

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FLATWING PHARMACEUTICALS, LLC and
MYLAN PHARMACEUTICALS INC.,
Petitioners,

v.

ANACOR PHAMACEUTICALS, INC.,
Patent Owner.

Case No. IPR2018-00171¹
U.S. Patent No. 9,572,823

PATENT OWNER'S AMENDED EXHIBIT LIST

¹ Case No. IPR2018-01361 has been joined with this proceeding.

LIST OF EXHIBITS

| Exhibit | Description |
|---------|---|
| 2002 | Transcript of May 2016 Deposition of S. Narasimha Murthy, Ph.D. |
| 2003 | Transcript of September 2016 Deposition of S. Narasimha Murthy, Ph.D. |
| 2004 | Nair et al., <i>Alteration of the diffusional barrier property of the nail leads to greater terbinafine drug loading and permeation</i> , Int'l J. Pharm., vol. 375, pp. 22–27 (2009) |
| 2005 | Nair et al., <i>A study on the effect of inorganic salts in transungual drug delivery of terbinafine</i> , J. Pharm. Pharmacol., vol. 61, pp. 431–37 (2009) |
| 2006 | Shivakumar et al., <i>Bilayered Nail Lacquer of Terbinafine Hydrochloride for Treatment of Onychomycosis</i> , J. Pharm. Sci., vol. 99, pp. 4267–76 (2010) |
| 2007 | Shivakumar et al., <i>Transungual drug delivery: an update</i> , J. Drug Del. Sci. Tech., vol. 24, pp. 301–10 (2014) |
| 2008 | Murthy et al., <i>Iontophoretic Drug Delivery across Human Nail</i> , J. Pharm. Sci., vol. 96, pp. 305–11 (2007) |
| 2009 | Gupta et al., <i>The use of topical therapies to treat onychomycosis</i> , Dermatol. Clin., vol. 21, pp. 481–89 (2003) |
| 2010 | Transcript of April 2016 Deposition of Stephen B. Kahl, Ph.D. |
| 2011 | Transcript of September 2016 Deposition of Stephen B. Kahl, Ph.D. |
| 2012 | Structural Diagrams from August 2018 Deposition of Stephen B. Kahl, Ph.D. |
| 2013 | Declaration of Paul J. Reider, Ph.D. |
| 2014 | Declaration of Majella E. Lane, Ph.D. |
| 2015 | Baker et al., <i>Therapeutic potential of boron-containing compounds</i> , Future Med. Chem., vol. 1, pp. 1275–88 (2009) |

| Exhibit | Description |
|---------|---|
| 2016 | Dennis G. Hall, <i>Structure, Properties, and Preparation of Boronic Acid Derivatives: Overview of Their Reactions and Applications</i> , in <i>Boronic Acids: Preparation and Applications in Organic Synthesis, Medicine and Materials</i> , Second Edition (Dennis G. Hall ed. 2011) |
| 2017 | Transcript of August 23, 2018 Deposition of Stephen B. Kahl, Ph.D. |
| 2018 | Transcript of August 20, 2018 Deposition of S. Narasimha Murthy, Ph.D. |
| 2019 | McNamara et al., <i>Synthesis of Unsymmetrical Dithioacetals: An Efficient Synthesis of a Novel LTD₄ Antagonist, L-660,711</i> , <i>J. Org. Chem.</i> , vol. 54, pp. 3718–21 (1989) |
| 2020 | Ryan et al., <i>Enhanced Reactivity of Iminium Ions as Heterodienophiles in Lewis Acid Mediated 4+2 Cycloaddition Reactions</i> , <i>Tetrahedron Letters</i> , vol. 28, pp. 2103–06 (1987) |
| 2021 | Brown et al., <i>Boron in Plant Biology</i> , <i>Plant Biol.</i> vol. 4, pp. 205–23 (2002) |
| 2022 | J.D. Lloyd, <i>Borates and their biological applications</i> , 29th Annual meeting of the International Research Group on Wood Preservation (June 1998) |
| 2023 | William G. Woods, <i>Review of Possible Boron Speciation Relating to its Essentiality</i> , <i>J. Trace Elements in Exp. Med.</i> , vol. 9, pp. 153–63 (1996) |
| 2024 | Steiner et al., <i>Diphenylborinic Acid Is a Strong Inhibitor of Serine Proteases</i> , <i>Bioorg. & Med. Chem. Lett.</i> , vol. 4, pp. 2417–20 (1994) |
| 2025 | Zhdankin et al, <i>Synthesis and structure of benzoboroxoles: novel organoboron heterocycles</i> , <i>Tetrahedron Letters</i> , vol. 40, pp. 6705–08 (1999) |
| 2026 | Dowlut & Hall, <i>An Improved Class of Sugar-Binding Boronic Acids, Soluble and Capable of Complexing Glycosides in Neutral Water</i> , <i>J. Am. Chem. Soc.</i> , vol. 128, pp. 4226–27 (2006) |

