



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/750,768	01/25/2013	Doug Amorese	25115-755.201	1162
12754 7590 07/15/2015 Wilson Sonsini Goodrich & Rosati/NUGEN 650 Page Mill Road Palo Alto, CA 94304			EXAMINER BERTAGNA, ANGELA MARIE	
			ART UNIT	PAPER NUMBER
			1637	
			NOTIFICATION DATE	DELIVERY MODE
			07/15/2015	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@wsgr.com

Office Action Summary	Application No. 13/750,768	Applicant(s) AMORESE ET AL.	
	Examiner Angela M. Bertagna	Art Unit 1637	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 3/16/15.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☒ Claim(s) 1-3,6,9,10,14,40-42,45-49 and 51-62 is/are pending in the application.
5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☒ Claim(s) 1-3,6,9,10,14,40-42,45-49 and 51-62 is/are rejected.

8) ☒ Claim(s) 55 is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10) ☐ The specification is objected to by the Examiner.

11) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some** c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

4) ☐ Other: _____.

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 21, 2015 has been entered.

Claims 1-3, 6, 9, 10, 14, 40-42, 45-49, and 51-62 are pending and under examination.

Response to Arguments

3. Applicant's arguments filed on January 21, 2015 have been fully considered.

Rejection of claims 1-3, 6, 9, 11, 14, and 51-53 under pre-AIA 35 U.S.C. 102(b) as being anticipated by Borodina

Applicant's arguments on pages 7-8 have been fully considered. Applicant argues that Borodina fails to teach steps (c) and (e) of claim 1. This argument was persuasive. The rejection has been withdrawn. The rejection has also been withdrawn because Borodina fails to teach step (b) of claim 1. The reference does not disclose ligation of the first adaptor to the nucleic acid fragments. Instead, the first adaptor is ligated to the cDNA generated from the RNA fragments (see the reproduction of Figure 5.1 of Borodina on page 8 of Applicant's arguments).

Rejection of claims 10, 54, and 55 under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Borodina in view of Vaidyanathan

Applicant argues that the rejection should be withdrawn because Vaidyanathan fails to remedy the deficiencies of Borodina with respect to claim 1 (page 12). This argument was persuasive. The rejection has been withdrawn.

Rejection of claims 40-42, 45-49, and 52 under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Costa in view of Kurn

Applicant argues that the references fail to teach or suggest step (b) of claim 40 (pages 9-12). This argument was persuasive. The rejection has been withdrawn.

Double Patenting

4. Applicant is advised that should claim 45 be found allowable, claim 48 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Objections

5. Claim 55 is objected to because “comprise” should be replaced with “comprises”.

Claim Rejections - 35 USC § 112

6. The following is a quotation of 35 U.S.C. 112(d):

Art Unit: 1637

(d) REFERENCE IN DEPENDENT FORMS.—Subject to subsection (e), a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), fourth paragraph:

Subject to the [fifth paragraph of 35 U.S.C. 112 (pre-AIA)], a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.

Claims 53 and 59 are rejected under 35 U.S.C. 112(d) or pre-AIA 35 U.S.C. 112, 4th paragraph, as being of improper dependent form for failing to further limit the subject matter of the claim upon which it depends, or for failing to include all the limitations of the claim upon which it depends.

Claim 53 depends from claim 1 and states that the first adaptor sequence is ligated to a 5' end of the nucleic acid fragments. This recitation is not further limiting because steps (c)-(e) of claim 1 already require ligation of the first adaptor to a 5' end of the nucleic acid fragments.

Claim 59 is not further limiting for the same reason.

Applicant may cancel the claim(s), amend the claim(s) to place the claim(s) in proper dependent form, rewrite the claim(s) in independent form, or present a sufficient showing that the dependent claim(s) complies with the statutory requirements.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-3, 6, 9, 10, 14, 40-42, 45-49, 51-54, and 57-62 are rejected under pre-AIA 35 U.S.C. 102(b) as being anticipated by Jones et al. (US 2003/0232348 A1).

Regarding claims 1, 14, and 53, Jones teaches a method for enriching for a nucleic acid sequence of interest in a sample that comprises the following steps (see Figure 3 and paragraph 94; see also Example 1 on page 14, paragraphs 129-132):

(a) fragmenting nucleic acids in the sample, wherein the nucleic acid fragments comprise the sequence of interest (paragraphs 94 and 129);

(b) ligating a first adaptor to a 5' end of the nucleic acid fragments (Figure 3 and paragraphs 94 and 129);

(c) annealing one or more oligonucleotides in solution to the nucleic acid sequence of interest in the nucleic acid fragments comprising the ligated first adaptor, wherein the oligonucleotides comprise a 3' portion that is complementary to the nucleic acid sequence of interest and a 5' portion comprising a second adaptor sequence (Figure 3, paragraph 94, and paragraph 129);

(d) extending said annealed oligonucleotides using a DNA polymerase to obtain extension products comprising sequence complementary to the ligated first adaptor, sequence complementary to the nucleic acid of interest, and the second adaptor (Figure 3, paragraph 94, and paragraph 129); and

(e) amplifying the extension products using a primer that anneals to the complement of the first adaptor sequence and a primer that anneals to the complement of the second adaptor sequence to enrich for the nucleic acid sequence of interest (Figure 3 and paragraphs 130-131).

