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APOTEX INC., APOTEX CORP., ARGENTUM PHARMACEUTICALS LLC, ACTAVIS ELIZABETH LLC, TEVA PHARMACEUTICALS USA, INC., SUN PHARMACEUTICAL INDUSTRIES, LTD., SUN PHARMACEUTICAL INDUSTRIES, INC., and SUN PHARMA GLOBAL FZE,

Petitioners,

v.

NOVARTIS AG,

Patent Owner.

Case IPR2017-00854[1]

U.S. Patent No. 9,187,405

PATENT OWNER'S SECOND UPDATED EXHIBIT LIST

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[1] Cases IPR2017-01550, IPR2017-01946, and IPR2017-01929 have been joined with this proceeding.

List of Patent Owner's Evidence and Exhibits

Exhibit	Reference
2001	Declaration of Robert W. Trenchard in Support of Motion for Admission *Pro Hac Vice*
2002	Order Admitting Robert W. Trenchard *Pro Hac Vice*, *Torrent Pharm. Ltd. v. Novartis AG*, IPR2014-00784, Paper 8
2003	Declaration of Fred D. Lublin, M.D. in support of Patent Owner's Preliminary Response
2004	Curriculum Vitae of Fred D. Lublin, M.D.
2005	Declaration of William J. Jusko, Ph.D. in support of Patent Owner's Preliminary Response
2006	Curriculum Vitae of William J. Jusko, Ph.D.
2007	United States Patent 5,604,229 to Fujita et al.
2008	Brinkmann et al., *The Immune Modulator FTY720 Targets Sphingosine 1-Phosphate Receptors*, 277 J. Bio. Chem. 24, 21453–57 (2002)
2009	Forrest et al., *Immune Cell Regulation and Cardiovascular Effects of Sphingosine 1-Phosphate Receptor Agonists in Rodents Are Mediated via Distinct Receptor Subtypes*, 309 J. Pharm. And Experimental Therapeutics 2, 758–68 (2004)
2010	Lublin et al., *Defining the clinical course of multiple sclerosis: Results of an international survey*, 46 Neurology 907–11 (1996)
2011	Miller et al., *How Modeling and Simulation Have Enhanced Decision Making in New Drug Development*, 32 J. Pharmacokinetics and Pharmacodynamics 2, 185–97 (2005)
2012	Sanna et al., *Sphingosine 1-Phosphate (S1P) Receptor Subtypes $S1P_1$ and $S1P_3$, Respectively, Regulate Lymphocyte Recirculation and Heart Rate*, 279 J. Bio. Chem. 14, 13839–48 (2004)
2013	Public LinkedIn Profile of Tadimeti S. Rao, Ph.D.
2014	Webb et al., *Sphingosine 1-phosphate receptor agonists attenuate relapsing-remitting experimental autoimmune encephalitis in SJL mice*, 153 J. Neuroimmunology 108–21 (2004)
2015	U.S. Food and Drug Administration Guidance – "Guidance for Industry End-of-Phase 2A Meetings," accessed on March 30, 2009 at https://www.fda.gov/Error/index.htm.

*Exhibits marked with an asterisk have been served on Petitioner but not filed with the Board as

Exhibit	Reference
2016	U.S. Food and Drug Administration Guidance – "Clinical Pharmacology Section of Labeling for Human Prescription Drug and Biological Products – Content and Format," (December 2016)
2017	Bloomberg Profile of Klemens Budde, M.D., accessed on April 27, 2017 at http://www.bloomberg.com
2018	Public LinkedIn Profile of Janet Karlix
2019	Bibliographic Data of Application No. 06/633,481, accessed on May 1, 2017 at portal.uspto.gov/pair/PublicPair
2020	Transcript of August 25, 2017, conference call between the parties and the Board regarding Patent Owner's List of Proposed Motions.
2021*	Email from Jane M. Love, Ph.D. to Michael Rosato regarding "IPR2017-00854 – Request for Conference Call," sent August 8, 2017.
2022	Declaration of Lawrence Steinman, M.D.
2023	Curriculum Vitae of Lawrence Steinman, M.D.
2024	Second Declaration of William J. Jusko, Ph.D.
2025	Second Declaration of Fred D. Lublin, M.D.
2026	Declaration of Christian Schnell
2027	American Autoimmune Related Diseases Association, Inc. Autoimmune Disease List, accessed on October 5, 2017 at www.aarda.org/diseaselist
2028	Boehler T, et al. FTY720 exerts differential effects on CD4+ and CD8+ T-lymphocyte subpopulations expressing chemokine and adhesion receptors. Nephrol Dial Transplant. 2004 Mar;19(3):702-13.
2029	Bouérat L, et al. Indolin-2-ones with high in vivo efficacy in a model for multiple sclerosis. J Med Chem. 2005 Aug 25;48(17):5412-4.
2030	Budde K, et al. FTY720 (fingolimod) in renal transplantation. Clin Transplant. 2006;20 Suppl 17:17-24.
2031	Chavez, Daniel. "FTY720 For Relapsing Multiple Sclerosis Phase II Data Shows Sustained Efficiency And Good Tolerability." Medical News Today. MediLexicon, Intl., 10 Apr. 2006. Web. 13 November 2017. <http://www.medicalnewstoday.com/releases/41281.php>

*Exhibits marked with an asterisk have been served on Petitioner but not filed with the Board as of the date of the Certificate of Service herewith.

