makes its contents accessible to the public, constitutes an adequate description of the deposited material sufficient to comply with the written description requirement of 35 U.S.C. § 112. Enzo, supra. As here, the subject matter at issue in Enzo concerned nucleotide sequences. In effect, the court held that a reference to a deposit of a nucleotide sequence was equivalent to a description of that sequence for purposes of satisfying the written description requirement. This holding was justified by the court “[I]n light of the history of biological deposits for patent purposes, the goals of the patent law, and the practical difficulties of describing unique biological materials in a written description.” Enzo, supra.

It is particularly noteworthy that the court apparently did not ascribe any particular criticality to the question of whether or not the specific structures of the nucleotide sequences at issue could have been accurately and completely described in the specification if a reasonable effort had been made to obtain them. In this regard, the court stated:

Although the structures of those sequences, i.e., the exact nucleotide base pairs, are not expressly set forth in the specification, those structures may not have been reasonably obtainable and in any event were not known to Enzo when it filed its application in 1986. See '659 patent, col. 3, ll. 40-46 (noting severe time constraints in sequencing DNA)

[underlining added for emphasis] Enzo, supra, at 1614.

In Lundak, the court held that where a deposit of a biological material with an

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independent depository is required to satisfy the enablement requirement of 35 U.S.C. § 112, the deposit can be made after filing of an application, but prior to issuance of a patent.

Based upon my reading of the Lundak and Enzo decisions, in my opinion Kolodner may rely upon the isolation of clone pDHA11, as described in Example 3 in its '792 application, in conjunction with the post-filing date deposit of that clone, to satisfy the written description requirement of 35 U.S.C. § 112, and thereby be accorded benefit of the '792 application filing date. In my view, this result is consistent with, and logically follows from, the principles enunciated by the court in Lundak and Enzo.

It is true, as noted by Chapelle, that Enzo does not address the specific question of whether a post-filing date deposit can be relied upon to satisfy the written description requirement. However, the parallel question of satisfying the enablement requirement via a post-filing date deposit was answered in the affirmative in Lundak. As I read Lundak, the rationale for acceptance of a post-filing date deposit applies equally as well to situations, as here and in Enzo, where deposits also are relied upon for purposes of satisfying the "description requirement."

I agree with Kolodner that, with respect to deposits, there is no basis for distinction between the written description and enablement requirements of 35 U.S.C. § 112, first paragraph. They must both be satisfied at the time of filing. If a biological material was in existence prior to the filing date, is referenced in the application, and is subsequently deposited with the appropriate assurances (37 CFR 1.804(b)), one can rely upon that later deposit to satisfy the requirements of 35 U.S.C. § 112, first

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paragraph. As held in Lundak, the act of later depositing that biological material did not change what is in the application because all that need be disclosed was already present in the application at the time it was filed. Lundak, supra, at 96. (KOB 12-19, particularly pages 17-18).

In this case, the '792 application describes an existing material in a working example in terms of its isolation as a clone referred to as pDHA 11. A plasmid containing that clone was later deposited with the ATCC; the deposit being referred to in Kolodner's involved application. As I previously noted (see footnote 3), the '792 application is linked in a chain of pendency with Kolodner's involved application which, in my opinion, satisfies the Lundak caveat that the deposit must be made prior to issuance of a patent, and referred to in the specification.

Thus, I find that the rationale stated in Lundak and in Enzo establishes a symmetry⁴ between the enablement and description requirements of 35 U.S.C. § 112 in respect to reliance upon a deposit of a biological material. This symmetry leads me to conclude that the practice of making a post-filing date deposit, which is looked upon with favor in Lundak, is equally acceptable for purposes of complying with the written description requirement. Chapelle has not convinced me that the history of biological

⁴ The symmetry to which I refer relates to the fact that both the written description and enablement requirements must be satisfied at the time of filing, and may be satisfied by making a deposit of the requisite biological material. In this particular regard, there is no distinction between the two. Therefore, if the enablement requirement can be satisfied under specified circumstances by a post-filing date deposit (Lundak) so, too, should the description requirement under corresponding circumstances.

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deposits for patent purposes, the exigencies of the patent law, or the practical difficulties associated with describing unique biological materials require a different conclusion.

I now address two ancillary points raised by Chapelle for the first time in its reply brief.

First, according to Chapelle, Kolodner has not satisfied the procedural requirement of 37 CFR § 1.804(b) which mandates that a corroborating statement (regarding the deposit of a biological material specifically identified in an application) must be "promptly" submitted. Chapelle points out that the statement relied on by Kolodner for this purpose (KR-41, paragraph 75) was filed during the preliminary motion stage of this interference, over four years from the time the deposit was made. I am not convinced by this argument since I am unaware of any precise definition of "promptly" which would preclude acceptance of Kolodner's statement as complying with the requirements of 37 CFR § 1.804(b). Indeed, in my view Kolodner followed acceptable procedure in a timely fashion especially when the statement in question is taken in conjunction with the much earlier reference in Kolodner's involved application (page 79) to the deposit itself:

A plasmid containing this human cDNA clone [pDHA 11] has been deposited with the American Type Culture Collection (ATCC) on January 26, 1994 in accordance with the Budapest Treaty as ATCC number 75647.

Certainly, both Kolodner's statement (KR-41) and the statement in involved application '251 (page 79) were submitted prior to issuance of any patent and, therefore, are within

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the letter and spirit of the guidelines provided in Lundak (227 USPQ at 95).

Second, Chapelle urges that an inventor's statement for purposes of satisfying 37 CFR § 1.804(b) requires corroboration by a third party non-inventor, in analogy to the corroboration requirement for establishing prior inventorship. Chapelle cites no authority in support of this particular proposition. In interference proceedings, the requirement for corroboration by a third party non-inventor has been uniquely applied only in regard to issues directly relating to prior inventorship, viz. conception, diligence and actual reduction to practice. Rivise and Caesar, Interference Law and Practice, Vol. III, § 539 (Michie Co. 1947). I am unaware of any application of the corroboration rule to issues relating to a constructive reduction to practice especially where, as here, the issues directly relate to satisfaction of the patentability standards set forth in the first paragraph of 35 U.S.C. § 112. Evidence regarding patentability generally requires no independent corroboration of the type required in determining prior inventorship. Accordingly, I see no basis for extending the corroboration rule to matters relating to constructive reduction to practice.

For all of the foregoing reasons, I hold that motion 11 was properly denied.

One final note is in order regarding the dissenting opinion of my colleague, Judge Ellis. For the most part, the concerns expressed in the dissenting opinion have been addressed, supra. However, one item merits further elaboration. My colleague states that:

... the evidence of record; viz, CX 2002, indicates that the nucleolide sequence of the insert contained in the deposited pDHA 11 clone differs

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from the nucleotide sequences disclosed in each of Kolodner's four applications.

To the contrary, I find that the evidence of record only indicates that the sequence described in CX-2001 is the same as the sequence described in Kolodner's earliest filed application, the '792 application. See original motion 11 (Paper No. 27, page 2); CX-2001; CX-2002; KR-30. My colleague appears to assume, without any concrete proof, that: (a) any clone which may be described in CX-2001 or CX-2002 is the same as the pDHA 11 clone identified in each of Kolodner's four applications, and/or (b) the nucleotide sequence of the pDHA 11 clone identified in the '792 application differs from the "incorrect" SEQ ID NO: 8 of the '251 application (the invention described in the count).

I refrain from making any such assumptions or inferences from the record before us. Rather, it is my position that Chapelle, as the moving party, has the burden of adducing evidence sufficient to establish pertinent facts rather than leaving such matters in the realm of speculation or inference. This burden should not have to be assumed by Kolodner or by a panel of the Board.

Chapelle did not adduce evidence sufficient to validate the assumptions of my colleague despite the following:

- (1) Chapelle had the opportunity to cross-examine Kolodner's witnesses on these particular matters, but did not; and
- (2) Chapelle was given the opportunity to access the deposited pDHA 11 clone

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and conduct inter partes testing, yet did not avail itself of that opportunity (see Paper No. 116)⁵.

Chapelle had the burden of making a case with regard to the issues raised in motion 11. In my opinion, it is inappropriate, especially in an inter partes proceeding, for the Board to substitute speculative commentary for evidence lacking in the record.

Other Motions

Turning to other motions decided by the APJ, it is initially noted that, of the twenty motions filed during the preliminary motion stage of this interference, only motions 1-6, 11, 14, and 17-20 were raised in the parties' briefs for final hearing. Motions 7-10, 12-13 and 15-16 were not raised in the briefs and, accordingly, are regarded as abandoned. Photis v. Lunkenhimer, 225 USPQ 948, 950-51 (Bd. Pat. Int. 1984).

Motions 1-5 are all motions for judgment attacking the patentability of Chapelle's involved claims. Those motions, which were originally deferred to final hearing, are now dismissed as moot since it has been determined, supra, that Chapelle has failed to show good cause why judgment should not be entered against Chapelle based on a failure to allege any date in its preliminary statement prior to the effective filing date accorded to senior party Kolodner.

⁵ Chapelle filed a motion for additional discovery pursuant to 37 CFR § 1.687(b) and, by virtue of the granting of that motion, was accorded full access to the deposited pDHA 11 clone of Kolodner, as well as the opportunity to introduce into evidence any sequencing data derived from that clone through inter partes testing.

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Motion 14, which was originally deferred to final hearing, is now dismissed as moot since it was filed in response to motions 2-5 which have now been dismissed. Motion 18, which is apparently contingent upon the granting of motion 11, is dismissed as moot since the contingency upon which it is based has not occurred.

Motions 17, 19 and 20 are now dismissed as moot since they were filed in response to motions 7, 9, and 13, respectively, which were not raised in the briefs and, therefore, regarded as abandoned.

In view of the foregoing, the only other motion before us for consideration on the merits (other than motion 11) is motion 6. Motion 6 was brought by Kolodner under 37 CFR § 1.633(c)(2). In the motion, Kolodner sought to amend its claim 49, and to add new claims 54-55 corresponding to the count. The APJ denied the motion because it was not considered to state sufficient reasons to justify granting the relief requested, as required by 37 CFR § 1.637(a).

According to Kolodner, the motion was brought to present claims which more nearly comport with Chapelle claim 1 which was held to be patentable. Kolodner also claims that denial of the motion "could" deny Kolodner the ability to present its best case.

In my view, motion 6 was properly denied essentially for the reasons presented by Chapelle (COB 33-34) and in the Decision on Motions (Paper No. 97, pages 8-9). In summary, Kolodner has failed to convincingly explain why the requested relief is necessary to resolve the present interference or otherwise materially affect its outcome. As pointed out by Chapelle, it is the count (rather than the claims) which determine

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what evidence can be presented to make out a case for priority. Kolodner has presented no motion to add or substitute a count.

As the APJ noted in his Decision on Motions (page 9):

The mere desire by Kolodner to obtain additional or modified claims corresponding to the count in issue is a matter which can be adequately addressed by the primary examiner upon continuation of ex parte prosecution after termination of the interference, assuming that Kolodner prevails in the interference and, therefore, is not a sufficient basis for relief. An interference proceeding is not an appropriate forum for correcting each and every deficiency which may be found in the parties' involved claims.



MARC L. CAROFF
Administrative Patent Judge

) BOARD OF PATENT
) APPEALS AND
) INTERFERENCES

LORIN, Administrative Patent Judge, concurring.

Throughout Motion 11 (*i.e.*, de la Chapelle's Preliminary Motion 5; Paper No. 27), De la Chapelle argues that Kolodner's prior 08/154,792 ('792) application does not satisfy the requirements of 35 U.S.C. § 112 for the subject matter "claimed"⁶ in Kolodner's interfering 08/465,251 ('251) application. However, Motion 11 was filed under Rule 37 CFR § 1.633(g). A "preliminary motion to attack benefit under § 1.633(g) shall explain, as to each count, why an opponent should not be accorded the benefit of the filing date of the earlier application" [emphasis added], 37 CFR § 1.637(g). The motion nowhere mentions the count.

Furthermore, pursuant to 37 CFR § 1.637(a), de la Chapelle was under a burden to show that Kolodner's '792 application does not satisfy the requirements of 35 U.S.C. § 112 for a single species within the scope of the count. Weil v. Fritz, 572 F.2d 856, 866 n.16, 196 USPQ 600, 608 n.16 (CCPA 1978). The count is drawn to an isolated DNA having SEQ ID NO:8 as set forth in Kolodner's interfering '251 application or SEQ ID NO:1 as set forth in de la Chapelle's interfering application no. 08/160,295 ('295). As they are literally disclosed in the parties' respective applications, Kolodner's SEQ ID NO:8 and de la Chapelle's SEQ ID NO:1 are not the same. Therefore the count is directed to two alternative species. Accordingly, to prevail, de la Chapelle needed to

⁶ Here are some examples:

- "There can be no doubt that Kolodner was not in possession of the invention as now claimed. [Emphasis original.] P. 6.
- "Thus the written description of the '792 application does not fulfill the requirements of § 112 for the claims now presented." P. 7.
- "Kolodner failed to provide an adequate written description of the invention defined by the claims by failing to teach the nucleotide sequence now claimed." Pp. 11-12.

explain why Kolodner's '792 application does not satisfy the requirements of 35 U.S.C. § 112 for both species sequences. That was not done.

Accordingly, the motion fails to strictly follow the letter of our rules.

My colleagues do not object that Motion 11 does not strictly adhere to the rules.⁷ In my opinion we would have been better served had de la Chapelle done so. Had de la Chapelle consulted the count, we would have a better understanding of how de la Chapelle construed the count in attacking the benefit accorded Kolodner as to the count. As it now stands, it falls on us to both construe the count and determine whether Motion 11 is grounded on a proper construction of the count.

I have carefully reviewed the factual record but I find the factual record inadequate for determining the proper construction of the count.

The count⁸ could be construed literally. But doing so raises the specter that there may not be an interference-in-fact.

When read literally (see attached spreadsheet), the alternative sequences of the count are very different. Differences between SEQ ID NO:1 as disclosed in de la

⁷ I presume the reason for this is that, albeit Motion 11 discusses the "claimed" invention, it focuses on no particular claim but solely on SEQ ID NO:8 as disclosed in Kolodner's involved '251 application, which is in fact one of the alternatives of the count. It should also be noted that de la Chapelle narrowly defines Kolodner's "claimed" subject matter as being "directed to nucleic acid molecules as shown in SEQ ID NO:8 of the involved [Kolodner] application Serial No. 08/468,251." Paper No. 27, p. 3, Material Fact No. 10. The reason de la Chapelle has not been required to explain why Kolodner's '792 application does not satisfy the requirements of 35 U.S.C. § 112 for the other alternative of the count, i.e., SEQ ID NO:1 as set forth in de la Chapelle's involved '295 application is, I presume, based on the assumption that de la Chapelle's SEQ ID NO:1 and Kolodner's SEQ ID NO:8 are equivalent.

⁸ The count is:

An isolated DNA molecule having the sequence of SEQ ID NO:1 (as set forth in 08/160,295) or SEQ ID NO:8 (as set forth in 08/465,251).

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Chapelle's involved '295 application and SEQ ID NO:8 as disclosed in Kolodner's '251 application exist at four locations:

Kolodner '251 SEQ ID NO:8 (position)	Kolodner '251 SEQ ID NO:8 (nucleotide)	de la Chapelle '295 SEQ ID NO:1 (position)	de la Chapelle '295 SEQ ID NO:1 (nucleotide)
1-12 (i.e., 5' end)	See attached spreadsheet.	1-65 (i.e., 5' end)	See attached spreadsheet.
414	T	467	C
968	T	1021	A
2895-3110 (i.e., 3' end)	See attached spreadsheet.	2948+ (i.e., 3' end)	Unknown - see attached spreadsheet.

Of particular interest is the difference between the "T" at position 968 of Kolodner's SEQ ID NO:8 and the "A" at position 1021 of de la Chapelle's SEQ ID NO:1. As I understand it, the codon encompassing position 968 of Kolodner's SEQ ID NO:8 encodes a valine residue, in contrast to the codon encompassing position 1021 of de la Chapelle's SEQ ID NO:1 which encodes an glutamic acid. This suggests the difference in nucleotides at that location is a significant one. It further suggests that these two sequences, as literally written, may in fact be independent and distinct from each other, raising the question of whether an interference-in-fact exists. Based on my review of the record, this question has not been answered. I could find nothing in the record showing, in accordance with 37 CFR § 1.601(n), that Kolodner's SEQ ID NO:8 and de la Chapelle's SEQ ID NO:1 as literally written are the same patentable invention.

What the record does show is that the examiner excused what the examiner considered to be errors in Kolodner's SEQ ID NO:8. The examiner's comments ("Proposed interference count") attached to the Notice declaring the interference, Paper

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No. 1, acknowledges the first three differences listed above (but not the last difference). The examiner indicates that, for example, the "T" at position 968 of Kolodner's SEQ ID NO:8 is an "editing mistake," as evidenced by Fishel⁹ (I note that the examiner does not say whether the "error" in de la Chapelle's SEQ ID NO:1 is also an "editing mistake;" see location 467 on the attached spreadsheet.) As far as the examiner is concerned, all the differences between Kolodner's SEQ ID NO:8 as set forth in the count and the actual cDNA sequence encoding the human MSH2 protein are "non-patentably distinct differences." The implication is that the count, as it is literally written, does not in fact define what the examiner considers to be the interfering subject matter. The examiner would have us read into the count the true cDNA sequence that encodes the human MSH2 protein, i.e., the one disclosed in Fishel (1994) (see attached spreadsheet).

The difficulty I have with the examiner's comments is that no facts are presented to support the underlying assumptions; that is, 1) Fishel (1994) refers to Kolodner's SEQ ID NO:8 of the count; 2) the differences between Kolodner's SEQ ID NO:8 of the count and Fishel's "corrected" sequence can be accounted for as "editing mistakes" and not something else; and 3) "editing mistakes" are per se "non-patentably distinct differences."

Accordingly, in trying to construe the count I am left with two options, to construe it literally or to construe it consistent with the examiner's comments. Either way, the

⁹ Fishel et al., (Fishel 1994), Cell, Vol. 77, No. 1, p. 167, April 8, 1994, is an Erratum providing corrected versions of sequences set forth in Fishel et al., (Fishel 1993), "The Human Mutator Gene Homolog MSH2 and Its Association with Hereditary Nonpolyposis Colon Cancer," Cell, Vol. 75, pp. 1027-1038 (1993), which the Erratum states has "some editing mistakes." See the attached spreadsheet.

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construction to be given the count is based on an inadequate factual foundation.

Accordingly, I do not find the count can be properly construed.

Without an adequate factual record to properly construe the count, we are not in a position to determine whether Motion 11 is grounded on a proper construction of the count. That means even if, as my colleagues have done, we overlook the fact that Motion 11 does not strictly comply with our rules, I do not see that we are in position to decide whether de la Chapelle has met its burden of showing that Kolodner should not be accorded benefit of its earlier '792 application as to the count.

Notwithstanding the inadequate factual record to properly construe the count, the fact remains that Junior Party did not address it.

On the grounds that Motion 11 does not comply with the rules, I would DISMISS Motion 11.

I concur with the reasoning of my colleague Judge Caroff as to the disposition of the other motions before us.



Hubert C. Lorin
Administrative Patent Judge

Ellis, Administrative Patent Judge, dissenting.

The analysis put forth by my colleagues with respect to de la Chapelle's Preliminary Motion 5 (hereinafter, motion 11),¹⁰ while appearing to have certain merit produces an incongruous result. I do not agree with Judge Caroff that (i) Kolodner's Application No. 08/154,792 (the '792 Application) provides an adequate written description of a nucleotide sequence within the scope of the count and that it [Kolodner] can overcome this deficiency by depositing a clone which contains a DNA encoding a nucleotide sequence not described in any of its four applications; or (ii) that a deposit is required in this case. Nor do I agree with Judge Lorin that motion 11 is fatally defective and the count impossible to construe. Therefore, since I would grant the motion, I provide the following dissent.

I.

The count in an interference is simply a vehicle for contesting priority. Case v. CPC International, Inc., 730 F.2d 745, 749, 221 USPQ 196, 199 (Fed. Cir. 1984). Its purpose is to determine what evidence is relevant to the issue of priority. Squires v. Corbett, 560 F.2d 424, 433, 194 USPQ 513, 518-519 (CCPA 1977). I agree with Judge Lorin that to determine whether any embodiments disclosed in the parties' priority

¹⁰ For consistency, I follow the numbering of the motions set forth by the majority. See footnote no. 1, above.

applications are within the scope of the count, the count must first be construed. However, I find no ambiguity in the language of the count, nor has any been pointed out by my colleague. Rather, I find that my colleague's real problem appears to be with the fact that the count is directed to two embodiments of the same invention¹¹ and that one of the embodiments contains an error in the nucleotide sequence. This does not mean that the count cannot be "properly construed." In fact, my colleague acknowledges that the count is directed to "two alternative species"; i.e., SEQ ID NO.: 8 as set forth in Kolodner's '251 Application or SEQ ID NO.: 1 as set forth in de la Chapelle's '295 Application (page 16, second paragraph). Thus, contrary to Judge

¹¹ I point out that a count is not ambiguous simply because it is broad enough to encompass both parties' embodiments of an invention. Since a count must encompass the parties' interfering subject matter (37 C.F.R. § 1.601(f)), it was necessary to create a count which encompasses both the nucleotide sequence set forth in Kolodner's SEQ ID NO.: 8 (claim 28 of the '251 Application) and de la Chapelle's SEQ ID NO.: 1.

The positive aspect of the count is that it enables each party to establish benefit based on its own applications and to establish priority based on its own nucleotide sequence data. That is, the count enables both to demonstrate that they were "in possession" of a nucleotide sequence which is said to encode the human MSH2 protein. The present count was constructed in a manner that was intended to ensure that the outcome of the interference would not hinge on inconsequential nucleotide sequence differences such as the silent third position codon change pointed out by the examiner (and Judge Lorin) at position 414 of the Kolodner nucleotide sequence (T, thymine) and position 467 of the de la Chapelle nucleotide sequence (C, cytosine). The difference is inconsequential because both nucleotide sequences code for the same amino acid residue (aspartic acid). (The differences in Kolodner's and de la Chapelle's nucleotide sequences in the regions outside the coding region of the human MSH2 gene are further examples of inconsequential nucleotide sequence differences).

The negative aspect of the count is that because SEQ ID NO.: 8 as set forth in the '251 Application contains an error, it [the count] still enables Kolodner to demonstrate "possession" of a species within the scope of the count, even though said sequence is incorrect.

Lorin's statements, it appears that there is sufficient basis for him to construe the count. In addition to Judge Caroff and myself, I point out that the parties were also able to understand the count because neither filed a motion to have it substituted.

The language of the count is given its broadest reasonable interpretation "and should not be given a contrived, artificial, or narrow interpretation which fails to apply to the language of the count in its most obvious sense." Genentech Inc. v. Chiron Corp., 112 F.3d 495, 500, 42 USPQ2d 1608, 1612 (Fed. Cir. 1997), quoting Credel v. Bond, 25 F.3d 1566, 1571, 30 USPQ2d 1911, 1915 (Fed. Cir. 1994). Here, the count is directed, inter alia, to the nucleotide sequence as set forth in SEQ ID NO.: 8 of the '251 Application. That the count is directed to a nucleotide sequence which contains an error does not render it ambiguous. I point out that only when a count is ambiguous, may resort be had to extrinsic evidence or to the specification from where it [the count] originated. Genentech Inc. v. Chiron Corp., 112 F.3d at 500, 42 USPQ2d at 1612; In re Spina, 975 F.2d 854, 856, 24 USPQ2d 1142, 1144 (Fed. Cir. 1992); In re Baxter, 656 F.2d 679, 686, 210 USPQ 795, 803 (CCPA 1981). Here, I find no statement by Judge Lorin that any of the terms or phrases of the count are ambiguous. Thus, it is not clear to me on what basis he is turning to the examiner's comments attached to the Notice declaring the interference (Paper No. 1) for the "factual foundation" that will enable him properly to construe the count. Even assuming, arguendo, that Judge Lorin's actions are appropriate, I point out that findings by, and decisions of, an examiner are not binding on this Board. Sze v. Bloch 458 F.2d 137, 141, 173 USPQ 498, 501 (CCPA

1972). Moreover, construction of the count is a question of law. Genentech Inc. v. Chiron Corp., 112 F.3d at 500, 42 USPQ2d at 1612 (Fed. Cir. 1997). Thus, it is the responsibility of the Board to construe the count, not the examiner. In any event, I find the examiner's comments are not directed to the count, but rather they convey his reasons for finding that there is an interference-in-fact despite the differences in the nucleotide sequences of Kolodner's SEQ ID NO.: 8 and de la Chapelle's SEQ ID NO.: 1. 37 C.F.R. § 1.601(n). The parties appear to agree since neither has filed a motion for no interference-in-fact.

I find no basis for my colleague's statement that when the count is literally construed there may not be an interference in fact (page 17, above) or that the sequences of the two parties are not directed to the same invention as set forth in 37 C.F.R. § 1.601(n) (page 18, above). Both parties are claiming a nucleotide sequence which they contend encodes the same protein, i.e., the human MSH2 protein. The record before us indicates that only one party (de la Chapelle) has "possession" of a correct nucleotide sequence encoding said protein.¹² Hence, my problem with the majority's decision: they render judgment against said party.

¹² I find no evidence in the record to support Judge Lorin's comments on page 19, above, that (i) de la Chapelle's SEQ. ID. NO.: 1 contains an error; and (ii) the nucleotide sequence disclosed in the Erratum in Cell (CX 2002 by Fishel) is the "true" sequence which encodes the human MSH2 protein. Rather, I find that the nucleotide sequence at issue is a human nucleotide sequence. Humans, as a rule, do not breed within families. Consequently, the human population shows many genetic differences known as genetic polymorphisms. De la Chapelle and Kolodner did not obtain their starting material from the same source; i.e., from the same human. Accordingly, it is reasonable to assume that de la Chapelle's SEQ. ID NO.: 1, and the sequence which Kolodner acknowledges is the correct sequence of his isolated clone (CX 2002), are allelic variants, i.e., they are alternate forms of the same gene.

II.

De la Chapelle filed preliminary motion 11 pursuant to 37 C.F.R. § 1.633(g) to deny senior party Kolodner the benefit of the November 17, 1993 filing date of the '792 Application. Paper No. 27.

De la Chapelle argues, and Kolodner agrees (KR 30, para. 6), that the nucleotide sequence disclosed in the '792 Application contains four errors. Paper No. 27, p. 2; CB, p. 8. These errors may be small in number, but because they are all present in the portion of the nucleotide sequence which encodes the structural gene they are substantial in their impact. For example, de la Chapelle points out that the first error occurs at nucleotides 16-18 of SEQ ID NO: 8; thus, an ATG codon is misdescribed as an ATC (in SEQ ID NO.: 16).¹³ Paper No. 27, pp. 2-3; CB, pp. 8-9. Moreover, because the ATG is the initiating methionine codon, when Kolodner used the incorrect nucleotide sequence to deduce the amino acid sequence for which it encodes, the resultant protein lacked the first twenty-five amino acids. Id. Compare the '792 Application, SEQ ID NO.: 16 and the involved '251 Application, SEQ ID NO.: 16; compare also, Kolodner's original publication (Cell, Vol. 75, pp. 1027-1038 (1993), Figure 1 (CX 2001) and the Kolodner Erratum (Cell, Vol. 77, p. 167 (1994), Figure 1 (CX 2002)). De la Chapelle further points out that the second error at nucleotide 1019 (a "C" is missing) results in a frameshift rendering amino acids 311-329, incorrect. Id.

¹³ SEQ ID NO.:16 discloses the amino acid sequence of the polypeptide encoded by SEQ ID NO.: 8.

De la Chapelle still further points out that the third error at nucleotide 1077 (an extraneous "A" is inserted) shifts the reading frame back to the correct sequence, and the fourth error at nucleotide 968 (a "T" instead of an "A") results in the incorrect disclosure of a hydrophobic amino acid- valine at position 318, instead of the acidic amino acid, glutamate (in SEQ ID NO.:16). Id. Thus, de la Chapelle contends that Kolodner's '792 Application fails to provide an adequate written description of an invention within the scope of the count.¹⁴

¹⁴ I agree with Judge Lorin that de la Chapelle's arguments in motion 11 are directed to Kolodner's claimed invention rather than the invention of the count as required by 37 C.F.R. § 1.637(g). However, when the count is identical to one of the claims, it has been the practice of this Board to consider the arguments presented in a motion filed pursuant to 37 C.F.R. § 1.633(g) as being directed to the count, even though the moving party has argued the claim. That is, we consider the substance of the motion, not its form.

I recognize that the count and Kolodner's claim 28 are not identical in this case because said claim does not include a DNA molecule having the nucleotide sequence of SEQ ID NO.: 1 set forth in de la Chapelle's involved '295 Application. However, in my view, this does not preclude the panel from considering the merits of de la Chapelle's motion because of the manner in which the interference was declared. See, the examiner's comments attached to the Notice declaring the interference (Paper No. 1) and the following explanation.

I do not agree with Judge Lorin (footnote 7) that the reason de la Chapelle need not establish that Kolodner's '792 Application does not satisfy the requirements of 35 U.S.C. § 112 for its SEQ ID NO.:1 is because the sequences are "equivalent." It is not clear to me, what my colleague means by "equivalent" nucleotide sequences. In my view de la Chapelle need not explain why Kolodner's '792 Application does not provide written descriptive support for SEQ ID NO. 1 of the '251 Application because it was known at the time the interference was declared that the parties' nucleotide sequences were not identical. See, the aforementioned examiner's comments attached to Paper No. 1. That is, in the context of motion 11, which is directed to the issue of written description of the invention, it was known at the time the interference was declared that Kolodner's involved and parent applications do not provide a written description of de la Chapelle's SEQ ID NO.:1. Similarly, it was known that de la Chapelle's involved '295 Application does not provide a written description of Kolodner's SEQ ID NO.: 8. Accordingly, I find that de la Chapelle's failure to prove the obvious is also a matter of

(continued...)

It is well established that de la Chapelle, as the moving party, has the burden of proving by a preponderance of the evidence that it is entitled to the relief sought. 37 C.F.R. § 1.637(a). In my view, de la Chapelle has sustained its burden.¹⁵

To be accorded benefit of an earlier-filed application, said application must satisfy the requirements of 35 U.S.C. § 112, first paragraph, for at least one species within the scope of the count. Hyatt v. Boone, 146 F.3d 1348, 1352, 47 USPQ2d 1128, 1130 (Fed. Cir. 1998). Weil v. Fritz, 572 F.2d 856, 865 n.16, 196 USPQ 600, 608 n.16 (CCPA 1978). Thus, the earlier-filed application must contain an adequate written description of the subject matter of the count, and must satisfy the enablement requirement. University of Rochester v. G.D. Searle & Co. Appeal No. 03-1304, (Fed. Cir. 2004); Enzo Biochem, Inc. v. Gen-Probe Incorporated, 296 F.3d 1316, 1324, 63 USPQ2d 1609, 1613 (Fed. Cir. 2002); Fiers v. Revel, 984 F.2d 1164, 1170-71, 25 USPQ2d 1601, 1606-1607 (Fed. Cir. 1993). To comply with the written description requirement, an applicant “must ... convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention.” Vas-Cath Inc. v. Mahurkar, 935 F.2d 1555, 1563-64, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991). With respect to a DNA sequence, our appellate reviewing court has held that an adequate written description usually “requires a precise definition, such as by structure,

(...continued)

form over substance.

¹⁵ Given my colleague’s disposition of this case, I have not provided my reasons for finding the arguments in Kolodner’s opposition to motion 11 (Paper No.), unconvincing. Nor have I considered the motions which the majority now dismisses as moot.

formula, chemical name or physical properties." Enzo Biochem, Inc. v. Gen-Probe Incorporated, 296 F.3d at 1324, 63 USPQ2d at 1613; University of California v. Eli Lilly and Co., 119 F.3d 1559, 1566, 43 USPQ2d 1398, 1404 (Fed. Cir. 1997); Fiers v. Revel, 984 F.2d at 1170, 25 USPQ2d at 1606. Although in circumstances where a DNA is not available in written form, a reference to a deposit of a nucleotide sequence may provide an adequate written description of said sequence. Enzo Biochem, Inc. v. Gen-Probe Incorporated, supra.

Since the count is directed, inter alia, to an isolated DNA molecule having the [nucleotide] sequence of SEQ ID NO.: 8 as set forth in the '251 Application, I find that the evidence of record (i.e., the incorrect nucleotide sequence in the '792 Application) clearly demonstrates that the '792 Application does not provide an adequate written description of said sequence. Rather, the '792 Application misdescribes the aforementioned sequence. Nor do I find that the '792 Application provides an adequate written description of SEQ ID NO.: 1 as set forth in the '295 Application. Accordingly, I find that the '792 Application does not convey to those skilled in the art that the Kolodner inventors were "in possession" of a nucleotide sequence within the scope of the count at the time the application was filed. Cf., Vas-Cath Inc. v. Mahurkar, 935 F.2d at 1563, 19 USPQ at 1117.

Judge Caroff acknowledges that (i) the '792 Application does not provide an adequate written description of the nucleotide sequence of SEQ ID NO.: 8 as required by the count; and (ii) one skilled in the art would not recognize the errors in the

nucleotide sequence disclosed therein (page 5, above); but concludes that based on his reading of In re Lundak, 773 F.2d 1216, 227 USPQ 90 (Fed. Cir. 1985) and Enzo Biochem Inc. v. Gen-Probe Inc., 296 F.3d 1316, 63 USPQ2d 1609 (Fed. Cir. 2002), that the deposit of clone pDHA 11 in the involved 08/465,251 (the '251 Application), filed June 5, 1995, is sufficient to satisfy the written description, and presumably the enablement, requirements of 35 U.S.C. § 112, first paragraph, of all of Kolodner's earlier-filed parent applications.¹⁶ According to my colleague, Enzo is controlling in this case because it stands for the proposition that the deposit of biological material in an appropriate public depository is sufficient to satisfy the written description requirement

¹⁶ Judge Caroff also suggests that given the deposited pDHA 11 clone, Kolodner could have corrected the nucleotide sequence in the '792 Application. I disagree. Errors in the specification cannot be corrected unless one skilled in the art would recognize (1) the error; and (2) the appropriate correction of said error. In re Oda, 443 F.2d 1200, 1205-06, 170 USPQ 268, 272 (CCPA 1971). Here, since the Kolodner inventors did not know that the nucleotide sequence disclosed in the '792 Application was incorrect, it reasonably follows that one skilled in the art, given the novel DNA sequence over 3,000 nucleotides in length set forth in SEQ ID NO.: 8, would have no way of knowing that there were any errors in the sequence. Moreover, when reading the specification as a whole, one skilled in the art would find that the '792 Application discloses that "the cDNA clone (SEQ ID NO. 8) contains a complete open reading frame capable of encoding 909 amino acids. The encoded amino acid sequence is presented in SEQ ID NO.16" [emphasis added]. The '792 Application, p. 26, lines 7-9. The polypeptide shown in SEQ ID NO.: 16 was deduced from the nucleotide sequence data of SEQ ID NO.: 8 and, therefore, contains the amino acid sequence errors recited above. The specification compares the incorrect sequence shown in SEQ ID NO.: 8 with other cDNAs and concludes that the nucleotide sequence is a human homologue of the E. coli mutS gene. Id., lines 14-17. In addition, the specification discloses that the incorrect polypeptide shown in SEQ ID NO.: 16 is a protein homologue of the E. coli MutS mismatch repair protein and of the yeast protein shown in SEQ ID NO.: 3. Id., lines 17-23. Thus, one skilled in the art, reading the '792 Application would not have any basis for believing that the nucleotide sequence (SEQ ID NO.: 8) and its corresponding amino acid sequence (SEQ ID NO.: 16) were incorrect.

of § 112 for any claim directed to a nucleotide sequence. I disagree.