Regarding claim 2, Jones teaches that the method further comprises sequencing the enriched nucleic acid sequence of interest (paragraph 132).

Regarding claim 3, Jones teaches that the nucleic acid sequence of interest comprises genomic DNA (paragraph 129). The reference also teaches that the nucleic acid sequence of interest may comprise cDNA or RNA (paragraph 47).

Regarding claims 6 and 52, Jones teaches that the nucleic acid fragments are double-stranded and that method comprises denaturing the nucleic acid fragments before the step of annealing the oligonucleotides (step (c) above), thereby generating single-stranded nucleic acid fragments comprising the first adaptor sequence and the nucleic acid sequence of interest (Figure 3 and paragraph 129).

Regarding claim 9, Jones teaches that the first and second adaptor sequence are distinct (Figure 3, paragraph 94, and paragraphs 129-131, where the A2-A3 adaptor ligated to the fragments is distinct from the A1 adaptor contained in the capture probe oligonucleotide).

Regarding claims 10 and 54, Jones teaches that the second adaptor sequence may comprise a barcode sequence (paragraphs 71-72) and also that the first adaptor may include a restriction site (paragraph 56).

Regarding claim 51, in the method of Jones the oligonucleotides comprise a 3' portion that is complementary to a different nucleic acid sequence of interest in the nucleic acid fragments and a 5' portion comprising the second adapter sequence (paragraph 129; see also Figure 3).

Regarding claims 57-61, Jones teaches that the first adaptor sequence is in a long strand of a partial duplex adaptor comprising a long strand and a short strand, the long strand is ligated

to a 5' end of the nucleic acid fragments, and the short strand is ligated to a 3' end of the nucleic acid fragments (see Figure 3 and paragraph 94).

Regarding claim 62, Jones teaches that the first adaptor sequence is in a ligation strand of a first adaptor, wherein the first adaptor comprises the ligation strand and a non-ligation strand, wherein the ligation strand ligates to a 5' end of the nucleic acid fragments (paragraph 59).

Regarding claim 40, Jones teaches a method for enriching a nucleic acid sequence of interest from a library (see Figure 3, paragraph 94, and Example 3 at paragraphs 129-132), wherein the library comprises nucleic acid inserts comprising the nucleic acid sequence of interest (Figure 3 and paragraphs 94 and 129), wherein the nucleic acid inserts have a first adaptor sequence attached on a first end and a second adaptor sequence attached on a second end (Figure 3 and paragraphs 94 and 129, where the fragments comprising the A2-A3 adaptor at each end are taught), the method comprising:

(a) denaturing the nucleic acid inserts, thereby generating a library of single-stranded nucleic acids with the first and second adaptor sequences flanking the nucleic acid sequence of interest (Figure 3 and paragraph 129);

(b) annealing one or more oligonucleotides in solution to the nucleic acid sequence of interest in the single-stranded nucleic acids, wherein the oligonucleotides comprise a 3' portion that is complementary to the nucleic acid sequence of interest and a 5' portion comprising a third adaptor sequence that is distinct from the first and second adaptor sequences (Figure 3, paragraph 94, and paragraph 129, where the A1-containing oligonucleotides are annealed);

(c) extending said annealed oligonucleotides using a polymerase to obtain extension products comprising sequence complementary to the first adaptor, sequence complementary to

the nucleic acid of interest, and the third adaptor (Figure 3, paragraph 94, and paragraph 129);
and

(d) amplifying the extension products using a primer that anneals to the complement of the first adaptor sequence and a primer that anneals to the complement of the third adaptor sequence to enrich for the nucleic acid sequence of interest (Figure 3 and paragraphs 130-131).

Regarding claim 41, Jones teaches that the method further comprises sequencing the enriched nucleic acid sequence of interest (paragraph 132).

Regarding claim 42, Jones teaches that the nucleic acid sequence of interest comprises genomic DNA (paragraph 129). The reference also teaches that the nucleic acid sequence of interest may comprise cDNA or RNA (paragraph 47).

Regarding claims 45 and 48, Jones teaches that the first and second adaptor sequence are the same among each of the inserts in the library (Figure 3 and paragraphs 94 and 129).

