

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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MODERNA THERAPEUTICS, INC.,  
Petitioner,

v.

PROTIVA BIOTHERAPEUTICS, INC.,  
Patent Owner.

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Case IPR2018-00739  
Patent No. 9,364,435

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**DECLARATION OF DAVID H. THOMPSON, PH. D.**

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I, David H. Thompson, declare as follows:

## **I. QUALIFICATIONS**

1. I am a Professor of Chemistry at Purdue University and Director of the Medicinal Chemistry Group in the Purdue Center for Cancer Research. My primary research interests include development of transiently-stable carrier systems for drug and nucleic acid delivery.

2. I received my Ph.D. in Organic Chemistry from Colorado State University in 1984. I also hold a Bachelor of the Arts in Biology and a Bachelor of Science in Chemistry from the University of Missouri, Columbia.

3. I have been a visiting professor at numerous institutions including, Chulalongkorn University, Department of Pharmaceutics; Technical University of Denmark, Department of Micro & Nanotechnology; Japan Advanced Institute of Science & Technology, Department of Biomaterials; Osaka University, Department of Applied Chemistry; University of Florida, Department of Pharmaceutics; and University of British Columbia, Department of Biochemistry.

4. I am listed as a co-inventor on 7 United States patents. I have also published more than 140 peer reviewed scientific papers.

5. I have studied, taught, practiced, and conducted research involving the formulation, use, characterization, and delivery of lipid particles. I have expertise with the delivery of therapeutic agents using lipid particles.

6. A copy of my Curriculum Vitae, attached as EX2010, contains further details on my education, experience, publications, and other qualifications to render an expert opinion in this matter.

## II. SCOPE OF WORK

7. I understand that a petition was filed with the United States Patent and Trademark Office for inter partes review of U.S. Patent No. 9,364,435 (“the ’435 patent,” EX1001).

8. I further understand that the Patent Trial and Appeal Board (“PTAB” or the “Board”) has decided to institute inter partes review of claims 1-20 of the ’435 patent under 35 U.S.C. §§ 102 and 103 based on the disclosures of WO2005/007196 (“the ’196 PCT,” EX1002), US 2006/134189 (“the ’189 PCT,” EX1003), Lin, et al, “Three-Dimensional Imaging of Lipid Gene-Carriers: Membrane Charge Density Controls Universal Transfection Behavior in Lamellar Cationic Liposome-DNA Complexes,” (“Lin,” EX1005), Ahmad, et al, “New multivalent cationic lipids reveal bell curve for transfection efficiency versus membrane charge density: lipid–DNA complexes for gene delivery,” (“Ahmad,” EX1006), and US 2006/0240554 (“the ’554 publication,” EX1004).

9. I have been specifically asked to provide my expert opinions on the patentability of the claims of the ’435 patent in view of the asserted grounds in the petition. In connection with this analysis, I have reviewed the ’435 patent and the

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