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EXAMINER	
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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.

Office Action Summary	Application No. 13/582,110	Applicant(s) KIM ET AL.	
	Examiner YIH-HORNG SHIAO	Art Unit 1672	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 *08-31-2012*.

☐ 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) *7-13* 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5a) Of the above claim(s) _____ is/are withdrawn from consideration.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) *7-13* is/are rejected.

8)☐ Claim(s) _____ 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 *08-31-2012;02-20-2013;07-15-2013*.

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

4) ☐ Other: _____.

DETAILED ACTION

The present application is being examined under the pre-AIA first to invent provisions. Preliminary amendment filed on August 31, 2012 has been entered. Claims 1-6 are cancelled. Claims 7-13 are pending in this instant application and are currently under examination.

Priority

This application is a 371 of PCT/KR2010/001360 filed on March 04, 2010.

Information Disclosure Statement

The information disclosure statements (IDS) filed on August 31, 2012, February 20, 2013, and July 15, 2013 have been considered.

Claim Rejections

Claim 7 is objected to because of the following informalities: The phrase "the group consisting of" should be inserted after the recitation "the genus Pueraria selected from" to comply with transitional phrase for a Markush group. The recitation "of extract of one or more plant" should read "of an extract of one or more plants". Appropriate correction is required.

Claims 9 and 12 are objected to because of the following informalities: Recitation of "the form of a composition" should read "a form of a composition" because

"the" represents the subsequent appearance of a claim limitation. Appropriate correction is required.

Claim 11 is objected to because of the following informalities: The recitation "an effective amount of puerarin" should read "an effective amount of a puerarin". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112(a):

> (a) IN GENERAL.—The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.

The following is a quotation of the first paragraph of pre-AIA 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 7-13 are rejected under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, because the specification, while being enabling for treating hair graying or vitiligo of a subject, does not reasonably provide enablement for preventing hair graying or vitiligo of a subject recited in claims 7 and 11. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or to use the invention commensurate in scope with these claims. Claims 2-6

depend from claim 1. Claims 8-10 depend from claim 7. Claims 12 and 13 depend from claim 11.

Applicants claim a method for preventing and treating hair graying or vitiligo of a subject recited in claims 7 and 11. However, no limiting definition of "prevention" is given in the instant Specification. In the absence of a limiting definition by the Applicants, "prevention," as described according to the **Institute for International Medical Education** (pages 15 and 16), is a preventive measure, such as preserving physical fitness in primary prevention and effective intervention to correct departures from good health in secondary prevention. More specifically, tertiary prevention, which is most relevant as used in the context of the instant invention, "consists of the measures available to reduce or eliminate long-term impairments and disabilities, [and to] minimize suffering caused by existing departures from good health". Thus the claimed method for preventing and treating hair graying or vitiligo of a subject as interpreted by a skilled practitioner of the medical or pharmaceutical arts would be to reduce the occurrence of or to eliminate hair graying or vitiligo of a subject by the method.

The Applicant's attention is drawn to *In re Wands*, 8 USPQ2d 1400 (CAFC1988) at 1404 where the court set forth eight factors to consider when assessing if a disclosure would have required undue experimentation. Citing *Ex parte Forman*, 230 USPQ 546 (BdApls 1986) at 547 the court recited eight factors: (1) The nature of the invention; (2) the state of the prior art; (3) the relative skill of those in the art; (4) the predictability or unpredictability of the art; (5) the breadth of the claims; (6) the amount

of direction or guidance presented; (7) the presence or absence of working examples; and (8) the quantity of experimentation necessary.

All of the *Wands* factors have been considered with regard to the instant claims, with the most relevant factors discussed below.

Nature of the invention: The rejected invention is drawn to a method for preventing and treating hair graying or vitiligo of a subject, comprising administering to the subject an effective amount of extract of one or more plant in the genus Pueraria and a method for preventing and treating hair graying or vitiligo of a subject, comprising administering to the subject an effective amount of puerarin.

Relative skill of those in the art: The relative skill of those in the art is high.

Breadth of claims: The claims are extremely broad in that they encompass the prevention of hair graying or vitiligo of a subject using the instantly claimed method.