Regarding claim 46, Jones teaches that the third adaptor sequence is the same among the one or more oligonucleotides (Figure 3 and paragraphs 94 and 129).

Regarding claim 47, Jones teaches that the first and second adaptor sequence may be distinct from each other (Figure 3 and also paragraph 58).

Regarding claim 49, Jones teaches that the third adaptor sequence may comprise a barcode sequence (paragraphs 71-72).

9. Claims 1-3, 6, 9, 10, 14, 40-42, 45-49, 51-62 are rejected under pre-AIA 35 U.S.C. 102(b) as being anticipated by Jones et al. (US 2005/0142577 A1).

Regarding claims 1, 2, 14, and 53, Jones teaches a method for enriching a nucleic acid sequence of interest in a sample comprising nucleic acids that comprises the following steps (see, for example, Figures 3-4 and paragraphs 86-90, 96, 99, and 100): (a) fragmenting nucleic acids in the sample to generate fragments comprising the sequence of interest, (b) ligating a first adaptor to a 5' end of the nucleic acid fragments, (c) annealing one or more oligonucleotides in solution to the nucleic acid sequence of interest in the fragments, wherein said oligonucleotides comprise a 3' portion that is complementary to the nucleic acid sequence of interest and a 5' portion comprising a second adaptor sequence, (d) extending said annealed oligonucleotides using a DNA polymerase to obtain extension products comprising sequence complementary to the ligated first adaptor, sequence complementary to the nucleic acid of interest, and the second adaptor, (e) amplifying the extension products using a primer that anneals to the complement of the first adaptor sequence and a primer that anneals to the complement of the second adaptor sequence to enrich for the nucleic acid sequence of interest, and (f) sequencing the enriched nucleic acid of interest.

Regarding claim 3, Jones teaches that the nucleic acid sequence of interest comprises genomic DNA (paragraph 100). The reference also teaches that the nucleic acid sequence of interest may comprise RNA (paragraphs 43-44).

Regarding claims 6 and 52, Jones teaches that the nucleic acid fragments are double-stranded and that method comprises denaturing the nucleic acid fragments before the step of annealing the oligonucleotides (step (c) above), thereby generating single-stranded nucleic acid fragments comprising the first adaptor sequence and the nucleic acid sequence of interest (Figure 3 and paragraphs 87 and 100).

Regarding claim 9, Jones teaches that the first and second adaptor sequence are distinct (Figure 3, paragraph 87, and paragraph 100).

Regarding claims 10 and 54, Jones teaches that the second adaptor sequence may comprise a barcode sequence (paragraphs 58 and 61) and also that the first adaptor may include a restriction site (paragraph 49).

Regarding claim 51, in the method of Jones, the oligonucleotides comprise a 3' portion that is complementary to a different nucleic acid sequence of interest in the nucleic acid fragments and a 5' portion comprising the second adapter sequence (paragraphs 87, 99, and 100; see also Figure 3).

Regarding claim 55, Jones teaches that the 3' portion of the oligonucleotides comprises a random sequence (see Figure 4, paragraph 100 and paragraphs 88-90).

Regarding claims 57-61, Jones teaches that the first adaptor sequence is in a long strand of a partial duplex adaptor comprising a long strand and a short strand, the long strand is ligated to a 5' end of the nucleic acid fragments, and the short strand is ligated to a 3' end of the nucleic acid fragments (see Figure 3 and paragraph 87).

Regarding claim 62, Jones teaches that the first adaptor sequence is in a ligation strand of a first adaptor, wherein the first adaptor comprises the ligation strand and a non-ligation strand, wherein the ligation strand ligates to a 5' end of the nucleic acid fragments (paragraph 50).

Regarding claim 40, Jones teaches a method for enriching a nucleic acid sequence of interest from a library (see Figure 3, paragraphs 86-90, 99, and 100), wherein the library comprises nucleic acid inserts comprising the nucleic acid sequence of interest (Figure 3 and paragraphs 86 and 100), wherein the nucleic acid inserts have a first adaptor sequence attached

on a first end and a second adaptor sequence attached on a second end (Figure 3 and paragraphs 86 and 100), the method comprising:

(a) denaturing the nucleic acid inserts, thereby generating a library of single-stranded nucleic acids with the first and second adaptor sequences flanking the nucleic acid sequence of interest (Figure 3 and paragraphs 86 and 100);

(b) annealing one or more oligonucleotides in solution to the nucleic acid sequence of interest in the single-stranded nucleic acids, wherein the oligonucleotides comprise a 3' portion that is complementary to the nucleic acid sequence of interest and a 5' portion comprising a third adaptor sequence that is distinct from the first and second adaptor sequences (Figure 3, paragraph 86, and paragraph 100, where the oligonucleotides containing an A1 or degenerate sequence are annealed);

(c) extending said annealed oligonucleotides using a polymerase to obtain extension products comprising sequence complementary to the first adaptor, sequence complementary to the nucleic acid of interest, and the third adaptor (Figure 3, paragraph 86, and paragraph 100); and

(d) amplifying the extension products using a primer that anneals to the complement of the first adaptor sequence and a primer that anneals to the complement of the third adaptor sequence to enrich for the nucleic acid sequence of interest (Figure 3 and paragraphs 86 and 100).