In my view, the court in Enzo did not make such a sweeping generalization with respect to deposits of clones said to encode a particular nucleotide sequence.¹⁷ I find that the court qualified its statement and held that a deposited material in a public depository may constitute an adequate written description of an invention, "when it is not otherwise available in written form" [emphasis added]. Enzo Biochem Inc. v. Gen-Probe Inc., 296 F.3d at 1325, 63 USPQ2d at 1613. Based on the record in this case, I find that the nucleotide sequence of the human mutator gene homolog (hMSH2), which Kolodner's SEQ ID NO.: 8 is said to describe, was obtainable in written form as evinced by the de la Chapelle '295 Application (SEQ ID NO.: 1), and the published sequence in a scientific journal. CX 2001 and CX 2002. Thus, since the fact situation as to when a deposit may satisfy the written description requirement for nucleotide sequence was not present in this case, Enzo is not controlling as precedent.

My problems with Judge Caroff's opinion do not end there. Kolodner filed the '792 Application on November 17, 1993, now abandoned. Kolodner filed Application 08/163,449 (the '449 Application) on December 7, 1993, now abandoned, which is said to be a continuation-in-part of the '792 Application. Kolodner filed Application 08/259,310 (the '310 Application) on June 13, 1994, now abandoned, which is said to be a continuation-in-part of the '499 Application. Kolodner filed Application 08/465,251

¹⁷ In addition, I find no statement in Enzo that a deposit of a biological material can be used to correct errors in a nucleotide sequence.

(the '251 Application) on June 5, 1995, which is said to be a continuation-in-part of the '310 Application. The errors in the nucleotide/amino acid sequence in the '792 Application are discussed above. The nucleotide and amino acid sequence data were only partially corrected in the '449, '310 and '251 Applications. In these latter applications, an incorrect "T" nucleotide appears at position 968, resulting in a codon coding for valine (GTA), rather than a glutamate (GAA) at amino acid position 318. Thus, SEQ ID NO.: 8 (and, consequently, SEQ ID NO.: 16) in the '449, '310 and '251 Applications is not the correct sequence of human MSH2. In addition, the evidence of record; *viz.*, CX 2002, indicates that the nucleotide sequence of the insert contained in the deposited pDHA 11 clone differs from the nucleotide sequences disclosed in each of Kolodner's four applications.¹⁸ As discussed above, the court is directed, *inter alia*, to

¹⁸ Judge Caroff states that he has not assumed, because there is no proof, that the pDHA 11 clone is the same as "any clone described in CX-2001 or CX-2002." See, page 12, above. I point out that my colleague has stated in footnote 3 that the deposit of clone could serve as a basis for correcting the sequence. The only correct nucleotide sequence of the hMSH2 gene the Kolodner inventors provide is in their Erratum in Cell, CX 2002. Thus, Judge Caroff appears to have assumed that the pDHA 11 clone encodes the correct nucleotide sequence set forth in said publication.

In addition, Kolodner states that:

pDHA 11 was deposited with the ATCC. That deposit is the same clone as described in the application [the '792 and '449 Applications]. ... The four errors were simple editing errors that resulted from an inadvertent proofreading failure. ... However, the molecule inherently contained the correct sequence and anyone sequencing it would, if done carefully, obtain the correct sequence [Paper No. 51, p. 18, last para.].

Again, the only correct sequence of the hMSH2 gene disclosed by the Kolodner inventors is the nucleotide sequence set forth in the Erratum in Cell, CX 2002.

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an isolated DNA molecule having the sequence of SEQ ID NO.: 8 as set forth in the '251 Application, and Judge Caroff states that by virtue of the deposited clone pDHA 11, the '792 Application provides an adequate written description of an invention within the scope of said count. However, it is not clear to me, and my colleague does not explain, of which nucleotide sequence the deposited clone provides an adequate written description. The incorrect SEQ ID NO.: 8 of the '251 Application (the invention described in the count), SEQ ID NO.: 1 as set forth in the '295 Application, or the nucleotide sequence of the hMSH2 gene as set forth in the Erratum in the Cell journal (CX 2002)?

I find that de la Chapelle clearly demonstrates that the '792 Application does not provide an adequate written description of SEQ ID NO.: 8 as set forth in the '251 Application. That is, anyone reading the '792 Application can plainly see, and Kolodner acknowledges,¹⁹ that (i) the '792 Application contains the four errors pointed out in motion 11 and the accompanying exhibits; and (ii) that three of these four errors were corrected in the '449, '310 and '251 Application. Thus, contrary to Judge Caroff's comments (para. bridging pp. 12-13, above), I find that there is no burden on de la Chapelle to "test" the deposited pDHA 11 clone or to cross-examine any of Kolodner's witnesses on this issue.

¹⁹ See, e.g., Kolodner's Opposition, Paper No. 51, p. 4, second complete para. and p., 12, last para.- p. 15, para. 3. See also, Dr. Kolodner's direct testimony, KR 32, paras. 6, 42 and 54, which are relied upon in said opposition.

III.

As of this writing, the written description and enablement requirements of 35 U.S.C. § 112, first paragraph, are considered by the court to be two separate and distinct issues. University of Rochester v. G.D. Searle & Co., Appeal No. 03-1304 (Fed. Cir. 2004); Enzo Biochem Inc. v. Gen-Probe Inc., 296 F.3d at 1324, 63 USPQ2d at 1612. Written description is a fact-based inquiry; whereas, enablement is a question of law. The purpose of the written description requirement is to “ensure that the scope of the right to exclude, as set forth in the claims, does not overreach the scope of the inventor’s contribution to the field of art as described in the patent specification.” Reiffin v. Microsoft Corp., 214 F.3d 1342, 1345, 54 USPQ2d 1915, 1917 (Fed. Cir. 2000). Traditionally, a deposit of a biological material in an appropriate depository, when accompanied by additional assurances described below, was considered sufficient to enable one skilled in the art to make and use the claimed invention. In re Lundak, 773 F.2d at 1218-19, 227 USPQ 90 at; In re Argoudelis, 434 F.2d 1390, 1391, 168 USPQ 99, 100 (CCPA 1970). Nevertheless, the court recently held that deposits of microorganisms containing a nucleotide sequence, not otherwise available in written form, may also be used to satisfy the written description requirement of § 112. Enzo Biochem Inc. v. Gen-Probe Inc., 296 F.3d at 1325, 63 USPQ2d at 1613-1614.

By the time of Lundak, it had been determined that the words in a specification alone did not always enable one skilled in the art to make and use a claimed invention.

That is, it was determined that certain inventions directed to novel biological materials such as microorganisms, plants, etc., which were not known and readily available to the public could not be made by one skilled in the art based on the teachings in the specification alone, without undue experimentation. For example, an invention directed to a novel microorganism capable of producing an antibiotic or digesting an oil spill, can not be readily isolated ("made") by one skilled in the art because finding a given microorganism in nature is unpredictable. Even the disclosure in a patent application of the precise location where a novel microorganism is located does not ensure that a person skilled in the art would be able "to make and use" the claimed invention. Similarly, with claims to novel plants. Given the unpredictable nature of genetic recombination events, the crossing of two plants using classical plant breeding techniques does not guarantee that one skilled in the art would be able "to make and use" a plant from the description provided in a patent application. Thus, the USPTO permitted an applicant to deposit such inventions in certain recognized depositories, in conjunction with a statement that all restrictions imposed by the depositor would be irrevocably removed upon the granting of the patent,²⁰ to satisfy the enablement

²⁰ Even, assuming, arguendo, that Judge Caroff is correct with respect to Kolodner being entitled to the benefit of the '792 Application based on a deposit referred to in the involved '251 Application, I do not find that it [Kolodner] has complied with the deposit requirements set forth in 37 C.F.R. §§ 1.801-1.809. Attention is directed to § 1.808(b). In addition to making a deposit in a recognized depository as described in the rules, the depositor must provide a written statement to the USPTO that all restrictions on the availability to the public of the deposited material will be irrevocably removed upon the granting of the patent. See M.P.E.P. § 2410.01; Ex parte (continued...)

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requirement of § 112.

In Lundak, the issue was at what time must a deposit of a human cell line producing hybridomas be made in order for the patent application to be enabling. Since the monoclonal antibody technique generates hybridomas against many different epitopes and with different affinities, a deposit ensured that the particular type of hybridoma claimed in the patent was reproducible and available to the public. The court found that a deposit made after the filing date of the application, and which was in compliance with other USPTO regulations, was sufficient to satisfy the enablement requirement of the patent application at issue. Thus, Lundak has stood for the proposition that provided a deposit is made prior to the issuance of the application in which the deposit is mentioned, said application is considered enabling as of its filing date. The court in Lundak makes no statement as to the deposited cell line satisfying the enablement requirement of an earlier-filed parent application. That is, the court did not, in either Lundak or Enzo, give the claims benefit under 35 U.S.C. § 120 to any earlier-filed applications. Thus, I find no basis for Judge Caroff's presumption that the court would have done so for purposes of both enablement and written description.

As set forth above, written description and enablement are two separate requirements of § 112, first paragraph. Written description is a fact-based inquiry. Here, the facts of record irrefutably establish that Kolodner's '792 Application does not provide an adequate written description of an invention within the scope of the count.

(...continued)

Hildebrand, 15 USPQ2d 1662 (Bd. Pat. App. & Int. 1990). This Kolodner has not done.

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Rather, the '792 Application misdescribes (i) the human MSH2 gene; and (ii) SEQ ID NO.: 8 as set forth in the '251 Application. Nor does the nucleotide sequence disclosed in the '792 Application provide an adequate written description of SEQ ID NO. :1 as set forth in the '295 Application. Judge Caroff's opinion disregards these facts. According to my colleague, it doesn't matter what nucleotide sequence is disclosed in a specification, as long as the name of the clone containing the sequence is disclosed and the clone is deposited any time an application is pending before the Office. Thus, my colleague appears to believe that those skilled in the art should obtain the deposited clone(s) mentioned in a patent and determine for themselves (even though the inventors themselves might not have been able to) whether the written description of the invention in the patent is correct, or not.

Moreover, while Judge Caroff states that his decision based on Lundak and Enzo, he overlooks the fact that his extension of the benefit of the deposited clone to satisfy the written description requirement of earlier-filed applications is inconsistent with 35 U.S.C. § 120,²¹ and other case law. 35 U.S.C. § 120 requires that each of

²¹ 35 U.S.C. § 120 states, in relevant part:

An application for patent for an invention disclosed in the manner provided by the first paragraph of section 112 of this title in an application previously filed in the United States, ... which is filed by an inventor or inventors named in the previously filed application shall have the same effect, as to such invention, as though filed on the date of the prior application, if filed before the patenting or abandonment of or termination of proceedings on the first application or on an application similarly entitled to the benefit of the filing date of the first application ... [emphasis added].

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Kolodner's earlier-filed applications satisfy the written description requirement for the claims to obtain benefit of their filing dates. Similarly, if one wants to obtain benefit of an earlier-filed application for constructive reduction to practice of an invention within the scope of the count, the earlier-filed application "must describe the subject matter of the count in terms that establish that [the inventor] was in possession of the later-claimed invention, including all of the elements and limitations presented in the count, at the time of the earlier filing." Hyatt v. Boone, 146 F.3d at 1553-54, 47 USPQ2d at 1131 ("It is not a question of whether one skilled in the art might be able to construct the patentee's device from the teachings of the disclosure . . . Rather, it is a question whether the application necessarily discloses that particular device"). Thus, while Judge Caroff contends that Lundak and Enzo establish a symmetry between written description and enablement, he ignores the case law which concerns the compliance of earlier-filed applications with the requirements of § 112, first paragraph, to establish constructive reduction to practice of an invention within the scope of the count, and 35 U.S.C. § 120. The relevant issue here is whether the earlier-filed '792 Application satisfies the requirements of § 112, first paragraph, for an invention within the scope of the count. I submit that it does not.

IV.

In addition to the foregoing, I find the Judge Caroff's opinion to be misdirected. The deposit issue is really a red herring. I direct attention to 37 C.F.R. §§ 1.802 (b) and

(c) which state, in relevant part:

(b) ... Biological material need not be deposited, inter alia, if it is known and readily available to the public or can be made or isolated without undue experimentation. ...

(c) The reference to a biological material in a specification disclosure or the actual deposit of such material by an applicant or patent owner does not create a presumption that such material is necessary to satisfy 35 U.S.C. 112 or that deposit in accordance with these regulations is or was required.

A deposit is only necessary when the material is not known and readily available to the public. As discussed above, at least one correct nucleotide and amino acid sequence of the human mutator gene homolog (hMSH2) were known and readily available in the art. These sequences were published in an "Erratum" in Cell, Vol. 77, p. 167 (1994). CX 2002.

In addition, the USPTO does not require a biological deposit when the complete nucleotide sequence of a gene is disclosed in a specification because this information is sufficient to enable one skilled in the art to "make and use" the claimed invention, without undue experimentation. Thus, because the nucleotide sequence of SEQ ID NO.: 8 as set forth in the '251 Application was disclosed in the '449 Application, even though the sequence (in the '449 Application) is incorrect, the '449 Application nevertheless satisfies the written description and enablement requirements of § 112, for the incorrect sequence for the human mutator gene homolog (hMSH2) recited in the count. However, it does not appear that Kolodner wants benefit of an incorrect nucleotide sequence.

V.

As the dissenter in this case, I take more liberties in expressing my opinion. To that end, it is my view that the court was too generous in the deference it accorded the USPTO's "Guidelines for Examination of Patent Applications Under the 35 U.S.C. 112, ¶ 1 'Written Description' Requirement," 66 Fed. Reg. 1099 (January 5, 2001).

Should it not be that a specification having a claim(s) to a nucleotide sequence, or a method(s) of using a nucleotide sequence, contain a written description of said sequence? In the past, specifications having claims directed to a microorganism, cell line, plant, etc. capable of performing a particular function, satisfied the enablement requirement by depositing said microorganism or cell line. However, there was a difference between the claims in past cases and those now before us. Previously, the claims were not directed to the nucleotide sequence within said microorganism/cell line/plant which was responsible for a particular function. For example, the claims were not directed to the gene encoding "antibiotic X" or responsible for digesting "petroleum product Y."²² One skilled in the art did not need to know the nucleotide sequence to

²² See, Diamond v. Chakrabarty, 100 S. Ct. 2204, 206 USPQ 193 (1980). See, also, U.S. Patent No. 4,259,444, claim 1 which reads as follows:

1. A bacterium from the genus Pseudomonas containing therein at least two stable energy-generating plasmids, each of said plasmids providing a separate hydrocarbon degradative pathway.

See also, In re Lundak, 773 F.2d 1216, 227 USPQ 90 (Fed. Cir. 1985). Claims 1 and 2, read as follows:

1. An immortal B-cell line WI-L2-729HF₂.

(continued...)

"make and use" the claimed invention because the entire microorganism/cell line/plant or product which it produced was the invention; not a specific nucleotide sequence contained therein. The isolation and characterization (determination of the nucleotide sequence) of a specific gene in those cases would have required undue experimentation by one skilled in the art to make and use the claimed invention based on the mere disclosure of its existence in a microorganism or cell line.²³

I point out that prior to the actual obtention of the nucleotide sequence encoding the human genome by the combined effort of numerous laboratories worldwide, the sequence was "not otherwise available in written form." Enzo Biochem Inc. v. Gen-Probe Inc., 296 F.3d at 1325, 63 USPQ2d at 1613. Would it have been possible for

(...continued)

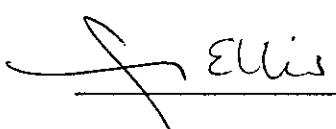
2. A hybridoma resulting from the fusion of an immunized lymphocyte and a cell line according to claim 1.

²³ Even today, one needs a probe to isolate a novel nucleotide sequence from cDNA and genomic libraries. DNA probes can only be constructed and employed to isolate genes if a portion of the nucleotide sequence is known. (Under certain circumstances, a DNA probe can also be constructed if part of the amino acid sequence of the protein which the gene encodes is known). Alternatively, if the gene of interest has a known homologue, it [the DNA of the homologue] can be used as a probe.

With cDNA libraries, it is sometimes possible to screen for a gene of interest using a biological assay or an antibody probe which detects the expression of the product which said gene encodes. However, expression of a product will occur only if the cDNA has been inserted into the cloning/expression vector in the proper orientation and in the correct reading frame. Eucaryotic genes, however, often contain introns (intervening segments of "nonsense" DNA which do not encode the gene product). Therefore, when eucaryotic genes are inserted into a vector (for purposes of cloning), it is often not possible to express the protein products which they encode. Thus, genomic libraries (comprising clones of eucaryotic genes) usually cannot be screened using a biological assay to locate the gene of interest.

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one to satisfy the written description requirement for a claim directed to the nucleotide sequence of the human genome by depositing several genomic or cDNA clones containing the nucleotide sequence as was done in Enzo? Would such an applicant have been "in possession" of the nucleotide sequence encoding the human genome? I don't think so. In my view, applicants should not be permitted to obtain a patent for a nucleotide sequence based on an isolated, and deposited clone or microorganism an applicant believes, and perhaps even does, contain a DNA sequence which encodes a particular gene. Nor should applicants who incorrectly sequence a gene be rewarded with a patent if they later deposit a microorganism containing the correct sequence. If a nucleotide sequence is what is claimed, the burden is on the applicant to "convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention"; i.e., "in possession" of the nucleotide sequence. Vas-Cath Inc. v. Mahurkar, 935 F.2d at 1563-64, 19 USPQ2d at 1117. Claiming a nucleotide sequence which one does not or cannot describe, overreaches the scope of an inventor's contribution to the field of art. Reiffin v. Microsoft Corp., 214 F.3d at 1345, 54 USPQ2d at 1917. "A patent is not a reward for the search, but compensation for its successful conclusion." Brenner v. Manson, 383 U.S. 519, 536, 148 USPQ 689, 696 (1966).



Joan Ellis

Administrative Patent Judge

JE/eld

Judgment

In view of the disposition of all the issues before us, judgment as to the subject matter of the sole count in this interference is in order and, accordingly, judgment is hereby awarded to Kolodner et al, the senior party.

Accordingly, de la Chapelle et al., the junior party, is not entitled to its claims 1-6, 27-31 and 38-45 corresponding to the count.

On the record before us in this interference, Kolodner et al are entitled to their claims 28-30, 32, 34-36 and 41-54 corresponding to the count.

However, we note that our decision in no way affects the status of the parties' claims indicated in the initial memorandum forwarded by the primary examiner (Form PTO-850). Thus, it should be noted that the examiner has determined that Chapelle claims 33-37 do not correspond to the count and are patentable. Also, Kolodner claims 31, 33, 37 and 38 have been designated as not corresponding to the count, but have been determined to be unpatentable.

Finally, Kolodner claims 29, 32, 35, 36, 41-49 and 53, which correspond to the count, have been determined by the examiner to be unpatentable. Accordingly, the only claims of Kolodner which both correspond to the count and are considered patentable are claims 28, 30, 34, 50-52, and 54.

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Kolodner	Kolodner	Cell	Cell Erratum	Kolodner	Kolodner	Chapelle #1
fil. 11/17/93	fil. 12/7/1993	pub. 12/9/93	pub. 4/8/1994	fil. 6/13/1994	fil. 6/5/95	fil. 12/2/1993
08/154,792	08/163,449			08/259,310	08/465,251	08/160295
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						51
						52
						53
1	A	1	A	1	A	54
2	T	2	T	2	T	55
3	T	3	T	3	T	56
4	C	4	C	4	C	57
5	G	5	G	5	G	58
6	G	6	G	6	G	59
7	C	7	C	7	C	60
8	A	8	A	8	A	61
9	C	9	C	9	C	62
10	G	10	G	10	G	63
11	A	11	A	11	A	64
12	G	12	G	12	G	65

Kolodner	Kolodner	Cell	Cell Erratum	Kolodner	Kolodner	Chapelle #1
fil. 11/17/93	fil. 12/7/93	pub. 12/9/93	pub. 4/8/1994	fil. 6/13/1994	fil. 6/5/95	fil. 12/2/1993
08/154,792	08/163,449			08/259,310	08/465,251	08/160,295
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15 C	15 C	15 C	3 C	15 C	68 C	C
16 A	16 A	16 A	4 A	16 A	69 A	A
17 T	17 T	17 T	5 T	17 T	70 T	T
18 C	18 G	18 C	6 G	18 G	71 G	G
19 G	19 G	19 G	7 G	19 G	72 G	G
20 C	20 C	20 C	8 C	20 C	73 C	C
21 C	21 G	21 C	9 G	21 G	74 G	G
22 G	22 G	22 G	10 G	22 G	75 G	G
23 T	23 T	23 T	11 T	23 T	76 T	T
24 G	24 G	24 G	12 G	24 G	77 G	G
25 C	25 C	25 C	13 C	25 C	78 C	C
26 A	26 A	26 A	14 A	26 A	79 A	A
27 G	27 G	27 G	15 G	27 G	80 G	G
28 C	28 C	28 C	16 C	28 C	81 C	C
29 C	29 C	29 C	17 C	29 C	82 C	C
30 G	30 G	30 G	18 G	30 G	83 G	G
31 A	31 A	31 A	19 A	31 A	84 A	A
32 A	32 A	32 A	20 A	32 A	85 A	A
33 G	33 G	33 G	21 G	33 G	86 G	G
34 G	34 G	34 G	22 G	34 G	87 G	G
35 A	35 A	35 A	23 A	35 A	88 A	A
36 G	36 G	36 G	24 G	36 G	89 G	G
37 A	37 A	37 A	25 A	37 A	90 A	A
38 C	38 C	38 C	26 C	38 C	91 C	C
39 G	39 G	39 G	27 G	39 G	92 G	G
40 C	40 C	40 C	28 C	40 C	93 C	C
41 T	41 T	41 T	29 T	41 T	94 T	T
42 G	42 G	42 G	30 G	42 G	95 G	G
43 C	43 C	43 C	31 C	43 C	96 C	C
44 A	44 A	44 A	32 A	44 A	97 A	A
45 G	45 G	45 G	33 G	45 G	98 G	G
46 T	46 T	46 T	34 T	46 T	99 T	T
47 T	47 T	47 T	35 T	47 T	100 T	T
48 G	48 G	48 G	36 G	48 G	101 G	G
49 G	49 G	49 G	37 G	49 G	102 G	G
50 A	50 A	50 A	38 A	50 A	103 A	A
51 G	51 G	51 G	39 G	51 G	104 G	G
52 A	52 A	52 A	40 A	52 A	105 A	A
53 G	53 G	53 G	41 G	53 G	106 G	G
54 C	54 C	54 C	42 C	54 C	107 C	C
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56 C	56 C	56 C	44 C	56 C	109 C	C
57 G	57 G	57 G	45 G	57 G	110 G	G
58 G	58 G	58 G	46 G	58 G	111 G	G
59 C	59 C	59 C	47 C	59 C	112 C	C
60 C	60 C	60 C	48 C	60 C	113 C	C
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62 A	62 A	62 A	50 A	62 A	115 A	A
63 G	63 G	63 G	51 G	63 G	116 G	G
64 G	64 G	64 G	52 G	64 G	117 G	G
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67 G	67 G	67 G	55 G	67 G	120 G	G
68 G	68 G	68 G	56 G	68 G	121 G	G
69 C	69 C	69 C	57 C	69 C	122 C	C
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71 T	71 T	71 T	59 T	71 T	124 T	T
72 C	72 C	72 C	60 C	72 C	125 C	C
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74 T	74 T	74 T	62 T	74 T	127 T	T
75 G	75 G	75 G	63 G	75 G	128 G	G
76 C	76 C	76 C	64 C	76 C	129 C	C
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83 T	83 T	83 T	71 T	83 T	136 T	T
84 T	84 T	84 T	72 T	84 T	137 T	T
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89 G	89 G	89 G	77 G	89 G	142 G	G
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91 A	91 A	91 A	79 A	91 A	144 A	A
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93 G	93 G	93 G	81 G	93 G	146 G	G
94 C	94 C	94 C	82 C	94 C	147 C	C
95 C	95 C	95 C	83 C	95 C	148 C	C

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101	A	101	A	89	A	86	A	154
102	G	102	G	90	G	87	G	155
103	C	103	C	91	C	88	C	156
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105	G	105	G	93	G	90	G	158
106	A	106	A	94	A	91	A	159
107	C	107	C	95	C	92	C	160
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109	A	109	A	97	A	94	A	162
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111	C	111	C	99	C	96	C	164
112	A	112	A	100	A	97	A	165
113	C	113	C	101	C	98	C	166
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115	G	115	G	103	G	100	G	168
116	T	116	T	104	T	101	T	169
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122	T	122	T	110	T	107	T	175
123	T	123	T	111	T	108	T	176
124	T	124	T	112	T	109	T	177
125	T	125	T	113	T	110	T	178
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144	T	144	T	132	T	129	T	197
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146	C	146	C	134	C	131	C	199
147	G	147	G	135	G	132	G	200
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159	G	159	G	147	G	144	G	212
160	G	160	G	148	G	145	G	213
161	A	161	A	149	A	146	A	214
162	C	162	C	150	C	147	C	215
163	G	163	G	151	G	148	G	216
164	C	164	C	152	C	149	C	217
165	G	165	G	153	G	150	G	218
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173	C	173	C	161	C	158	C	226
174	C	174	C	162	C	159	C	227
175	G	175	G	163	G	160	G	228
176	C	176	C	164	C	161	C	229
177	C	177	C	165	C	162	C	230
178	C	178	C	166	C	163	C	231

	Kolodner fil. 11/17/93	Kolodner fil. 12/7/1993	Cell pub. 12/9/93	Cell Erratum pub. 4/8/1994	Kolodner fil. 6/13/1994		Kolodner fil. 6/5/95	Chapelle #1 fil. 12/2/1993
	08/154,792	08/163,449			08/259,310	SEQ ID NO:8	08/465,251	08/160295
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180	G	180	G	168	G	165	G	233
181	G	181	G	169	G	166	G	234
182	A	182	A	170	A	167	A	235
183	G	183	G	171	G	168	G	236
184	G	184	G	172	G	169	G	237
185	T	185	T	173	T	170	T	238
186	G	186	G	174	G	171	G	239
187	T	187	T	175	T	172	T	240
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190	A	190	A	178	A	175	A	243
191	A	191	A	179	A	176	A	244
192	G	192	G	180	G	177	G	245
193	A	193	A	181	A	178	A	246
194	C	194	C	182	C	179	C	247
195	C	195	C	183	C	180	C	248
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204	G	204	G	192	G	189	G	257
205	A	205	A	193	A	190	A	258
206	T	206	T	194	T	191	T	259
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210	G	210	G	198	G	195	G	263
211	T	211	T	199	T	196	T	264
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213	C	213	C	201	C	198	C	266
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223	G	223	G	211	G	208	G	276
224	C	224	C	212	C	209	C	277
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226	G	226	G	214	G	211	G	279
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231	A	231	A	219	A	216	A	284
232	A	232	A	220	A	217	A	285
233	A	233	A	221	A	218	A	286
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236	A	236	A	224	A	221	A	289
237	T	237	T	225	T	222	T	290
238	C	238	C	226	C	223	C	291
239	T	239	T	227	T	224	T	292
240	G	240	G	228	G	225	G	293
241	C	241	C	229	C	226	C	294
242	A	242	A	230	A	227	A	295
243	G	243	G	231	G	228	G	296
244	A	244	A	232	A	229	A	297
245	G	245	G	233	G	230	G	298
246	T	246	T	234	T	231	T	299
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248	T	248	T	236	T	233	T	301
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251	T	251	T	239	T	236	T	304
252	G	252	G	240	G	237	G	305
253	C	253	C	241	C	238	C	306
254	T	254	T	242	T	239	T	307
255	T	255	T	243	T	240	T	308
256	A	256	A	244	A	241	A	309
257	G	257	G	245	G	242	G	310
258	T	258	T	246	T	243	T	311
259	A	259	A	247	A	244	A	312
260	A	260	A	248	A	245	A	313
261	A	261	A	249	A	246	A	314

Kolodner	Kolodner	Ceff	Cell Erratum	Kolodner	Kolodner	Chapelle #1
fil. 11/17/93	fil. 12/7/1993	pub. 12/9/93	pub. 4/8/1994	fil. 6/13/1994	fil. 6/5/95	fil. 12/2/1993
08/154,792	08/163,449			08/259,310	08/465,251	08/160,295
SEQ ID NO:8	SEQ ID NO:8			SEQ ID NO:1	SEQ ID NO:8	SEQ ID NO:1
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263 T	263 T	263 T	251 T	248 T	263 T	316 T
264 G	264 G	264 G	252 G	249 G	264 G	317 G
265 A	265 A	265 A	253 A	250 A	265 A	318 A
266 A	266 A	266 A	254 A	251 A	266 A	319 A
267 T	267 T	267 T	255 T	252 T	267 T	320 T
268 T	268 T	268 T	256 T	253 T	268 T	321 T
269 T	269 T	269 T	257 T	254 T	269 T	322 T
270 T	270 T	270 T	258 T	255 T	270 T	323 T
271 G	271 G	271 G	259 G	256 G	271 G	324 G
272 A	272 A	272 A	260 A	257 A	272 A	325 A
273 A	273 A	273 A	261 A	258 A	273 A	326 A
274 T	274 T	274 T	262 T	259 T	274 T	327 T
275 C	275 C	275 C	263 C	260 C	275 C	328 C
276 T	276 T	276 T	264 T	261 T	276 T	329 T
277 T	277 T	277 T	265 T	262 T	277 T	330 T
278 T	278 T	278 T	266 T	263 T	278 T	331 T
279 T	279 T	279 T	267 T	264 T	279 T	332 T
280 G	280 G	280 G	268 G	265 G	280 G	333 G
281 T	281 T	281 T	269 T	266 T	281 T	334 T
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283 A	283 A	283 A	271 A	268 A	283 A	336 A
284 A	284 A	284 A	272 A	269 A	284 A	337 A
285 A	285 A	285 A	273 A	270 A	285 A	338 A
286 G	286 G	286 G	274 G	271 G	286 G	339 G
287 A	287 A	287 A	275 A	272 A	287 A	340 A
288 T	288 T	288 T	276 T	273 T	288 T	341 T
289 C	289 C	289 C	277 C	274 C	289 C	342 C
290 T	290 T	290 T	278 T	275 T	290 T	343 T
291 T	291 T	291 T	279 T	276 T	291 T	344 T
292 C	292 C	292 C	280 C	277 C	292 C	345 C
293 T	293 T	293 T	281 T	278 T	293 T	346 T
294 T	294 T	294 T	282 T	279 T	294 T	347 T
295 C	295 C	295 C	283 C	280 C	295 C	348 C
296 T	296 T	296 T	284 T	281 T	296 T	349 T
297 G	297 G	297 G	285 G	282 G	297 G	350 G
298 G	298 G	298 G	286 G	283 G	298 G	351 G
299 T	299 T	299 T	287 T	284 T	299 T	352 T
300 T	300 T	300 T	288 T	285 T	300 T	353 T
301 C	301 C	301 C	289 C	286 C	301 C	354 C
302 G	302 G	302 G	290 G	287 G	302 G	355 G
303 T	303 T	303 T	291 T	288 T	303 T	356 T
304 C	304 C	304 C	292 C	289 C	304 C	357 C
305 A	305 A	305 A	293 A	290 A	305 A	358 A
306 G	306 G	306 G	294 G	291 G	306 G	359 G
307 T	307 T	307 T	295 T	292 T	307 T	360 T
308 A	308 A	308 A	296 A	293 A	308 A	361 A
309 T	309 T	309 T	297 T	294 T	309 T	362 T
310 A	310 A	310 A	298 A	295 A	310 A	363 A
311 G	311 G	311 G	299 G	296 G	311 G	364 G
312 A	312 A	312 A	300 A	297 A	312 A	365 A
313 G	313 G	313 G	301 G	298 G	313 G	366 G
314 T	314 T	314 T	302 T	299 T	314 T	367 T
315 T	315 T	315 T	303 T	300 T	315 T	368 T
316 G	316 G	316 G	304 G	301 G	316 G	369 G
317 A	317 A	317 A	305 A	302 A	317 A	370 A
318 A	318 A	318 A	306 A	303 A	318 A	371 A
319 G	319 G	319 G	307 G	304 G	319 G	372 G
320 T	320 T	320 T	308 T	305 T	320 T	373 T
321 T	321 T	321 T	309 T	306 T	321 T	374 T
322 T	322 T	322 T	310 T	307 T	322 T	375 T
323 A	323 A	323 A	311 A	308 A	323 A	376 A
324 T	324 T	324 T	312 T	309 T	324 T	377 T
325 A	325 A	325 A	313 A	310 A	325 A	378 A
326 A	326 A	326 A	314 A	311 A	326 A	379 A
327 G	327 G	327 G	315 G	312 G	327 G	380 G
328 A	328 A	328 A	316 A	313 A	328 A	381 A
329 A	329 A	329 A	317 A	314 A	329 A	382 A
330 T	330 T	330 T	318 T	315 T	330 T	383 T
331 A	331 A	331 A	319 A	316 A	331 A	384 A
332 G	332 G	332 G	320 G	317 G	332 G	385 G
333 A	333 A	333 A	321 A	318 A	333 A	386 G
334 G	334 G	334 G	322 G	319 G	334 G	387 G
335 C	335 C	335 C	323 C	320 C	335 C	388 C
336 T	336 T	336 T	324 T	321 T	336 T	389 T
337 G	337 G	337 G	325 G	322 G	337 G	390 G
338 G	338 G	338 G	326 G	323 G	338 G	391 G
339 A	339 A	339 A	327 A	324 A	339 A	392 A
340 A	340 A	340 A	328 A	325 A	340 A	393 A
341 A	341 A	341 A	329 A	326 A	341 A	394 A
342 T	342 T	342 T	330 T	327 T	342 T	395 T
343 A	343 A	343 A	331 A	328 A	343 A	396 A
344 A	344 A	344 A	332 A	329 A	344 A	397 A

