

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

AMBRY GENETICS CORPORATION,  
Petitioner,

v.

THE JOHNS HOPKINS UNIVERSITY,  
Patent Owner.

---

Case IPR2017-02093  
Patent 7,824,889 B2

---

Before LORA M. GREEN, TINA E. HULSE, and RICHARD J. SMITH,  
*Administrative Patent Judges.*

SMITH, *Administrative Patent Judge.*

DECISION  
Institution of *Inter Partes* Review  
37 C.F.R. § 42.108

## I. INTRODUCTION

Ambry Genetics Corporation (“Petitioner”) filed a Petition to institute an *inter partes* review of claims 1 and 8 of U.S. Patent 7,824,889 B2 (the “’889 patent”). Paper 2 (“Pet.”) The Johns Hopkins University (“Patent Owner”) filed a Preliminary Response to the Petition. Paper 6 (“Prelim. Resp.”).

We have authority to determine whether to institute an *inter partes* review under 35 U.S.C. § 314. To institute an *inter partes* review, we must determine that the information presented in the Petition shows “a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). For the reasons set forth below, we conclude that Petitioner has established a reasonable likelihood that it would prevail in showing the unpatentability of at least one challenged claim of the ’889 patent. Therefore, we institute an *inter partes* review for claims 1 and 8 of the ’889 patent.

### A. *Related Proceedings*

The ’889 patent has been asserted in pending district court proceedings: *Esoterix Genetic Laboratories, LLC and The Johns Hopkins University v. Ambry Genetics Corporation*, United States District Court for the Middle District of North Carolina, Case No. 1:16-cv-1111-WO-JEP (the “Ambry Litigation”). Pet. 1–2; Paper 4, 2. The ’889 patent was also asserted in litigation styled *Esoterix Genetic Laboratories, LLC and The Johns Hopkins University v. Myriad Genetics, Inc. and Myriad Genetics Laboratories, Inc.*, United States District Court for the Middle District of North Carolina, Case No. 1:16-cv-1112-WE-JEP, but that case has been dismissed. Pet. 2; Paper 4, 2. The ’889 patent was also asserted in litigation

styled *Esoterix Genetic Laboratories, LLC and The Johns Hopkins University v. Life Technologies Corp, et al.*, Civil Action No. 1:12-cv-01173-CCE-JEP (MDNC). Paper 4, 2–3.

Petitioner also filed petitions for *inter partes* review of certain claims of related U.S. Patent No. 6,440,706 (IPR2017-02086); U.S. Patent No. 7,915,015 (IPR2017-02095); and U.S. Patent No. 8,859,206 (IPR2017-02096). Pet. 2; Paper 4, 2.

### B. *The '889 Patent*

The '889 patent relates to diagnostic genetic analyses. Ex. 1001, 1:19. With the understanding that somatic mutations are the primary cause of cancer, new opportunities for basic research into the pathogenesis of cancer have arisen. *Id.* at 1:26–31. For example, in some cases, detecting neoplastic cells in urine, stool, and sputum is possible at a stage when the primary tumors are still curable and the patients are asymptomatic. *Id.* at 1:34–39. Thus, it is important to be able to detect small populations of mutant cells among a large excess of normal cells. *Id.* at 1:32–34, 43–45. Accordingly, the specification states that “[i]t is an object of the present invention to provide methods for determining the presence of a selected genetic sequence in a population of genetic sequences.” *Id.* at 2:3–5.

The disclosed method involves diluting a biological sample to a point where a practically usable number of the diluted samples contain a proportion of the selected genetic sequence (analyte) relative to total template molecules. *Id.* at 4:20–23. The diluted samples are separately amplified so that the amplified products have a proportion of the analyte sequence that is detectable by the detection means chosen. *Id.* at 4:7–10. With this method, single template molecules can be amplified so that the products are completely mutant or completely wild-type. *Id.* at 4:11–13.

The specification refers to this method as “digital amplification.” *Id.* at 4:42–43. According to the specification, “[t]he ultimate utility of Digital Amplification lies in its ability to convert the intrinsically exponential nature of PCR to a linear one.” *Id.* at 6:1–3. The specification further states that “[i]t should thereby prove useful for experiments requiring the investigation of individual alleles, rare variants/mutations, or quantitative analysis of PCR products.” *Id.* at 6:3–5. For example, the specification identifies detecting “allelic imbalance” as a potential application of digital amplification. *Id.* at 5:29–30; 40–65 (Table 1). According to the specification, “[a]llelic imbalances often result from a disease state.” *Id.* at 6:56–57.

### C. Illustrative Claims

Petitioner challenges claims 1 and 8 of the ’889 patent. Claims 1 and 8, as amended during *ex parte* reexamination, are reproduced below:

1. A method for determining an allelic imbalance in a biological sample, comprising the steps of:

distributing isolated nucleic acid template molecules to form a set comprising a plurality of assay samples, wherein the nucleic acid template molecules are isolated from the biological sample;

amplifying the template molecules within the set to form a population of amplified molecules in individual assay samples of the set;

analyzing the amplified molecules in the assay samples of the set to determine a first number of assay samples which contain a selected genetic sequence on a first chromosome and a second number of assay samples which contain a reference genetic sequence on a second chromosome, wherein between 0.1 and 0.9 of the assay samples yield an amplification product of at least one of the selected and the reference genetic sequences;

comparing the first number of assay samples to the second number of assay samples to ascertain an allelic imbalance in the biological sample.

8. The method of claim 1 wherein between 0.1 and 0.6 of the assay samples yield an amplification product of at least one of the selected and the reference genetic sequences.

Ex. 1001, 21.

*D. The Asserted Grounds of Unpatentability*

Petitioner contends that the challenged claims are unpatentable under 35 U.S.C. §§ 102(b) and/or 103 based on the following specific grounds.

Pet. 4.

Reference[s]	Basis	Claims challenged
Chiang <sup>1</sup>	§ 102(b)	1
Sykes <sup>2</sup>	§ 102(b)	1, 8
Chiang and/or Sykes	§ 102(b)/§103	1, 8

Petitioner also relies on the Declaration of Gregory A. Buck, Ph.D.

Ex. 1007.

## II. ANALYSIS

*A. Person of Ordinary Skill in the Art*

Petitioner asserts that as of August 2, 1999, a person of ordinary skill in the art “would typically have earned a Master’s degree in the biological

---

<sup>1</sup> Pie-Wen Chiang et al., *Use of a Fluorescent-PCR Reaction to Detect Genomic Sequence Copy Number and Transcriptional Abundance*, 6 GENOME RESEARCH 1013–26 (1996) (“Chiang”). Ex. 1031.

<sup>2</sup> P.J. Sykes et al., *Quantitation of Targets for PCR by Use of Limiting Dilution*, 13 BIOTECHNIQUES 444–49 (1992) (“Sykes”). Ex. 1011.

# Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

## Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

## Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

## Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

## API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

## LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

## FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

## E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.