Regarding claim 41, Jones teaches that the method further comprises sequencing the enriched nucleic acid sequence of interest (paragraph 100).

Regarding claim 42, Jones teaches that the nucleic acid sequence of interest comprises genomic DNA (paragraph 100). The reference also teaches that the nucleic acid sequence of interest may comprise RNA (paragraphs 43-44).

Regarding claims 45 and 48, Jones teaches that the first and second adaptor sequence are the same among each of the inserts in the library (Figure 3 and paragraphs 86 and 100).

Regarding claim 46, Jones teaches that the third adaptor sequence is the same among the one or more oligonucleotides (Figure 3 and paragraphs 86 and 100).

Regarding claim 47, Jones teaches that the first and second adaptor sequence may be distinct from each other (Figure 3 and also paragraph 53).

Regarding claim 49, Jones teaches that the third adaptor sequence may comprise a barcode sequence (paragraph 58).

Regarding claim 56, Jones teaches that the 3' portion of the oligonucleotides comprises a random sequence (paragraph 100 and paragraphs 88-90).

Claim Rejections - 35 USC § 103

10. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under pre-AIA 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made

absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of pre-AIA 35 U.S.C. 103(c) and potential pre-AIA 35 U.S.C. 102(e), (f) or (g) prior art under pre-AIA 35 U.S.C. 103(a).

11. Claims 55 and 56 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Jones et al. (US 2003/0232348 A1; Jones 1 below) in view of Jones et al. (US 2005/0142577 A1; Jones 2 below).

As discussed above, Jones 1 teaches the method of claims 1-3, 6, 9, 10, 14, 40-42, 45-49, 51-54, and 57-62.

Jones 1 does not teach that the 3' portion of the one or more oligonucleotides comprises a random sequence as required by claims 55 and 56.

However, Jones 2 teaches that incorporating a degenerate sequence into the 3' portion of oligonucleotides used for the same purpose as the oligonucleotides of Jones 1 is advantageous because the degenerate sequence "may improve efficiency and reduce the cost of locus-specific genotyping applications" (paragraph 88). The reference further teaches that the degenerate sequence may include a random sequence (paragraphs 89-90).

It would have been *prima facie* obvious for one of ordinary skill in the art at the time of the invention to practice the method of Jones 1 using oligonucleotides having a 3' portion comprising a random sequence. The ordinary artisan would have been motivated to do so to obtain a more efficient and less expensive method as taught by Jones 2 and would have had a

reasonable expectation of success since the oligonucleotides of Jones 2 were used for the same purpose as the oligonucleotides of Jones 1. Thus, the methods of claims 55 and 56 are *prima facie* obvious.

Conclusion

12. No claims are currently allowable.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

(1) Rabinowitz et al. (US 2011/0288780 A1) is cited for its disclosure on page 22, paragraphs 213-222 of a method comprising (i) forming a library of DNA fragments with universal adaptors on both ends, (ii) amplifying the library with universal primers, (iii) performing multiplexed target-specific amplification, (iv) barcoding the resulting amplification products, and (v) sequencing the barcoded amplification products.

(2) Rabinowitz et al. (US 2012/0270212 A1) is cited for its disclosure in Figure 6 and paragraphs 316 and 322 of a method comprising (i) forming a library of DNA fragments with adaptors on both ends, (ii) amplifying the library using an adaptor-specific primer and a target-specific primer, and (iii) further amplifying the resulting amplification products.

(3) Link et al. (US 2012/0309002 A1) is cited for its disclosure in Figures 3-5 of a method comprising (i) ligation of adaptors to both strands of a double-stranded nucleic acid, (ii) hybridization and extension of an oligonucleotide comprising a 3' target-specific portion and a 5' adaptor sequence, and amplification of the resulting extension products using a first primer that

targets an adaptor present in step (i) and a second primer that targets the adaptor added in step (ii).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela M. Bertagna whose telephone number is (571)272-8291. The examiner can normally be reached on Monday-Friday, 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on (571)272-0782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Angela M. Bertagna/
Primary Examiner, Art Unit 1637