Kolodner	Kolodner	Cell	Cell Erratum	Kolodner	Kolodner	Chapelle #1
fil. 11/17/93	fil. 12/7/1993	pub. 12/9/93	pub. 4/8/1994	fil. 6/13/1994	fil. 6/5/95	fil. 12/2/1993
06/154,792	08/163,449			08/259,310	08/465,251	08/160295
SEQ ID NO:8	SEQ ID NO:8			SEQ ID NO:1	SEQ ID NO:8	SEQ ID NO:1
345 G	345 G	345 G	333 G	330 G	345 G	398 G
346 G	346 G	346 G	334 G	331 G	346 G	399 G
347 C	347 C	347 C	335 C	332 C	347 C	400 C
348 A	348 A	348 A	336 A	333 A	348 A	401 A
349 T	349 T	349 T	337 T	334 T	349 T	402 T
350 C	350 C	350 C	338 C	335 C	350 C	403 C
351 C	351 C	351 C	339 C	336 C	351 C	404 C
352 A	352 A	352 A	340 A	337 A	352 A	405 A
353 A	353 A	353 A	341 A	338 A	353 A	406 A
354 G	354 G	354 G	342 G	339 G	354 G	407 G
355 G	355 G	355 G	343 G	340 G	355 G	408 G
356 A	356 A	356 A	344 A	341 A	356 A	409 A
357 G	357 G	357 G	345 G	342 G	357 G	410 G
358 A	358 A	358 A	346 A	343 A	358 A	411 A
359 A	359 A	359 A	347 A	344 A	359 A	412 A
360 T	360 T	360 T	348 T	345 T	360 T	413 T
361 G	361 G	361 G	349 G	346 G	361 G	414 G
362 A	362 A	362 A	350 A	347 A	362 A	415 A
363 T	363 T	363 T	351 T	348 T	363 T	416 T
364 T	364 T	364 T	352 T	349 T	364 T	417 T
365 G	365 G	365 G	353 G	350 G	365 G	418 G
366 G	366 G	366 G	354 G	351 G	366 G	419 G
367 T	367 T	367 T	355 T	352 T	367 T	420 T
368 A	368 A	368 A	356 A	353 A	368 A	421 A
369 T	369 T	369 T	357 T	354 T	369 T	422 T
370 T	370 T	370 T	358 T	355 T	370 T	423 T
371 T	371 T	371 T	359 T	356 T	371 T	424 T
372 G	372 G	372 G	360 G	357 G	372 G	425 G
373 G	373 G	373 G	361 G	358 G	373 G	426 G
374 C	374 C	374 C	362 C	359 C	374 C	427 C
375 A	375 A	375 A	363 A	360 A	375 A	428 A
376 T	376 T	376 T	364 T	361 T	376 T	429 T
377 A	377 A	377 A	365 A	362 A	377 A	430 A
378 T	378 T	378 T	366 T	363 T	378 T	431 T
379 A	379 A	379 A	367 A	364 A	379 A	432 A
380 A	380 A	380 A	368 A	365 A	380 A	433 A
381 G	381 G	381 G	369 G	366 G	381 G	434 G
382 G	382 G	382 G	370 G	367 G	382 G	435 G
383 C	383 C	383 C	371 C	368 C	383 C	436 GCT
384 T	384 T	384 T	372 T	369 T	384 T	437 T
385 T	385 T	385 T	373 T	370 T	385 T	438 T
386 C	386 C	386 C	374 C	371 C	386 C	439 TCT
387 T	387 T	387 T	375 T	372 T	387 T	440 T
388 C	388 C	388 C	376 C	373 C	388 C	441 C
389 C	389 C	389 C	377 C	374 C	389 C	442 C
390 T	390 T	390 T	378 T	375 T	390 T	443 T
391 G	391 G	391 G	379 G	376 G	391 G	444 G
392 G	392 G	392 G	380 G	377 G	392 G	445 G
393 C	393 C	393 C	381 C	378 C	393 C	446 C
394 A	394 A	394 A	382 A	379 A	394 A	447 A
395 A	395 A	395 A	383 A	380 A	395 A	448 A
396 T	396 T	396 T	384 T	381 T	396 T	449 T
397 C	397 C	397 C	385 C	382 C	397 C	450 C
398 T	398 T	398 T	386 T	383 T	398 T	451 T
399 C	399 C	399 C	387 C	384 C	399 C	452 C
400 T	400 T	400 T	388 T	385 T	400 T	453 T
401 C	401 C	401 C	389 C	386 C	401 C	454 TGT
402 T	402 T	402 T	390 T	387 T	402 T	455 T
403 C	403 C	403 C	391 C	388 C	403 C	456 C
404 A	404 A	404 A	392 A	389 A	404 A	457 AGT
405 G	405 G	405 G	393 G	390 G	405 G	458 G
406 T	406 T	406 T	394 T	391 T	406 T	459 T
407 T	407 T	407 T	395 T	392 T	407 T	460 T
408 T	408 T	408 T	396 T	393 T	408 T	461 T
409 G	409 G	409 G	397 G	394 G	409 G	462 G
410 A	410 A	410 A	398 A	395 A	410 A	463 A
411 A	411 A	411 A	399 A	396 A	411 A	464 A
412 G	412 G	412 G	400 G	397 G	412 G	465 G
413 A	413 A	413 A	401 A	398 A	413 A	466 A
414 T	414 T	414 T	402 T	399 T	414 T	467 C
415 A	415 A	415 A	403 A	400 A	415 A	468 AT
416 T	416 T	416 T	404 T	401 T	416 T	469 T
417 T	417 T	417 T	405 T	402 T	417 T	470 T
418 C	418 C	418 C	406 C	403 C	418 C	471 C
419 T	419 T	419 T	407 T	404 T	419 T	472 T
420 C	420 C	420 C	408 C	405 C	420 C	473 C
421 T	421 T	421 T	409 T	406 T	421 T	474 T
422 T	422 T	422 T	410 T	407 T	422 T	475 T
423 T	423 T	423 T	411 T	408 T	423 T	476 T
424 G	424 G	424 G	412 G	409 G	424 G	477 G
425 G	425 G	425 G	413 G	410 G	425 G	478 G
426 T	426 T	426 T	414 T	411 T	426 T	479 T
427 A	427 A	427 A	415 A	412 A	427 A	480 A

	Kolodner	Kolodner	Cell	Cell Erratum	Kolodner		Kolodner	Chapelle #1
	fil. 11/17/93	fil. 12/7/1993	pub. 12/9/93	pub. 4/8/1994	fil. 6/13/1994		fil. 6/5/95	fil. 12/2/1993
	08/154,792	08/163,449			08/259,310		08/465,251	08/160295
	SEQ ID NO:8	SEQ ID NO:8			SEQ ID NO:1		SEQ ID NO:8	SEQ ID NO:1
428	A	428	A	416	A	413	A	481
429	C	429	C	417	C	414	C	482
430	A	430	A	418	A	415	A	483
431	A	431	A	419	A	416	A	484
432	T	432	T	420	T	417	T	485
433	G	433	G	421	G	418	G	486
434	A	434	A	422	A	419	A	487
435	T	435	T	423	T	420	T	488
436	A	436	A	424	A	421	A	489
437	T	437	T	425	T	422	T	490
438	G	438	G	426	G	423	G	491
439	T	439	T	427	T	424	T	492
440	C	440	C	428	C	425	C	493
441	A	441	A	429	A	426	A	494
442	G	442	G	430	G	427	G	495
443	C	443	C	431	C	428	C	496
444	T	444	T	432	T	429	T	497
445	T	445	T	433	T	430	T	498
446	C	446	C	434	C	431	C	499
447	C	447	C	435	C	432	C	500
448	A	448	A	436	A	433	A	501
449	T	449	T	437	T	434	T	502
450	T	450	T	438	T	435	T	503
451	G	451	G	439	G	436	G	504
452	G	452	G	440	G	437	G	505
453	T	453	T	441	T	438	T	506
454	G	454	G	442	G	439	G	507
455	T	455	T	443	T	440	T	508
456	T	456	T	444	T	441	T	509
457	G	457	G	445	G	442	G	510
458	T	458	T	446	T	443	T	511
459	G	459	G	447	G	444	G	512
460	G	460	G	448	G	445	G	513
461	G	461	G	449	G	446	G	514
462	T	462	T	450	T	447	T	515
463	G	463	G	451	G	448	G	516
464	T	464	T	452	T	449	T	517
465	T	465	T	453	T	450	T	518
466	A	466	A	454	A	451	A	519
467	A	467	A	455	A	452	A	520
468	A	468	A	456	A	453	A	521
469	A	469	A	457	A	454	A	522
470	T	470	T	458	T	455	T	523
471	G	471	G	459	G	456	G	524
472	T	472	T	460	T	457	T	525
473	C	473	C	461	C	458	C	526
474	C	474	C	462	C	459	C	527
475	G	475	G	463	G	460	G	528
476	C	476	C	464	C	461	C	529
477	A	477	A	465	A	462	A	530
478	G	478	G	466	G	463	G	531
479	T	479	T	467	T	464	T	532
480	T	480	T	468	T	465	T	533
481	G	481	G	469	G	466	G	534
482	A	482	A	470	A	467	A	535
483	T	483	T	471	T	468	T	536
484	G	484	G	472	G	469	G	537
485	G	485	G	473	G	470	G	538
486	C	486	C	474	C	471	C	539
487	C	487	C	475	C	472	C	540
488	A	488	A	476	A	473	A	541
489	G	489	G	477	G	474	G	542
490	A	490	A	478	A	475	A	543
491	G	491	G	479	G	476	G	544
492	A	492	A	480	A	477	A	545
493	C	493	C	481	C	478	C	546
494	A	494	A	482	A	479	A	547
495	G	495	G	483	G	480	G	548
496	G	496	G	484	G	481	G	549
497	T	497	T	485	T	482	T	550
498	T	498	T	486	T	483	T	551
499	G	499	G	487	G	484	G	552
500	G	500	G	488	G	485	G	553
501	A	501	A	489	A	486	A	554
502	G	502	G	490	G	487	G	555
503	T	503	T	491	T	488	T	556
504	T	504	T	492	T	489	T	557
505	G	505	G	493	G	490	G	558
506	G	506	G	494	G	491	G	559
507	G	507	G	495	G	492	G	560
508	T	508	T	496	T	493	T	561
509	A	509	A	497	A	494	A	562
510	T	510	T	498	T	495	T	563

Kolodner	Kolodner	Cell	Cell Erratum	Kolodner	Kolodner	Chapelle #1
fil. 11/17/93	fil. 12/7/1993	pub. 12/9/93	pub. 4/8/1994	fil. 6/13/1994	fil. 6/5/95	fil. 12/2/1993
08/154,792	08/163,449			08/259,310	08/465,251	08/160295
SEQ ID NO:8	SEQ ID NO:8			SEQ ID NO:1	SEQ ID NO:8	SEQ ID NO:1
511 G	511 G	511 G	499 G	496 G	511 G	564 G
512 T	512 T	512 T	500 T	497 T	512 T	565 T
513 G	513 G	513 G	501 G	498 G	513 G	566 G
514 G	514 G	514 G	502 G	499 G	514 G	567 G
515 A	515 A	515 A	503 A	500 A	515 A	568 A
516 T	516 T	516 T	504 T	501 T	516 T	569 T
517 T	517 T	517 T	505 T	502 T	517 T	570 T
518 C	518 C	518 C	506 C	503 C	518 C	571 C
519 C	519 C	519 C	507 C	504 C	519 C	572 C
520 A	520 A	520 A	508 A	505 A	520 A	573 A
521 T	521 T	521 T	509 T	506 T	521 T	574 T
522 A	522 A	522 A	510 A	507 A	522 A	575 A
523 C	523 C	523 C	511 C	508 C	523 C	576 C
524 A	524 A	524 A	512 A	509 A	524 A	577 A
525 G	525 G	525 G	513 G	510 G	525 G	578 G
526 A	526 A	526 A	514 A	511 A	526 A	579 A
527 G	527 G	527 G	515 G	512 G	527 G	580 G
528 G	528 G	528 G	516 G	513 G	528 G	581 G
529 A	529 A	529 A	517 A	514 A	529 A	582 A
530 A	530 A	530 A	518 A	515 A	530 A	583 A
531 A	531 A	531 A	519 A	516 A	531 A	584 A
532 C	532 C	532 C	520 C	517 C	532 C	585 C
533 T	533 T	533 T	521 T	518 T	533 T	586 T
534 A	534 A	534 A	522 A	519 A	534 A	587 A
535 G	535 G	535 G	523 G	520 G	535 G	588 G
536 G	536 G	536 G	524 G	521 G	536 G	589 G
537 A	537 A	537 A	525 A	522 A	537 A	590 A
538 C	538 C	538 C	526 C	523 C	538 C	591 C
539 T	539 T	539 T	527 T	524 T	539 T	592 T
540 G	540 G	540 G	528 G	525 G	540 G	593 G
541 T	541 T	541 T	529 T	526 T	541 T	594 T
542 G	542 G	542 G	530 G	527 G	542 G	595 G
543 T	543 T	543 T	531 T	528 T	543 T	596 T
544 G	544 G	544 G	532 G	529 G	544 G	597 G
545 A	545 A	545 A	533 A	530 A	545 A	598 A
546 A	546 A	546 A	534 A	531 A	546 A	599 A
547 T	547 T	547 T	535 T	532 T	547 T	600 T
548 T	548 T	548 T	536 T	533 T	548 T	601 T
549 C	549 C	549 C	537 C	534 C	549 C	602 C
550 C	550 C	550 C	538 C	535 C	550 C	603 C
551 C	551 C	551 C	539 C	536 C	551 C	604 C
552 T	552 T	552 T	540 T	537 T	552 T	605 T
553 G	553 G	553 G	541 G	538 G	553 G	606 G
554 A	554 A	554 A	542 A	539 A	554 A	607 A
555 T	555 T	555 T	543 T	540 T	555 T	608 T
556 A	556 A	556 A	544 A	541 A	556 A	609 A
557 A	557 A	557 A	545 A	542 A	557 A	610 A
558 T	558 T	558 T	546 T	543 T	558 T	611 T
559 G	559 G	559 G	547 G	544 G	559 G	612 G
560 A	560 A	560 A	548 A	545 A	560 A	613 A
561 T	561 T	561 T	549 T	546 T	561 T	614 T
562 C	562 C	562 C	550 C	547 C	562 C	615 C
563 A	563 A	563 A	551 A	548 A	563 A	616 A
564 G	564 G	564 G	552 G	549 G	564 G	617 G
565 T	565 T	565 T	553 T	550 T	565 T	618 T
566 T	566 T	566 T	554 T	551 T	566 T	619 T
567 C	567 C	567 C	555 C	552 C	567 C	620 C
568 T	568 T	568 T	556 T	553 T	568 T	621 T
569 C	569 C	569 C	557 C	554 C	569 C	622 C
570 C	570 C	570 C	558 C	555 C	570 C	623 C
571 A	571 A	571 A	559 A	556 A	571 A	624 A
572 A	572 A	572 A	560 A	557 A	572 A	625 A
573 T	573 T	573 T	561 T	558 T	573 T	626 T
574 C	574 C	574 C	562 C	559 C	574 C	627 C
575 T	575 T	575 T	563 T	560 T	575 T	628 T
576 T	576 T	576 T	564 T	561 T	576 T	629 T
577 G	577 G	577 G	565 G	562 G	577 G	630 G
578 A	578 A	578 A	566 A	563 A	578 A	631 A
579 G	579 G	579 G	567 G	564 G	579 G	632 G
580 G	580 G	580 G	568 G	565 G	580 G	633 G
581 C	581 C	581 C	569 C	566 C	581 C	634 C
582 T	582 T	582 T	570 T	567 T	582 T	635 T
583 C	583 C	583 C	571 C	568 C	583 C	636 C
584 T	584 T	584 T	572 T	569 T	584 T	637 T
585 C	585 C	585 C	573 C	570 C	585 C	638 C
586 C	586 C	586 C	574 C	571 C	586 C	639 C
587 T	587 T	587 T	575 T	572 T	587 T	640 T
588 C	588 C	588 C	576 C	573 C	588 C	641 C
589 A	589 A	589 A	577 A	574 A	589 A	642 A
590 T	590 T	590 T	578 T	575 T	590 T	643 T
591 C	591 C	591 C	579 C	576 C	591 C	644 C
592 C	592 C	592 C	580 C	577 C	592 C	645 C
593 A	593 A	593 A	581 A	578 A	593 A	646 A

Kolodner		Kolodner	Cell		Cell Erratum		Kolodner		Kolodner		Chapelle #1
fil. 11/17/93		fil. 12/7/1993	pub. 12/9/93		pub. 4/8/1994		fil. 6/13/1994		fil. 8/5/95		fil. 12/2/1993
08/154,792		08/183,449					08/259,310		08/465,251		08/160295
SEQ ID NO:8		SEQ ID NO:8					SEQ ID NO:1		SEQ ID NO:8		SEQ ID NO:1
594 G	594 G	594 G	594 G	582 G	582 G	576 G	594 G	647 G	647 G	647 G	647 G
595 A	595 A	595 A	595 A	583 A	583 A	580 A	595 A	648 A	648 A	648 A	648 A
596 T	596 T	596 T	596 T	584 T	584 T	581 T	596 T	649 T	649 T	649 T	649 T
597 T	597 T	597 T	597 T	585 T	585 T	582 T	597 T	650 T	650 T	650 T	650 T
598 G	598 G	598 G	598 G	586 G	586 G	583 G	598 G	651 G	651 G	651 G	651 G
599 G	599 G	599 G	599 G	587 G	587 G	584 G	599 G	652 G	652 G	652 G	652 G
600 A	600 A	600 A	600 A	588 A	588 A	585 A	600 A	653 G	653 G	653 G	653 G
601 C	601 C	601 C	601 C	589 C	589 C	586 C	601 C	654 C	654 C	654 C	654 C
602 C	602 C	602 C	602 C	590 C	590 C	587 C	602 C	655 C	655 C	655 C	655 C
603 A	603 A	603 A	603 A	591 A	591 A	588 A	603 A	656 C	656 C	656 C	656 C
604 A	604 A	604 A	604 A	592 A	592 A	589 A	604 A	657 A	657 A	657 A	657 A
605 A	605 A	605 A	605 A	593 A	593 A	590 A	605 A	658 A	658 A	658 A	658 A
606 G	606 G	606 G	606 G	594 G	594 G	591 G	606 G	659 G	659 G	659 G	659 G
607 G	607 G	607 G	607 G	595 G	595 G	592 G	607 G	660 G	660 G	660 G	660 G
608 A	608 A	608 A	608 A	596 A	596 A	593 A	608 A	661 A	661 A	661 A	661 A
609 A	609 A	609 A	609 A	597 A	597 A	594 A	609 A	662 A	662 A	662 A	662 A
610 T	610 T	610 T	610 T	598 T	598 T	595 T	610 T	663 T	663 T	663 T	663 T
611 G	611 G	611 G	611 G	599 G	599 G	596 G	611 G	664 G	664 G	664 G	664 G
612 T	612 T	612 T	612 T	600 T	600 T	597 T	612 T	665 T	665 T	665 T	665 T
613 G	613 G	613 G	613 G	601 G	601 G	598 G	613 G	666 G	666 G	666 G	666 G
614 T	614 T	614 T	614 T	602 T	602 T	599 T	614 T	667 T	667 T	667 T	667 T
615 T	615 T	615 T	615 T	603 T	603 T	600 T	615 T	668 T	668 T	668 T	668 T
616 T	616 T	616 T	616 T	604 T	604 T	601 T	616 T	669 T	669 T	669 T	669 T
617 T	617 T	617 T	617 T	605 T	605 T	602 T	617 T	670 T	670 T	670 T	670 T
618 A	618 A	618 A	618 A	606 A	606 A	603 A	618 A	671 A	671 A	671 A	671 A
619 C	619 C	619 C	619 C	607 C	607 C	604 C	619 C	672 C	672 C	672 C	672 C
620 C	620 C	620 C	620 C	608 C	608 C	605 C	620 C	673 C	673 C	673 C	673 C
621 C	621 C	621 C	621 C	609 C	609 C	606 C	621 C	674 C	674 C	674 C	674 C
622 G	622 G	622 G	622 G	610 G	610 G	607 G	622 G	675 G	675 G	675 G	675 G
623 G	623 G	623 G	623 G	611 G	611 G	608 G	623 G	676 G	676 G	676 G	676 G
624 A	624 A	624 A	624 A	612 A	612 A	609 A	624 A	677 A	677 A	677 A	677 A
625 G	625 G	625 G	625 G	613 G	613 G	610 G	625 G	678 G	678 G	678 G	678 G
626 G	626 G	626 G	626 G	614 G	614 G	611 G	626 G	679 G	679 G	679 G	679 G
627 A	627 A	627 A	627 A	615 A	615 A	612 A	627 A	680 A	680 A	680 A	680 A
628 G	628 G	628 G	628 G	616 G	616 G	613 G	628 G	681 G	681 G	681 G	681 G
629 A	629 A	629 A	629 A	617 A	617 A	614 A	629 A	682 A	682 A	682 A	682 A
630 G	630 G	630 G	630 G	618 G	618 G	615 G	630 G	683 G	683 G	683 G	683 G
631 A	631 A	631 A	631 A	619 A	619 A	616 A	631 A	684 A	684 A	684 A	684 A
632 C	632 C	632 C	632 C	620 C	620 C	617 C	632 C	685 C	685 C	685 C	685 C
633 T	633 T	633 T	633 T	621 T	621 T	618 T	633 T	686 T	686 T	686 T	686 T
634 G	634 G	634 G	634 G	622 G	622 G	619 G	634 G	687 G	687 G	687 G	687 G
635 C	635 C	635 C	635 C	623 C	623 C	620 C	635 C	688 G	688 G	688 G	688 G
636 T	636 T	636 T	636 T	624 T	624 T	621 T	636 T	689 T	689 T	689 T	689 T
637 G	637 G	637 G	637 G	625 G	625 G	622 G	637 G	690 G	690 G	690 G	690 G
638 G	638 G	638 G	638 G	626 G	626 G	623 G	638 G	691 G	691 G	691 G	691 G
639 A	639 A	639 A	639 A	627 A	627 A	624 A	639 A	692 A	692 A	692 A	692 A
640 G	640 G	640 G	640 G	628 G	628 G	625 G	640 G	693 G	693 G	693 G	693 G
641 A	641 A	641 A	641 A	629 A	629 A	626 A	641 A	694 A	694 A	694 A	694 A
642 C	642 C	642 C	642 C	630 C	630 C	627 C	642 C	695 C	695 C	695 C	695 C
643 A	643 A	643 A	643 A	631 A	631 A	628 A	643 A	696 A	696 A	696 A	696 A
644 T	644 T	644 T	644 T	632 T	632 T	629 T	644 T	697 T	697 T	697 T	697 T
645 G	645 G	645 G	645 G	633 G	633 G	630 G	645 G	698 G	698 G	698 G	698 G
646 G	646 G	646 G	646 G	634 G	634 G	631 G	646 G	699 G	699 G	699 G	699 G
647 G	647 G	647 G	647 G	635 G	635 G	632 G	647 G	700 G	700 G	700 G	700 G
648 G	648 G	648 G	648 G	636 G	636 G	633 G	648 G	701 G	701 G	701 G	701 G
649 A	649 A	649 A	649 A	637 A	637 A	634 A	649 A	702 A	702 A	702 A	702 A
650 A	650 A	650 A	650 A	638 A	638 A	635 A	650 A	703 A	703 A	703 A	703 A
651 A	651 A	651 A	651 A	639 A	639 A	636 A	651 A	704 A	704 A	704 A	704 A
652 C	652 C	652 C	652 C	640 C	640 C	637 C	652 C	705 C	705 C	705 C	705 C
653 T	653 T	653 T	653 T	641 T	641 T	638 T	653 T	706 T	706 T	706 T	706 T
654 G	654 G	654 G	654 G	642 G	642 G	639 G	654 G	707 G	707 G	707 G	707 G
655 A	655 A	655 A	655 A	643 A	643 A	640 A	655 A	708 A	708 A	708 A	708 A
656 G	656 G	656 G	656 G	644 G	644 G	641 G	656 G	709 G	709 G	709 G	709 G
657 A	657 A	657 A	657 A	645 A	645 A	642 A	657 A	710 A	710 A	710 A	710 A
658 C	658 C	658 C	658 C	646 C	646 C	643 C	658 C	711 C	711 C	711 C	711 C
659 A	659 A	659 A	659 A	647 A	647 A	644 A	659 A	712 A	712 A	712 A	712 A
660 G	660 G	660 G	660 G	648 G	648 G	645 G	660 G	713 G	713 G	713 G	713 G
661 A	661 A	661 A	661 A	649 A	649 A	646 A	661 A	714 A	714 A	714 A	714 A
662 T	662 T	662 T	662 T	650 T	650 T	647 T	662 T	715 T	715 T	715 T	715 T
663 A	663 A	663 A	663 A	651 A	651 A	648 A	663 A	716 A	716 A	716 A	716 A
664 A	664 A	664 A	664 A	652 A	652 A	649 A	664 A	717 A	717 A	717 A	717 A
665 T	665 T	665 T	665 T	653 T	653 T	650 T	665 T	718 T	718 T	718 T	718 T
666 T	666 T	666 T	666 T	654 T	654 T	651 T	666 T	719 T	719 T	719 T	719 T
667 C	667 C	667 C	667 C	655 C	655 C	652 C	667 C	720 C	720 C	720 C	720 C
668 A	668 A	668 A	668 A	656 A	656 A	653 A	668 A	721 A	721 A	721 A	721 A
669 A	669 A	669 A	669 A	657 A	657 A	654 A	669 A	722 A	722 A	722 A	722 A
670 A	670 A	670 A	670 A	658 A	658 A	655 A	670 A	723 A	723 A	723 A	723 A
671 G	671 G	671 G	671 G	659 G	659 G	656 G	671 G	724 G	724 G	724 G	724 G
672 A	672 A	672 A	672 A	660 A	660 A	657 A	672 A	725 A	725 A	725 A	725 A
673 G	673 G	673 G	673 G	661 G	661 G	658 G	673 G	726 G	726 G	726 G	726 G
674 G	674 G	674 G	674 G	662 G	662 G	659 G	674 G	727 G	727 G	727 G	727 G
675 A	675 A	675 A	675 A	663 A	663 A	660 A	675 A	728 A	728 A	728 A	728 A
676 G	676 G	676 G	676 G	664 G	664 G	661 G	676 G	729 G	729 G	729 G	729 G

Kolodner	Kolodner	Cell	Cell Erratum	Kolodner	Kolodner	Chapelle #1
fil. 11/17/93	fil. 12/7/1993	pub. 12/9/93	pub. 4/8/1994	fil. 6/13/1994	fil. 6/5/95	fil. 12/2/1993
08/154,792	08/163,449			08/259,310	08/465,251	08/160295
SEQ ID NO:8	SEQ ID NO:8			SEQ ID NO:1	SEQ ID NO:8	SEQ ID NO:1
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678 A	678 A	678 A	666 A	663 A	678 A	731 A
679 A	679 A	679 A	667 A	664 A	679 A	732 A
680 T	680 T	680 T	668 T	665 T	680 T	733 T
681 T	681 T	681 T	669 T	666 T	681 T	734 T
682 C	682 C	682 C	670 C	667 C	682 C	735 C
683 T	683 T	683 T	671 T	668 T	683 T	736 T
684 G	684 G	684 G	672 G	669 G	684 G	737 G
685 A	685 A	685 A	673 A	670 A	685 A	738 A
686 T	686 T	686 T	674 T	671 T	686 T	739 T
687 C	687 C	687 C	675 C	672 C	687 C	740 C
688 A	688 A	688 A	676 A	673 A	688 A	741 A
689 C	689 C	689 C	677 C	674 C	689 C	742 C
690 A	690 A	690 A	678 A	675 A	690 A	743 A
691 G	691 G	691 G	679 G	676 G	691 G	744 G
692 A	692 A	692 A	680 A	677 A	692 A	745 A
693 A	693 A	693 A	681 A	678 A	693 A	746 A
694 A	694 A	694 A	682 A	679 A	694 A	747 A
695 G	695 G	695 G	683 G	680 G	695 G	748 G
696 A	696 A	696 A	684 A	681 A	696 A	749 A
697 A	697 A	697 A	685 A	682 A	697 A	750 A
698 A	698 A	698 A	686 A	683 A	698 A	751 A
699 A	699 A	699 A	687 A	684 A	699 A	752 A
700 A	700 A	700 A	688 A	685 A	700 A	753 A
701 A	701 A	701 A	689 A	686 A	701 A	754 A
702 A	702 A	702 A	690 A	687 A	702 A	755 A
703 G	703 G	703 G	691 G	688 G	703 G	756 G
704 C	704 C	704 C	692 C	689 C	704 C	757 C
705 T	705 T	705 T	693 T	690 T	705 T	758 T
706 G	706 G	706 G	694 G	691 G	706 G	759 G
707 A	707 A	707 A	695 A	692 A	707 A	760 A
708 C	708 C	708 C	696 C	693 C	708 C	761 C
709 T	709 T	709 T	697 T	694 T	709 T	762 T
710 T	710 T	710 T	698 T	695 T	710 T	763 T
711 T	711 T	711 T	699 T	696 T	711 T	764 T
712 T	712 T	712 T	700 T	697 T	712 T	765 T
713 C	713 C	713 C	701 C	698 C	713 C	766 C
714 C	714 C	714 C	702 C	699 C	714 C	767 C
715 A	715 A	715 A	703 A	700 A	715 A	768 A
716 C	716 C	716 C	704 C	701 C	716 C	769 C
717 A	717 A	717 A	705 A	702 A	717 A	770 A
718 A	718 A	718 A	706 A	703 A	718 A	771 A
719 A	719 A	719 A	707 A	704 A	719 A	772 A
720 A	720 A	720 A	708 A	705 A	720 A	773 A
721 G	721 G	721 G	709 G	706 G	721 G	774 G
722 A	722 A	722 A	710 A	707 A	722 A	775 A
723 C	723 C	723 C	711 C	708 C	723 C	776 C
724 A	724 A	724 A	712 A	709 A	724 A	777 A
725 T	725 T	725 T	713 T	710 T	725 T	778 T
726 T	726 T	726 T	714 T	711 T	726 T	779 T
727 T	727 T	727 T	715 T	712 T	727 T	780 T
728 A	728 A	728 A	716 A	713 A	728 A	781 A
729 T	729 T	729 T	717 T	714 T	729 T	782 T
730 C	730 C	730 C	718 C	715 C	730 C	783 C
731 A	731 A	731 A	719 A	716 A	731 A	784 A
732 G	732 G	732 G	720 G	717 G	732 G	785 G
733 G	733 G	733 G	721 G	718 G	733 G	786 G
734 A	734 A	734 A	722 A	719 A	734 A	787 A
735 C	735 C	735 C	723 C	720 C	735 C	788 C
736 C	736 C	736 C	724 C	721 C	736 C	789 C
737 T	737 T	737 T	725 T	722 T	737 T	790 T
738 C	738 C	738 C	726 C	723 C	738 C	791 C
739 A	739 A	739 A	727 A	724 A	739 A	792 A
740 A	740 A	740 A	728 A	725 A	740 A	793 A
741 C	741 C	741 C	729 C	726 C	741 C	794 C
742 C	742 C	742 C	730 C	727 C	742 C	795 C
743 G	743 G	743 G	731 G	728 G	743 G	796 G
744 G	744 G	744 G	732 G	729 G	744 G	797 G
745 T	745 T	745 T	733 T	730 T	745 T	798 T
746 T	746 T	746 T	734 T	731 T	746 T	799 T
747 G	747 G	747 G	735 G	732 G	747 G	800 G
748 T	748 T	748 T	736 T	733 T	748 T	801 T
749 T	749 T	749 T	737 T	734 T	749 T	802 T
750 G	750 G	750 G	738 G	735 G	750 G	803 G
751 A	751 A	751 A	739 A	736 A	751 A	804 A
752 A	752 A	752 A	740 A	737 A	752 A	805 A
753 A	753 A	753 A	741 A	738 A	753 A	806 A
754 G	754 G	754 G	742 G	739 G	754 G	807 G
755 G	755 G	755 G	743 G	740 G	755 G	808 G
756 C	756 C	756 C	744 C	741 C	756 C	809 C
757 A	757 A	757 A	745 A	742 A	757 A	810 A
758 A	758 A	758 A	746 A	743 A	758 A	811 A
759 A	759 A	759 A	747 A	744 A	759 A	812 A