State of the prior art/Predictability or unpredictability of the art: There is no teaching or suggestion in the state of the prior art that application of certain method comprising a pharmaceutical composition can prevent hair graying or vitiligo of a subject. **Trueb** (Clin Interven Aging, 1:121-129, 2006) disclosed that temporary hair darkening has been reported after ingestion of large doses of p-aminobenzoic acid; in 460 gray-haired individuals a response rate is 82%; Darkening was obvious within 2-4 months of starting treatment; The hairs turned gray again 2-4 weeks after stopping therapy; In the absence of a natural way to reverse hair graying, hair colorants are the mainstay of recovering lost hair color (page 126, right column, lines 10-20). **Szczurko et al.** (BMC Dermatol, 8:2, 2008) disclosed i) L-phenylalanine monotherapy was assessed

in one trial and as an adjuvant to phototherapy in three trials; All reported beneficial effects, ii) Three clinical trials utilized different traditional Chinese medicine products; Although each traditional Chinese medicine trial reported benefit in the active groups, the quality of the trials was poor, iii) Six trials investigated the use of plants in the treatment of vitiligo, four using plants as photosensitizing agents; The studies provide weak evidence that photosensitizing plants can be effective in conjunction with phototherapy, and moderate evidence that Ginkgo biloba monotherapy can be useful for vitiligo, and iv) Two clinical trials investigated the use of vitamins in the therapy of vitiligo; One tested oral cobalamin with folic acid, and found no significant improvement over control; Another trial combined vitamin E with phototherapy and reported significantly better repigmentation over phototherapy only (page 1, Abstract, lines 9-20). One of skilled artisan would understand that an extract of a pueraria or a puerarin is to minimize, not to prevent, hair graying or vitiligo. Thus, it is highly unlikely that one of ordinary skill in the art would consider it possible to prevent hair graying or vitiligo using the instantly claimed method.

Amount of guidance/Existence of working examples: It is worth noting that there are no working examples in the instant application to show that the claimed method is effective for preventing hair graying or vitiligo as recited in the claim. The exemplary embodiments of the Specification merely present (i) The hair graying preventing effect is tested as follows using hair graying-induced mice ($Mitf^{mi\text{-}vit}$) purchased from the Jackson Lab (USA); The mice experience hair graying with time since melanin synthesis in the hair follicle decreases (page 3, [0042]) and as seen from FIG. 2, the groups treated with

puerarin or the extract of the plant in the genus Pueraria show higher melanin content; Accordingly, it can be seen that they are effective in increasing melanin content in the hairs of the hair graying-induced mice (page 4, [0046), and (ii) As seen from FIGS. 3 to 5, puerarin is effective in increasing melanin content in the hairs of the hair graying induced mice, both male and female (page 4, [0051]), but does not show that hair graying or vitiligo has been eliminated. In the absence of any examples and in view of the state of the prior art, one of ordinary skill in the art would view that it is unlikely, and unpredictable, that the method can be used to prevent hair graying or vitiligo.

Quantity of experimentation: In order to practice the full scope of the invention, one skilled in the art would need to undertake a novel and extensive research program to show that a preventive measure can be achieved after applying the method comprising an extract from a pueraria or a puerarin. Furthermore, one of ordinary skill in the art would need to test a representative number of animals before one of ordinary skill in the art would be able to conclude that any method can be used to prevent hair graying or vitiligo. Because this research would have to be exhaustive, and because it would involve such a wide and unpredictable scope of use in prevention of hair graying or vitiligo, it would constitute an undue and unpredictable experimental burden.

Lack of a working example is a critical factor to be considered, especially in a case involving an unpredictable and undeveloped art. See MPEP § 2164. *Genetech*, 108 F.3d at 1366, states that "a patent is not a hunting license. It is not a reward for search, but compensation for its successful conclusion" and "[p]atent protection is

granted in return for an enabling disclosure of an invention, not for vague intimations of general ideas that may or may not be workable".

Therefore, in view of the *Wands* factors as discussed above, including the amount of guidance provided and the predictability of the art and the lack of working examples to practice the full scope of the claimed invention herein, a person of ordinary skill in the art would have to engage in undue experimentation, with no assurance of success.

Claim Rejections - 35 USC § 102

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 –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (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.

Claims 7-11 and 13 are rejected under pre-AIA 35 U.S.C. 102(b) as being anticipated by **D'Amelio et al.** (US Patent Application Publication 2005/0196475, published on September 8, 2005, hereinafter referred to as D'Amelio '475).

D'Amelio '475 disclosed a process of reducing wrinkles of the skin of a subject in need thereof comprising topically applying a composition containing an effective amount of an extract of *Pueraria candollei var. mirifica* A Shaw. & Suvat. to the skin of a subject to reduce wrinkles of the skin (page 1, [0014]). Pueraria candollei var. mirifica A. Shaw.

