UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

MYRIAD GENETICS, INC., MYRIAD GENETIC LABORATORIES, INC., BIO-RAD LABORATORIES, INC., and RAINDANCE TECHNOLOGIES, INC.

Petitioners

v.

THE JOHNS HOPKINS UNIVERSITY

Patent Owner

U.S. Patent No. 6,440,706

---

Case No. *To be assigned*

---

**PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 6,440,706 UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. §§ 42.1-.80, 42.100-.123**

# TABLE OF CONTENTS

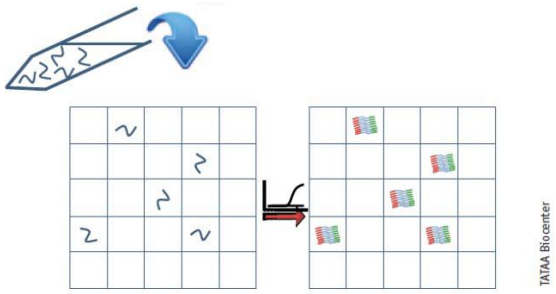
**Page**

## I. STATEMENT OF THE PRECISE RELIEF REQUESTED AND THE REASONS THEREFOR (37 C.F.R. § 42.22(A))

Myriad Genetics, Inc., Myriad Genetic Laboratories, Inc. (collectively, "Myriad"), Bio-Rad Laboratories, Inc., and RainDance Technologies, Inc. (collectively, "Petitioners") respectfully petition for *Inter Partes* Review, and seek cancellation of claims 1-3, 7-11, 15-16, 19-20, 24, 27, 38-43, 47-48, 51-52, 56, and 59 of USPN 6,440,706 (MYR1001) as unpatentable for anticipation and/or obviousness. The '706 patent is assigned to The Johns Hopkins University (hereinafter "Patent Owner").

## II. OVERVIEW

Claims 1-3, 7-11, 15-16, 19-20, 24, 27, 38-43, 47-48, 51-52, 56, and 59 of the '706 patent should be canceled as anticipated and/or obvious. MYR1002, ¶¶20-22. Independent claims 1 and 38 recite a method that Patent Owner calls "digital PCR." MYR1002, ¶¶10-19. The figure below shows the basic steps of the method, which involve distributing a DNA sample into compartments such that each compartment contains, ideally, one or zero molecules of DNA from the sample, carrying out PCR in each compartment, and then analyzing the resulting amplified DNA molecules to determine how many compartments contain each different template DNA molecule:




MYR1018, 541.

The steps comprising what the Patent Owner calls "digital PCR" were well known in the art before the earliest possible priority date for the '706 patent.[1] MYR1002, ¶11. In the prior art, this method was often called "limiting dilution analysis" or "limiting dilution PCR" ("LDPCR") because the sample is diluted down to the point at which some compartments will be "positive," *i.e.*, contain a PCR-amplified product, and some will be "negative," *i.e.*, contain no PCR-amplified product. *Id*. For LDPCR, terms such as "assay samples," "replicates," "compartments," "sample chambers," "wells," or "microreactors" all represent the

[1] The earliest application to which the '706 patent claims priority is provisional application 60/146,792, filed 8/2/1999. MYR1011. Given that, Petitioners rely almost exclusively on prior art under 35 U.SC. §102(b), they are not aware of any claim to an earlier priority date that would affect any of the arguments set forth herein. Petitioners reserve the right to respond should Patent Owner allege an earlier priority date.

same functional element – a separate space where a diluted single template molecule can undergo PCR without cross-contamination, and produce pure or homogeneous amplified product. *Id*. As discussed in detail below, Patent Owner did nothing more than add a snappy name to the prior art method of LDPCR.

By 1994, Kary Mullis, the Nobel Prize winning inventor of PCR, had edited a book on PCR (MYR1014) that included a chapter on quantitative PCR, the use of PCR to quantitate amounts of nucleic acids in a sample. The Mullis chapter discloses and discusses the work of multiple groups of scientists at the time who were carrying out and publishing work involving LDPCR. MYR1002, ¶15. A common feature of this work is that it involved diluting and distributing nucleic acids down to the single molecule level in assay samples or compartments, amplifying the single molecule templates using PCR, and counting or otherwise analyzing the amplified templates in the assay samples or compartments. As the Mullis chapter disclosed in 1994:

> The principle of limiting dilution can also be called on to achieve absolute DNA quantitation. It is based on the use of a qualitative all-or-none endpoint and on the premise that one or more targets in the reaction mixture give rise to a positive endpoint. . . . ***Accurate quantitation can be achieved by performing multiple replicates at serial dilutions of the material to be assayed (Simmonds, 1990; Lee et al. 1990; Sykes et al. 1992)***. At the limit of dilution, where some end points are positive and some are negative, the number of targets

DOCKET ALARM

# 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.