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SEQ ID NO:8	SEQ ID NO:8			08/259,310	08/465,251	08/160295
SEQ ID NO:1					SEQ ID NO:8	SEQ ID NO:1
760 A	760 A	760 A	748 A	745 A	760 A	813 A
761 A	761 A	761 A	749 A	746 A	761 A	814 A
762 G	762 G	762 G	750 G	747 G	762 G	815 G
763 G	763 G	763 G	751 G	748 G	763 G	816 G
764 G	764 G	764 G	752 G	749 G	764 G	817 G
765 A	765 A	765 A	753 A	750 A	765 A	818 A
766 G	766 G	766 G	754 G	751 G	766 G	819 G
767 A	767 A	767 A	755 A	752 A	767 A	820 A
768 G	768 G	768 G	756 G	753 G	768 G	821 G
769 C	769 C	769 C	757 C	754 C	769 C	822 C
770 A	770 A	770 A	758 A	755 A	770 A	823 A
771 G	771 G	771 G	759 G	756 G	771 G	824 G
772 A	772 A	772 A	760 A	757 A	772 A	825 A
773 T	773 T	773 T	761 T	758 T	773 T	826 T
774 G	774 G	774 G	762 G	759 G	774 G	827 G
775 A	775 A	775 A	763 A	760 A	775 A	828 A
776 A	776 A	776 A	764 A	761 A	776 A	829 A
777 T	777 T	777 T	765 T	762 T	777 T	830 T
778 A	778 A	778 A	766 A	763 A	778 A	831 A
779 G	779 G	779 G	767 G	764 G	779 G	832 G
780 T	780 T	780 T	768 T	765 T	780 T	833 T
781 G	781 G	781 G	769 G	766 G	781 G	834 G
782 C	782 C	782 C	770 C	767 C	782 C	835 C
783 T	783 T	783 T	771 T	768 T	783 T	836 T
784 G	784 G	784 G	772 G	769 G	784 G	837 G
785 T	785 T	785 T	773 T	770 T	785 T	838 T
786 A	786 A	786 A	774 A	771 A	786 A	839 A
787 T	787 T	787 T	775 T	772 T	787 T	840 T
788 T	788 T	788 T	776 T	773 T	788 T	841 T
789 G	789 G	789 G	777 G	774 G	789 G	842 G
790 C	790 C	790 C	778 C	775 C	790 C	843 C
791 C	791 C	791 C	779 C	776 C	791 C	844 C
792 A	792 A	792 A	780 A	777 A	792 A	845 A
793 G	793 G	793 G	781 G	778 G	793 G	846 G
794 A	794 A	794 A	782 A	779 A	794 A	847 A
795 A	795 A	795 A	783 A	780 A	795 A	848 A
796 A	796 A	796 A	784 A	781 A	796 A	849 A
797 T	797 T	797 T	785 T	782 T	797 T	850 T
798 G	798 G	798 G	786 G	783 G	798 G	851 G
799 G	799 G	799 G	787 G	784 G	799 G	852 G
800 A	800 A	800 A	788 A	785 A	800 A	853 A
801 G	801 G	801 G	789 G	786 G	801 G	854 G
802 A	802 A	802 A	790 A	787 A	802 A	855 A
803 A	803 A	803 A	791 A	788 A	803 A	856 A
804 T	804 T	804 T	792 T	789 T	804 T	857 T
805 C	805 C	805 C	793 C	790 C	805 C	858 C
806 A	806 A	806 A	794 A	791 A	806 A	859 A
807 G	807 G	807 G	795 G	792 G	807 G	860 G
808 G	808 G	808 G	796 G	793 G	808 G	861 G
809 T	809 T	809 T	797 T	794 T	809 T	862 T
810 T	810 T	810 T	798 T	795 T	810 T	863 T
811 G	811 G	811 G	799 G	796 G	811 G	864 G
812 C	812 C	812 C	800 C	797 C	812 C	865 C
813 A	813 A	813 A	801 A	798 A	813 A	866 A
814 G	814 G	814 G	802 G	799 G	814 G	867 G
815 T	815 T	815 T	803 T	800 T	815 T	868 T
816 T	816 T	816 T	804 T	801 T	816 T	869 T
817 T	817 T	817 T	805 T	802 T	817 T	870 T
818 C	818 C	818 C	806 C	803 C	818 C	871 C
819 A	819 A	819 A	807 A	804 A	819 A	872 A
820 T	820 T	820 T	808 T	805 T	820 T	873 T
821 C	821 C	821 C	809 C	806 C	821 C	874 C
822 A	822 A	822 A	810 A	807 A	822 A	875 A
823 C	823 C	823 C	811 C	808 C	823 C	876 C
824 T	824 T	824 T	812 T	809 T	824 T	877 T
825 G	825 G	825 G	813 G	810 G	825 G	878 G
826 T	826 T	826 T	814 T	811 T	826 T	879 T
827 C	827 C	827 C	815 C	812 C	827 C	880 C
828 T	828 T	828 T	816 T	813 T	828 T	881 T
829 G	829 G	829 G	817 G	814 G	829 G	882 G
830 C	830 C	830 C	818 C	815 C	830 C	883 C
831 G	831 G	831 G	819 G	816 G	831 G	884 G
832 G	832 G	832 G	820 G	817 G	832 G	885 G
833 T	833 T	833 T	821 T	818 T	833 T	886 T
834 A	834 A	834 A	822 A	819 A	834 A	887 A
835 A	835 A	835 A	823 A	820 A	835 A	888 A
836 T	836 T	836 T	824 T	821 T	836 T	889 T
837 C	837 C	837 C	825 C	822 C	837 C	890 C
838 A	838 A	838 A	826 A	823 A	838 A	891 A
839 A	839 A	839 A	827 A	824 A	839 A	892 A
840 G	840 G	840 G	828 G	825 G	840 G	893 G
841 T	841 T	841 T	829 T	826 T	841 T	894 T
842 T	842 T	842 T	830 T	827 T	842 T	895 T

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08/154,792	08/163,449			08/259,310	08/465,251	08/160295
SEQ ID NO:8	SEQ ID NO:8			SEQ ID NO:1	SEQ ID NO:8	SEQ ID NO:1
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850 C 850 C 850 C 836 C 835 C 850 C 903 C	851 T 851 T 851 T 839 T 836 T 851 T 904 T	852 C 852 C 852 C 840 C 837 C 852 C 905 C	853 T 853 T 853 T 841 T 838 T 853 T 906 T	854 T 854 T 854 T 842 T 839 T 854 T 907 T	855 A 855 A 855 A 843 A 840 A 855 A 908 A	856 T 856 T 856 T 844 T 841 T 856 T 909 T
857 C 857 C 857 C 845 C 842 C 857 C 910 C	858 A 858 A 858 A 846 A 843 A 858 A 911 A	859 G 859 G 859 G 847 G 844 G 859 G 912 G	860 A 860 A 860 A 848 A 845 A 860 A 913 G	861 T 861 T 861 T 849 T 846 T 861 T 914 G	862 G 862 G 862 G 850 G 847 G 862 G 915 G	863 A 863 A 863 A 851 A 848 A 863 A 916 G
864 T 864 T 864 T 852 T 849 T 864 T 917 T	865 T 865 T 865 T 853 T 850 T 865 T 918 T	866 C 866 C 866 C 854 C 851 C 866 C 919 C	867 C 867 C 867 C 855 C 852 C 867 C 920 C	868 A 868 A 868 A 856 A 853 A 868 A 921 G	869 A 869 A 869 A 857 A 854 A 869 A 922 A	870 C 870 C 870 C 858 C 855 C 870 C 923 C
871 T 871 T 871 T 859 T 856 T 871 T 924 T	872 T 872 T 872 T 860 T 857 T 872 T 925 T	873 T 873 T 873 T 861 T 858 T 873 T 926 T	874 G 874 G 874 G 862 G 859 G 874 G 927 G	875 G 875 G 875 G 863 G 860 G 875 G 928 G	876 A 876 A 876 A 864 A 861 A 876 A 929 G	877 C 877 C 877 C 865 C 852 C 877 C 930 C
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885 A 885 A 885 A 873 A 870 A 885 A 938 G	886 C 886 C 886 C 874 C 871 C 886 C 939 G	887 T 887 T 887 T 875 T 872 T 887 T 940 T	888 G 888 G 888 G 876 G 873 G 888 G 941 G	889 A 889 A 889 A 877 A 874 A 889 A 942 G	890 C 890 C 890 C 876 C 875 C 890 C 943 G	891 T 891 T 891 T 879 T 876 T 891 T 944 T
892 A 892 A 892 A 880 A 877 A 892 A 945 G	893 C 893 C 893 C 881 C 878 C 893 C 946 G	894 T 894 T 894 T 882 T 879 T 894 T 947 T	895 T 895 T 895 T 883 T 880 T 895 T 948 T	896 T 896 T 896 T 884 T 881 T 896 T 949 T	897 T 897 T 897 T 885 T 882 T 897 T 950 T	898 G 898 G 898 G 886 G 883 G 898 G 951 G
899 A 899 A 899 A 887 A 884 A 899 A 952 G	900 C 900 C 900 C 888 C 885 C 900 C 953 G	901 T 901 T 901 T 889 T 886 T 901 T 954 G	902 T 902 T 902 T 890 T 887 T 902 T 955 G	903 C 903 C 903 C 891 C 888 C 903 C 956 G	904 A 904 A 904 A 892 A 889 A 904 A 957 G	905 G 905 G 905 G 893 G 890 G 905 G 958 G
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Kolodner	Kolodner	Cell	Cell Erratum	Kolodner	Kolodner	Chapelle #1
fil. 11/17/93	fil. 12/7/1993	pub. 12/9/93	pub. 4/8/1994	fil. 6/13/1994	fil. 6/5/95	fil. 12/2/1993
08/154,792	08/163,449			08/259,310	08/465,251	08/160,295
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1011	G	1011	G	999	G	996	G	1064
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1014	T	1014	T	1002	T	999	T	1067
1015	A	1015	A	1003	A	1000	A	1068
1016	A	1016	A	1004	A	1001	A	1069
1017	A	1017	A	1005	A	1002	A	1070
1018	A	1018	A	1006	A	1003	A	1071
1019	C	1019	C	1007	C	1004	C	1072
1020	C	1020	C	1008	C	1005	C	1073
1021	C	1021	C	1009	C	1006	C	1074
1022	1022	C	1022	1010	C	1007	C	1075
1023	T	1023	T	1011	T	1008	T	1076
1024	C	1024	C	1012	C	1009	C	1077
1025	A	1025	A	1013	A	1010	A	1078
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1027	G	1027	G	1015	G	1012	G	1080
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1169 C 1169 C 1169 C 1157 C 1154 C 1169 C 1222 C	1170 A 1170 A 1170 A 1158 A 1155 A 1170 A 1223 A	1171 G 1171 G 1171 G 1159 G 1156 G 1171 G 1224 G	1172 A 1172 A 1172 A 1160 A 1157 A 1172 A 1225 A	1173 T 1173 T 1173 T 1161 T 1158 T 1173 T 1226 T	1174 C 1174 C 1174 C 1162 C 1159 C 1174 C 1227 C	
1174 C 1174 C 1174 C 1162 C 1159 C 1174 C 1227 C						

Kolodner		Kolodner	Cell	Cell Erratum	Kolodner	Kolodner		Chapelle #1
fil. 11/17/93		fil. 12/7/1993	pub. 12/9/93	pub. 4/8/1994	fil. 6/13/1994	fil. 6/5/95		fil. 12/2/1993
08/154,792		08/163,449			08/259,310	08/465,251		08/160,295
SEQ ID NO:8	SEQ ID NO:8				SEQ ID NO:1	SEQ ID NO:8	SEQ ID NO:1	
1175 T	1175 T	1175 T	1163 T	1160 T	1175 T	1228 T	T	
1176 T	1176 T	1176 T	1164 T	1161 T	1176 T	1229 T	T	
1177 A	1177 A	1177 A	1165 A	1162 A	1177 A	1230 A	A	
1178 A	1178 A	1178 A	1166 A	1163 A	1178 A	1231 A	A	
1179 C	1179 C	1179 C	1167 C	1164 C	1179 C	1232 C	C	
1180 C	1180 C	1180 C	1168 C	1165 C	1180 C	1233 C	C	
1181 G	1181 G	1181 G	1169 G	1166 G	1181 G	1234 G	G	
1182 A	1182 A	1182 A	1170 A	1167 A	1182 A	1235 A	A	
1183 C	1183 C	1183 C	1171 C	1168 C	1183 C	1236 C	C	
1184 T	1184 T	1184 T	1172 T	1169 T	1184 T	1237 T	T	
1185 T	1185 T	1185 T	1173 T	1170 T	1185 T	1238 T	T	
1186 G	1186 G	1186 G	1174 G	1171 G	1186 G	1239 G	G	
1187 C	1187 C	1187 C	1175 C	1172 C	1187 C	1240 C	C	
1188 C	1188 C	1188 C	1176 C	1173 C	1188 C	1241 C	C	
1189 A	1189 A	1189 A	1177 A	1174 A	1189 A	1242 A	A	
1190 A	1190 A	1190 A	1178 A	1175 A	1190 A	1243 A	A	
1191 G	1191 G	1191 G	1179 G	1176 G	1191 G	1244 G	G	
1192 A	1192 A	1192 A	1180 A	1177 A	1192 A	1245 A	A	
1193 A	1193 A	1193 A	1181 A	1178 A	1193 A	1246 A	A	
1194 G	1194 G	1194 G	1182 G	1179 G	1194 G	1247 G	G	
1195 T	1195 T	1195 T	1183 T	1180 T	1195 T	1248 T	T	
1196 T	1196 T	1196 T	1184 T	1181 T	1196 T	1249 T	T	
1197 T	1197 T	1197 T	1185 T	1182 T	1197 T	1250 T	T	
1198 C	1198 C	1198 C	1186 C	1183 C	1198 C	1251 C	C	
1199 A	1199 A	1199 A	1187 A	1184 A	1199 A	1252 A	A	
1200 A	1200 A	1200 A	1188 A	1185 A	1200 A	1253 A	A	
1201 A	1201 A	1201 A	1189 A	1186 A	1201 A	1254 A	A	
1202 G	1202 G	1202 G	1190 G	1187 G	1202 G	1255 G	G	
1203 A	1203 A	1203 A	1191 A	1188 A	1203 A	1256 A	A	
1204 C	1204 C	1204 C	1192 C	1189 C	1204 C	1257 C	C	
1205 A	1205 A	1205 A	1193 A	1190 A	1205 A	1258 A	A	
1206 A	1206 A	1206 A	1194 A	1191 A	1206 A	1259 A	A	
1207 G	1207 G	1207 G	1195 G	1192 G	1207 G	1260 G	G	
1208 C	1208 C	1208 C	1196 C	1193 C	1208 C	1261 C	C	
1209 A	1209 A	1209 A	1197 A	1194 A	1209 A	1262 A	A	
1210 G	1210 G	1210 G	1198 G	1195 G	1210 G	1263 G	G	
1211 C	1211 C	1211 C	1199 C	1196 C	1211 C	1264 C	C	
1212 A	1212 A	1212 A	1200 A	1197 A	1212 A	1265 A	A	
1213 A	1213 A	1213 A	1201 A	1198 A	1213 A	1266 A	A	
1214 A	1214 A	1214 A	1202 A	1199 A	1214 A	1267 A	A	
1215 C	1215 C	1215 C	1203 C	1200 C	1215 C	1268 C	C	
1216 T	1216 T	1216 T	1204 T	1201 T	1216 T	1269 T	T	
1217 T	1217 T	1217 T	1205 T	1202 T	1217 T	1270 T	T	
1218 A	1218 A	1218 A	1206 A	1203 A	1218 A	1271 A	A	
1219 C	1219 C	1219 C	1207 C	1204 C	1219 C	1272 C	C	
1220 A	1220 A	1220 A	1208 A	1205 A	1220 A	1273 A	A	
1221 A	1221 A	1221 A	1209 A	1206 A	1221 A	1274 A	A	
1222 G	1222 G	1222 G	1210 G	1207 G	1222 G	1275 G	G	
1223 A	1223 A	1223 A	1211 A	1208 A	1223 A	1276 A	A	
1224 T	1224 T	1224 T	1212 T	1209 T	1224 T	1277 T	T	
1225 T	1225 T	1225 T	1213 T	1210 T	1225 T	1278 T	T	
1226 G	1226 G	1226 G	1214 G	1211 G	1226 G	1279 G	G	
1227 T	1227 T	1227 T	1215 T	1212 T	1227 T	1280 T	T	
1228 T	1228 T	1228 T	1216 T	1213 T	1228 T	1281 T	T	
1229 A	1229 A	1229 A	1217 A	1214 A	1229 A	1282 A	A	
1230 C	1230 C	1230 C	1218 C	1215 C	1230 C	1283 C	C	
1231 C	1231 C	1231 C	1219 C	1216 C	1231 C	1284 C	C	
1232 G	1232 G	1232 G	1220 G	1217 G	1232 G	1285 G	G	
1233 A	1233 A	1233 A	1221 A	1218 A	1233 A	1286 A	A	
1234 C	1234 C	1234 C	1222 C	1219 C	1234 C	1287 C	C	
1235 T	1235 T	1235 T	1223 T	1220 T	1235 T	1288 T	T	
1236 C	1236 C	1236 C	1224 C	1221 C	1236 C	1289 C	C	
1237 T	1237 T	1237 T	1225 T	1222 T	1237 T	1290 T	T	
1238 A	1238 A	1238 A	1226 A	1223 A	1238 A	1291 A	A	
1239 T	1239 T	1239 T	1227 T	1224 T	1239 T	1292 T	T	
1240 C	1240 C	1240 C	1228 C	1225 C	1240 C	1293 C	C	
1241 A	1241 A	1241 A	1229 A	1226 A	1241 A	1294 A	A	
1242 G	1242 G	1242 G	1230 G	1227 G	1242 G	1295 G	G	
1243 G	1243 G	1243 G	1231 G	1228 G	1243 G	1296 G	G	
1244 G	1244 G	1244 G	1232 G	1229 G	1244 G	1297 G	G	
1245 T	1245 T	1245 T	1233 T	1230 T	1245 T	1298 T	T	
1246 A	1246 A	1246 A	1234 A	1231 A	1246 A	1299 A	A	
1247 T	1247 T	1247 T	1235 T	1232 T	1247 T	1300 T	T	
1248 A	1248 A	1248 A	1236 A	1233 A	1248 A	1301 A	A	
1249 A	1249 A	1249 A	1237 A	1234 A	1249 A	1302 A	A	
1250 A	1250 A	1250 A	1238 A	1235 A	1250 A	1303 A	A	
1251 T	1251 T	1251 T	1239 T	1236 T	1251 T	1304 T	T	
1252 C	1252 C	1252 C	1240 C	1237 C	1252 C	1305 C	C	
1253 A	1253 A	1253 A	1241 A	1238 A	1253 A	1306 A	A	
1254 A	1254 A	1254 A	1242 A	1239 A	1254 A	1307 A	A	
1255 C	1255 C	1255 C	1243 C	1240 C	1255 C	1308 C	C	
1256 T	1256 T	1256 T	1244 T	1241 T	1256 T	1309 T	T	
1257 A	1257 A	1257 A	1245 A	1242 A	1257 A	1310 A	A	

Kolodner	Kolodner	Cell	Cell Erratum	Kolodner	Kolodner	Chapelle #1
fil. 11/17/93	fil. 12/7/1993	pub. 12/9/93	pub. 4/8/1994	fil. 6/13/1994	fil. 6/5/95	fil. 12/2/1993
08/154,792	08/163,449			08/259,310	08/465,251	08/160295
SEQ ID NO:8	SEQ ID NO:8			SEQ ID NO:1	SEQ ID NO:8	SEQ ID NO:1
1258 C	1258 C	1258 C	1246 C	1243 C	1258 C	1311 C
1259 C	1259 C	1259 C	1247 C	1244 C	1259 C	1312 C
1260 T	1260 T	1260 T	1248 T	1245 T	1260 T	1313 T
1261 A	1261 A	1261 A	1249 A	1246 A	1261 A	1314 A
1262 A	1262 A	1262 A	1250 A	1247 A	1262 A	1315 A
1263 T	1263 T	1263 T	1251 T	1248 T	1263 T	1316 T
1264 G	1264 G	1264 G	1252 G	1249 G	1264 G	1317 G
1265 T	1265 T	1265 T	1253 T	1250 T	1265 T	1318 T
1266 A	1266 T	1266 A	1254 T	1251 T	1266 T	1319 T
1267 A	1267 A	1267 A	1255 A	1252 A	1267 A	1320 A
1268 T	1268 T	1268 T	1256 T	1253 T	1268 T	1321 T
1269 A	1269 A	1269 A	1257 A	1254 A	1269 A	1322 A
1270 C	1270 C	1270 C	1258 C	1255 C	1270 C	1323 C
1271 A	1271 A	1271 A	1259 A	1256 A	1271 A	1324 A
1272 G	1272 G	1272 G	1260 G	1257 G	1272 G	1325 G
1273 G	1273 G	1273 G	1281 G	1258 G	1273 G	1326 G
1274 C	1274 C	1274 C	1262 C	1259 C	1274 C	1327 C
1275 T	1275 T	1275 T	1263 T	1260 T	1275 T	1328 T
1276 C	1276 C	1276 C	1264 C	1261 C	1276 C	1329 C
1277 T	1277 T	1277 T	1265 T	1262 T	1277 T	1330 T
1278 G	1278 G	1278 G	1266 G	1263 G	1278 G	1331 G
1279 G	1279 G	1279 G	1267 G	1264 G	1279 G	1332 G
1280 A	1280 A	1280 A	1268 A	1265 A	1280 A	1333 A
1281 A	1281 A	1281 A	1269 A	1266 A	1281 A	1334 A
1282 A	1282 A	1282 A	1270 A	1267 A	1282 A	1335 A
1283 A	1283 A	1283 A	1271 A	1268 A	1283 A	1336 A
1284 A	1284 A	1284 A	1272 A	1269 A	1284 A	1337 A
1285 C	1285 C	1285 C	1273 C	1270 C	1285 C	1338 C
1286 A	1286 A	1286 A	1274 A	1271 A	1286 A	1339 A
1287 T	1287 T	1287 T	1275 T	1272 T	1287 T	1340 T
1288 G	1288 G	1288 G	1276 G	1273 G	1288 G	1341 G
1289 A	1289 A	1289 A	1277 A	1274 A	1289 A	1342 A
1290 A	1290 A	1290 A	1278 A	1275 A	1290 A	1343 A
1291 G	1291 G	1291 G	1279 G	1276 G	1291 G	1344 G
1292 G	1292 G	1292 G	1280 G	1277 G	1292 G	1345 G
1293 A	1293 A	1293 A	1281 A	1278 A	1293 A	1346 A
1294 A	1294 A	1294 A	1282 A	1279 A	1294 A	1347 A
1295 A	1295 A	1295 A	1283 A	1280 A	1295 A	1348 A
1296 A	1296 A	1296 A	1284 A	1281 A	1296 A	1349 A
1297 C	1297 C	1297 C	1285 C	1282 C	1297 C	1350 C
1298 A	1298 A	1298 A	1286 A	1283 A	1298 A	1351 A
1299 C	1299 C	1299 C	1287 C	1284 C	1299 C	1352 C
1300 C	1300 C	1300 C	1288 C	1285 C	1300 C	1353 C
1301 A	1301 A	1301 A	1289 A	1286 A	1301 A	1354 A
1302 G	1302 G	1302 G	1290 G	1287 G	1302 G	1355 G
1303 A	1303 A	1303 A	1291 A	1288 A	1303 A	1356 A
1304 A	1304 A	1304 A	1292 A	1289 A	1304 A	1357 A
1305 A	1305 A	1305 A	1293 A	1290 A	1305 A	1358 A
1306 T	1306 T	1306 T	1294 T	1291 T	1306 T	1359 T
1307 T	1307 T	1307 T	1295 T	1292 T	1307 T	1360 T
1308 A	1308 A	1308 A	1296 A	1293 A	1308 A	1361 A
1309 T	1309 T	1309 T	1297 T	1294 T	1309 T	1362 T
1310 T	1310 T	1310 T	1298 T	1295 T	1310 T	1363 T
1311 G	1311 G	1311 G	1299 G	1296 G	1311 G	1364 G
1312 T	1312 T	1312 T	1300 T	1297 T	1312 T	1365 T
1313 T	1313 T	1313 T	1301 T	1298 T	1313 T	1366 T
1314 G	1314 G	1314 G	1302 G	1299 G	1314 G	1367 G
1315 G	1315 G	1315 G	1303 G	1300 G	1315 G	1368 G
1316 C	1316 C	1316 C	1304 C	1301 C	1316 C	1369 C
1317 A	1317 A	1317 A	1305 A	1302 A	1317 A	1370 A
1318 G	1318 G	1318 G	1306 G	1303 G	1318 G	1371 G
1319 T	1319 T	1319 T	1307 T	1304 T	1319 T	1372 T
1320 T	1320 T	1320 T	1308 T	1305 T	1320 T	1373 T
1321 T	1321 T	1321 T	1309 T	1306 T	1321 T	1374 T
1322 T	1322 T	1322 T	1310 T	1307 T	1322 T	1375 T
1323 T	1323 T	1323 T	1311 T	1308 T	1323 T	1376 T
1324 G	1324 G	1324 G	1312 G	1309 G	1324 G	1377 G
1325 T	1325 T	1325 T	1313 T	1310 T	1325 T	1378 G
1326 G	1326 G	1326 G	1314 G	1311 G	1326 G	1379 G
1327 A	1327 A	1327 A	1315 A	1312 A	1327 A	1380 A
1328 C	1328 C	1328 C	1316 C	1313 C	1328 C	1381 C
1329 T	1329 T	1329 T	1317 T	1314 T	1329 T	1382 T
1330 C	1330 C	1330 C	1318 C	1315 C	1330 C	1383 C
1331 C	1331 C	1331 C	1319 C	1316 C	1331 C	1384 C
1332 T	1332 T	1332 T	1320 T	1317 T	1332 T	1385 T
1333 C	1333 C	1333 C	1321 C	1318 C	1333 C	1386 C
1334 T	1334 T	1334 T	1322 T	1319 T	1334 T	1387 T
1335 T	1335 T	1335 T	1323 T	1320 T	1335 T	1388 T
1336 A	1336 A	1336 A	1324 A	1321 A	1336 A	1389 A
1337 C	1337 C	1337 C	1325 C	1322 C	1337 C	1390 C
1338 T	1338 T	1338 T	1326 T	1323 T	1338 T	1391 I
1339 G	1339 G	1339 G	1327 G	1324 G	1339 G	1392 G
1340 A	1340 A	1340 A	1328 A	1325 A	1340 A	1393 A

Kolodner	Kolodner	Cell	Cell Erratum	Kolodner	Kolodner	Chapelle #1
fil. 11/17/93	fil. 12/7/1993	pub. 12/9/93	pub. 4/8/1994	fil. 6/13/1994	fil. 6/5/95	fil. 12/2/1993
08/154,792	08/163,449			08/259,310	08/465,251	08/160295
SEQ ID NO:8	SEQ ID NO:8			SEQ ID NO:1	SEQ ID NO:8	SEQ ID NO:1
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1348 T 1348 T 1348 T 1336 T 1333 T 1348 T 1401 T	1349 C 1349 C 1349 C 1337 C 1334 C 1349 C 1402 C	1350 T 1350 T 1350 T 1338 T 1335 T 1350 T 1403 T	1351 G 1351 G 1351 G 1339 G 1336 G 1351 G 1404 G	1352 A 1352 A 1352 A 1340 A 1337 A 1352 A 1405 A	1353 C 1353 C 1353 C 1341 C 1338 C 1353 C 1406 C	1354 T 1354 T 1354 T 1342 T 1339 T 1354 T 1407 T
1355 T 1355 T 1355 T 1343 T 1340 T 1355 T 1408 T	1356 C 1356 C 1356 C 1344 C 1341 C 1356 C 1409 C	1357 T 1357 T 1357 T 1345 T 1342 T 1357 T 1410 T	1358 C 1358 C 1358 C 1346 C 1343 C 1358 C 1411 C	1359 C 1359 C 1359 C 1347 C 1344 C 1359 C 1412 C	1360 A 1360 A 1360 A 1348 A 1345 A 1360 A 1413 A	1361 A 1361 A 1361 A 1349 A 1346 A 1361 A 1414 A
1362 G 1362 G 1362 G 1350 G 1347 G 1362 G 1415 G	1363 T 1363 T 1363 T 1351 T 1348 T 1363 T 1416 T	1364 T 1364 T 1364 T 1352 T 1349 T 1364 T 1417 T	1365 T 1365 T 1365 T 1353 T 1350 T 1365 T 1418 T	1366 C 1366 C 1366 C 1354 C 1351 C 1366 C 1419 C	1367 A 1367 A 1367 A 1355 A 1352 A 1367 A 1420 A	1368 G 1368 G 1368 G 1356 G 1353 G 1368 G 1421 G
1369 G 1369 G 1369 G 1357 G 1354 G 1369 G 1422 G	1370 A 1370 A 1370 A 1358 A 1355 A 1370 A 1423 A	1371 A 1371 A 1371 A 1359 A 1356 A 1371 A 1424 A	1372 A 1372 A 1372 A 1360 A 1357 A 1372 A 1425 A	1373 T 1373 T 1373 T 1361 T 1358 T 1373 T 1426 T	1374 G 1374 G 1374 G 1362 G 1359 G 1374 G 1427 G	1375 A 1375 A 1375 A 1363 A 1360 A 1375 A 1428 A
1376 T 1376 T 1376 T 1364 T 1361 T 1376 T 1429 T	1377 A 1377 A 1377 A 1365 A 1362 A 1377 A 1430 A	1378 G 1378 G 1378 G 1366 G 1363 G 1378 G 1431 G	1379 A 1379 A 1379 A 1367 A 1364 A 1379 A 1432 A	1380 A 1380 A 1380 A 1368 A 1365 A 1380 A 1433 A	1381 A 1381 A 1381 A 1369 A 1366 A 1381 A 1434 A	1382 C 1382 C 1382 C 1370 C 1367 C 1382 C 1435 C
1383 A 1383 A 1383 A 1371 A 1368 A 1383 A 1436 A	1384 A 1384 A 1384 A 1372 A 1369 A 1384 A 1437 A	1385 C 1385 C 1385 C 1373 C 1370 C 1385 C 1438 C	1386 T 1386 T 1386 T 1374 T 1371 T 1386 T 1439 T	1387 T 1387 T 1387 T 1375 T 1372 T 1387 T 1440 T	1388 T 1388 T 1388 T 1376 T 1373 T 1388 T 1441 T	1389 A 1389 A 1389 A 1377 A 1374 A 1389 A 1442 A
1390 G 1390 G 1390 G 1378 G 1375 G 1390 G 1443 G	1391 A 1391 A 1391 A 1379 A 1376 A 1391 A 1444 A	1392 T 1392 T 1392 T 1380 T 1377 T 1392 T 1445 T	1393 A 1393 A 1393 A 1381 A 1378 A 1393 A 1446 A	1394 T 1394 T 1394 T 1382 T 1379 T 1394 T 1447 T	1395 G 1395 G 1395 G 1383 G 1380 G 1395 G 1448 G	1396 G 1396 G 1396 G 1384 G 1381 G 1396 G 1449 G
1397 A 1397 A 1397 A 1385 A 1382 A 1397 A 1450 A	1398 T 1398 T 1398 T 1386 T 1383 T 1398 T 1451 T	1399 C 1399 C 1399 C 1387 C 1384 C 1399 C 1452 C	1400 A 1400 A 1400 A 1388 A 1385 A 1400 A 1453 A	1401 G 1401 G 1401 G 1389 G 1386 G 1401 G 1454 G	1402 G 1402 G 1402 G 1390 G 1387 G 1402 G 1455 G	1403 T 1403 T 1403 T 1391 T 1388 T 1403 T 1456 T
1404 G 1404 G 1404 G 1404 G 1392 G 1404 G 1457 G	1405 G 1405 G 1405 G 1393 G 1390 G 1405 G 1458 G	1406 A 1406 A 1406 A 1394 A 1391 A 1406 A 1459 A	1407 A 1407 A 1407 A 1395 A 1392 A 1407 A 1460 A	1408 A 1408 A 1408 A 1396 A 1393 A 1408 A 1461 A	1409 A 1409 A 1409 A 1397 A 1394 A 1409 A 1462 A	1410 C 1410 C 1410 C 1398 C 1395 C 1410 C 1463 C
1411 C 1411 C 1411 C 1399 C 1396 C 1411 C 1464 C	1412 A 1412 A 1412 A 1400 A 1397 A 1412 A 1465 A	1413 T 1413 T 1413 T 1401 T 1398 T 1413 T 1466 T	1414 G 1414 G 1414 G 1402 G 1399 G 1414 G 1467 G	1415 A 1415 A 1415 A 1403 A 1400 A 1415 A 1468 A	1416 A 1416 A 1416 A 1404 A 1401 A 1416 A 1469 A	1417 T 1417 T 1417 T 1405 T 1402 T 1417 T 1470 T
1418 T 1418 T 1418 T 1406 T 1403 T 1418 T 1471 T	1419 C 1419 C 1419 C 1407 C 1404 C 1419 C 1472 C	1420 C 1420 C 1420 C 1408 C 1405 C 1420 C 1473 C	1421 T 1421 T 1421 T 1409 T 1406 T 1421 T 1474 T	1422 T 1422 T 1422 T 1410 T 1407 T 1422 T 1475 T	1423 G 1423 G 1423 G 1411 G 1408 G 1423 G 1476 G	