& Suvat. (hereinafter *Pueraria mirifica* or *P. mirifica*) (page 1, [0005]). The extract contains miroestrol, deoxymiroestrol, diadzin, puerarin, genistin, diadzein and genistein (page 1, [0010]). A topical composition is a suspension consisting essentially of glycerin and about 1.0 to 5.0% by weight of the dry powdered extract (page 3, [0041]). It has been reported that *P. mirifica* is able to produce a soft, youthful skin, and to turn white hair black (page 1, [0007]). The reference is further directed to a method of treating a subject by administering internally (page 1, [0009]). The composition provides about 3-11 mg diadzin, about 12-30 mg puerarin, about 0.5-2 mg genistin, about 1.1 to 3.6 mg diadzein, and about 0.2 to 2 mg genistein based on 100 g of the final composition (page 3, [0042]). Thus, while the prior art does not specifically teach that gray hair and/or vitiligo is prevented, the claimed limitation does not appear to result in a manipulative difference since the prior art appears to apply the composition to the same patient population, e.g., a human. Note: Since the specification does not appear to specifically identify a patient population is in need of prevention, for prior art purposes, the patient population has been interpreted to be any subject since it is recognized that in the art that at least graying hair is a natural process of aging.

Thus, the teachings of D'Amelio '475 anticipate Applicant's claims 7-11 and 13.

Claims 7-13 are rejected under pre-AIA 35 U.S.C. 102(b) as being anticipated by **Cherdshewasart et al.** (US Patent Application Publication 2004/0105900, published on June 3, 2004, hereinafter referred to as Cherdshewasart '900).

Cherdshewasart '900 disclosed a process of treating pre-menopausal women comprising administering effective amount of *Pueraria mirifica* extract in a capsule thereby resulting in improved smooth skin and healthy hair (or hair complexity) in the treated women compared with placebo group (page 5, [0039-0041], Table 8). The products comprise the dried extract or the liquid extract at an amount of 0.1-100% and are preferably in the form selected from the group consisting of pills, capsules, packages, bottles, and boxes or in any other sealed form (page 2, [0022]). A cosmetic composition for skin lotion was prepared, which contained the *Pueraria mirifica* extract at an amount of 4.0% by weight (page 3, [0030]). Contents of isoflavones in the extract derived from the tuber of *Pueraria mirifica* are given in Table 1 (page 3, 0025]).

TABLE 1

Contents of Isoflavones in Extract Derived from Tuber of Pueraria mirifica

Isoflavone	Content (mg/100 g)
Daidzin	51.0
Daidzein	8.1
Genistin	12.0
Genistein	2.0
Puerarin	96.0

The calculated Puerarin is about 0.1 wt% (= 96 mg/100 g). Thus, while the prior art does not specifically teach that gray hair and/or vitiligo is prevented, the claimed limitation does not appear to result in a manipulative difference since the prior art appears to apply the composition to the same patient population, e.g., a human. Note: Since the specification does not appear to specifically identify a patient population is in need of prevention, for prior art purposes, the patient population has been interpreted to

be any subject since it is recognized that in the art that at least graying hair is a natural process of aging.

Thus, the teachings of Cherdshewasart '900 anticipate Applicant's claims 7-13.

Claims 11-13 are rejected under pre-AIA 35 U.S.C. 102(a) as being anticipated by **Lee et al.** (KR1020090066824, published on June 24, 2009, also listed in IDS filed on August 31, 2012, English-translation is used for citation here, hereinafter referred to as Lee '2009).

Lee '2009 disclosed a process for treating a melanocyte comprising administrating a composition comprising 1000 μg/ml (= about 0.1 wt%) puerarin to the melanocyte (page 13, right column, 3rd paragraph). The composition can be not only in a form of a cosmetic composition but also an oral or a parenteral administration (page 10, right column, lines 1-3). Since the active step in the process of Lee '2009 is identical to Applicants' method claims 11-13, the method of Lee '2009 is expected to achieve the same intended purpose, including treating hair graying or vitiligo.

Thus, the teachings of Lee '2009 anticipate Applicant's claims 11-13.

Claim Rejections - 35 USC § 103

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 negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under pre-AIA 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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).

Claims 7-13 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over **D'Amelio et al.** (US Patent Application Publication 2005/0196475, published on September 8, 2005, hereinafter referred to as D'Amelio '475).

D'Amelio '475 disclosed a process of reducing wrinkles of the skin of a subject in need thereof comprising topically applying a composition containing an effective amount of an extract of *Pueraria candollei var. mirifica* A Shaw. & Suvat. to the skin of a subject to reduce wrinkles of the skin (page 1, [0014]). Pueraria candollei var. mirifica A. Shaw. & Suvat. (hereinafter *Pueraria mirifica* or *P. mirifica*) (page 1, [0005]). The extract contains miroestrol, deoxymiroestrol, diadzin, puerarin, genistin, diadzein and genistein (page 1, [0010]). A topical composition is a suspension consisting essentially of glycerin and about 1.0 to 5.0% by weight of the dry powdered extract (page 3, [0041]). It has been reported that *P. mirifica* is able to produce a soft, youthful skin, and to turn white hair black (page 1, [0007]). The reference is further directed to a method of treating a subject by administering internally (page 1, [0009]). The composition provides about 3-11 mg diadzin, about 12-30 mg puerarin, about 0.5-2 mg genistin, about 1.1 to 3.6 mg diadzein, and about 0.2 to 2 mg genistein based on 100 g of the final composition (page 3, [0042]).

