

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 No. IPR2017-02086 (U.S. Patent No. 6,440,706)

Case No. IPR2017-02093 (U.S. Patent No. 7,824,889)

Case No. IPR2017-02095 (U.S. Patent No. 7,915,015)

---

**DECLARATION OF FRED RUSSELL KRAMER, PH.D.**

Patent Nos. 6,440,706; 7,824,889; 7,915,015  
Declaration of Fred Russell Kramer, Ph.D.

I, Fred Russell Kramer, Ph.D., declare as follows:

**I. Introduction**

1. I am over the age of eighteen (18) and am otherwise competent to make this declaration.

2. I have been engaged by the law firm of Kilpatrick, Townsend & Stockton LLP, counsel for Laboratory Corporation of America Holdings (LabCorp), to consult with legal counsel, to prepare this and potentially other declarations, and to be available for deposition in connection with responding to the Petitions for *Inter Partes* Review of U.S. Patent No. 6,440,706 (“the ’706 patent”); U.S. Patent No. 8,859,206 (“the ’206 patent”); U.S. Patent No. 7,824,889 (“the ’889 patent”); and U.S. Patent No. 7,915,015 (“the ’015 patent”) (collectively, “the Petitions”) filed by Ambry Genetics Corporation (“the Petitioner”).<sup>1</sup> I am being compensated for my time in connection with the Petitions at my standard consulting rate. My

---

<sup>1</sup> In each Petition, the respective patent is identified as Exhibit AMB1001. When I refer to specific portions of the patents in my comments below, I identify the patent by this exhibit number and also identify which of the four patents to which I am referring.

Patent Nos. 6,440,706; 7,824,889; 7,915,015  
Declaration of Fred Russell Kramer, Ph.D.

compensation is hourly and is unaffected by the substance of my opinion or the outcome of the proceedings.

## II. Expertise

3. I am qualified based on my education and experience to testify as an expert in the field of molecular biology. My education and experience qualified me as a person of at least ordinary skill in the art at the time of the invention in 1999. A true and correct copy of my *curriculum vitae* is attached as Exhibit No. JHU2002. Additionally, I provide the following overview of my background as it pertains to my qualifications for providing expert testimony in this matter.

4. I am currently a Professor of Microbiology, Biochemistry and Molecular Genetics at the Public Health Research Institute (PHRI), New Jersey Medical School, at Rutgers University, The State University of New Jersey. I am currently the Co-Director of the Laboratory of Molecular Genetics at PHRI. I am also an Associate Member of the Cancer Institute of New Jersey.

5. For 27 years, I served as a Research Professor or Adjunct Professor at the New York University School of Medicine in the Department of Microbiology, and I was a professor and conducted research prior to that for 17 years at Columbia

Patent Nos. 6,440,706; 7,824,889; 7,915,015  
Declaration of Fred Russell Kramer, Ph.D.

University in the Department of Genetics and Development and the Institute of Cancer Research at the College of Physicians and Surgeons.

6. I earned my Bachelor of Science Degree from the University of Michigan in 1964 and my Ph.D. from the Rockefeller University in 1969. I conducted postdoctoral research with Dr. Sol Spiegelman at Columbia University from 1969-1972.

7. I have worked in the areas of microbiology, biochemistry, and molecular genetics for 48 years, and I have worked in research related to nucleic acid detection using a variety of techniques, including polymerase chain reaction (PCR) assays, for over 33 years. For example, I have designed extremely sensitive, multiplex, clinical PCR assays that simultaneously detect four different pathogenic retroviruses in blood, and I have demonstrated the use of Molecular Beacons in PCR assays, including their use in the detection of rare mutations. I also developed a single-tube version of a PCR assay that rapidly identifies multidrug-resistant *Mycobacterium tuberculosis* in sputum samples, which is now the principal assay for the direct detection of tuberculosis utilized throughout the world. The ongoing focus of my research is the development of highly selective PCR assays for the

Patent Nos. 6,440,706; 7,824,889; 7,915,015  
Declaration of Fred Russell Kramer, Ph.D.

detection of rare somatic mutations related to cancer diagnosis, prognosis, and therapy.

8. In forming my opinions, I relied on my knowledge and experience in the field, as well as on documents and information referenced in this Declaration. All statements in my Declaration, unless indicated otherwise, are based on my knowledge and experience in the field.

### **III. Materials Considered**

9. In forming my opinions, in addition to my knowledge and experience, I have considered the following documents and things that I have obtained or that have been provided to me:

- U.S. Patents Nos. 6,440,706; 8,859,206; 7,824,889; and 7,915,015;
- Levran *et al.*, 1997, Sequence Variation in the Fanconi Anemia Gene *FAA*, PNAS 94:13051-13056 (“Levran”);
- Simmonds *et al.*, 1990, Human Immunodeficiency Virus-Infected Individuals Contain Provirus in Small Numbers of Peripheral Mononuclear Cells and at Low Copy Numbers, Journal of Virology 64:864-872 (“Simmonds”);
- Sykes *et al.*, 1992, Quantitation of Targets for PCR by Use of Limiting Dilution, BioTechniques 13:444-449 (“Sykes”);
- U.S. Patent No. 6,143,496 (Brown *et al.*) (“Brown”);

# 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.