Kolodner	Kolodner	Cell	Cell Erratum	Kolodner	Kolodner	Chapelle #1
fil. 11/17/93	fil. 12/7/1993	pub. 12/9/93	pub. 4/8/1994	fil. 6/13/1994	fil. 6/5/95	fil. 12/2/1993
08/154,792	08/163,449			08/259,310	08/465,251	08/160295
SEQ ID NO:8	SEQ ID NO:8			SEQ ID NO:1	SEQ ID NO:8	SEQ ID NO:1
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1425 A	1425 A	1425 A	1413 A	1410 A	1425 A	1478 A
1426 A	1426 A	1426 A	1414 A	1411 A	1426 A	1479 A
1427 A	1427 A	1427 A	1415 A	1412 A	1427 A	1480 A
1428 A	1428 A	1428 A	1416 A	1413 A	1428 A	1481 A
1429 C	1429 C	1429 C	1417 C	1414 C	1429 C	1482 C
1430 C	1430 C	1430 C	1418 C	1415 C	1430 C	1483 C
1431 T	1431 T	1431 T	1419 T	1416 T	1431 T	1484 T
1432 T	1432 T	1432 T	1420 T	1417 T	1432 T	1485 T
1433 C	1433 C	1433 C	1421 C	1418 C	1433 C	1486 C
1434 A	1434 A	1434 A	1422 A	1419 A	1434 A	1487 A
1435 T	1435 T	1435 T	1423 T	1420 T	1435 T	1488 T
1436 T	1436 T	1436 T	1424 T	1421 T	1436 T	1489 T
1437 T	1437 T	1437 T	1425 T	1422 T	1437 T	1490 T
1438 G	1438 G	1438 G	1426 G	1423 G	1438 G	1491 G
1439 A	1439 A	1439 A	1427 A	1424 A	1439 A	1492 A
1440 T	1440 T	1440 T	1428 T	1425 T	1440 T	1493 T
1441 C	1441 C	1441 C	1429 C	1426 C	1441 C	1494 C
1442 C	1442 C	1442 C	1430 C	1427 C	1442 C	1495 C
1443 T	1443 T	1443 T	1431 T	1428 T	1443 T	1496 T
1444 A	1444 A	1444 A	1432 A	1429 A	1444 A	1497 A
1445 A	1445 A	1445 A	1433 A	1430 A	1445 A	1498 A
1446 T	1446 T	1446 T	1434 T	1431 T	1446 T	1499 T
1447 C	1447 C	1447 C	1435 C	1432 C	1447 C	1500 C
1448 T	1448 T	1448 T	1436 T	1433 T	1448 T	1501 T
1449 C	1449 C	1449 C	1437 C	1434 C	1449 C	1502 C
1450 A	1450 A	1450 A	1438 A	1435 A	1450 A	1503 A
1451 G	1451 G	1451 G	1439 G	1436 G	1451 G	1504 G
1452 T	1452 T	1452 T	1440 T	1437 T	1452 T	1505 T
1453 G	1453 G	1453 G	1441 G	1438 G	1453 G	1506 G
1454 A	1454 A	1454 A	1442 A	1439 A	1454 A	1507 A
1455 A	1455 A	1455 A	1443 A	1440 A	1455 A	1508 A
1456 T	1456 T	1456 T	1444 T	1441 T	1456 T	1509 T
1457 T	1457 T	1457 T	1445 T	1442 T	1457 T	1510 T
1458 A	1458 A	1458 A	1446 A	1443 A	1458 A	1511 A
1459 A	1459 A	1459 A	1447 A	1444 A	1459 A	1512 A
1460 G	1460 G	1460 G	1448 G	1445 G	1460 G	1513 G
1461 A	1461 A	1461 A	1449 A	1446 A	1461 A	1514 A
1462 G	1462 G	1462 G	1450 G	1447 G	1462 G	1515 G
1463 A	1463 A	1463 A	1451 A	1448 A	1463 A	1516 A
1464 A	1464 A	1464 A	1452 A	1449 A	1464 A	1517 A
1465 A	1465 A	1465 A	1453 A	1450 A	1465 A	1518 A
1466 T	1466 T	1466 T	1454 T	1451 T	1466 T	1519 T
1467 A	1467 A	1467 A	1455 A	1452 A	1467 A	1520 A
1468 A	1468 A	1468 A	1456 A	1453 A	1468 A	1521 A
1469 T	1469 T	1469 T	1457 T	1454 T	1469 T	1522 T
1470 G	1470 G	1470 G	1458 G	1455 G	1470 G	1523 G
1471 A	1471 A	1471 A	1459 A	1456 A	1471 A	1524 A
1472 A	1472 A	1472 A	1460 A	1457 A	1472 A	1525 A
1473 T	1473 T	1473 T	1461 T	1458 T	1473 T	1526 T
1474 G	1474 G	1474 G	1462 G	1459 G	1474 G	1527 G
1475 A	1475 A	1475 A	1463 A	1460 A	1475 A	1528 A
1476 C	1476 C	1476 C	1464 C	1461 C	1476 C	1529 C
1477 T	1477 T	1477 T	1465 T	1462 T	1477 T	1530 T
1478 T	1478 T	1478 T	1466 T	1463 T	1478 T	1531 T
1479 G	1479 G	1479 G	1467 G	1464 G	1479 G	1532 G
1480 G	1480 G	1480 G	1468 G	1465 G	1480 G	1533 G
1481 A	1481 A	1481 A	1469 A	1466 A	1481 A	1534 A
1482 A	1482 A	1482 A	1470 A	1467 A	1482 A	1535 A
1483 A	1483 A	1483 A	1471 A	1468 A	1483 A	1536 A
1484 A	1484 A	1484 A	1472 A	1469 A	1484 A	1537 A
1485 G	1485 G	1485 G	1473 G	1470 G	1485 G	1538 A
1486 A	1486 A	1486 A	1474 A	1471 A	1486 A	1539 A
1487 A	1487 A	1487 A	1475 A	1472 A	1487 A	1540 A
1488 G	1488 G	1488 G	1476 G	1473 G	1488 G	1541 G
1489 A	1489 A	1489 A	1477 A	1474 A	1489 A	1542 A
1490 T	1490 T	1490 T	1478 T	1475 T	1490 T	1543 T
1491 G	1491 G	1491 G	1479 G	1476 G	1491 G	1544 G
1492 C	1492 C	1492 C	1480 C	1477 C	1492 C	1545 C
1493 A	1493 A	1493 A	1481 A	1478 A	1493 A	1546 A
1494 G	1494 G	1494 G	1482 G	1479 G	1494 G	1547 G
1495 T	1495 T	1495 T	1483 T	1480 T	1495 T	1548 T
1496 C	1496 C	1496 C	1484 C	1481 C	1496 C	1549 C
1497 A	1497 A	1497 A	1485 A	1482 A	1497 A	1550 A
1498 A	1498 A	1498 A	1486 A	1483 A	1498 A	1551 A
1499 C	1499 C	1499 C	1487 C	1484 C	1499 C	1552 C
1500 A	1500 A	1500 A	1488 A	1485 A	1500 A	1553 A
1501 T	1501 T	1501 T	1489 T	1486 T	1501 T	1554 T
1502 T	1502 T	1502 T	1490 T	1487 T	1502 T	1555 T
1503 A	1503 A	1503 A	1491 A	1488 A	1503 A	1556 A
1504 A	1504 A	1504 A	1492 A	1489 A	1504 A	1557 A
1505 T	1505 T	1505 T	1493 T	1490 T	1505 T	1558 T
1506 A	1506 A	1506 A	1494 A	1491 A	1506 A	1559 A

Kolodner	Kolodner	Cell	Cell Erratum	Kolodner	Kolodner	Chapelle #1
fil. 11/17/93	fil. 12/7/1993	pub. 12/9/93	pub. 4/8/1994	fil. 6/13/1994	fil. 6/5/95	fil. 12/2/1993
08/154,792	08/163,449			08/259,310	08/465,251	08/160295
SEQ ID NO:8	SEQ ID NO:8			SEQ ID NO:1	SEQ ID NO:8	SEQ ID NO:1
1507 A	1507 A	1507 A	1495 A	1492 A	1507 A	1560 A
1508 G	1508 G	1508 G	1496 G	1493 G	1508 G	1561 G
1509 T	1509 T	1509 T	1497 T	1494 T	1509 T	1562 T
1510 G	1510 G	1510 G	1498 G	1495 G	1510 G	1563 G
1511 C	1511 C	1511 C	1499 C	1496 C	1511 C	1564 C
1512 A	1512 A	1512 A	1500 A	1497 A	1512 A	1565 A
1513 G	1513 G	1513 G	1501 G	1498 G	1513 G	1566 G
1514 C	1514 C	1514 C	1502 C	1499 C	1514 C	1567 C
1515 C	1515 C	1515 C	1503 C	1500 C	1515 C	1568 C
1516 A	1516 A	1516 A	1504 A	1501 A	1516 A	1569 A
1517 G	1517 G	1517 G	1505 G	1502 G	1517 G	1570 G
1518 A	1518 A	1518 A	1506 A	1503 A	1518 A	1571 A
1519 G	1519 G	1519 G	1507 G	1504 G	1519 G	1572 G
1520 A	1520 A	1520 A	1508 A	1505 A	1520 A	1573 A
1521 T	1521 T	1521 T	1509 T	1506 T	1521 T	1574 T
1522 C	1522 C	1522 C	1510 C	1507 C	1522 C	1575 C
1523 T	1523 T	1523 T	1511 T	1508 T	1523 T	1576 T
1524 T	1524 T	1524 T	1512 T	1509 T	1524 T	1577 T
1525 G	1525 G	1525 G	1513 G	1510 G	1525 G	1578 G
1526 G	1526 G	1526 G	1514 G	1511 G	1526 G	1579 G
1527 C	1527 C	1527 C	1515 C	1512 C	1527 C	1580 C
1528 T	1528 T	1528 T	1516 T	1513 T	1528 T	1581 T
1529 T	1529 T	1529 T	1517 T	1514 T	1529 T	1582 T
1530 G	1530 G	1530 G	1518 G	1515 G	1530 G	1583 G
1531 G	1531 G	1531 G	1519 G	1516 G	1531 G	1584 G
1532 A	1532 A	1532 A	1520 A	1517 A	1532 A	1585 A
1533 C	1533 C	1533 C	1521 C	1518 C	1533 C	1586 C
1534 C	1534 C	1534 C	1522 C	1519 C	1534 C	1587 C
1535 C	1535 C	1535 C	1523 C	1520 C	1535 C	1588 C
1536 T	1536 T	1536 T	1524 T	1521 T	1536 T	1589 T
1537 G	1537 G	1537 G	1525 G	1522 G	1537 G	1590 G
1538 G	1538 G	1538 G	1526 G	1523 G	1538 G	1591 G
1539 C	1539 C	1539 C	1527 C	1524 C	1539 C	1592 C
1540 A	1540 A	1540 A	1528 A	1525 A	1540 A	1593 A
1541 A	1541 A	1541 A	1529 A	1526 A	1541 A	1594 A
1542 A	1542 A	1542 A	1530 A	1527 A	1542 A	1595 A
1543 C	1543 C	1543 C	1531 C	1528 C	1543 C	1596 C
1544 A	1544 A	1544 A	1532 A	1529 A	1544 A	1597 A
1545 G	1545 G	1545 G	1533 G	1530 G	1545 G	1598 G
1546 A	1546 A	1546 A	1534 A	1531 A	1546 A	1599 A
1547 T	1547 T	1547 T	1535 T	1532 T	1547 T	1600 T
1548 T	1548 T	1548 T	1536 T	1533 T	1548 T	1601 T
1549 A	1549 A	1549 A	1537 A	1534 A	1549 A	1602 A
1550 A	1550 A	1550 A	1538 A	1535 A	1550 A	1603 A
1551 A	1551 A	1551 A	1539 A	1536 A	1551 A	1604 A
1552 C	1552 C	1552 C	1540 C	1537 C	1552 C	1605 C
1553 T	1553 T	1553 T	1541 T	1538 T	1553 T	1606 T
1554 G	1554 G	1554 G	1542 G	1539 G	1554 G	1607 G
1555 G	1555 G	1555 G	1543 G	1540 G	1555 G	1608 G
1556 A	1556 A	1556 A	1544 A	1541 A	1556 A	1609 A
1557 T	1557 T	1557 T	1545 T	1542 T	1557 T	1610 T
1558 T	1558 T	1558 T	1546 T	1543 T	1558 T	1611 T
1559 C	1559 C	1559 C	1547 C	1544 C	1559 C	1612 C
1560 C	1560 C	1560 C	1548 C	1545 C	1560 C	1613 C
1561 A	1561 A	1561 A	1549 A	1546 A	1561 A	1614 A
1562 G	1562 G	1562 G	1550 G	1547 G	1562 G	1615 G
1563 T	1563 T	1563 T	1551 T	1548 T	1563 T	1616 T
1564 G	1564 G	1564 G	1552 G	1549 G	1564 G	1617 G
1565 C	1565 C	1565 C	1563 C	1560 C	1565 C	1618 C
1566 A	1566 A	1566 A	1564 A	1561 A	1566 A	1619 A
1567 C	1567 C	1567 C	1565 C	1562 C	1567 C	1620 C
1568 A	1568 A	1568 A	1566 A	1563 A	1568 A	1621 A
1569 G	1569 G	1569 G	1567 G	1564 G	1569 G	1622 G
1570 T	1570 T	1570 T	1568 T	1565 T	1570 T	1623 T
1571 T	1571 T	1571 T	1569 T	1566 T	1571 T	1624 T
1572 T	1572 T	1572 T	1570 T	1567 T	1572 T	1625 T
1573 G	1573 G	1573 G	1561 G	1558 G	1573 G	1626 G
1574 G	1574 G	1574 G	1562 G	1559 G	1574 G	1627 G
1575 A	1575 A	1575 A	1563 A	1560 A	1575 A	1628 A
1576 T	1576 T	1576 T	1564 T	1561 T	1576 T	1629 T
1577 A	1577 A	1577 A	1565 A	1562 A	1577 A	1630 A
1578 T	1578 T	1578 T	1566 T	1563 T	1578 T	1631 T
1579 T	1579 T	1579 T	1567 T	1564 T	1579 T	1632 T
1580 A	1580 A	1580 A	1568 A	1565 A	1580 A	1633 A
1581 C	1581 C	1581 C	1569 C	1566 C	1581 C	1634 C
1582 T	1582 T	1582 T	1570 T	1567 T	1582 T	1635 T
1583 T	1583 T	1583 T	1571 T	1568 T	1583 T	1636 T
1584 T	1584 T	1584 T	1572 T	1569 T	1584 T	1637 T
1585 C	1585 C	1585 C	1573 C	1570 C	1585 C	1638 C
1586 G	1586 G	1586 G	1574 G	1571 G	1586 G	1639 G
1587 T	1587 T	1587 T	1575 T	1572 T	1587 T	1640 T
1588 G	1588 G	1588 G	1576 G	1573 G	1588 G	1641 G
1589 T	1589 T	1589 T	1577 T	1574 T	1589 T	1642 T

	Kolodner		Kolodner	Cell	Cell Erratum	Kolodner		Kolodner		Chapelle #1	
	fil. 11/17/93		fil. 12/7/1993	pub. 12/9/93	pub. 4/8/1994	fil. 6/13/1994		fil. 6/5/95		fil. 12/2/1993	
	08/154,792		08/163,449			08/259,310		08/465,251		08/160295	
SEQ ID NO:8	SEQ ID NO:8					SEQ ID NO:1		SEQ ID NO:8		SEQ ID NO:1	
1590	A	1590	A	1590	A	1578	A	1575	A	1643	A
1591	A	1591	A	1591	A	1579	A	1576	A	1644	A
1592	C	1592	C	1592	C	1580	C	1577	C	1645	C
1593	C	1593	C	1593	C	1581	C	1578	C	1646	C
1594	T	1594	T	1594	T	1582	T	1579	T	1647	T
1595	G	1595	G	1595	G	1583	G	1580	G	1648	G
1596	T	1596	T	1596	T	1584	T	1581	T	1649	T
1597	A	1597	A	1597	A	1585	A	1582	A	1650	A
1598	A	1598	A	1598	A	1586	A	1583	A	1651	A
1599	G	1599	G	1599	G	1587	G	1584	G	1652	G
1600	G	1600	G	1600	G	1588	G	1585	G	1653	G
1601	A	1601	A	1601	A	1589	A	1586	A	1654	A
1602	A	1602	A	1602	A	1590	A	1587	A	1655	A
1603	G	1603	G	1603	G	1591	G	1588	G	1656	G
1604	A	1604	A	1604	A	1592	A	1589	A	1657	A
1605	A	1605	A	1605	A	1593	A	1590	A	1658	A
1606	A	1606	A	1606	A	1594	A	1591	A	1659	A
1607	A	1607	A	1607	A	1595	A	1592	A	1660	A
1608	A	1608	A	1608	A	1596	A	1593	A	1661	A
1609	G	1609	G	1609	G	1597	G	1594	G	1662	G
1610	T	1610	T	1610	T	1598	T	1595	T	1663	T
1611	C	1611	C	1611	C	1599	C	1596	C	1664	C
1612	C	1612	C	1612	C	1600	C	1597	C	1665	C
1613	T	1613	T	1613	T	1601	T	1598	T	1666	T
1614	T	1614	T	1614	T	1602	T	1599	T	1667	T
1615	C	1615	C	1615	C	1603	C	1600	C	1668	C
1616	G	1616	G	1616	G	1604	G	1601	G	1669	G
1617	T	1617	T	1617	T	1605	T	1602	T	1670	T
1618	A	1618	A	1618	A	1606	A	1603	A	1671	A
1619	A	1619	A	1619	A	1607	A	1604	A	1672	A
1620	C	1620	C	1620	C	1608	C	1605	C	1673	C
1621	A	1621	A	1621	A	1609	A	1606	A	1674	A
1622	A	1622	A	1622	A	1610	A	1607	A	1675	A
1623	T	1623	T	1623	T	1611	T	1608	T	1676	T
1624	A	1624	A	1624	A	1612	A	1609	A	1677	A
1625	A	1625	A	1625	A	1613	A	1610	A	1678	A
1626	A	1625	A	1626	A	1614	A	1611	A	1679	A
1627	A	1627	A	1627	A	1615	A	1612	A	1680	A
1628	A	1628	A	1628	A	1616	A	1613	A	1681	A
1629	C	1629	C	1629	C	1617	C	1614	C	1682	C
1630	T	1630	T	1630	T	1618	T	1615	T	1683	T
1631	T	1631	T	1631	T	1619	T	1616	T	1684	T
1632	T	1632	T	1632	T	1620	T	1617	T	1685	T
1633	A	1633	A	1633	A	1621	A	1618	A	1686	A
1634	G	1634	G	1634	G	1622	G	1619	G	1687	G
1635	T	1635	T	1635	T	1623	T	1620	T	1688	T
1636	A	1636	A	1636	A	1624	A	1621	A	1689	A
1637	C	1637	C	1637	C	1625	C	1622	C	1690	C
1638	T	1638	T	1638	T	1626	T	1623	T	1691	T
1639	G	1639	G	1639	G	1627	G	1624	G	1692	G
1640	T	1640	T	1640	T	1628	T	1625	T	1693	T
1641	A	1641	A	1641	A	1629	A	1626	A	1694	A
1642	G	1642	G	1642	G	1630	G	1627	G	1695	G
1643	A	1643	A	1643	A	1631	A	1628	A	1696	A
1644	T	1644	T	1644	T	1632	T	1629	T	1697	T
1645	A	1645	A	1645	A	1633	A	1630	A	1698	A
1646	T	1646	T	1646	T	1634	T	1631	T	1699	T
1647	C	1647	C	1647	C	1635	C	1632	C	1700	C
1648	C	1648	C	1648	C	1636	C	1633	C	1701	C
1649	A	1649	A	1649	A	1637	A	1634	A	1702	A
1650	G	1650	G	1650	G	1638	G	1635	G	1703	G
1651	A	1651	A	1651	A	1639	A	1636	A	1704	A
1652	A	1652	A	1652	A	1640	A	1637	A	1705	A
1653	G	1653	G	1653	G	1641	G	1638	G	1706	G
1654	A	1654	A	1654	A	1642	A	1639	A	1707	A
1655	A	1655	A	1655	A	1643	A	1640	A	1708	A
1656	T	1656	T	1656	T	1644	T	1641	T	1709	T
1657	G	1657	G	1657	G	1645	G	1642	G	1710	G
1658	G	1658	G	1658	G	1646	G	1643	G	1711	G
1659	T	1659	T	1659	T	1647	T	1644	T	1712	T
1660	G	1660	G	1660	G	1648	G	1645	G	1713	G
1661	T	1661	T	1661	T	1649	T	1646	T	1714	T
1662	T	1662	T	1662	T	1650	T	1647	T	1715	T
1663	A	1663	A	1663	A	1651	A	1648	A	1716	A
1664	A	1664	A	1664	A	1652	A	1649	A	1717	A
1665	A	1665	A	1665	A	1653	A	1650	A	1718	A
1666	T	1666	T	1666	T	1654	T	1651	T	1719	T
1667	T	1667	T	1667	T	1655	T	1652	T	1720	T
1668	T	1668	T	1668	T	1656	T	1653	T	1721	T
1669	A	1669	A	1669	A	1657	A	1654	A	1722	A
1670	C	1670	C	1670	C	1658	C	1655	C	1723	C
1671	C	1671	C	1671	C	1659	C	1656	C	1724	C
1672	A	1672	A	1672	A	1660	A	1657	A	1725	A

Kolodner		Kolodner		Cell		Cell Erratum		Kolodner		Kolodner		Chapelle #1
fil. 11/17/93		fil. 12/7/1993		pub. 12/9/93		pub. 4/6/1994		fil. 6/13/1994		fil. 6/5/95		fil. 12/2/1993
08/154,792		08/163,449						08/259,310		08/465,251		08/160,295
SEQ ID NO:8		SEQ ID NO:8						SEQ ID NO:1		SEQ ID NO:8		SEQ ID NO:1
1673	A	1673	A	1673	A	1661	A	1658	A	1673	A	1726
1674	C	1674	C	1674	C	1662	C	1659	C	1674	C	1727
1675	A	1675	A	1675	A	1663	A	1660	A	1675	A	1728
1676	G	1676	G	1676	G	1664	G	1661	G	1676	G	1729
1677	C	1677	C	1677	C	1665	C	1662	C	1677	C	1730
1678	A	1678	A	1678	A	1666	A	1663	A	1678	A	1731
1679	A	1679	A	1679	A	1667	A	1664	A	1679	A	1732
1680	A	1680	A	1680	A	1668	A	1665	A	1680	A	1733
1681	T	1681	T	1681	T	1669	T	1666	T	1681	T	1734
1682	T	1682	T	1682	T	1670	T	1667	T	1682	T	1735
1683	G	1683	G	1683	G	1671	G	1668	G	1683	G	1736
1684	A	1684	A	1684	A	1672	A	1669	A	1684	A	1737
1685	C	1685	C	1685	C	1673	C	1670	C	1685	C	1738
1686	T	1686	T	1686	T	1674	T	1671	T	1686	T	1739
1687	T	1687	T	1687	T	1675	T	1672	T	1687	T	1740
1688	C	1688	C	1688	C	1676	C	1673	C	1688	C	1741
1689	T	1689	T	1689	T	1677	T	1674	T	1689	T	1742
1690	T	1690	T	1690	T	1678	T	1675	T	1690	T	1743
1691	T	1691	T	1691	T	1679	T	1676	T	1691	T	1744
1692	A	1692	A	1692	A	1680	A	1677	A	1692	A	1745
1693	A	1693	A	1693	A	1681	A	1678	A	1693	A	1746
1694	A	1694	A	1694	A	1682	A	1679	A	1694	A	1747
1695	T	1695	T	1695	T	1683	T	1680	T	1695	T	1748
1696	G	1696	G	1696	G	1684	G	1681	G	1696	G	1749
1697	A	1697	A	1697	A	1685	A	1682	A	1697	A	1750
1698	A	1698	A	1698	A	1686	A	1683	A	1698	A	1751
1699	G	1699	G	1699	G	1687	G	1684	G	1699	G	1752
1700	A	1700	A	1700	A	1688	A	1685	A	1700	A	1753
1701	G	1701	G	1701	G	1689	G	1686	G	1701	G	1754
1702	T	1702	T	1702	T	1690	T	1687	T	1702	T	1755
1703	A	1703	A	1703	A	1691	A	1688	A	1703	A	1756
1704	T	1704	T	1704	T	1692	T	1689	T	1704	T	1757
1705	A	1705	A	1705	A	1693	A	1690	A	1705	A	1758
1706	C	1706	C	1706	C	1694	C	1691	C	1706	C	1759
1707	C	1707	C	1707	C	1695	C	1692	C	1707	C	1760
1708	A	1708	A	1708	A	1696	A	1693	A	1708	A	1761
1709	A	1709	A	1709	A	1697	A	1694	A	1709	A	1762
1710	A	1710	A	1710	A	1698	A	1695	A	1710	A	1763
1711	A	1711	A	1711	A	1699	A	1696	A	1711	A	1764
1712	A	1712	A	1712	A	1700	A	1697	A	1712	A	1765
1713	T	1713	T	1713	T	1701	T	1698	T	1713	T	1766
1714	A	1714	A	1714	A	1702	A	1699	A	1714	A	1767
1715	A	1715	A	1715	A	1703	A	1700	A	1715	A	1768
1716	A	1716	A	1716	A	1704	A	1701	A	1716	A	1769
1717	A	1717	A	1717	A	1705	A	1702	A	1717	A	1770
1718	C	1718	C	1718	C	1706	C	1703	C	1718	C	1771
1719	A	1719	A	1719	A	1707	A	1704	A	1719	A	1772
1720	G	1720	G	1720	G	1708	G	1705	G	1720	G	1773
1721	A	1721	A	1721	A	1709	A	1706	A	1721	A	1774
1722	A	1722	A	1722	A	1710	A	1707	A	1722	A	1775
1723	T	1723	T	1723	T	1711	T	1708	T	1723	T	1776
1724	A	1724	A	1724	A	1712	A	1709	A	1724	A	1777
1725	T	1725	T	1725	T	1713	T	1710	T	1725	T	1778
1726	G	1726	G	1726	G	1714	G	1711	G	1726	G	1779
1727	A	1727	A	1727	A	1715	A	1712	A	1727	A	1780
1728	A	1728	A	1728	A	1716	A	1713	A	1728	A	1781
1729	G	1729	G	1729	G	1717	G	1714	G	1729	G	1782
1730	A	1730	A	1730	A	1718	A	1715	A	1730	A	1783
1731	A	1731	A	1731	A	1719	A	1716	A	1731	A	1784
1732	G	1732	G	1732	G	1720	G	1717	G	1732	G	1785
1733	C	1733	C	1733	C	1721	C	1718	C	1733	C	1786
1734	C	1734	C	1734	C	1722	C	1719	C	1734	C	1787
1735	C	1735	C	1735	C	1723	C	1720	C	1735	C	1788
1736	A	1736	A	1736	A	1724	A	1721	A	1736	A	1789
1737	G	1737	G	1737	G	1725	G	1722	G	1737	G	1790
1738	G	1738	G	1738	G	1726	G	1723	G	1738	G	1791
1739	A	1739	A	1739	A	1727	A	1724	A	1739	A	1792
1740	T	1740	T	1740	T	1728	T	1725	T	1740	T	1793
1741	G	1741	G	1741	G	1729	G	1726	G	1741	G	1794
1742	C	1742	C	1742	C	1730	C	1727	C	1742	C	1795
1743	C	1743	C	1743	C	1731	C	1728	C	1743	C	1796
1744	A	1744	A	1744	A	1732	A	1729	A	1744	A	1797
1745	T	1745	T	1745	T	1733	T	1730	T	1745	T	1798
1746	T	1746	T	1746	T	1734	T	1731	T	1746	T	1799
1747	G	1747	G	1747	G	1735	G	1732	G	1747	G	1800
1748	T	1748	T	1748	T	1736	T	1733	T	1748	T	1801
1749	T	1749	T	1749	T	1737	T	1734	T	1749	T	1802
1750	A	1750	A	1750	A	1738	A	1735	A	1750	A	1803
1751	A	1751	A	1751	A	1739	A	1736	A	1751	A	1804
1752	A	1752	A	1752	A	1740	A	1737	A	1752	A	1805
1753	G	1753	G	1753	G	1741	G	1738	G	1753	G	1806
1754	A	1754	A	1754	A	1742	A	1739	A	1754	A	1807
1755	A	1755	A	1755	A	1743	A	1740	A	1755	A	1808

Kolodner		Kolodner	Cell	Cell Erratum	Kolodner		Kolodner		Chapelle #1
fil. 11/17/93		fil. 12/7/1993	pub. 12/9/93	pub. 4/8/1994	fil. 6/13/1994		fil. 6/5/95		fil. 12/2/1993
08/154,792		08/163,449			08/259,310		08/465,251		08/160,295
SEQ ID NO:8		SEQ ID NO:8			SEQ ID NO:1		SEQ ID NO:8		SEQ ID NO:1
1756	A	1756	A	1756	A	1744	A	1741	A
1757	T	1757	T	1757	T	1745	T	1742	T
1758	T	1758	T	1758	T	1746	T	1743	T
1759	G	1759	G	1759	G	1747	G	1744	G
1760	T	1760	T	1760	T	1748	T	1745	T
1761	C	1761	C	1761	C	1749	C	1746	C
1762	A	1762	A	1762	A	1750	A	1747	A
1763	A	1763	A	1763	A	1751	A	1748	A
1764	T	1764	T	1764	T	1752	T	1749	T
1765	A	1765	A	1765	A	1753	A	1750	A
1766	T	1766	T	1766	T	1754	T	1751	T
1767	T	1767	T	1767	T	1755	T	1752	T
1768	T	1768	T	1768	T	1756	T	1753	T
1769	C	1769	C	1769	C	1757	C	1754	C
1770	T	1770	T	1770	T	1758	T	1755	T
1771	T	1771	T	1771	T	1759	T	1756	T
1772	C	1772	C	1772	C	1760	C	1757	C
1773	A	1773	A	1773	A	1781	A	1758	A
1774	G	1774	G	1774	G	1762	G	1759	G
1775	G	1775	G	1775	G	1763	G	1760	G
1776	C	1776	C	1776	C	1764	C	1761	C
1777	T	1777	T	1777	T	1765	T	1762	T
1778	A	1778	A	1778	A	1766	A	1763	A
1779	T	1779	T	1779	T	1767	T	1764	T
1780	G	1780	G	1780	G	1768	G	1765	G
1781	T	1781	T	1781	T	1769	T	1766	T
1782	A	1782	A	1782	A	1770	A	1767	A
1783	G	1783	G	1783	G	1771	G	1768	G
1784	A	1784	A	1784	A	1772	A	1769	A
1785	A	1785	A	1785	A	1773	A	1770	A
1786	C	1786	C	1786	C	1774	C	1771	C
1787	C	1787	C	1787	C	1775	C	1772	C
1788	A	1788	A	1788	A	1776	A	1773	A
1789	A	1789	A	1789	A	1777	A	1774	A
1790	T	1790	T	1790	T	1778	T	1775	T
1791	G	1791	G	1791	G	1779	G	1776	G
1792	C	1792	C	1792	C	1780	C	1777	C
1793	A	1793	A	1793	A	1781	A	1778	A
1794	G	1794	G	1794	G	1782	G	1779	G
1795	A	1795	A	1795	A	1783	A	1780	A
1796	C	1796	C	1796	C	1784	C	1781	C
1797	A	1797	A	1797	A	1785	A	1782	A
1798	C	1798	C	1798	C	1786	C	1783	C
1799	I	1799	I	1799	I	1787	I	1784	I
1800	C	1800	C	1800	C	1788	C	1785	C
1801	A	1801	A	1801	A	1789	A	1786	A
1802	A	1802	A	1802	A	1790	A	1787	A
1803	T	1803	T	1803	T	1791	T	1788	T
1804	G	1804	G	1804	G	1792	G	1789	G
1805	A	1805	A	1805	A	1793	A	1790	A
1806	T	1806	T	1806	T	1794	T	1791	T
1807	G	1807	G	1807	G	1795	G	1792	G
1808	T	1808	T	1808	T	1796	T	1793	T
1809	G	1809	G	1809	G	1797	G	1794	G
1810	T	1810	T	1810	T	1798	T	1795	T
1811	T	1811	T	1811	T	1799	T	1796	T
1812	A	1812	A	1812	A	1800	A	1797	A
1813	G	1813	G	1813	G	1801	G	1798	G
1814	C	1814	C	1814	C	1802	C	1799	C
1815	T	1815	T	1815	T	1803	T	1800	T
1816	C	1816	C	1816	C	1804	C	1801	C
1817	A	1817	A	1817	A	1805	A	1802	A
1818	G	1818	G	1818	G	1806	G	1803	G
1819	C	1819	C	1819	C	1807	C	1804	C
1820	T	1820	T	1820	T	1808	T	1805	T
1821	A	1821	A	1821	A	1809	A	1806	A
1822	G	1822	G	1822	G	1810	G	1807	G
1823	A	1823	A	1823	A	1811	A	1808	A
1824	T	1824	T	1824	T	1812	T	1809	T
1825	G	1825	G	1825	G	1813	G	1810	G
1826	C	1826	C	1826	C	1814	C	1811	C
1827	T	1827	T	1827	T	1815	T	1812	T
1828	G	1828	G	1828	G	1816	G	1813	G
1829	T	1829	T	1829	T	1817	T	1814	T
1830	T	1830	T	1830	T	1818	T	1815	T
1831	G	1831	G	1831	G	1819	G	1816	G
1832	T	1832	T	1832	T	1820	T	1817	T
1833	C	1833	C	1833	C	1821	C	1818	C
1834	A	1834	A	1834	A	1822	A	1819	A
1835	G	1835	G	1835	G	1823	G	1820	G
1836	C	1836	C	1836	C	1824	C	1821	C
1837	T	1837	T	1837	T	1825	T	1822	T
1838	T	1838	T	1838	T	1826	T	1823	T