Exhibit	Reference
2032	Fingolimod, Chemical Abstract Registry No. 162359-55-9.
2033	2-amino-2-[2-(4-oc tylphenyl)ethyl]propane-1,3-diol;hydrochloride, Chemical Abstract Registry No. 162359-56-0.
2034	Chiba K, et al. FTY720, a novel immunosuppressant, induces sequestration of circulating mature lymphocytes by acceleration of lymphocyte homing in rats. I. FTY720 selectively decreases the number of circulating mature lymphocytes by acceleration of lymphocyte homing. J Immunol. 1998 May 15;160(10):5037-44.
2035	Cohen JA, et al. Oral fingolimod or intramuscular interferon for relapsing multiple sclerosis. N Engl J Med. 2010 Feb 4;362(5):402-15.
2036	Doggrell SA. Is fingolimod an advancement in the treatment of multiple sclerosis? Evaluation of: KAPPOS L, ANTEL J, COMI G. et al.: Oral fingolimod (FTY720) for relapsing multiple sclerosis. N. Engl. J. Med. (2006) 355:1124-1140. Expert Opin Pharmacother. 2007 Feb;8(3):383-6.
2037	FDA Approval and Commitment Letter of NDA 022527, dated September 21, 2010.
2038	Foster CA, et al. Brain penetration of the oral immunomodulatory drug FTY720 and its phosphorylation in the central nervous system during experimental autoimmune encephalomyelitis: consequences for mode of action in multiple sclerosis. J Pharmacol Exp Ther. 2007 Nov;323(2):469-75. Epub 2007 Aug 6.
2039	Deposition Transcript of Barbara S. Giesser, M.D., October 2, 2017
2040	Gilenya label
2041	Chapter 2: Guidelines for Collection and Analysis of Pharmacokinetic Data. Applied pharmacokinetics: Principles of therapeutic drug monitoring. Second edition. Edited by William E. Evans, Jerome J. Schentag, and William J. Jusko. Applied therapeutics: Spokane, WA. 1986.
2042	Calabresi PA et al. Safety and efficacy of fingolimod in patients with relapsing-remitting multiple sclerosis (FREEDOMS II): a double-blind, randomised, placebo-controlled, phase 3 trial. Lancet Neurol. 2014 Jun;13(6):545-56.

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Exhibit	Reference
2043	Kirk SL and Karlik SJ. VEGF and vascular changes in chronic neuroinflammation. J Autoimmun. 2003 Dec;21(4):353-63.
2044	Kirk S, et al. Angiogenesis in multiple sclerosis: is it good, bad or an epiphenomenon? J Neurol Sci. 2004 Feb 15;217(2):125-30.
2045	Kovarik JM, et al. Multiple-dose FTY720: tolerability, pharmacokinetics, and lymphocyte responses in healthy subjects. J Clin Pharmacol. 2004 May;44(5):532-7.
2046	Li H, et al. Pharmacokinetics and cell trafficking dynamics of 2-amino-2-[2-(4-octylphenyl)ethyl]propane-1,3-diol hydrochloride (FTY720) in cynomolgus monkeys after single oral and intravenous doses. J Pharmacol Exp Ther. 2002 May;301(2):519-26.
2047	MCALPINE'S MULTIPLE SCLEROSIS, 4th Edition, Compston, ed (Elsevier, Inc., December 2005).
2048	Park et al. "Peripheral Blood FTY720 Pharmacokinetic/Pharmacodynamic (PK/PD) Modeling in Renal Transplanted Recipients," Abstract #707, Kidney: Pharmacogenetics, Kinetics and New Drug, p. 333-334.
2049	Pinschewer DD, et al. FTY720 immunosuppression impairs effector T cell peripheral homing without affecting induction, expansion, and memory. J Immunol. 2000 Jun 1;164(11):5761-70.
2050	CLINICAL PHARMACOKINETICS: CONCEPTS AND APPLICATIONS. By Malcolm Rowland and Thomas N. Tozer. Lea & Febiger, 600 Washington Square, Philadelphia, Pa 19106. 1980.
2051	Steinman L and Zamvil SS. How to successfully apply animal studies in experimental allergic encephalomyelitis to research on multiple sclerosis. Ann Neurol. 2006 Jul;60(1):12-21.
2052	Teshima et al. FTY720, A Novel Immunosuppressant, Possessing Unique Mechanisms. Abstract 5127. 9th International Congress of Immunology, July 23-29, 1995.
2053	Xie JH, et al. Sphingosine-1-phosphate receptor agonism impairs the efficiency of the local immune response by altering trafficking of naive and antigen-activated CD4+ T cells. J Immunol. 2003 Apr 1;170(7):3662-70.

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