D'Amelio '475 does not explicitly teach "treating" hair graying and the limitation "wherein the composition comprises the puerarin in an amount of 0.1-10 wt% based on the total weight of the composition"" required by claim 12.

However, it would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to treat hair graying by administering an extract as taught by D'Amelio in view of the teachings of D'Amelio. One would have been motivated to do so because as taught by D'Amelio, Wanadorn P.W., in "A Reputed Rejuvenator", J. Siam. Society, Natural History Supp., 8, 337 (1931), wrote "The ability

of P. mirifica to produce a soft, youthful skin, and to turn White hair black, is stressed (paragraph 0007). Thus, one of ordinary skill in the art would have a reasonable expectation that by treating hair graying by administering an extract as taught by D'Amelio in view of the teachings of D'Amelio, one would achieve a method of treating gray hair.

Moreover, it would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to optimize the amount of the extract in a composition as taught by D'Amelio via routine experimentation to obtain an *Pueratia mirifica* extract comprising an amount of puerarin by different solvent mixtures as taught by D'Amelio '475. Thus, one of skill in the art would have a reasonable expectation that by optimizing the solvent mixtures as taught by D'Amelio '475, one would achieve a method for treating a subject comprising administrating to the subject an effective amount of extract of *Pueraria mirifica* in a composition comprising the puerarin in an amount of 0.1-10 wt% based on the total weight of the composition. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See MPEP § 2144.05 [R-5] [II.A].

Claims 7-10 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over **Sahastrayoga** (Central Council for Research in Ayurveda & Siddha, New Delhi, 1990, also listed in IDS as translated non-patent publication III filed by third party on

February 20, 2013, hereinafter referred to as Sahastrayoga '1990) in view of **Keung et al.** (Phytochemistry 47:499-506, 1998, hereinafter referred to as Keung '1998).

With regard to claims 7 and 10, **Sahastrayoga** '1990 disclosed a method for treating premature grey hair/canities comprising administering orally to a subject a composition comprising a powdered *Pueraria tuberosa* (pages 2 and 3).

Sahastrayoga '1990 did not explicitly disclosed (a) an extract of one of more plant in the genus Pueraria, required by claim 7, (b) the extract of the plant comprises puerarin, required by claim 8, (c) the extract of the plant is in an amount of 0.1-10 wt% based on the total weight of a composition, required by claim 9.

Keung '1998 disclosed that HPLC analysis of crude radix pueraria extract identifies 7 isoflavones with puerarin being most abundant (160 mg/g extract) (page 502, left column, lines 1-3). To verify the antidipsotropic activity of radix pueraria documented in traditional Chinese medicine, we prepared a crude methanol extract of radix pueraria and studied its effect on ethanol intake of golden hamsters (page 500, right column, 3rd paragraph). Dry extract was dissolved in sterile phosphate buffer saline before administration (page 502, Table 1). Control receives 1 ml saline (page 505, Fig. 6 and Fig. 7). Thus, the calculated puerarin based on the weight of crude extract is about 8 wt% [= 160 mg/(1 g dry extract+1 g saline)].

Thus, it would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to substitute the powdered Pueraria as taught in the method of Sahastrayoga '1990 with an extract of a Pueraria in view of the teachings of Keung '1998. One would have been motivated to do so because Keung '1998 teaches

that administration of an extract of Pueraria is a way to verify the biological activity of the Pueraria. Thus, one of skill in the art would have a reasonable expectation that by substituting the powdered Pueraria as taught in the method of Sahastrayoga '1990 with an extract of a Pueraria in view of the teachings of Keung '1998, one would achieve a method for treating hair graying comprising administrating to a subject an effective amount of extract of *Pueraria tuberosa*. "Exemplary rationales that may support a conclusion of obviousness include: (B) Simple substitution of one known element for another to obtain predictable results". See MPEP § 2143 [R-9].

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YIH-HORNG SHIAO whose telephone number is (571)272-7135. The examiner can normally be reached on Mon-Thur, 07:30 am to 06:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brandon Fetterolf can be reached on 571-272-2919. 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.

/YIH-HORNG SHIAO/
Examiner, Art Unit 1672

/BRANDON FETTEROLF/

Supervisory Patent Examiner, Art Unit 1672