Kolodner		Kolodner	Cell		Cell Erratum	Kolodner		Kolodner		Chapelle #1
fil. 11/17/93		fil. 12/7/1993	pub. 12/9/93		pub. 4/8/1994	fil. 6/13/1994		fil. 6/5/95		fil. 12/2/1993
08/154,792		08/163,449				08/259,310		08/465,251		08/160285
SEQ ID NO:8		SEQ ID NO:8				SEQ ID NO:1		SEQ ID NO:5		SEQ ID NO:1
1839	T	1839	T	1839	T	1827	T	1824	T	1892
1840	G	1840	G	1840	G	1828	G	1825	G	1893
1841	C	1841	C	1841	C	1829	C	1826	C	1894
1842	T	1842	T	1842	T	1830	T	1827	T	1895
1843	C	1843	C	1843	C	1831	C	1828	C	1896
1844	A	1844	A	1844	A	1832	A	1829	A	1897
1845	C	1845	C	1845	C	1833	C	1830	C	1898
1846	G	1846	G	1846	G	1834	G	1831	G	1899
1847	T	1847	T	1847	T	1835	T	1832	T	1900
1848	G	1848	G	1848	G	1836	G	1833	G	1901
1849	T	1849	T	1849	T	1837	T	1834	T	1902
1850	C	1850	C	1850	C	1838	C	1835	C	1903
1851	A	1851	A	1851	A	1839	A	1836	A	1904
1852	A	1852	A	1852	A	1840	A	1837	A	1905
1853	A	1853	A	1853	A	1841	A	1838	A	1906
1854	T	1854	T	1854	T	1842	T	1839	T	1907
1855	G	1855	G	1855	G	1843	G	1840	G	1908
1856	G	1856	G	1856	G	1844	G	1841	G	1909
1857	A	1857	A	1857	A	1845	A	1842	A	1910
1858	G	1858	G	1858	G	1846	G	1843	G	1911
1859	C	1859	C	1859	C	1847	C	1844	C	1912
1860	A	1860	A	1860	A	1848	A	1845	A	1913
1861	C	1861	C	1861	C	1849	C	1846	C	1914
1862	C	1862	C	1862	C	1850	C	1847	C	1915
1863	T	1863	T	1863	T	1851	T	1848	T	1916
1864	G	1864	G	1864	G	1852	G	1849	G	1917
1865	T	1865	T	1865	T	1853	T	1850	T	1918
1866	T	1866	T	1866	T	1854	T	1851	T	1919
1867	C	1867	C	1867	C	1855	C	1852	C	1920
1868	C	1868	C	1868	C	1856	C	1853	C	1921
1869	A	1869	A	1869	A	1857	A	1854	A	1922
1870	T	1870	T	1870	T	1858	T	1855	T	1923
1871	A	1871	A	1871	A	1859	A	1856	A	1924
1872	T	1872	T	1872	T	1860	T	1857	T	1925
1873	G	1873	G	1873	G	1861	G	1858	G	1926
1874	T	1874	T	1874	T	1862	T	1859	T	1927
1875	A	1875	A	1875	A	1863	A	1860	A	1928
1876	C	1876	C	1876	C	1864	C	1861	C	1929
1877	G	1877	G	1877	G	1865	G	1862	G	1930
1878	A	1878	A	1878	A	1866	A	1863	A	1931
1879	C	1879	C	1879	C	1867	C	1864	C	1932
1880	C	1880	C	1880	C	1868	C	1865	C	1933
1881	A	1881	A	1881	A	1869	A	1866	A	1934
1882	G	1882	G	1882	G	1870	G	1867	G	1935
1883	C	1883	C	1883	C	1871	C	1868	C	1936
1884	C	1884	C	1884	C	1872	C	1869	C	1937
1885	A	1885	A	1885	A	1873	A	1870	A	1938
1886	T	1886	T	1886	T	1874	T	1871	T	1939
1887	T	1887	T	1887	T	1875	T	1872	T	1940
1888	T	1888	T	1888	T	1876	T	1873	T	1941
1889	T	1889	T	1889	T	1877	T	1874	T	1942
1890	G	1890	G	1890	G	1878	G	1875	G	1943
1891	G	1891	G	1891	G	1879	G	1876	G	1944
1892	A	1892	A	1892	A	1880	A	1877	A	1945
1893	G	1893	G	1893	G	1881	G	1878	G	1946
1894	A	1894	A	1894	A	1882	A	1879	A	1947
1895	A	1895	A	1895	A	1883	A	1880	A	1948
1896	A	1896	A	1896	A	1884	A	1881	A	1949
1897	G	1897	G	1897	G	1885	G	1882	G	1950
1898	G	1898	G	1898	G	1886	G	1883	G	1951
1899	A	1899	A	1899	A	1887	A	1884	A	1952
1900	C	1900	C	1900	C	1888	C	1885	C	1953
1901	A	1901	A	1901	A	1889	A	1886	A	1954
1902	A	1902	A	1902	A	1890	A	1887	A	1955
1903	G	1903	G	1903	G	1891	G	1888	G	1956
1904	G	1904	G	1904	G	1892	G	1889	G	1957
1905	A	1905	A	1905	A	1893	A	1890	A	1958
1906	A	1906	A	1906	A	1894	A	1891	A	1959
1907	G	1907	G	1907	G	1895	G	1892	G	1960
1908	A	1908	A	1908	A	1896	A	1893	A	1961
1909	A	1909	A	1909	A	1897	A	1894	A	1962
1910	T	1910	T	1910	T	1898	T	1895	T	1963
1911	T	1911	T	1911	T	1899	T	1896	T	1964
1912	A	1912	A	1912	A	1900	A	1907	A	1965
1913	T	1913	T	1913	T	1901	T	1898	T	1966
1914	A	1914	A	1914	A	1902	A	1899	A	1967
1915	T	1915	T	1915	T	1903	T	1900	T	1968
1916	T	1916	T	1916	T	1904	T	1901	T	1969
1917	A	1917	A	1917	A	1905	A	1902	A	1970
1918	A	1918	A	1918	A	1906	A	1903	A	1971
1919	A	1919	A	1919	A	1907	A	1904	A	1972
1920	A	1920	A	1920	A	1908	A	1905	A	1973
1921	G	1921	G	1921	G	1909	G	1906	G	1974

	Kolodner	Kolodner	Cell	Cell Erratum	Kolodner	Kolodner	Chapelle #1
fil. 11/17/1993	fil. 12/7/1993	pub. 12/9/93	pub. 4/8/1994	fil. 6/13/1994	fil. 6/13/1994	fil. 6/5/95	fil. 12/2/1993
08/154,792	08/163,449			08/259,310	SEQ ID NO:1	08/465,251	08/160295
SEQ ID NO:8	SEQ ID NO:8				SEQ ID NO:1	SEQ ID NO:8	SEQ ID NO:1
1922	C	1922	C	1922	C	1907	C
1923	A	1923	A	1923	A	1923	A
1924	T	1924	T	1924	T	1924	T
1925	C	1925	C	1925	C	1925	C
1926	C	1926	C	1926	C	1926	C
1927	A	1927	A	1927	A	1927	A
1928	G	1928	G	1928	G	1928	G
1929	G	1929	G	1929	G	1929	G
1930	C	1930	C	1930	C	1930	C
1931	A	1931	A	1931	A	1931	A
1932	T	1932	T	1932	T	1932	T
1933	G	1933	G	1933	G	1933	G
1934	C	1934	C	1934	C	1934	C
1935	T	1935	T	1935	T	1935	T
1936	T	1936	T	1924	T	1936	T
1937	G	1937	G	1937	G	1937	G
1938	T	1938	T	1938	T	1938	T
1939	G	1939	G	1939	G	1939	G
1940	T	1940	T	1940	T	1940	T
1941	T	1941	T	1941	T	1941	T
1942	G	1942	G	1942	G	1942	G
1943	A	1943	A	1943	A	1943	A
1944	A	1944	A	1944	A	1944	A
1945	G	1945	G	1945	G	1945	G
1946	T	1946	T	1934	T	1946	T
1947	T	1947	T	1947	T	1947	T
1948	C	1948	C	1948	C	1948	C
1949	A	1949	A	1949	A	1949	A
1950	A	1950	A	1950	A	1950	A
1951	G	1951	G	1951	G	1951	G
1952	A	1952	A	1952	A	1952	A
1953	T	1953	T	1953	T	1953	T
1954	G	1954	G	1954	G	1954	G
1955	A	1955	A	1955	A	1955	A
1956	A	1956	A	1956	A	1956	A
1957	A	1957	A	1957	A	1957	A
1958	T	1958	T	1958	T	1958	T
1959	T	1959	T	1959	T	1959	T
1960	G	1960	G	1960	G	1960	G
1961	C	1961	C	1961	C	1961	C
1962	A	1962	A	1962	A	1962	A
1963	T	1963	T	1963	T	1963	T
1964	T	1964	T	1964	T	1964	T
1965	T	1965	T	1965	T	1965	T
1966	A	1966	A	1966	A	1966	A
1967	T	1967	T	1967	T	1967	T
1968	T	1968	T	1968	T	1968	T
1969	C	1969	C	1969	C	1969	C
1970	C	1970	C	1970	C	1970	C
1971	T	1971	T	1971	T	1971	T
1972	A	1972	A	1972	A	1972	A
1973	A	1973	A	1961	A	1973	A
1974	T	1974	T	1974	T	1974	T
1975	G	1975	G	1975	G	1975	G
1976	A	1976	A	1976	A	1976	A
1977	C	1977	C	1977	C	1977	C
1978	G	1978	G	1978	G	1978	G
1979	T	1979	T	1979	T	1979	T
1980	A	1980	A	1980	A	1980	A
1981	T	1981	T	1981	T	1981	T
1982	A	1982	A	1982	A	1982	A
1983	C	1983	C	1983	C	1983	C
1984	T	1984	T	1984	T	1984	T
1985	T	1985	T	1985	T	1985	T
1986	T	1986	T	1986	T	1986	T
1987	G	1987	G	1987	G	1987	G
1988	A	1988	A	1988	A	1988	A
1989	A	1989	A	1989	A	1989	A
1990	A	1990	A	1990	A	1990	A
1991	A	1991	A	1991	A	1991	A
1992	A	1992	A	1992	A	1992	A
1993	G	1993	G	1993	G	1993	G
1994	A	1994	A	1994	A	1994	A
1995	T	1995	T	1995	T	1995	T
1996	A	1996	A	1996	A	1996	A
1997	A	1997	A	1997	A	1997	A
1998	A	1998	A	1998	A	1998	A
1999	C	1999	C	1999	C	1999	C
2000	A	2000	A	2000	A	2000	A
2001	G	2001	G	2001	G	2001	G
2002	A	2002	A	2002	A	2002	A
2003	T	2003	T	2003	T	2003	T
2004	G	2004	G	2004	G	2004	G

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fil. 11/17/93	fil. 12/7/1993	pub. 12/9/93	pub. 4/8/1994	fil. 6/13/1994	fil. 6/5/95	fil. 12/2/1993
0B/154,782	08/163,449			08/259,310	08/465,251	08/160295
SEQ ID NO:8	SEQ ID NO:8			SEQ ID NO:1	SEQ ID NO:8	SEQ ID NO:1
2005 T	2005 T	2005 T	1993 T	1990 T	2058 T	T
2006 T	2006 T	2006 T	1994 T	1991 T	2059 C	C
2007 C	2007 C	2007 C	1995 C	1992 C	2060 C	C
2008 C	2008 C	2008 C	1996 C	1993 C	2061 C	C
2009 A	2009 A	2009 A	1997 A	1994 A	2062 A	A
2010 C	2010 C	2010 C	1998 C	1995 C	2063 C	C
2011 A	2011 A	2011 A	1999 A	1996 A	2064 A	A
2012 T	2012 T	2012 T	2000 T	1997 T	2065 T	T
2013 C	2013 C	2013 C	2001 C	1998 C	2066 C	C
2014 A	2014 A	2014 A	2002 A	1999 A	2067 A	A
2015 T	2015 T	2015 T	2003 T	2000 T	2068 T	T
2016 T	2016 T	2016 T	2004 T	2001 T	2069 T	T
2017 A	2017 A	2017 A	2005 A	2002 A	2070 A	A
2018 C	2018 C	2018 C	2006 C	2003 C	2071 C	C
2019 T	2019 T	2019 T	2007 T	2004 T	2072 T	T
2020 G	2020 G	2020 G	2008 G	2005 G	2073 G	G
2021 G	2021 G	2021 G	2009 G	2006 G	2074 G	G
2022 C	2022 C	2022 C	2010 C	2007 C	2075 C	C
2023 C	2023 C	2023 C	2011 C	2008 C	2076 C	C
2024 C	2024 C	2024 C	2012 C	2009 C	2077 C	C
2025 C	2025 C	2025 C	2013 C	2010 C	2078 C	C
2026 A	2026 A	2026 A	2014 A	2011 A	2079 A	A
2027 A	2027 A	2027 A	2015 A	2012 A	2080 A	A
2028 T	2028 T	2028 T	2016 T	2013 T	2081 T	T
2029 A	2029 A	2029 A	2017 A	2014 A	2082 A	A
2030 T	2030 T	2030 T	2018 T	2015 T	2083 T	T
2031 G	2031 G	2031 G	2019 G	2016 G	2084 G	G
2032 G	2032 G	2032 G	2020 G	2017 G	2085 G	G
2033 G	2033 G	2033 G	2021 G	2018 G	2086 G	G
2034 A	2034 A	2034 A	2022 A	2019 A	2087 A	A
2035 G	2035 G	2035 G	2023 G	2020 G	2088 G	G
2036 G	2036 G	2036 G	2024 G	2021 G	2089 G	G
2037 T	2037 T	2037 T	2025 T	2022 T	2090 T	T
2038 A	2038 A	2038 A	2026 A	2023 A	2091 A	A
2039 A	2039 A	2039 A	2027 A	2024 A	2092 A	A
2040 A	2040 A	2040 A	2028 A	2025 A	2093 A	A
2041 T	2041 T	2041 T	2029 T	2026 T	2094 T	T
2042 C	2042 C	2042 C	2030 C	2027 C	2095 C	C
2043 A	2043 A	2043 A	2031 A	2028 A	2096 A	A
2044 A	2044 A	2044 A	2032 A	2029 A	2097 A	A
2045 C	2045 C	2045 C	2033 C	2030 C	2098 C	C
2046 A	2046 A	2046 A	2034 A	2031 A	2099 A	A
2047 T	2047 T	2047 T	2035 T	2032 T	2100 T	T
2048 A	2048 A	2048 A	2036 A	2033 A	2101 A	A
2049 T	2049 T	2049 T	2037 T	2034 T	2102 T	T
2050 A	2050 A	2050 A	2038 A	2035 A	2103 A	A
2051 T	2051 T	2051 T	2039 T	2036 T	2104 T	T
2052 T	2052 T	2052 T	2040 T	2037 T	2105 T	T
2053 C	2053 C	2053 C	2041 C	2038 C	2106 C	C
2054 G	2054 G	2054 G	2042 G	2039 G	2107 G	G
2055 A	2055 A	2055 A	2043 A	2040 A	2108 G	A
2056 C	2056 C	2056 C	2044 C	2041 C	2109 C	C
2057 A	2057 A	2057 A	2045 A	2042 A	2110 A	A
2058 A	2058 A	2058 A	2046 A	2043 A	2111 A	A
2059 A	2059 A	2059 A	2047 A	2044 A	2112 A	A
2060 C	2060 C	2060 C	2048 C	2045 C	2113 C	C
2061 T	2061 T	2061 T	2049 T	2046 T	2114 T	T
2062 G	2062 G	2062 G	2050 G	2047 G	2115 G	G
2063 G	2063 G	2063 G	2051 G	2048 G	2116 G	G
2064 G	2064 G	2064 G	2052 G	2049 G	2117 G	G
2065 G	2065 G	2065 G	2053 G	2050 G	2118 G	G
2066 T	2066 T	2066 T	2054 T	2051 T	2119 T	T
2067 G	2067 G	2067 G	2055 G	2052 G	2120 G	G
2068 A	2068 A	2068 A	2056 A	2053 A	2121 A	A
2069 T	2069 T	2069 T	2057 T	2054 T	2122 T	T
2070 A	2070 A	2070 A	2058 A	2055 A	2123 A	A
2071 G	2071 G	2071 G	2059 G	2056 G	2124 G	G
2072 T	2072 T	2072 T	2060 T	2057 T	2125 T	T
2073 A	2073 A	2073 A	2061 A	2058 A	2126 A	A
2074 C	2074 C	2074 C	2062 C	2059 C	2127 C	C
2075 T	2075 T	2075 T	2063 T	2060 T	2128 T	T
2076 C	2076 C	2076 C	2064 C	2061 C	2129 C	C
2077 A	2077 A	2077 A	2065 A	2062 A	2130 A	A
2078 T	2078 T	2078 T	2066 T	2063 T	2131 T	T
2079 G	2079 G	2079 G	2067 G	2064 G	2132 G	G
2080 G	2080 G	2080 G	2068 G	2065 G	2133 G	G
2081 C	2081 C	2081 C	2069 C	2066 C	2134 C	C
2082 C	2082 C	2082 C	2070 C	2067 C	2135 C	C
2083 C	2083 C	2083 C	2071 C	2068 C	2136 C	C
2084 A	2084 A	2084 A	2072 A	2069 A	2137 A	A
2085 A	2085 A	2085 A	2073 A	2070 A	2138 A	A
2086 A	2086 A	2086 A	2074 A	2071 A	2139 A	A
2087 T	2087 T	2087 T	2075 T	2072 T	2140 T	T

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08/154,792	08/163,449			08/259,310	08/465,251	08/160295
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2088 T	2088 T	2088 T	2076 T	2073 T	2088 T	2141 T
2089 G	2089 G	2089 G	2077 G	2074 G	2089 G	2142 G
2090 G	2090 G	2090 G	2078 G	2075 G	2090 G	2143 G
2091 G	2091 G	2091 G	2079 G	2076 G	2091 G	2144 G
2092 T	2092 T	2092 T	2080 T	2077 T	2092 T	2145 T
2093 G	2093 G	2093 G	2081 G	2078 G	2093 G	2146 G
2094 T	2094 T	2094 T	2082 T	2079 T	2094 T	2147 T
2095 T	2095 T	2095 T	2083 T	2080 T	2095 T	2148 T
2096 T	2096 T	2096 T	2084 T	2081 T	2096 T	2149 T
2097 T	2097 T	2097 T	2085 T	2082 T	2097 T	2150 T
2098 G	2098 G	2098 G	2086 G	2083 G	2098 G	2151 G
2099 T	2099 T	2099 T	2087 T	2084 T	2099 T	2152 T
2100 G	2100 G	2100 G	2088 G	2085 G	2100 G	2153 G
2101 C	2101 C	2101 C	2089 C	2086 C	2101 C	2154 C
2102 C	2102 C	2102 C	2090 C	2087 C	2102 C	2155 C
2103 A	2103 A	2103 A	2091 A	2088 A	2103 A	2156 A
2104 T	2104 T	2104 T	2092 T	2089 T	2104 T	2157 T
2105 G	2105 G	2105 G	2089 G	2090 G	2105 G	2158 G
2106 T	2106 T	2106 T	2094 T	2091 T	2106 T	2159 T
2107 G	2107 G	2107 G	2095 G	2092 G	2107 G	2160 G
2108 A	2108 A	2108 A	2096 A	2093 A	2108 A	2161 A
2109 G	2109 G	2109 G	2097 G	2094 G	2109 G	2162 G
2110 T	2110 T	2110 T	2098 T	2095 T	2110 T	2163 T
2111 C	2111 C	2111 C	2099 C	2096 C	2111 C	2164 C
2112 A	2112 A	2112 A	2100 A	2097 A	2112 A	2165 A
2113 G	2113 G	2113 G	2101 G	2098 G	2113 G	2166 G
2114 C	2114 C	2114 C	2102 C	2099 C	2114 C	2167 C
2115 A	2115 A	2115 A	2103 A	2100 A	2115 A	2168 A
2116 G	2116 G	2116 G	2104 G	2101 G	2116 G	2169 G
2117 A	2117 A	2117 A	2105 A	2102 A	2117 A	2170 A
2118 A	2118 A	2118 A	2106 A	2103 A	2118 A	2171 A
2119 G	2119 G	2119 G	2107 G	2104 G	2119 G	2172 G
2120 T	2120 T	2120 T	2108 T	2105 T	2120 T	2173 T
2121 G	2121 G	2121 G	2109 G	2106 G	2121 G	2174 G
2122 T	2122 T	2122 T	2110 T	2107 T	2122 T	2175 T
2123 C	2123 C	2123 C	2111 C	2108 C	2123 C	2176 C
2124 C	2124 C	2124 C	2112 C	2109 C	2124 C	2177 C
2125 A	2125 A	2125 A	2113 A	2110 A	2125 A	2178 A
2126 T	2126 T	2126 T	2114 T	2111 T	2126 T	2179 T
2127 T	2127 T	2127 T	2115 T	2112 T	2127 T	2180 T
2128 G	2128 G	2128 G	2116 G	2113 G	2128 G	2181 G
2129 T	2129 T	2129 T	2117 T	2114 T	2129 T	2182 T
2130 G	2130 G	2130 G	2118 G	2115 G	2130 G	2183 G
2131 G	2131 G	2131 G	2119 G	2116 G	2131 G	2184 G
2132 A	2132 A	2132 A	2120 A	2117 A	2132 A	2185 A
2133 C	2133 C	2133 C	2121 C	2118 C	2133 C	2186 C
2134 T	2134 T	2134 T	2122 T	2119 T	2134 T	2187 T
2135 G	2135 G	2135 G	2123 G	2120 G	2135 G	2188 G
2136 C	2136 C	2136 C	2124 C	2121 C	2136 C	2189 C
2137 A	2137 A	2137 A	2125 A	2122 A	2137 A	2190 A
2138 T	2138 T	2138 T	2126 T	2123 T	2138 T	2191 T
2139 C	2139 C	2139 C	2127 C	2124 C	2139 C	2192 C
2140 T	2140 T	2140 T	2128 T	2125 T	2140 T	2193 T
2141 T	2141 T	2141 T	2129 T	2126 T	2141 T	2194 T
2142 A	2142 A	2142 A	2130 A	2127 A	2142 A	2195 A
2143 G	2143 G	2143 G	2131 G	2128 G	2143 G	2196 G
2144 C	2144 C	2144 C	2132 C	2129 C	2144 C	2197 C
2145 C	2145 C	2145 C	2133 C	2130 C	2145 C	2198 C
2146 C	2146 C	2146 C	2134 C	2131 C	2146 C	2199 C
2147 G	2147 G	2147 G	2135 G	2132 G	2147 G	2200 G
2148 A	2148 A	2148 A	2136 A	2133 A	2148 A	2201 A
2149 G	2149 G	2149 G	2137 G	2134 G	2149 G	2202 G
2150 T	2150 T	2150 T	2138 T	2135 T	2150 T	2203 T
2151 A	2151 A	2151 A	2139 A	2136 A	2151 A	2204 A
2152 G	2152 G	2152 G	2140 G	2137 G	2152 G	2205 G
2153 G	2153 G	2153 G	2141 G	2138 G	2153 G	2206 G
2154 G	2154 G	2154 G	2142 G	2139 G	2154 G	2207 G
2155 G	2155 G	2155 G	2143 G	2140 G	2155 G	2208 G
2156 C	2156 C	2156 C	2144 C	2141 C	2156 C	2209 C
2157 T	2157 T	2157 T	2145 T	2142 T	2157 T	2210 T
2158 G	2158 G	2158 G	2146 G	2143 G	2158 G	2211 G
2159 G	2159 G	2159 G	2147 G	2144 G	2159 G	2212 G
2160 T	2160 T	2160 T	2148 T	2145 T	2160 T	2213 T
2161 G	2161 G	2161 G	2149 G	2146 G	2161 G	2214 G
2162 A	2162 A	2162 A	2150 A	2147 A	2162 A	2215 A
2163 C	2163 C	2163 C	2151 C	2148 C	2163 C	2216 C
2164 A	2164 A	2164 A	2152 A	2149 A	2164 A	2217 A
2165 G	2165 G	2165 G	2153 G	2150 G	2165 G	2218 G
2166 T	2166 T	2166 T	2154 T	2151 T	2166 T	2219 T
2167 C	2167 C	2167 C	2155 C	2152 C	2167 C	2220 C
2168 A	2168 A	2168 A	2156 A	2153 A	2168 A	2221 A
2169 A	2169 A	2169 A	2157 A	2154 A	2169 A	2222 A
2170 T	2170 T	2170 T	2158 T	2155 T	2170 T	2223 T

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08/154,792	08/163,449			08/259,310	SEQ ID NO:1	08/465,251	SEQ ID NO:8
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2173 A 2173 A 2173 A 2161 A 2158 A 2173 A 2226 A	2174 A 2174 A 2174 A 2162 A 2159 A 2174 A 2227 A						
2175 A 2175 A 2175 A 2163 A 2160 A 2175 A 2228 A	2176 G 2176 G 2176 G 2164 G 2161 G 2176 G 2229 G						
2177 G 2177 G 2177 G 2165 G 2162 G 2177 G 2230 G	2178 A 2178 A 2178 A 2166 A 2163 A 2178 A 2231 A						
2179 G 2179 G 2179 G 2167 G 2164 G 2179 G 2232 G	2180 T 2180 T 2180 T 2168 T 2165 T 2180 T 2233 T						
2181 C 2181 C 2181 C 2169 C 2166 C 2181 C 2234 C	2182 T 2182 T 2182 T 2170 T 2167 T 2182 T 2235 T						
2183 C 2183 C 2183 C 2171 C 2168 C 2183 C 2236 C	2184 C 2184 C 2184 C 2172 C 2169 C 2184 C 2237 C						
2185 A 2185 A 2185 A 2173 A 2170 A 2185 A 2238 A	2186 C 2186 C 2186 C 2174 C 2171 C 2186 C 2239 C						
2187 G 2187 G 2187 G 2175 G 2172 G 2187 G 2240 G	2188 T 2188 T 2188 T 2176 T 2173 T 2188 T 2241 T						
2189 T 2189 T 2189 T 2177 T 2174 T 2189 T 2242 T	2190 C 2190 C 2190 C 2178 C 2175 C 2190 C 2243 C						
2191 A 2191 A 2191 A 2179 A 2176 A 2191 A 2244 A	2192 T 2192 T 2192 T 2180 T 2177 T 2192 T 2245 T						
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2195 C 2195 C 2195 C 2183 C 2180 C 2195 C 2248 C	2196 T 2196 T 2196 T 2184 T 2181 T 2196 T 2249 T						
2197 G 2197 G 2197 G 2185 G 2182 G 2197 G 2250 G	2198 A 2198 A 2198 A 2186 A 2183 A 2198 A 2251 A						
2199 A 2199 A 2199 A 2187 A 2184 A 2199 A 2252 A	2200 A 2200 A 2200 A 2188 A 2185 A 2200 A 2253 A						
2201 T 2201 T 2201 T 2189 T 2186 T 2201 T 2254 T	2202 G 2202 G 2202 G 2190 G 2187 G 2202 G 2255 G						
2203 T 2203 T 2203 T 2191 T 2188 T 2203 T 2256 T	2204 T 2204 T 2204 T 2192 T 2189 T 2204 T 2257 T						
2205 G 2205 G 2205 G 2193 G 2190 G 2205 G 2258 G	2206 G 2206 G 2206 G 2194 G 2191 G 2206 G 2259 G						
2207 A 2207 A 2207 A 2195 A 2192 A 2207 A 2260 A	2208 A 2208 A 2208 A 2196 A 2193 A 2208 A 2261 A						
2209 A 2209 A 2209 A 2197 A 2194 A 2209 A 2262 A	2210 C 2210 C 2210 C 2198 C 2195 C 2210 C 2263 C						
2211 T 2211 T 2211 T 2198 T 2196 T 2211 T 2264 T	2212 G 2212 G 2212 G 2200 G 2197 G 2212 G 2265 G						
2213 C 2213 C 2213 C 2201 C 2198 C 2213 C 2266 C	2214 T 2214 T 2214 T 2202 T 2199 T 2214 T 2267 T						
2215 T 2215 T 2215 T 2203 T 2200 T 2215 T 2268 T	2216 C 2216 C 2216 C 2204 C 2201 C 2216 C 2269 C						
2217 T 2217 T 2217 T 2205 T 2202 T 2217 T 2270 T	2218 A 2218 A 2218 A 2206 A 2203 A 2218 A 2271 A						
2219 T 2219 T 2219 T 2207 T 2204 T 2219 T 2272 T	2220 C 2220 C 2220 C 2208 C 2205 C 2220 C 2273 C						
2221 C 2221 C 2221 C 2209 C 2206 C 2221 C 2274 C	2222 T 2222 T 2222 T 2210 T 2207 T 2222 T 2275 T						
2223 C 2223 C 2223 C 2211 C 2208 C 2223 C 2276 C	2224 A 2224 A 2224 A 2212 A 2209 A 2224 A 2277 A						
2225 G 2225 G 2225 G 2213 G 2210 G 2225 G 2278 G	2226 G 2226 G 2226 G 2214 G 2211 G 2226 G 2279 G						
2227 T 2227 T 2227 T 2215 T 2212 T 2227 T 2280 T	2228 C 2228 C 2228 C 2216 C 2213 C 2228 C 2281 C						
2229 T 2229 T 2229 T 2217 T 2214 T 2229 T 2282 T	2230 G 2230 G 2230 G 2218 G 2215 G 2230 G 2283 G						
2231 C 2231 C 2231 C 2219 C 2216 C 2231 C 2284 C	2232 A 2232 A 2232 A 2220 A 2217 A 2232 A 2285 A						
2233 A 2233 A 2233 A 2221 A 2218 A 2233 A 2286 A	2234 C 2234 C 2234 C 2222 C 2219 C 2234 C 2287 C						
2235 C 2235 C 2235 C 2223 C 2220 C 2235 C 2288 C	2236 A 2236 A 2236 A 2224 A 2221 A 2236 A 2289 A						
2237 A 2237 A 2237 A 2225 A 2222 A 2237 A 2290 A	2238 A 2238 A 2238 A 2226 A 2223 A 2238 A 2291 A						
2239 G 2239 G 2239 G 2227 G 2224 G 2239 G 2292 G	2240 A 2240 A 2240 A 2228 A 2225 A 2240 A 2293 A						
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2243 C 2243 C 2243 C 2231 C 2228 C 2243 C 2296 C	2244 A 2244 A 2244 A 2232 A 2229 A 2244 A 2297 A						
2245 T 2245 T 2245 T 2233 T 2230 T 2245 T 2298 T	2246 T 2246 T 2246 T 2234 T 2231 T 2246 T 2299 T						
2247 A 2247 A 2247 A 2235 A 2232 A 2247 A 2300 A	2248 A 2248 A 2248 A 2236 A 2233 A 2248 A 2301 A						
2249 T 2249 T 2249 T 2237 T 2234 T 2249 T 2302 T	2250 A 2250 A 2250 A 2238 A 2235 A 2250 A 2303 A						
2251 A 2251 A 2251 A 2239 A 2236 A 2251 A 2304 A	2252 T 2252 T 2252 T 2240 T 2237 T 2252 T 2305 T						
2253 C 2253 C 2253 C 2241 C 2238 C 2253 C 2306 C							

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	08/154,792		08/163,449						08/259,310		08/465,251		08/160295
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2254	A	2254	A	2254	A	2242	A	2239	A	2254	A	2307	A
2255	T	2255	T	2255	T	2243	T	2240	T	2255	T	2308	T
2256	A	2256	A	2256	A	2244	A	2241	A	2256	A	2309	A
2257	G	2257	G	2257	G	2245	G	2242	G	2257	G	2310	G
2258	A	2258	A	2258	A	2246	A	2243	A	2258	A	2311	A
2259	T	2259	T	2259	T	2247	T	2244	T	2259	T	2312	T
2260	G	2260	G	2260	G	2248	G	2245	G	2260	G	2313	G
2261	A	2261	A	2261	A	2249	A	2246	A	2261	A	2314	A
2262	A	2262	A	2262	A	2250	A	2247	A	2262	A	2315	A
2263	T	2263	T	2263	T	2251	T	2248	T	2263		2316	T
2264	T	2264	T	2264	T	2252	T	2249	T	2264	T	2317	T
2265	G	2265	G	2265	G	2253	G	2250	G	2265	G	2318	G
2266	G	2266	G	2266	G	2254	G	2251	G	2266	G	2319	G
2267	G	2267	G	2267	G	2255	G	2252	G	2267	G	2320	G
2268	A	2268	A	2268	A	2256	A	2253	A	2268	A	2321	A
2269	A	2269	A	2269	A	2257	A	2254	A	2269	A	2322	A
2270	G	2270	G	2270	G	2258	G	2255	G	2270	G	2323	G
2271	A	2271	A	2271	A	2259	A	2256	A	2271	A	2324	A
2272	G	2272	G	2272	G	2260	G	2257	G	2272	G	2325	G
2273	G	2273	G	2273	G	2261	G	2258	G	2273	G	2326	G
2274	A	2274	A	2274	A	2262	A	2259	A	2274	A	2327	A
2275	A	2275	A	2275	A	2263	A	2260	A	2275	A	2328	A
2276	C	2276	C	2276	C	2264	C	2261	C	2276	C	2329	C
2277	T	2277	T	2277	T	2265	T	2262	T	2277	T	2330	T
2278	T	2278	T	2278	T	2266	T	2263	T	2278	T	2331	T
2279	C	2279	C	2279	C	2267	C	2264	C	2279	C	2332	C
2280	T	2280	T	2280	T	2268	T	2265	T	2280	T	2333	T
2281	A	2281	A	2281	A	2269	A	2266	A	2281	A	2334	A
2282	C	2282	C	2282	C	2270	C	2267	C	2282	C	2335	C
2283	C	2283	C	2283	C	2271	C	2268	C	2283	C	2336	C
2284	T	2284	T	2284	T	2272	T	2269	T	2284	T	2337	T
2285	A	2285	A	2285	A	2273	A	2270	A	2285	A	2338	A
2286	C	2286	C	2286	C	2274	C	2271	C	2286	C	2339	C
2287	G	2287	G	2287	G	2275	G	2272	G	2287	G	2340	G
2288	A	2288	A	2288	A	2276	A	2273	A	2288	A	2341	A
2289	T	2289	T	2289	T	2277	T	2274	T	2289	T	2342	T
2290	G	2290	G	2290	G	2278	G	2275	G	2290	G	2343	G
2291	G	2291	G	2291	G	2279	G	2276	G	2291	G	2344	G
2292	A	2292	A	2292	A	2280	A	2277	A	2292	A	2345	A
2293	T	2293	T	2293	T	2281	T	2278	T	2293	T	2346	T
2294	T	2294	T	2294	T	2282	T	2279	T	2294	T	2347	T
2295	T	2295	T	2295	T	2283	T	2280	T	2295	T	2348	T
2296	G	2296	G	2296	G	2284	G	2281	G	2296	G	2349	G
2297	G	2297	G	2297	G	2285	G	2282	G	2297	G	2350	G
2298	G	2298	G	2298	G	2286	G	2283	G	2298	G	2351	G
2299	T	2299	T	2299	T	2287	T	2284	T	2299	T	2352	T
2300	T	2300	T	2300	T	2288	T	2285	T	2300	T	2353	T
2301	A	2301	A	2301	A	2289	A	2286	A	2301	A	2354	A
2302	G	2302	G	2302	G	2290	G	2287	G	2302	G	2355	G
2303	C	2303	C	2303	C	2291	C	2288	C	2303	C	2356	C
2304	A	2304	A	2304	A	2292	A	2289	A	2304	A	2357	A
2305	T	2305	T	2305	T	2293	T	2290	T	2305	T	2358	T
2306	G	2306	G	2306	G	2294	G	2291	G	2306	G	2359	G
2307	G	2307	G	2307	G	2295	G	2292	G	2307	G	2360	G
2308	G	2308	G	2308	G	2296	G	2293	G	2308	G	2361	G
2309	C	2309	C	2309	C	2297	C	2294	C	2309	C	2362	C
2310	T	2310	T	2310	T	2298	T	2295	T	2310	T	2363	T
2311	A	2311	A	2311	A	2299	A	2296	A	2311	A	2364	A
2312	T	2312	T	2312	T	2300	T	2297	T	2312	T	2365	T
2313	A	2313	A	2313	A	2301	A	2298	A	2313	A	2366	A
2314	T	2314	T	2314	T	2302	T	2299	T	2314	T	2367	T
2315	C	2315	C	2315	C	2303	C	2300	C	2315	C	2368	C
2316	A	2316	A	2316	A	2304	A	2301	A	2316	A	2369	A
2317	G	2317	G	2317	G	2305	G	2302	G	2317	G	2370	G
2318	A	2318	A	2318	A	2306	A	2303	A	2318	A	2371	A
2319	A	2319	A	2319	A	2307	A	2304	A	2319	A	2372	A
2320	T	2320	T	2320	T	2308	T	2305	T	2320	T	2373	T
2321	A	2321	A	2321	A	2309	A	2306	A	2321	A	2374	A
2322	C	2322	C	2322	C	2310	C	2307	C	2322	C	2375	C
2323	A	2323	A	2323	A	2311	A	2308	A	2323	A	2376	A
2324	T	2324	T	2324	T	2312	T	2309	T	2324	T	2377	T
2325	T	2325	T	2325	T	2313	T	2310	T	2325	T	2378	T
2326	G	2326	G	2326	G	2314	G	2311	G	2326	G	2379	G
2327	C	2327	C	2327	C	2315	C	2312	C	2327	C	2380	C
2328	A	2328	A	2328	A	2316	A	2313	A	2328	A	2381	A
2329	A	2329	A	2329	A	2317	A	2314	A	2329	A	2382	A
2330	C	2330	C	2330	C	2318	C	2315	C	2330	C	2383	C
2331	A	2331	A	2331	A	2319	A	2316	A	2331	A	2384	A
2332	A	2332	A	2332	A	2320	A	2317	A	2332	A	2385	A
2333	A	2333	A	2333	A	2321	A	2318	A	2333	A	2386	A
2334	G	2334	G	2334	G	2322	G	2319	G	2334	G	2387	G
2335	A	2335	A	2335	A	2323	A	2320	A	2335	A	2388	A
2336	T	2336	T	2336	T	2324	T	2321	T	2336	T	2389	T

