

Reply in Support of Petition for *Inter Partes Review* of
U.S. Patent No. 10,716,793 B2

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LIQUIDIA TECHNOLOGIES, INC.,

Petitioner

v.

UNITED THERAPEUTICS CORPORATION,

Patent Owner

IPR2021-00406

U.S. Patent No. 10,716,793 B2

Issue Date: July 21, 2020

Title: Treprostinil Administration by Inhalation

**REPLY IN SUPPORT OF PETITION FOR *INTER PARTES* REVIEW
OF U.S. Patent No. 10,716,793 B2**

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EXHIBITS

Exhibit No.	Description of Document
1001	U.S. Patent No. 10,716,793 B2 to Olschewski, et al. (“’793 patent”)
1002	Declaration of Dr. Nicholas Hill (“Hill Decl.”)
1003	<i>Curriculum Vitae</i> of Dr. Nicholas Hill
1004	Declaration of Dr. Igor Gonda (“Gonda Decl.”)
1005	<i>Curriculum Vitae</i> of Dr. Igor Gonda
1006	U.S. Patent No. 6,521,212 B1 to Cloutier, et al. (“’212 patent”)
1007	Voswinckel, R., et al., Abstract 218: “Inhaled treprostinil is a potent pulmonary vasodilator in severe pulmonary hypertension,” <i>European Heart Journal</i> 25:22 (2004) (“Voswinckel JESC”)
1008	Robert Voswinckel, Beate Enke, Andre Kreckel, Frank Reichenberger, Stefanie Krick, Henning Gall, Tobias Gessier, Thomas Schmehl, Markus G. Kohstall, Friedrich Grimminger, Hossein A. Ghofrani, Werner Seeger, and Horst Olschewski, Abstract 1414: “Inhaled Treprostinil Sodium (TRE) For the Treatment of Pulmonary Hypertension,” Abstracts from the 2004 Scientific Sessions of the American Heart Association, <i>Circulation</i> , 110(17 Suppl.):III-295 (October 26, 2004) (“Voswinckel JAHA”)
1009	Robert Voswinckel, Hossein A. Ghofrani, Friedrich Grimminger, and Werner Seeger, “Clinical Observations” on “Inhaled Treprostinil for Treatment of Chronic Pulmonary Arterial Hypertension,” “Letters” Section of the <i>Annals of Internal Medicine</i> , 144(2):149-50 (January 2006) (“Voswinckel 2006”)
1010	Hossein Ardeschir Ghofrani, Robert Voswinckel, et al., Neue Therapieoptionen in der Behandlung der pulmonalerteriellen Hypertonie, 30(4) HERZ, 30(4):296–302 (June 2005) (“Ghofrani”) (Foreign article and English translation attached)
1011	First Amended Complaint filed in <i>United Therapeutics Corporation v. Liquidia Technologies, Inc.</i> , Case No. 1:20-cv-00755-RGA (D. Del.)

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EXHIBITS

Exhibit No.	Description of Document
1012	United Therapeutics Corporation’s Answer to Defendant Liquidia Technologies, Inc.’s Counterclaims filed in <i>United Therapeutics Corporation v. Liquidia Technologies, Inc.</i> , Case No. 1:20-cv-00755-RGA (D. Del.)
1013	United Therapeutics Corporation’s Opening Brief in Support of its Motion to Dismiss Defendant’s Counterclaim filed in <i>United Therapeutics Corporation v. Liquidia Technologies, Inc.</i> , Case No. 1:20-cv-00755-RGA (D. Del.)
1014	Memorandum Order denying United Therapeutics Corporation’s Motion to Dismiss Defendants Counterclaim filed in <i>United Therapeutics Corporation v. Liquidia Technologies, Inc.</i> , Case No. 1:20-cv-00755-RGA (D. Del.)
1015	10,716,793 Patent Prosecution History
1016	10,376,525 Patent Prosecution History (excerpted)
1017	9,339,507 Patent Prosecution History (excerpted)
1018	Remodulin® 2004 Label
1019	Stein, S.W., et al., “The History of Therapeutic Aerosols: A Chronological Review,” <i>Journal of Aerosol Medicine and Pulmonary Drug Delivery</i> , 30(1):20-41 (2017) (“Stein”)
1020	Clark, A.R., “Medical Aerosol Inhalers: Past, Present, and Future,” <i>Aerosol Science and Technology</i> , 22:374-91 (1995) (“Clark”)
1021	Ruan, C.-H., et al., “Prostacyclin Therapy for Pulmonary Arterial Hypertension,” <i>Texas Heart Institute Journal</i> , 37(4):391-99 (2010) (“Ruan”)
1022	Walmrath, D., et al., “Direct Comparison of Inhaled Nitric Oxide and Aerosolized Prostacyclin in Acute Respiratory Distress Syndrome,” <i>American Journal of Respiratory Critical Care Medicine</i> , 153:991-96 (1996) (“Walmrath 1996”)
1023	Olschewski, H., et al., “Inhaled Prostacyclin and Iloprost in Severe Pulmonary Hypertension Secondary to Lung Fibrosis,” <i>American</i>

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Exhibit No.	Description of Document
	<i>Journal of Respiratory Critical Care Medicine</i> , 160:600-07 (1999) (“Olschewski 1999”)
1024	Haché, M., et al., “Inhaled epoprostenol (prostacyclin) and pulmonary hypertension before cardiac surgery,” <i>Journal of Thoracic and Cardiovascular Surgery</i> , 125:642-49 (2003) (“Hache”)
1025	De Wet, C.J., et al., “Inhaled prostacyclin is safe, effective, and affordable in patients with pulmonary hypertension, right heart dysfunction, and refractory hypoxemia after cardiothoracic surgery,” <i>Journal of Thoracic and Cardiovascular Surgery</i> , 127:1058-67 (2004) (“De Wet”)
1026	Denver, J. and Dyche, T., “The Adaptive Aerosol Delivery (AAD) Technology: Past, Present, and Future,” <i>Journal of Aerosol Medicine and Pulmonary Drug Delivery</i> , 23(1 suppl):S-1-S10 (2010) (“Denver and Dyche”)
1027	U.S. Patent No. 6,242,482 B1 to Shorr, et al. (“Shorr”)
1028	U.S. Patent Application Publication No. US 2004/0265238 A1 to Chaudry (“Chaudry”)
1029	Ventavis® Label 2004
1030	Newman, S.P., “Aerosols”, Chapter from <i>Encyclopedia of Respiratory Medicine</i> pp. 58-64 (2006) (“Newman”)
1031	Geller, D.E., “Comparing Clinical Features of the Nebulizer, Metered-Dose Inhaler, and Dry Powder Inhaler,” <i>Respiratory Care</i> , 50(10):1313-21 (2005) (“Geller 2005”)
1032	Bender, B., et al., “Nonadherence in asthmatic patients: is there a solution to the problem?” <i>Annals of Allergy, Asthma & Immunology</i> , 79:177-86 (1997) (“Bender 1997”)
1033	Rau, J.L., “Determinants of Patient Adherence to an Aerosol Regimen,” <i>Respiratory Care</i> 50(10):1346-56 (2005) (“Rau 2005”)
1034	Geller, D., et al., “Bolus Inhalation of rhDNase with the AERx System in Subjects with Cystic Fibrosis,” <i>Journal of Aerosol</i>

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