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| 2027 | Boni E. Elewski, <i>Onychomycosis: Pathogenesis, Diagnosis, and Management</i> , Clin. Microbiology Revs., vol. 11, pp. 415–29 (1998) |
| 2028 | Wang et al., <i>Keratin: Structure, mechanical properties, occurrence in biological organisms, and efforts at bioinspiration</i> , Prog. Mater. Sci., vol. 76, pp. 229–318 (2016) |
| 2029 | Runne & Orfanos, <i>The Human Nail: Structure, Growth and Pathological Changes</i> , Curr. Prob. Derm. vol. 9, pp. 102–49 (1981) |
| 2030 | Topical Nail Products and Ungual Drug Delivery (Murthy & Maibach eds. 2013) |
| 2031 | Walters et al., <i>Physicochemical characterization of the human nail: permeation pattern for water and the homologous alcohols and differences with respect to the stratum corneum</i> , J. Pharm. Pharmacol. vol. 35, pp. 28–33 (1983) |
| 2032 | Kobayashi et al., <i>In vitro permeation of several drugs through the human nail plate: relationship between physicochemical properties and nail permeability of drugs</i> , Eur. J. Pharm. Sci., vol. 21 pp. 471–77 (2004) |
| 2033 | Mertin & Lippold, <i>In-vitro Permeability of the Human Nail of a Keratin Membrane from Bovine Hooves: Influence of the Partition Coefficient Octanol/Water and the Water Solubility of Drugs on their Permeability and Maximum Flux</i> , J. Pharm. Pharmacol., vol. 49, pp. 30–34 (1997) |
| 2034 | Mertin & Lippold, <i>In-vitro Permeability of the Human Nail and of a Keratin Membrane from Bovine Hooves: Penetration of Chloramphenicol from Lipophilic Vehicles and a Nail Lacquer</i> , J. Pharm. Pharmacol., vol. 49, pp. 241–45 (1997) |
| 2035 | Pollak et al., <i>Efinaconazole Topical Solution, 10%: Factors Contributing to Onychomycosis Success</i> , J. Fungi, vol. 1, pp. 107–14 (2015) |

| Exhibit | Description |
|---------|---|
| 2036 | Sugiura et al., <i>The Low Keratin Affinity of Efinaconazole Contributes to Its Nail Penetration and Fungicidal Activity in Topical Onychomycosis Treatment</i> , <i>Antimicrobial Agents & Chemotherapy</i> , vol. 58, pp. 3837–42 (2014) |
| 2037 | Tatsumi et al., <i>Therapeutic Efficacy of Topically Applied KP-103 against Experimental Tinea Unguium in Guinea Pigs in Comparison with Amorolfine and Terbinafine</i> , <i>Antimicrobial Agents & Chemotherapy</i> , vol. 46, pp. 3797–801 (2002) |
| 2038 | Biobor JF Service Bulletin No. 982 |
| 2039 | Yao et al., <i>Borate Esters Used as Lubricant Additives</i> , <i>Lubrication Science</i> , vol. 14, pp. 415–23 (2002) |
| 2040 | Lee & Wong, <i>Toxic Effects of Some Alcohol and Ethylene Glycol Derivatives on Cladosporium resinae</i> , <i>Applied & Envtl. Microbiol.</i> , vol. 38, pp. 24–28 (1979) |
| 2041 | Marova et al., <i>Non-enzymatic glycation of epidermal proteins of the stratum corneum in diabetic patients</i> , <i>Acta Diabetologica</i> , vol. 32, pp. 38–43 (1995) |
| 2042 | Bakan & Bakan, <i>Glycosylation of nail in diabetics: possible marker of long-term hyperglycaemia</i> , <i>Clin. Chim. Acta</i> , vol. 147, pp 1–5 (1985) |
| 2043 | Bo Forslind, <i>Biophysical Studies of the Normal Nail</i> , <i>Acta Derm Venerol</i> , vol. 5, pp. 161–68, (1970) |
| 2044 | Curriculum Vitae of Paul J. Reider, Ph.D. |
| 2045 | Curriculum Vitae of Majella E. Lane, Ph.D. |
| 2046 | Transcript of January 11, 2019 Deposition of S. Narasimha Murthy, Ph.D. |
| 2047 | Transcript of January 8, 2019 Deposition of Stephen B. Kahl, Ph.D. |

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