Kolodner	Kolodner	Cell	Cell Erratum	Kolodner	Kolodner	Chapelle #1
fil. 11/17/93	fil. 12/7/1993	pub. 12/9/93	pub. 4/8/1994	fil. 6/13/1994	fil. 6/5/95	fil. 12/2/1993
08/154 792	08/163,449			08/259,310	08/485,251	08/160295
SEQ ID NO:8	SEQ ID NO:8			SEQ ID NO:1	SEQ ID NO:8	SEQ ID NO:1
2337 T	2337 T	2337 T	2325 T	2322 T	2337 T	2390 T
2338 G	2338 G	2338 G	2326 G	2323 G	2338 G	2391 G
2339 G	2339 G	2339 G	2327 G	2324 G	2339 G	2392 G
2340 T	2340 T	2340 T	2328 T	2325 T	2340 T	2393 T
2341 G	2341 G	2341 G	2329 G	2326 G	2341 G	2394 G
2342 C	2342 C	2342 C	2330 C	2327 C	2342 C	2395 C
2343 T	2343 T	2343 T	2331 T	2328 T	2343 T	2396 T
2344 T	2344 T	2344 T	2332 T	2329 T	2344 T	2397 T
2345 T	2345 T	2345 T	2333 T	2330 T	2345 T	2398 T
2346 T	2346 T	2346 T	2334 T	2331 T	2346 T	2399 T
2347 T	2347 T	2347 T	2335 T	2332 T	2347 T	2400 T
2348 G	2348 G	2348 G	2336 G	2333 G	2348 G	2401 G
2349 C	2349 C	2349 C	2337 C	2334 C	2349 C	2402 C
2350 A	2350 A	2350 A	2338 A	2335 A	2350 A	2403 A
2351 T	2351 T	2351 T	2339 T	2336 T	2351 T	2404 T
2352 G	2352 G	2352 G	2340 G	2337 G	2352 G	2405 G
2353 T	2353 T	2353 T	2341 T	2338 T	2353 T	2406 T
2354 T	2354 T	2354 T	2342 T	2339 T	2354 T	2407 T
2355 T	2355 T	2355 T	2343 T	2340 T	2355 T	2408 T
2356 G	2356 G	2356 G	2344 G	2341 G	2356 G	2409 G
2357 C	2357 C	2357 C	2345 C	2342 C	2357 C	2410 C
2358 A	2358 A	2358 A	2346 A	2343 A	2358 A	2411 A
2359 A	2359 A	2359 A	2347 A	2344 A	2359 A	2412 A
2360 C	2360 C	2360 C	2348 C	2345 C	2360 C	2413 C
2361 C	2361 C	2361 C	2349 C	2346 C	2361 C	2414 C
2362 C	2362 C	2362 C	2350 C	2347 C	2362 C	2415 C
2363 A	2363 A	2363 A	2351 A	2348 A	2363 A	2416 A
2364 T	2364 T	2364 T	2352 T	2349 T	2364 T	2417 T
2365 T	2365 T	2365 T	2353 T	2350 T	2365 T	2418 T
2366 T	2366 T	2366 T	2354 T	2351 T	2366 T	2419 T
2367 T	2367 T	2367 T	2355 T	2352 T	2367 T	2420 T
2368 C	2368 C	2368 C	2356 C	2353 C	2368 C	2421 C
2369 A	2369 A	2369 A	2357 A	2354 A	2369 A	2422 A
2370 T	2370 T	2370 T	2358 T	2355 T	2370 T	2423 T
2371 G	2371 G	2371 G	2359 G	2356 G	2371 G	2424 G
2372 A	2372 A	2372 A	2360 A	2357 A	2372 A	2425 A
2373 A	2373 A	2373 A	2361 A	2358 A	2373 A	2426 A
2374 C	2374 C	2374 C	2362 C	2359 C	2374 C	2427 C
2375 T	2375 T	2375 T	2363 T	2360 T	2375 T	2428 T
2376 T	2376 T	2376 T	2364 T	2361 T	2376 T	2429 T
2377 A	2377 A	2377 A	2365 A	2362 A	2377 A	2430 A
2378 C	2378 C	2378 C	2366 C	2363 C	2378 C	2431 C
2379 T	2379 T	2379 T	2367 T	2364 T	2379 T	2432 T
2380 G	2380 G	2380 G	2368 G	2365 G	2380 G	2433 G
2381 C	2381 C	2381 C	2369 C	2366 C	2381 C	2434 C
2382 C	2382 C	2382 C	2370 C	2367 C	2382 C	2435 C
2383 T	2383 T	2383 T	2371 T	2368 T	2383 T	2436 T
2384 T	2384 T	2384 T	2372 T	2369 T	2384 T	2437 T
2385 G	2385 G	2385 G	2373 G	2370 G	2385 G	2438 G
2386 G	2386 G	2386 G	2374 G	2371 G	2386 G	2439 G
2387 C	2387 C	2387 C	2375 C	2372 C	2387 C	2440 C
2388 C	2388 C	2388 C	2376 C	2373 C	2388 C	2441 C
2389 A	2389 A	2389 A	2377 A	2374 A	2389 A	2442 A
2390 A	2390 A	2390 A	2378 A	2375 A	2390 A	2443 A
2391 T	2391 T	2391 T	2379 T	2376 T	2391 T	2444 T
2392 C	2392 C	2392 C	2380 C	2377 C	2392 C	2445 C
2393 A	2393 A	2393 A	2381 A	2378 A	2393 A	2446 A
2394 G	2394 G	2394 G	2382 G	2379 G	2394 G	2447 G
2395 A	2395 A	2395 A	2383 A	2380 A	2395 A	2448 A
2396 T	2396 T	2396 T	2384 T	2381 T	2396 T	2449 T
2397 A	2397 A	2397 A	2385 A	2382 A	2397 A	2450 A
2398 C	2398 C	2398 C	2386 C	2383 C	2398 C	2451 C
2399 C	2399 C	2399 C	2387 C	2384 C	2399 C	2452 C
2400 A	2400 A	2400 A	2388 A	2385 A	2400 A	2453 A
2401 A	2401 A	2401 A	2389 A	2386 A	2401 A	2454 A
2402 C	2402 C	2402 C	2390 C	2387 C	2402 C	2455 C
2403 T	2403 T	2403 T	2391 T	2388 T	2403 T	2456 T
2404 G	2404 G	2404 G	2392 G	2389 G	2404 G	2457 G
2405 T	2405 T	2405 T	2393 T	2390 T	2405 T	2458 T
2406 T	2406 T	2406 T	2394 T	2391 T	2406 T	2459 T
2407 A	2407 A	2407 A	2395 A	2392 A	2407 A	2460 A
2408 A	2408 A	2408 A	2396 A	2393 A	2408 A	2461 A
2409 T	2409 T	2409 T	2397 T	2394 T	2409 T	2462 T
2410 A	2410 A	2410 A	2398 A	2395 A	2410 A	2463 A
2411 A	2411 A	2411 A	2399 A	2396 A	2411 A	2464 A
2412 T	2412 T	2412 T	2400 T	2397 T	2412 T	2465 T
2413 C	2413 C	2413 C	2401 C	2398 C	2413 C	2466 C
2414 T	2414 T	2414 T	2402 T	2399 T	2414 T	2467 T
2415 A	2415 A	2415 A	2403 A	2400 A	2415 A	2468 A
2416 C	2416 C	2416 C	2404 C	2401 C	2416 C	2469 C
2417 A	2417 A	2417 A	2405 A	2402 A	2417 A	2470 A
2418 T	2418 T	2418 T	2406 T	2403 T	2418 T	2471 T
2419 G	2419 G	2419 G	2407 G	2404 G	2419 G	2472 G

Kolodner	Kolodner	Cell	Cell Erratum	Kolodner	Kolodner	Chapelle #1
fil. 11/17/93	fil. 12/7/1993	pub. 12/9/93	pub. 4/8/1994	fil. 6/13/1994	fil. 6/5/95	fil. 12/2/1993
08/154,792	08/163,449			08/259,310	08/465,251	08/160295
SEQ ID NO:8	SEQ ID NO:8			SEQ ID NO:1	SEQ ID NO:8	SEQ ID NO:1
2420 T	2420 T	2420 T	2408 T	2405 T	2473 T	
2421 C	2421 C	2421 C	2409 C	2406 C	2474 C	
2422 A	2422 A	2422 A	2410 A	2407 A	2475 A	
2423 C	2423 C	2423 C	2411 C	2408 C	2476 C	
2424 A	2424 A	2424 A	2412 A	2409 A	2477 A	
2425 G	2425 G	2425 G	2413 G	2410 G	2478 G	
2426 C	2426 C	2426 C	2414 C	2411 C	2479 C	
2427 A	2427 A	2427 A	2415 A	2412 A	2480 A	
2428 C	2428 C	2428 C	2416 C	2413 C	2481 C	
2429 T	2429 T	2429 T	2417 T	2414 T	2482 T	
2430 C	2430 C	2430 C	2418 C	2415 C	2483 C	
2431 A	2431 A	2431 A	2419 A	2416 A	2484 A	
2432 C	2432 C	2432 C	2420 C	2417 C	2485 C	
2433 C	2433 C	2433 C	2421 C	2418 C	2486 C	
2434 A	2434 A	2434 A	2422 A	2419 A	2487 A	
2435 C	2435 C	2435 C	2423 C	2420 C	2488 C	
2436 T	2436 T	2436 T	2424 T	2421 T	2489 T	
2437 G	2437 G	2437 G	2425 G	2422 G	2490 G	
2438 A	2438 A	2438 A	2426 A	2423 A	2491 A	
2439 A	2439 A	2439 A	2427 A	2424 A	2492 A	
2440 G	2440 G	2440 G	2428 G	2425 G	2493 G	
2441 A	2441 A	2441 A	2429 A	2426 A	2494 A	
2442 G	2442 G	2442 G	2430 G	2427 G	2495 G	
2443 A	2443 A	2443 A	2431 A	2428 A	2496 A	
2444 C	2444 C	2444 C	2432 C	2429 C	2497 C	
2445 C	2445 C	2445 C	2433 C	2430 C	2498 C	
2446 T	2446 T	2446 T	2434 T	2431 T	2499 T	
2447 T	2447 T	2447 T	2435 T	2432 T	2500 T	
2448 A	2448 A	2448 A	2436 A	2433 A	2501 A	
2449 A	2449 A	2449 A	2437 A	2434 A	2502 A	
2450 C	2450 C	2450 C	2438 C	2435 C	2503 C	
2451 T	2451 T	2451 T	2439 T	2436 T	2504 T	
2452 A	2452 A	2452 A	2440 A	2437 A	2505 A	
2453 T	2453 T	2453 T	2441 T	2438 T	2506 T	
2454 G	2454 G	2454 G	2442 G	2439 G	2507 G	
2455 C	2455 C	2455 C	2443 C	2440 C	2508 C	
2456 T	2456 T	2456 T	2444 T	2441 T	2509 T	
2457 T	2457 T	2457 T	2445 T	2442 T	2510 T	
2458 T	2458 T	2458 T	2446 T	2443 T	2511 T	
2459 A	2459 A	2459 A	2447 A	2444 A	2512 A	
2460 T	2460 T	2460 T	2448 T	2445 T	2513 T	
2461 C	2461 C	2461 C	2449 C	2446 C	2514 C	
2462 A	2462 A	2462 A	2450 A	2447 A	2515 A	
2463 G	2463 G	2463 G	2451 G	2448 G	2516 G	
2464 G	2464 G	2464 G	2452 G	2449 G	2517 G	
2465 T	2465 T	2465 T	2453 T	2450 T	2518 T	
2466 G	2466 G	2466 G	2454 G	2451 G	2519 G	
2467 A	2467 A	2467 A	2455 A	2452 A	2520 A	
2468 A	2468 A	2468 A	2456 A	2453 A	2521 A	
2469 G	2469 G	2469 G	2457 G	2454 G	2522 G	
2470 A	2470 A	2470 A	2458 A	2455 A	2523 A	
2471 A	2471 A	2471 A	2459 A	2456 A	2524 A	
2472 A	2472 A	2472 A	2460 A	2457 A	2525 A	
2473 G	2473 G	2473 G	2461 G	2458 G	2526 G	
2474 G	2474 G	2474 G	2462 G	2459 G	2527 G	
2475 T	2475 T	2475 T	2463 T	2460 T	2528 T	
2476 G	2476 G	2476 G	2464 G	2461 G	2529 G	
2477 T	2477 T	2477 T	2465 T	2462 T	2530 T	
2478 C	2478 C	2478 C	2466 C	2463 C	2531 C	
2479 T	2479 T	2479 T	2467 T	2464 T	2532 T	
2480 G	2480 G	2480 G	2468 G	2465 G	2533 G	
2481 T	2481 T	2481 T	2469 T	2466 T	2534 T	
2482 G	2482 G	2482 G	2470 G	2467 G	2535 G	
2483 A	2483 A	2483 A	2471 A	2468 A	2536 A	
2484 T	2484 T	2484 T	2472 T	2469 T	2537 T	
2485 C	2485 C	2485 C	2473 C	2470 C	2538 C	
2486 A	2486 A	2486 A	2474 A	2471 A	2539 A	
2487 A	2487 A	2487 A	2475 A	2472 A	2540 A	
2488 A	2488 A	2488 A	2476 A	2473 A	2541 A	
2489 G	2489 G	2489 G	2477 G	2474 G	2542 G	
2490 T	2490 T	2490 T	2478 T	2475 T	2543 T	
2491 T	2491 T	2491 T	2479 T	2476 T	2544 T	
2492 T	2492 T	2492 T	2480 T	2477 T	2545 T	
2493 T	2493 T	2493 T	2481 T	2478 T	2546 T	
2494 G	2494 G	2494 G	2482 G	2479 G	2547 G	
2495 G	2495 G	2495 G	2483 G	2480 G	2548 G	
2496 G	2496 G	2496 G	2484 G	2481 G	2549 G	
2497 A	2497 A	2497 A	2485 A	2482 A	2550 A	
2498 T	2498 T	2498 T	2486 T	2483 T	2551 T	
2499 T	2499 T	2499 T	2487 T	2484 T	2552 T	
2500 C	2500 C	2500 C	2488 C	2485 C	2553 C	
2501 A	2501 A	2501 A	2489 A	2486 A	2554 A	
2502 T	2502 T	2502 T	2490 T	2487 T	2555 T	

Kolodner	Kolodner	Cell	Cell Erratum	Kolodner	Kolodner	Chapelle #1
fil. 11/17/93	fil. 12/7/1993	pub. 12/9/93	pub. 4/8/1994	fil. 6/13/1994	fil. 6/5/95	fil. 12/2/1993
08/154,792	08/163,449			08/259,310	08/465,251	08/160295
SEQ ID NO:8	SEQ ID NO:8			SEQ ID NO:1	SEQ ID NO:8	SEQ ID NO:1
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2504 T	2504 T	2504 T	2492 T	2489 T	2504 T	2557 T
2505 T	2505 T	2505 T	2493 T	2490 T	2505 T	2558 T
2506 G	2506 G	2506 G	2494 G	2491 G	2506 G	2559 G
2507 C	2507 C	2507 C	2495 C	2492 C	2507 C	2560 C
2508 A	2508 A	2508 A	2496 A	2493 A	2508 A	2561 A
2509 G	2509 G	2509 G	2497 G	2494 G	2509 G	2562 G
2510 A	2510 A	2510 A	2498 A	2495 A	2510 A	2563 A
2511 G	2511 G	2511 G	2499 G	2496 G	2511 G	2564 G
2512 C	2512 C	2512 C	2500 C	2497 C	2512 C	2565 C
2513 T	2513 T	2513 T	2501 T	2498 T	2513 T	2566 T
2514 T	2514 T	2514 T	2502 T	2499 T	2514 T	2567 T
2515 G	2515 G	2515 G	2503 G	2500 G	2515 G	2568 G
2516 C	2516 C	2516 C	2504 C	2501 C	2516 C	2569 C
2517 T	2517 T	2517 T	2505 T	2502 T	2517 T	2570 T
2518 A	2518 A	2518 A	2506 A	2503 A	2518 A	2571 A
2519 A	2519 A	2519 A	2507 A	2504 A	2519 A	2572 A
2520 T	2520 T	2520 T	2508 T	2505 T	2520 T	2573 T
2521 T	2521 T	2521 T	2509 T	2506 T	2521 T	2574 T
2522 T	2522 T	2522 T	2510 T	2507 T	2522 T	2575 T
2523 C	2523 C	2523 C	2511 C	2508 C	2523 C	2576 C
2524 C	2524 C	2524 C	2512 C	2509 C	2524 C	2577 C
2525 C	2525 C	2525 C	2513 C	2510 C	2525 C	2578 C
2526 T	2526 T	2526 T	2514 T	2511 T	2526 T	2579 T
2527 A	2527 A	2527 A	2515 A	2512 A	2527 A	2580 A
2528 A	2528 A	2528 A	2516 A	2513 A	2528 A	2581 A
2529 G	2529 G	2529 G	2517 G	2514 G	2529 G	2582 G
2530 C	2530 C	2530 C	2518 C	2515 C	2530 C	2583 C
2531 A	2531 A	2531 A	2519 A	2516 A	2531 A	2584 A
2532 T	2532 T	2532 T	2520 T	2517 T	2532 T	2585 T
2533 G	2533 G	2533 G	2521 G	2518 G	2533 G	2586 G
2534 T	2534 T	2534 T	2522 T	2519 T	2534 T	2587 T
2535 A	2535 A	2535 A	2523 A	2520 A	2535 A	2588 A
2536 A	2536 A	2536 A	2524 A	2521 A	2536 A	2589 A
2537 T	2537 T	2537 T	2525 T	2522 T	2537 T	2590 T
2538 A	2538 A	2538 A	2526 A	2523 A	2538 A	2591 A
2539 G	2539 G	2539 G	2527 G	2524 G	2539 G	2592 G
2540 A	2540 A	2540 A	2528 A	2525 A	2540 A	2593 A
2541 G	2541 G	2541 G	2529 G	2526 G	2541 G	2594 G
2542 T	2542 T	2542 T	2530 T	2527 T	2542 T	2595 T
2543 G	2543 G	2543 G	2531 G	2528 G	2543 G	2596 G
2544 T	2544 T	2544 T	2532 T	2529 T	2544 T	2597 T
2545 G	2545 G	2545 G	2533 G	2530 G	2545 G	2598 G
2546 C	2546 C	2546 C	2534 C	2531 C	2546 C	2599 C
2547 T	2547 T	2547 T	2535 T	2532 T	2547 T	2600 T
2548 A	2548 A	2548 A	2536 A	2533 A	2548 A	2601 A
2549 A	2549 A	2549 A	2537 A	2534 A	2549 A	2602 A
2550 A	2550 A	2550 A	2538 A	2535 A	2550 A	2603 A
2551 C	2551 C	2551 C	2539 C	2536 C	2551 C	2604 C
2552 A	2552 A	2552 A	2540 A	2537 A	2552 A	2605 A
2553 G	2553 G	2553 G	2541 G	2538 G	2553 G	2606 G
2554 A	2554 A	2554 A	2542 A	2539 A	2554 A	2607 A
2555 A	2555 A	2555 A	2543 A	2540 A	2555 A	2608 A
2556 A	2556 A	2556 A	2544 A	2541 A	2556 A	2609 A
2557 G	2557 G	2557 G	2545 G	2542 G	2557 G	2610 G
2558 C	2558 C	2558 C	2546 C	2543 C	2558 C	2611 C
2559 C	2559 C	2559 C	2547 C	2544 C	2559 C	2612 C
2560 C	2560 C	2560 C	2548 C	2545 C	2560 C	2613 C
2561 T	2561 T	2561 T	2549 T	2546 T	2561 T	2614 T
2562 G	2562 G	2562 G	2550 G	2547 G	2562 G	2615 G
2563 G	2563 G	2563 G	2551 G	2548 G	2563 G	2616 G
2564 A	2564 A	2564 A	2552 A	2549 A	2564 A	2617 A
2565 A	2565 A	2565 A	2553 A	2550 A	2565 A	2618 A
2566 C	2566 C	2566 C	2554 C	2551 C	2566 C	2619 C
2567 T	2567 T	2567 T	2555 T	2552 T	2567 T	2620 T
2568 T	2568 T	2568 T	2556 T	2553 T	2568 T	2621 T
2569 G	2569 G	2569 G	2557 G	2554 G	2569 G	2622 G
2570 A	2570 A	2570 A	2558 A	2555 A	2570 A	2623 A
2571 G	2571 G	2571 G	2559 G	2556 G	2571 G	2624 G
2572 G	2572 G	2572 G	2560 G	2557 G	2572 G	2625 G
2573 A	2573 A	2573 A	2561 A	2558 A	2573 A	2626 A
2574 G	2574 G	2574 G	2562 G	2559 G	2574 G	2627 G
2575 T	2575 T	2575 T	2563 T	2560 T	2575 T	2628 T
2576 T	2576 T	2576 T	2564 T	2561 T	2576 T	2629 T
2577 T	2577 T	2577 T	2565 T	2562 T	2577 T	2630 T
2578 C	2578 C	2578 C	2566 C	2563 C	2578 C	2631 C
2579 A	2579 A	2579 A	2567 A	2564 A	2579 A	2632 A
2580 G	2580 G	2580 G	2568 G	2565 G	2580 G	2633 G
2581 T	2581 T	2581 T	2569 T	2566 T	2581 T	2634 T
2582 A	2582 A	2582 A	2570 A	2567 A	2582 A	2635 A
2583 T	2583 T	2583 T	2571 T	2568 T	2583 T	2636 T
2584 A	2584 A	2584 A	2572 A	2569 A	2584 A	2637 A
2585 T	2585 T	2585 T	2573 T	2570 T	2585 T	2638 T

Kolodner		Kolodner	Cell	Cell Erratum	Kolodner		Kolodner	Chapelle #1
fil. 11/17/93		fil. 12/7/1993	pub. 12/9/93	pub. 4/8/1994	fil. 6/13/1994		fil. 6/5/95	fil. 12/2/1993
08/154 792			08/163,449		08/259,310		08/465,251	08/160295
SEQ ID NO:8	SEQ ID NO:8				SEQ ID NO:1		SEQ ID NO:8	SEQ ID NO:1
2586 T	2586 T	2586 T	2574 T	2571 T	2586 T	2639 T	T	T
2587 G	2587 G	2587 G	2575 G	2572 G	2587 G	2640 G	G	G
2588 G	2588 G	2588 G	2576 G	2573 G	2588 G	2641 G	G	G
2589 A	2589 A	2589 A	2577 A	2574 A	2589 A	2642 A	A	A
2590 G	2590 G	2590 G	2578 G	2575 G	2590 G	2643 G	G	G
2591 A	2591 A	2591 A	2579 A	2576 A	2591 A	2644 A	A	A
2592 A	2592 A	2592 A	2580 A	2577 A	2592 A	2645 A	A	A
2593 T	2593 T	2593 T	2581 T	2578 T	2593 T	2646 T	T	T
2594 C	2594 C	2594 C	2582 C	2579 C	2594 C	2647 C	C	C
2595 G	2595 G	2595 G	2583 G	2580 G	2595 G	2648 G	G	G
2596 C	2596 C	2596 C	2584 C	2581 C	2596 C	2649 C	C	C
2597 A	2597 A	2597 A	2585 A	2582 A	2597 A	2650 A	A	A
2598 A	2598 A	2598 A	2586 A	2583 A	2598 A	2651 A	A	A
2599 G	2599 G	2599 G	2587 G	2584 G	2599 G	2652 G	G	G
2600 G	2600 G	2600 G	2588 G	2585 G	2600 G	2653 G	G	G
2601 A	2601 A	2601 A	2589 A	2586 A	2601 A	2654 A	A	A
2602 T	2602 T	2602 T	2590 T	2587 T	2602 T	2655 T	T	T
2603 A	2603 A	2603 A	2591 A	2588 A	2603 A	2656 A	A	A
2604 T	2604 T	2604 T	2592 T	2589 T	2604 T	2657 T	T	T
2605 G	2605 G	2605 G	2593 G	2590 G	2605 G	2658 G	G	G
2606 A	2606 A	2606 A	2594 A	2591 A	2606 A	2659 A	A	A
2607 T	2607 T	2607 T	2595 T	2592 T	2607 T	2660 T	T	T
2608 A	2608 A	2608 A	2596 A	2593 A	2608 A	2661 A	A	A
2609 T	2609 T	2609 T	2597 T	2594 T	2609 T	2662 T	T	T
2610 C	2610 C	2610 C	2598 C	2595 C	2610 C	2663 C	C	C
2611 A	2611 A	2611 A	2599 A	2596 A	2611 A	2664 A	A	A
2612 T	2612 T	2612 T	2600 T	2597 T	2612 T	2665 T	T	T
2613 G	2613 G	2613 G	2601 G	2598 G	2613 G	2666 G	G	G
2614 G	2614 G	2614 G	2602 G	2599 G	2614 G	2667 G	G	G
2615 A	2615 A	2615 A	2603 A	2600 A	2615 A	2668 A	A	A
2616 A	2616 A	2616 A	2604 A	2601 A	2616 A	2669 A	A	A
2617 C	2617 C	2617 C	2605 C	2602 C	2617 C	2670 C	C	C
2618 C	2618 C	2618 C	2606 C	2603 C	2618 C	2671 C	C	C
2619 A	2619 A	2619 A	2607 A	2604 A	2619 A	2672 A	A	A
2620 G	2620 G	2620 G	2608 G	2605 G	2620 G	2673 G	G	G
2621 C	2621 C	2621 C	2609 C	2606 C	2621 C	2674 C	C	C
2622 A	2622 A	2622 A	2610 A	2607 A	2622 A	2675 A	A	A
2623 G	2623 G	2623 G	2611 G	2608 G	2623 G	2676 G	G	G
2624 C	2624 C	2624 C	2612 C	2609 C	2624 C	2677 C	C	C
2625 A	2625 A	2625 A	2613 A	2610 A	2625 A	2678 A	A	A
2626 A	2626 A	2626 A	2614 A	2611 A	2626 A	2679 A	A	A
2627 A	2627 A	2627 A	2615 A	2612 A	2627 A	2680 A	A	A
2628 G	2628 G	2628 G	2616 G	2613 G	2628 G	2681 G	G	G
2629 A	2629 A	2629 A	2617 A	2614 A	2629 A	2682 A	A	A
2630 A	2630 A	2630 A	2618 A	2615 A	2630 A	2683 A	A	A
2631 G	2631 G	2631 G	2619 G	2616 G	2631 G	2684 G	G	G
2632 T	2632 T	2632 T	2620 T	2617 T	2632 T	2685 T	T	T
2633 G	2633 G	2633 G	2621 G	2618 G	2633 G	2686 G	G	G
2634 C	2634 C	2634 C	2622 C	2619 C	2634 C	2687 G	G	G
2635 T	2635 T	2635 T	2623 T	2620 T	2635 T	2688 T	T	T
2636 A	2636 A	2636 A	2624 A	2621 A	2636 A	2689 A	A	A
2637 T	2637 T	2637 T	2625 T	2622 T	2637 T	2690 T	T	T
2638 C	2638 C	2638 C	2626 C	2623 C	2638 C	2691 C	C	C
2639 T	2639 T	2639 T	2627 T	2624 T	2639 T	2692 T	T	T
2640 G	2640 G	2640 G	2628 G	2625 G	2640 G	2693 G	G	G
2641 G	2641 G	2641 G	2629 G	2626 G	2641 G	2694 G	G	G
2642 A	2642 A	2642 A	2630 A	2627 A	2642 A	2695 A	A	A
2643 A	2643 A	2643 A	2631 A	2628 A	2643 A	2696 A	A	A
2644 A	2644 A	2644 A	2632 A	2629 A	2644 A	2697 A	A	A
2645 G	2645 G	2645 G	2633 G	2630 G	2645 G	2698 G	G	G
2646 A	2646 A	2646 A	2634 A	2631 A	2646 A	2699 A	A	A
2647 G	2647 G	2647 G	2635 G	2632 G	2647 G	2700 G	G	G
2648 A	2648 A	2648 A	2636 A	2633 A	2648 A	2701 A	A	A
2649 G	2649 G	2649 G	2637 G	2634 G	2649 G	2702 G	G	G
2650 C	2650 C	2650 C	2638 C	2635 C	2650 C	2703 C	C	C
2651 A	2651 A	2651 A	2639 A	2636 A	2651 A	2704 A	A	A
2652 A	2652 A	2652 A	2640 A	2637 A	2652 A	2705 A	A	A
2653 G	2653 G	2653 G	2641 G	2638 G	2653 G	2706 G	G	G
2654 G	2654 G	2654 G	2642 G	2639 G	2654 G	2707 G	G	G
2655 T	2655 T	2655 T	2643 T	2640 T	2655 T	2708 T	T	T
2656 G	2656 G	2656 G	2644 G	2641 G	2656 G	2709 G	G	G
2657 A	2657 A	2657 A	2645 A	2642 A	2657 A	2710 A	A	A
2658 A	2658 A	2658 A	2646 A	2643 A	2658 A	2711 A	A	A
2659 A	2659 A	2659 A	2647 A	2644 A	2659 A	2712 A	A	A
2660 A	2660 A	2660 A	2648 A	2645 A	2660 A	2713 A	A	A
2661 A	2661 A	2661 A	2649 A	2646 A	2661 A	2714 A	A	A
2662 A	2662 A	2662 A	2650 A	2647 A	2662 A	2715 A	A	A
2663 T	2663 T	2663 T	2651 T	2648 T	2663 T	2716 T	T	T
2664 T	2664 T	2664 T	2652 T	2649 T	2664 T	2717 T	T	T
2665 A	2665 A	2665 A	2653 A	2650 A	2665 A	2718 A	A	A
2666 T	2666 T	2666 T	2654 T	2651 T	2666 T	2719 T	T	T
2667 T	2667 T	2667 T	2655 T	2652 T	2667 T	2720 T	T	T
2668 C	2668 C	2668 C	2656 C	2653 C	2668 C	2721 C	C	C

