

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”).¹ I am being compensated for my time in connection with the Petitions at my standard consulting rate. My

¹ 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.

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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

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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

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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”);

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