Kolodner	Kolodner	Cell	Cell Erratum	Kolodner	Kolodner	Chapelle #1
fil. 11/17/93	fil. 12/7/1993	pub. 12/9/93	pub. 4/8/1994	fil. 6/13/1994	fil. 6/5/95	fil. 12/2/1993
08/154,792	08/163,449			08/259,310	08/465,251	08/160295
SEQ ID NO:8	SEQ ID NO:8			SEQ ID NO:1	SEQ ID NO:8	SEQ ID NO:1
2669 A	2669 A	2669 A	2657 A	2654 A	2669 A	2722 A
2670 G	2670 G	2670 G	2658 G	2655 G	2670 G	2723 G
2671 G	2671 G	2671 G	2659 G	2656 G	2671 G	2724 G
2672 A	2672 A	2672 A	2660 A	2657 A	2672 A	2725 A
2673 G	2673 G	2673 G	2661 G	2658 G	2673 G	2726 G
2674 T	2674 T	2674 T	2662 T	2659 T	2674 T	2727 T
2675 T	2675 T	2675 T	2663 T	2660 T	2675 T	2728 T
2676 C	2676 C	2676 C	2664 C	2661 C	2676 C	2729 C
2677 C	2677 C	2677 C	2665 C	2662 C	2677 C	2730 C
2678 T	2678 T	2678 T	2666 T	2663 T	2678 T	2731 T
2679 G	2679 G	2679 G	2667 G	2664 G	2679 G	2732 G
2680 T	2680 T	2680 T	2668 T	2665 T	2680 T	2733 T
2681 C	2681 C	2681 C	2669 C	2666 C	2681 C	2734 C
2682 C	2682 C	2682 C	2670 C	2667 C	2682 C	2735 C
2683 A	2683 A	2683 A	2671 A	2658 A	2683 A	2736 A
2684 A	2684 A	2684 A	2672 A	2669 A	2684 A	2737 A
2685 G	2685 G	2685 G	2673 G	2670 G	2685 G	2738 G
2686 G	2686 G	2686 G	2674 G	2671 G	2686 G	2739 G
2687 T	2687 T	2687 T	2675 T	2672 T	2687 T	2740 T
2688 G	2688 G	2688 G	2676 G	2673 G	2688 G	2741 G
2689 A	2689 A	2689 A	2677 A	2674 A	2689 A	2742 A
2690 A	2690 A	2690 A	2678 A	2675 A	2690 A	2743 A
2691 A	2691 A	2691 A	2679 A	2676 A	2691 A	2744 A
2692 C	2692 C	2692 C	2680 C	2677 C	2692 C	2745 C
2693 A	2693 A	2693 A	2681 A	2678 A	2693 A	2746 A
2694 A	2694 A	2694 A	2682 A	2679 A	2694 A	2747 A
2695 A	2695 A	2695 A	2683 A	2680 A	2695 A	2748 A
2696 T	2696 T	2696 T	2684 T	2681 T	2696 T	2749 T
2697 G	2697 G	2697 G	2685 G	2682 G	2697 G	2750 G
2698 C	2698 C	2698 C	2686 C	2683 C	2698 C	2751 C
2699 C	2699 C	2699 C	2687 C	2684 C	2699 C	2752 C
2700 C	2700 C	2700 C	2688 C	2685 C	2700 C	2753 C
2701 T	2701 T	2701 T	2689 T	2686 T	2701 T	2754 T
2702 T	2702 T	2702 T	2690 T	2687 T	2702 T	2755 T
2703 T	2703 T	2703 T	2691 T	2688 T	2703 T	2756 T
2704 A	2704 A	2704 A	2692 A	2689 A	2704 A	2757 A
2705 C	2705 C	2705 C	2693 C	2690 C	2705 C	2758 C
2706 T	2706 T	2706 T	2694 T	2691 T	2706 T	2759 T
2707 G	2707 G	2707 G	2695 G	2692 G	2707 G	2760 G
2708 A	2708 A	2708 A	2696 A	2683 A	2708 A	2761 A
2709 A	2709 A	2709 A	2697 A	2694 A	2709 A	2762 A
2710 A	2710 A	2710 A	2698 A	2695 A	2710 A	2763 A
2711 T	2711 T	2711 T	2699 T	2696 T	2711 T	2764 T
2712 G	2712 G	2712 G	2700 G	2697 G	2712 G	2765 G
2713 T	2713 T	2713 T	2701 T	2698 T	2713 T	2766 T
2714 C	2714 C	2714 C	2702 C	2699 C	2714 C	2767 C
2715 A	2715 A	2715 A	2703 A	2700 A	2715 A	2768 A
2716 G	2716 G	2716 G	2704 G	2701 G	2716 G	2769 G
2717 A	2717 A	2717 A	2705 A	2702 A	2717 A	2770 A
2718 A	2718 A	2718 A	2706 A	2703 A	2718 A	2771 A
2719 G	2719 G	2719 G	2707 G	2704 G	2719 G	2772 G
2720 A	2720 A	2720 A	2708 A	2705 A	2720 A	2773 A
2721 A	2721 A	2721 A	2709 A	2706 A	2721 A	2774 A
2722 A	2722 A	2722 A	2710 A	2707 A	2722 A	2775 A
2723 A	2723 A	2723 A	2711 A	2708 A	2723 A	2776 A
2724 C	2724 C	2724 C	2712 C	2709 C	2724 C	2777 C
2725 A	2725 A	2725 A	2713 A	2710 A	2725 A	2778 A
2726 T	2726 T	2726 T	2714 T	2711 T	2726 T	2779 T
2727 C	2727 C	2727 C	2715 C	2712 C	2727 C	2780 C
2728 A	2728 A	2728 A	2716 A	2713 A	2728 A	2781 A
2729 C	2729 C	2729 C	2717 C	2714 C	2729 C	2782 C
2730 A	2730 A	2730 A	2718 A	2715 A	2730 A	2783 A
2731 A	2731 A	2731 A	2719 A	2716 A	2731 A	2784 A
2732 T	2732 T	2732 T	2720 T	2717 T	2732 T	2785 T
2733 A	2733 A	2733 A	2721 A	2718 A	2733 A	2786 A
2734 A	2734 A	2734 A	2722 A	2718 A	2734 A	2787 A
2735 A	2735 A	2735 A	2723 A	2720 A	2735 A	2788 A
2736 G	2736 G	2736 G	2724 G	2721 G	2736 G	2789 G
2737 T	2737 T	2737 T	2725 T	2722 T	2737 T	2790 T
2738 T	2738 T	2738 T	2726 T	2723 T	2738 T	2791 T
2739 A	2739 A	2739 A	2727 A	2724 A	2739 A	2792 A
2740 A	2740 A	2740 A	2728 A	2725 A	2740 A	2793 A
2741 A	2741 A	2741 A	2729 A	2726 A	2741 A	2794 A
2742 A	2742 A	2742 A	2730 A	2727 A	2742 A	2795 A
2743 C	2743 C	2743 C	2731 C	2728 C	2743 C	2796 C
2744 A	2744 A	2744 A	2732 A	2729 A	2744 A	2797 A
2745 G	2745 G	2745 G	2733 G	2730 G	2745 G	2798 G
2746 C	2746 C	2746 C	2734 C	2731 C	2746 C	2799 C
2747 T	2747 T	2747 T	2735 T	2732 T	2747 T	2800 T
2748 A	2748 A	2748 A	2736 A	2733 A	2748 A	2801 A
2749 A	2749 A	2749 A	2737 A	2734 A	2749 A	2802 A
2750 A	2750 A	2750 A	2738 A	2735 A	2750 A	2803 A
2751 A	2751 A	2751 A	2739 A	2736 A	2751 A	2804 A

Kolodner	Kolodner	Cell	Cell Erratum	Kolodner	Kolodner	Chapelle #1
fil. 11/17/93	fil. 12/7/1993	pub. 12/9/93	pub. 4/8/1994	fil. 6/13/1994	fil. 6/5/95	fil. 12/2/1993
08/154,792	08/163,449			08/259,310	08/485,251	08/160295
SEQ ID NO:8	SEQ ID NO:8			SEQ ID NO:1	SEQ ID NO:8	SEQ ID NO:1
2752 G	2752 G	2752 G	2740 G	2737 G	2752 G	2805 G
2753 C	2753 C	2753 C	2741 C	2738 C	2753 C	2806 C
2754 T	2754 T	2754 T	2742 T	2739 T	2754 T	2807 T
2755 G	2755 G	2755 G	2743 G	2740 G	2755 G	2808 G
2756 A	2756 A	2756 A	2744 A	2741 A	2756 A	2809 A
2757 A	2757 A	2757 A	2745 A	2742 A	2757 A	2810 A
2758 G	2758 G	2758 G	2746 G	2743 G	2758 G	2811 G
2759 T	2759 T	2759 T	2747 T	2744 T	2759 T	2812 T
2760 A	2760 A	2760 A	2748 A	2745 A	2760 A	2813 A
2761 A	2761 A	2761 A	2749 A	2746 A	2761 A	2814 A
2762 T	2762 T	2762 T	2750 T	2747 T	2762 T	2815 T
2763 A	2763 A	2763 A	2751 A	2748 A	2763 A	2816 A
2764 G	2764 G	2764 G	2752 G	2749 G	2764 G	2817 G
2765 C	2765 C	2765 C	2753 C	2750 C	2765 C	2818 C
2766 A	2766 A	2766 A	2754 A	2751 A	2766 A	2819 A
2767 A	2767 A	2767 A	2755 A	2752 A	2767 A	2820 A
2768 A	2768 A	2768 A	2756 A	2753 A	2768 A	2821 A
2769 G	2769 G	2769 G	2757 G	2754 G	2769 G	2822 G
2770 A	2770 A	2770 A	2758 A	2755 A	2770 A	2823 A
2771 A	2771 A	2771 A	2759 A	2756 A	2771 A	2824 A
2772 T	2772 T	2772 T	2760 T	2757 T	2772 T	2825 T
2773 A	2773 A	2773 A	2761 A	2758 A	2773 A	2826 A
2774 A	2774 A	2774 A	2762 A	2759 A	2774 A	2827 A
2775 T	2775 T	2775 T	2763 T	2760 T	2775 T	2828 T
2776 A	2776 A	2776 A	2764 A	2761 A	2776 A	2829 A
2777 G	2777 G	2777 G	2765 G	2762 G	2777 G	2830 G
2778 C	2778 C	2778 C	2766 C	2763 C	2778 C	2831 C
2779 T	2779 T	2779 T	2767 T	2764 T	2779 T	2832 T
2780 T	2780 T	2780 T	2768 T	2765 T	2780 T	2833 T
2781 T	2781 T	2781 T	2769 T	2766 T	2781 T	2834 T
2782 G	2782 G	2782 G	2770 G	2767 G	2782 G	2835 G
2783 T	2783 T	2783 T	2771 T	2768 T	2783 T	2836 T
2784 A	2784 A	2784 A	2772 A	2759 A	2784 A	2837 A
2785 A	2785 A	2785 A	2773 A	2770 A	2785 A	2838 A
2786 A	2786 A	2786 A	2774 A	2771 A	2786 A	2839 A
2787 T	2787 T	2787 T	2775 T	2772 T	2787 T	2840 T
2788 G	2788 G	2788 G	2776 G	2773 G	2788 G	2841 G
2789 A	2789 A	2789 A	2777 A	2774 A	2789 A	2842 A
2790 A	2790 A	2790 A	2778 A	2775 A	2790 A	2843 A
2791 A	2791 A	2791 A	2779 A	2776 A	2791 A	2844 A
2792 T	2792 T	2792 T	2780 T	2777 T	2792 T	2845 T
2793 C	2793 C	2793 C	2781 C	2778 C	2793 C	2846 C
2794 A	2794 A	2794 A	2782 A	2779 A	2794 A	2847 A
2795 T	2795 T	2795 T	2783 T	2760 T	2795 T	2848 T
2796 T	2796 T	2796 T	2784 T	2761 T	2796 T	2849 T
2797 T	2797 T	2797 T	2785 T	2762 T	2797 T	2850 T
2798 C	2798 C	2798 C	2786 C	2763 C	2798 C	2851 C
2799 A	2799 A	2799 A	2787 A	2764 A	2799 A	2852 A
2800 C	2800 C	2800 C	2788 C	2765 C	2800 C	2853 C
2801 G	2801 G	2801 G	2789 G	2766 G	2801 G	2854 G
2802 A	2802 A	2802 A	2790 A	2787 A	2802 A	2855 A
2803 A	2803 A	2803 A	2791 A	2788 A	2803 A	2856 A
2804 T	2804 T	2804 T	2792 T	2769 T	2804 T	2857 T
2805 A	2805 A	2805 A	2793 A	2790 A	2805 A	2858 A
2806 A	2806 A	2806 A	2794 A	2791 A	2806 A	2859 A
2807 A	2807 A	2807 A	2795 A	2762 A	2807 A	2860 A
2808 A	2808 A	2808 A	2796 A	2763 A	2808 A	2861 A
2809 G	2809 G	2809 G	2797 G	2794 G	2809 G	2862 G
2810 T	2810 T	2810 T	2798 T	2765 T	2810 T	2863 T
2811 T	2811 T	2811 T	2799 T	2766 T	2811 T	2864 T
2812 A	2812 A	2812 A	2800 A	2767 A	2812 A	2865 A
2813 C	2813 C	2813 C	2801 C	2768 C	2813 C	2866 C
2814 T	2814 T	2814 T	2802 T	2769 T	2814 T	2867 T
2815 A	2815 A	2815 A	2803 A	2800 A	2815 A	2868 A
2816 C	2816 C	2816 C	2804 C	2801 C	2816 C	2869 C
2817 G	2817 G	2817 G	2805 G	2802 G	2817 G	2870 G
2818 T	2818 T	2818 T	2806 T	2803 T	2818 T	2871 T
2819 G	2819 G	2819 G	2807 G	2804 G	2819 G	2872 G
2820 A	2820 A	2820 A	2808 A	2805 A	2820 A	2873 A
2821 A	2821 A	2821 A	2809 A	2806 A	2821 A	2874 A
2822 A	2822 A	2822 A	2810 A	2807 A	2822 A	2875 A
2823 A	2823 A	2823 A	2811 A	2808 A	2823 A	2876 A
2824 A	2824 A	2824 A	2812 A	2809 A	2824 A	2877 A
2825 T	2825 T	2825 T	2813 T	2810 T	2825 T	2878 T
2826 C	2826 C	2826 C	2814 C	2811 C	2826 C	2879 C
2827 C	2827 C	2827 C	2815 C	2812 C	2827 C	2880 C
2828 C	2828 C	2828 C	2816 C	2813 C	2828 C	2881 C
2829 A	2829 A	2829 A	2817 A	2814 A	2829 A	2882 A
2830 G	2830 G	2830 G	2818 G	2815 G	2830 G	2883 G
2831 T	2831 T	2831 T	2819 T	2816 T	2831 T	2884 T
2832 A	2832 A	2832 A	2820 A	2817 A	2832 A	2885 A
2833 A	2833 A	2833 A	2821 A	2818 A	2833 A	2886 A
2834 T	2834 T	2834 T	2822 T	2819 T	2834 T	2887 T

Kolodner	Kolodner	Cell	Cell Erratum	Kolodner	Kolodner	Chapelle #1
fil. 11/17/93	fil. 12/7/1993	pub. 12/9/93	pub. 4/8/1994	fil. 6/13/1994	fil. 6/5/95	fil. 12/2/1993
08/154,792	08/163,449			08/259,310	08/455,251	08/160,295
SEQ ID NO:8	SEQ ID NO:8			SEQ ID NO:1	SEQ ID NO:8	SEQ ID NO:1
2835 G	2835 G	2835 G	2823 G	2820 G	2835 G	2888 G
2836 G	2836 G	2836 G	2824 G	2821 G	2836 G	2889 G
2837 A	2837 A	2837 A	2825 A	2822 A	2837 A	2890 A
2838 A	2838 A	2838 A	2826 A	2823 A	2838 A	2891 A
2839 T	2839 T	2839 T	2827 T	2824 T	2839 T	2892 T
2840 G	2840 G	2840 G	2828 G	2825 G	2840 G	2893 G
2841 A	2841 A	2841 A	2829 A	2826 A	2841 A	2894 A
2842 A	2842 A	2842 A	2830 A	2827 A	2842 A	2895 A
2843 G	2843 G	2843 G	2831 G	2828 G	2843 G	2896 G
2844 G	2844 G	2844 G	2832 G	2829 G	2844 G	2897 G
2845 T	2845 T	2845 T	2833 T	2830 T	2845 T	2898 T
2846 A	2846 A	2846 A	2834 A	2831 A	2846 A	2899 A
2847 A	2847 A	2847 A	2835 A	2832 A	2847 A	2900 A
2848 T	2848 T	2848 T	2836 T	2833 T	2848 T	2901 T
2849 A	2849 A	2849 A	2837 A	2834 A	2849 A	2902 A
2850 T	2850 T	2850 T	2838 T	2835 T	2850 T	2903 T
2851 T	2851 T	2851 T	2839 T	2836 T	2851 T	2904 T
2852 G	2852 G	2852 G	2840 G	2837 G	2852 G	2905 G
2853 A	2853 A	2853 A	2841 A	2838 A	2853 A	2906 A
2854 T	2854 T	2854 T	2842 T	2839 T	2854 T	2907 T
2855 A	2855 A	2855 A	2843 A	2840 A	2855 A	2908 A
2856 A	2856 A	2856 A	2844 A	2841 A	2856 A	2909 A
2857 G	2857 G	2857 G	2845 G	2842 G	2857 G	2910 G
2858 C	2858 C	2858 C	2846 C	2843 C	2858 C	2911 C
2859 T	2859 T	2859 T	2847 T	2844 T	2859 T	2912 T
2860 A	2860 A	2860 A	2848 A	2845 A	2860 A	2913 A
2861 T	2861 T	2861 T	2849 T	2846 T	2861 T	2914 T
2862 T	2862 T	2862 T	2850 T	2847 T	2862 T	2915 T
2863 G	2863 G	2863 G	2851 G	2848 G	2863 G	2916 G
2864 T	2864 T	2864 T	2852 T	2849 T	2864 T	2917 T
2865 C	2865 C	2865 C	2853 C	2850 C	2865 C	2918 C
2866 T	2866 T	2866 T	2854 T	2851 T	2866 T	2919 T
2867 G	2867 G	2867 G	2855 G	2852 G	2867 G	2920 G
2868 T	2868 T	2868 T	2856 T	2853 T	2868 T	2921 T
2869 A	2869 A	2869 A	2857 A	2854 A	2869 A	2922 A
2870 A	2870 A	2870 A	2858 A	2855 A	2870 A	2923 A
2871 T	2871 T	2871 T	2859 T	2856 T	2871 T	2924 T
2872 A	2872 A	2872 A	2860 A	2857 A	2872 A	2925 A
2873 G	2873 G	2873 G	2861 G	2858 G	2873 G	2926 G
2874 T	2874 T	2874 T	2862 T	2859 T	2874 T	2927 T
2875 T	2875 T	2875 T	2863 T	2860 T	2875 T	2928 T
2876 T	2876 T	2876 T	2864 T	2861 T	2876 T	2929 T
2877 T	2877 T	2877 T	2865 T	2862 T	2877 T	2930 T
2878 A	2878 A	2878 A	2866 A	2863 A	2878 A	2931 A
2879 T	2879 T	2879 T	2867 T	2864 T	2879 T	2932 T
2880 A	2880 A	2880 A	2868 A	2865 A	2880 A	2933 A
2881 T	2881 T	2881 T	2869 T	2866 T	2881 T	2934 T
2882 T	2882 T	2882 T	2870 T	2867 T	2882 T	2935 T
2883 G	2883 G	2883 G	2871 G	2868 G	2883 G	2936 G
2884 T	2884 T	2884 T	2872 T	2869 T	2884 T	2937 T
2885 T	2885 T	2885 T	2873 T	2870 T	2885 T	2938 T
2886 T	2886 T	2886 T	2874 T	2871 T	2886 T	2939 T
2887 T	2887 T	2887 T	2875 T	2872 T	2887 T	2940 T
2888 A	2888 A	2888 A	2876 A	2873 A	2888 A	2941 A
2889 T	2889 T	2889 T	2877 T	2874 T	2889 T	2942 T
2890 A	2890 A	2890 A	2878 A	2875 A	2890 A	2943 A
2891 T	2891 T	2891 T	2879 T	2876 T	2891 T	2944 T
2892 T	2892 T	2892 T	2880 T	2877 T	2892 T	2945 T
2893 A	2893 A	2893 A	2881 A	2878 A	2893 A	2946 A
2894 A	2894 A	2894 A	2882 A	2879 A	2894 A	2947 A
2895 C	2895 C	2895 C	2883 C	2880 C	2895 C	
2896 C	2896 C	2896 C	2884 C	2881 C	2896 C	
2897 C	2897 C	2897 C	2885 C	2882 C	2897 C	
2898 T	2898 T	2898 T	2886 T	2883 T	2898 T	
2899 T	2899 T	2899 T	2887 T	2884 T	2899 T	
2900 T	2900 T	2900 T	2888 T	2885 T	2900 T	
2901 T	2901 T	2901 T	2889 T	2886 T	2901 T	
2902 T	2902 T	2902 T	2890 T	2887 T	2902 T	
2903 C	2903 C	2903 C	2891 C	2888 C	2903 C	
2904 C	2904 C	2904 C	2892 C	2889 C	2904 C	
2905 A	2905 A	2905 A	2893 A	2890 A	2905 A	
2906 T	2906 T	2906 T	2894 T	2891 T	2906 T	
2907 A	2907 A	2907 A	2895 A	2892 A	2907 A	
2908 G	2908 G	2908 G	2896 A	2893 G	2908 G	
2909 T	2909 T	2909 T	2897 T	2894 T	2909 T	
2910 G	2910 G	2910 G	2898 G	2895 G	2910 G	
2911 T	2911 T	2911 T	2899 T	2896 T	2911 T	
2912 T	2912 T	2912 T	2900 T	2897 T	2912 T	
2913 A	2913 A	2913 A	2901 A	2898 A	2913 A	
2914 A	2914 A	2914 A	2902 A	2899 A	2914 A	
2915 C	2915 C	2915 C	2903 C	2900 C	2915 C	
2916 T	2916 T	2916 T	2904 T	2901 T	2916 T	
2917 G	2917 G	2917 G	2905 N/A	2902 G	2917 G	
2918 T	2918 T	2918 T	2906 N/A	2903 T	2918 T	

	Kolodner		Kolodner		Cell		Cell Erratum		Kolodner		Kolodner		Chapelle #1
	fil. 11/17/93		fil. 12/7/1993		pub. 12/9/93		pub. 4/6/1994		fil. 6/13/1994		fil. 6/5/95		fil. 12/2/1993
	08/154,792		08/163,449						08/259,310		08/465,251		08/160295
	SEQ ID NO:8		SEQ ID NO:8						SEQ ID NO:1		SEQ ID NO:8		SEQ ID NO:1
2919	C	2919	C	2919	T	2907	N/A	2904	C	2919	C		
2920	A	2920	A	2920	C	2908	N/A	2905	A	2920	A		
2921	G	2921	G	2921	A	2909	N/A	2906	G	2921	G		
2922	T	2922	T	2922	G	2910	N/A	2907	T	2922	T		
2923	G	2923	G	2923	T	2911	N/A	2908	G	2923	G		
2924	C	2924	C	2924	G	2912	N/A	2909	C	2924	C		
2925	C	2925	C	2925	C	2913	N/A	2910	C	2925	C		
2926	C	2926	C	2926	C	2914	N/A	2911	C	2926	C		
2927	A	2927	A	2927	C	2915	N/A	2912	A	2927			
2928	T	2928	T	2928	A	2916	N/A	2913	T	2928			
2929	G	2929	G	2929	T	2917	N/A	2914	G	2929	G		
2930	G	2930	G	2930	G	2918	N/A	2915	G	2930			
2931	G	2931	G	2931	G	2919	N/A	2916	G	2931	G		
2932	C	2932	C	2932	G	2920	N/A	2917	C	2932	C		
2933	T	2933	T	2933	C	2921	N/A	2918	T	2933			
2934	A	2934	A	2934	T	2922	N/A	2919	A	2934	A		
2935	T	2935	T	2935	A	2923	N/A	2920	T	2935	T		
2936	C	2936	C	2936	T	2924	N/A	2921	C	2936	C		
2937	A	2937	A	2937	C	2925	N/A	2922	A	2937	A		
2938	A	2938	A	2938	A	2926	N/A	2923	A	2938	A		
2939	C	2939	C	2939	A	2927	N/A	2924	C	2939	C		
2940	T	2940	T	2940	C	2928	N/A	2925	T	2940			
2941	T	2941	T	2941	T	2929	N/A	2926	T	2941	T		
2942	A	2942	A	2942	T	2930	N/A	2927	A	2942	A		
2943	A	2943	A	2943	A	2931	N/A	2928	A	2943	A		
2944	T	2944	T	2944	A	2932	N/A	2929	T	2944	T		
2945	A	2945	A	2945	T	2933	N/A	2930	A	2945	A		
2946	A	2946	A	2946	A	2934	N/A	2931	A	2946	A		
2947	G	2947	G	2947	A	2935	N/A	2932	G	2947	G		
2948	A	2948	A	2948	G	2936	N/A	2933	A	2948	G		
2949	T	2949	T	2949	A	2937	N/A	2934	T	2949	T		
2950	A	2950	A	2950	T	2938	N/A	2935	A	2950	A		
2951	T	2951	T	2951	A	2939	N/A	2936	T	2951	T		
2952	T	2952	T	2952	T	2940	N/A	2937	T	2952	T		
2953	T	2953	T	2953	T	2941	N/A	2938	T	2953			
2954	A	2954	A	2954	T	2942	N/A	2939	A	2954	A		
2955	G	2955	G	2955	A	2943	N/A	2940	G	2955	G		
2956	T	2956	T	2956	G	2944	N/A	2941	T	2956			
2957	A	2957	A	2957	T	2945	N/A	2942	A	2957	A		
2958	A	2958	A	2958	A	2946	N/A	2943	A	2958	A		
2959	T	2959	T	2959	A	2947	N/A	2944	T	2959			
2960	A	2960	A	2960	T	2948	N/A	2945	A	2960	A		
2961	T	2961	T	2961	A	2949	N/A	2946	T	2961	T		
2962	T	2962	T	2962	T	2950	N/A	2947	T	2962			
2963	T	2963	T	2963	T	2951	N/A	2948	T	2963	T		
2964	T	2964	T	2964	T	2952	N/A	2949	T	2964	T		
2965	A	2965	A	2965	T	2953	N/A	2950	A	2965	A		
2966	C	2966	C	2966	A	2954	N/A	2951	C	2966	C		
2967	T	2967	T	2967	C	2955	N/A	2952	T	2967	T		
2968	T	2968	T	2968	T	2956	N/A	2953	T	2968			
2969	T	2969	T	2969	T	2957	N/A	2954	T	2969	T		
2970	G	2970	G	2970	T	2958	N/A	2955	G	2970			
2971	A	2971	A	2971	G	2959	N/A	2956	A	2971	A		
2972	G	2972	G	2972	A	2960	N/A	2957	G	2972	G		
2973	G	2973	G	2973	G	2961	N/A	2958	G	2973	G		
2974	A	2974	A	2974	G	2962	N/A	2959	A	2974	A		
2975	C	2975	C	2975	A	2963	N/A	2960	C	2975	C		
2976	A	2976	A	2976	C	2964	N/A	2961	A	2976	A		
2977	T	2977	T	2977	A	2965	N/A	2962	T	2977	T		
2978	T	2978	T	2978	T	2966	N/A	2963	T	2978			
2979	T	2979	T	2979	T	2967	N/A	2964	T	2979	T		
2980	T	2980	T	2980	T	2968	N/A	2965	T	2980	T		
2981	C	2981	C	2981	T	2969	N/A	2966	C	2981	C		
2982	A	2982	A	2982	C	2970	N/A	2967	A	2982	A		
2983	A	2983	A	2983	A	2971	N/A	2968	A	2983	A		
2984	A	2984	A	2984	A	2972	N/A	2969	A	2984	A		
2985	G	2985	G	2985	A	2973	N/A	2970	G	2985	G		
2986	A	2986	A	2986	G	2974	N/A	2971	A	2986	A		
2987	T	2987	T	2987	A	2975	N/A	2972	T	2987	T		
2988	T	2988	T	2988	T	2976	N/A	2973	T	2988			
2989	T	2989	T	2989	T	2977	N/A	2974	T	2989	T		
2990	T	2990	T	2990	T	2978	N/A	2975	T	2990	T		
2991	T	2991	T	2991	T	2979	N/A	2976	T	2991	T		
2992	A	2992	A	2992	T	2980	N/A	2977	A	2992	A		
2993	T	2993	T	2993	A	2981	N/A	2978	T	2993	T		
2994	T	2994	T	2994	T	2982	N/A	2979	T	2994			
2995	T	2995	T	2995	T	2983	N/A	2980	T	2995	T		
2996	T	2996	T	2996	T	2984	N/A	2981	T	2996	T		
2997	G	2997	G	2997	T	2985	N/A	2982	G	2997	G		
2998	A	2998	A	2998	G	2986	N/A	2983	A	2998	A		
2999	A	2999	A	2999	A	2987	N/A	2984	A	2999	A		
3000	A	3000	A	3000	A	2988	N/A	2985	A	3000	A		
3001	A	3001	A	3001	A	2989	N/A	2986	A	3001	A		
3002	A	3002	A	3002	A	2990	N/A	2987	A	3002	A		
3003	T	3003	T	3003	A	2991	N/A	2988	T	3003	T		

Kolodner	Kolodner	Cell	Cell Erratum	Kolodner	Kolodner	Chapelle #1
fil. 11/17/93	fil. 12/7/1993	pub. 12/9/93	pub. 4/6/1994	fil. 6/13/1994	fil. 6/5/95	fil. 12/2/1993
08/154,792	08/163,449			08/259,310	08/465,251	08/160295
SEQ ID NO:8	SEQ ID NO:8			SEQ ID NO:1	SEQ ID NO:8	SEQ ID NO:1
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3005 A	3005 A	3005 G	2993 N/A	2990 A	3005 A	
3006 G	3006 G	3006 A	2994 N/A	2991 G	3006 G	
3007 A	3007 A	3007 G	2995 N/A	2992 A	3007 A	
3008 G	3008 G	3008 A	2996 N/A	2993 G	3008 G	
3009 C	3009 C	3009 G	2997 N/A	2994 C	3009 C	
3010 T	3010 T	3010 C	2998 N/A	2995 T	3010 T	
3011 G	3011 G	3011 T	2999 N/A	2996 G	3011 G	
3012 T	3012 T	3012 G	3000 N/A	2997 T	3012 T	
3013 A	3013 A	3013 T	3001 N/A	2998 A	3013 A	
3014 A	3014 A	3014 A	3002 N/A	2999 A	3014 A	
3015 C	3015 C	3015 A	3003 N/A	3000 C	3015 C	
3016 T	3016 T	3016 C	3004 N/A	3001 T	3016 T	
3017 G	3017 G	3017 T	3005 N/A	3002 G	3017 G	
3018 A	3018 A	3018 G	3006 N/A	3003 A	3018 A	
3019 G	3019 G	3019 A	3007 N/A	3004 G	3019 G	
3020 G	3020 G	3020 G	3008 N/A	3005 G	3020 G	
3021 A	3021 A	3021 G	3009 N/A	3006 A	3021 A	
3022 C	3022 C	3022 A	3010 N/A	3007 C	3022 C	
3023 T	3023 T	3023 C	3011 N/A	3008 T	3023 T	
3024 G	3024 G	3024 T	3012 N/A	3009 G	3024 G	
3025 T	3025 T	3025 G	3013 N/A	3010 T	3025 T	
3026 T	3026 T	3026 T	3014 N/A	3011 T	3026 T	
3027 T	3027 T	3027 T	3015 N/A	3012 T	3027 T	
3028 G	3028 G	3028 T	3016 N/A	3013 G	3028 G	
3029 C	3029 C	3029 G	3017 N/A	3014 C	3029 C	
3030 A	3030 A	3030 C	3018 N/A	3015 A	3030 A	
3031 A	3031 A	3031 A	3019 N/A	3016 A	3031 A	
3032 T	3032 T	3032 A	3020 N/A	3017 T	3032 T	
3033 T	3033 T	3033 T	3021 N/A	3018 T	3033 T	
3034 G	3034 G	3034 T	3022 N/A	3019 G	3034 G	
3035 A	3035 A	3035 G	3023 N/A	3020 A	3035 A	
3036 C	3036 C	3036 A	3024 N/A	3021 C	3036 C	
3037 A	3037 A	3037 C	3025 N/A	3022 A	3037 A	
3038 T	3038 T	3038 A	3026 N/A	3023 T	3038 T	
3039 A	3039 A	3039 T	3027 N/A	3024 A	3039 A	
3040 G	3040 G	3040 A	3028 N/A	3025 G	3040 G	
3041 G	3041 G	3041 G	3029 N/A	3026 G	3041 G	
3042 C	3042 C	3042 G	3030 N/A	3027 C	3042 C	
3043 A	3043 A	3043 C	3031 N/A	3028 A	3043 A	
3044 A	3044 A	3044 A	3032 N/A	3029 A	3044 A	
3045 T	3045 T	3045 A	3033 N/A	3030 T	3045 T	
3046 A	3046 A	3046 T	3034 N/A	3031 A	3046 A	
3047 A	3047 A	3047 A	3035 N/A	3032 A	3047 A	
3048 T	3048 T	3048 A	3036 N/A	3033 T	3048 T	
3049 A	3049 A	3049 T	3037 N/A	3034 A	3049 A	
3050 A	3050 A	3050 A	3038 N/A	3035 A	3050 A	
3051 G	3051 G	3051 A	3039 N/A	3036 G	3051 G	
3052 T	3052 T	3052 G	3040 N/A	3037 T	3052 T	
3053 G	3053 G	3053 T	3041 N/A	3038 G	3053 G	
3054 A	3054 A	3054 G	3042 N/A	3039 A	3054 A	
3055 T	3055 T	3055 A	3043 N/A	3040 T	3055 T	
3056 G	3056 G	3056 T	3044 N/A	3041 G	3056 G	
3057 T	3057 T	3057 G	3045 N/A	3042 T	3057 T	
3058 G	3058 G	3058 T	3046 N/A	3043 G	3058 G	
3059 C	3059 C	3059 G	3047 N/A	3044 C	3059 C	
3060 T	3060 T	3060 C	3048 N/A	3045 T	3060 T	
3061 G	3061 G	3061 T	3049 N/A	3046 G	3061 G	
3062 A	3062 A	3062 G	3050 N/A	3047 A	3062 A	
3063 A	3063 A	3063 A	3051 N/A	3048 A	3063 A	
3064 T	3064 T	3064 A	3052 N/A	3049 T	3064 T	
3065 T	3065 T	3065 T	3053 N/A	3050 T	3065 T	
3066 T	3066 T	3066 T	3054 N/A	3051 T	3066 T	
3067 T	3067 T	3067 T	3055 N/A	3052 T	3067 T	
3068 T	3068 T	3068 T	3056 N/A	3053 A	3068 T	
3069 A	3069 A	3069 T	3057 N/A	3054 T	3069 A	
3070 T	3070 T	3070 A	3058 N/A	3055 A	3070 T	
3071 A	3071 A	3071 T	3059 N/A	3056 A	3071 A	
3072 A	3072 A	3072 A	3060 N/A	3057 A	3072 A	
3073 A	3073 A	3073 A	3061 N/A	3058 T	3073 A	
3074 A	3074 A	3074 A	3062 N/A	3059 A	3074 A	
3075 A	3075 A	3075 A		3060 A	3075 A	
3076 A	3076 A	3076 A		3061 A	3076 A	
3077 T	3077 T	3077 A		3062 A	3077 T	
3078 C	3078 C	3078 T		3063 T	3078 C	
3079 A	3079 A	3079 C		3064 C	3079 A	
3080 T	3080 T	3080 A		3065 A	3080 T	
3081 G	3081 G	3081 T		3066 T	3081 G	
3082 A	3082 A	3082 G		3067 G	3082 A	
3083 G	3083 G	3083 A		3068 T	3083 G	
3084 T	3084 T	3084 G		3069 A	3084 T	
3085 T	3085 T	3085 T		3070 G	3085 T	
3086 T	3086 T	3086 T		3071 T	3086 T	
3087 G	3087 G	3087 T		3072 T	3087 G	
3088 G	3088 G	3088 G		3073 T	3088 G	

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SEQ ID NO:8	SEQ ID NO:8			SEQ ID NO:1	SEQ ID NO:8	SEQ ID NO:1
3089 G	3089 G	3089 G		3074 G	3089 G	
3090 A	3090 A	3090 G		3075 T	3090 A	
3091 A	3091 A	3091 A		3076 G	3091 A	
3092 A	3092 A	3092 A		3077 G	3092 A	
3093 A	3093 A	3093 A		3078	3093 A	
3094 A	3094 A	3094 A		3079	3094 A	
3095 A	3095 A	3095 A		3080	3095 A	
3096 A	3096 A	3096 A		3081	3096 A	
3097 A	3097 A	3097 A		3082	3097 A	
3098 A	3098 A	3098 A		3083	3098 A	
3099 A	3099 A	3099 A		3084	3099 A	
3100 A	3100 A	3100 A		3085	3100 A	
3101 A	3101 A	3101 A		3086	3101 A	
3102 A	3102 A	3102 A		3087	3102 A	
3103 A	3103 A	3103 A		3088	3103 A	
3104 A	3104 A	3104 A		3089	3104 A	
3105 A	3105 A	3105 A		3090	3105 A	
3106 A	3106 A	3106 A		3091	3106 A	
3107 A	3107 A	3107 A		3092	3107 A	
3108 A	3108 A	3108 A		3093	3108 A	
3109 A	3109 A	3109 A		3094	3109 A	
3110 A	3110 A	3110 A, A		3095	3110 A	