

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

ARGENTUM PHARMACEUTICALS LLC,  
Petitioner,

v.

MERCK PATENTGESELLSCHAFT,  
Patent Owner.

---

Case No. Unassigned

Patent No. 8,673,921

Issue Date: March 18, 2014

Title: POLYMORPHIC FORMS OF 1-[4-(5-CYANOINDOL-3-  
YL)BUTYL]-4-(2-CARBAMOYL BENZOFURAN-5-YL)  
PIPERAZINE HYDROCHLORIDE

---

**PETITION FOR *INTER PARTES* REVIEW OF  
U.S. PATENT NO. 8,673,921**

**TABLE OF CONTENTS**

	<b><u>Page</u></b>
I. MANDATORY NOTICES (37 C.F.R. § 42.8).....	1
A. Real Parties-In-Interest under 37 C.F.R. § 42.8(b)(1).....	1
B. Related Matters under 37 C.F.R. § 42.8(b)(2) .....	1
C. Lead and Backup Counsel.....	2
D. Service Information .....	2
II. GROUNDS FOR STANDING UNDER 37 C.F.R. §§ 42.101 AND 42.104 .....	3
A. Grounds for Standing under 37 C.F.R. § 42.104(a) .....	3
B. Identification of Challenge under 37 C.F.R. § 42.104(b).....	3
III. THE ‘921 PATENT .....	4
A. Brief Description .....	4
B. Summary of Prosecution History .....	7
IV. CLAIM CONSTRUCTION .....	8
A. Legal Principles .....	8
B. Construction of the Term “Crystalline modification” .....	9
C. Construction of the Term “Administering” .....	11
V. LEVEL OF SKILL IN THE ART .....	11
VI. TECHNOLOGY BACKGROUND.....	12
A. Crystals .....	12
B. Characterizing crystals .....	14
C. Crystallization techniques .....	14
D. Vilazodone hydrochloride (VHCl) .....	16
VII. CLAIM-BY-CLAIM EXPLANATION OF GROUNDS FOR UNPATENTABILITY .....	17
A. Ground 1: Claims 1, 14, and 15 Are Anticipated By the ‘241 Patent as Characterized by Patent Owner’s Admissions.....	17

Petition for *Inter Partes* Review

U.S. Patent No. 8,673,921

B.	Ground 2: Claims 1, 14, and 15 are Obvious over the ‘241 Patent as characterized by Patent Owner’s Admissions and Bartoszyk .....	23
C.	Ground 3: Claims 1 and 11 are Obvious Over the ‘241 Patent as Characterized by Patent Owner’s Admissions, Pavia, and Byrn.....	31
1.	Claim 11 .....	32
a.	Experiments showing crystalline forms present in Example 4 of the ‘241 patent .....	35
b.	The Second and Fifth Experiments Would Create Form IV Even If Form VIII Was Not the Starting Material .....	43
2.	Teaching, Suggestion, Motivation to Purify Via Crystallization.....	44
3.	Obvious to Try .....	45
4.	Known Method to Improve a Prior Art Product .....	47
5.	Claim 1 .....	48
D.	Ground 4: Claim 1, 12, 14, and 15 are Obvious in View of the ‘241 Patent, as Characterized by Patent Owner’s Admissions, Bartoszyk, Pavia, and Byrn.....	50
1.	Claim 12 .....	50
2.	Claim 1 .....	54
3.	Claim 14 .....	56
4.	Claim 15 .....	59
VIII.	NO SECONDARY CONSIDERATIONS OF NONOBVIOUSNESS .....	63
A.	No Unexpected Results Compared to the Closest Prior Art.....	63
B.	No Required Nexus.....	65
IX.	NO BASIS TO DENY THE PETITION UNDER 35 U.S.C. § 325(D) .....	66
X.	CONCLUSION .....	67

**TABLE OF EXHIBITS**

<b>Ex #</b>	<b><u>Exhibit</u></b>
1001	United States Patent No. 8,673,921 (“’921 patent)
1002	Declaration of Robin Rogers, Ph.D.
1003	Declaration of Sanjay Mathew, M.D.
1004	United States Patent No. 5,532,241 (“’241 patent”)
1005	WO 00/72832 to Bartoszyk (“Bartoszyk”)
1006	Notice of Allowance in U.S. Patent No. 8,673,921
1007	Defendants’ Claim Construction Opening Brief, <i>Forest Laboratories et al. v. Accord Healthcare Inc.</i> , Case No. 1:15-cv-00272 (D. Del.)
1008	Defendants’ Answering Claim Construction Brief, <i>Forest Laboratories et al. v. Accord Healthcare Inc.</i> , Case No. 1:15-cv-00272 (D. Del.)
1009	Stipulation and Order, <i>Forest Laboratories et al. v. Accord Healthcare Inc.</i> , Case No. 1:15-cv-00272 (D. Del.)
1010	Polymorphism in Pharmaceutical Solids, (Brittain, H., ed.), <i>Drugs and the Pharmaceutical Sciences</i> , Vol. 95 (1999) (“Brittain”)
1011	Gould, P. et al., <i>Salt Selection for Basic Drugs</i> , Int’l J. of Pharmaceutics, Vol. 33 (1986) (“Gould”)
1012	Byrn et al., <i>Solid-State Chemistry of Drugs</i> , Chapter 10, “Polymorphs,” 143-231 (2d ed. 1999)
1013	<i>Pharmaceutical Dosage Forms: Tablets</i> , (Lieberman, H. et al. ed.), Vol. 1 (2d ed. 1989) (“Lieberman”)
1014	<i>Claims Charts</i>
1015	Claim Construction Order, <i>Forest Laboratories et al. v. Accord Healthcare Inc.</i> , Case No. 1:15-cv-00272 (D. Del.)
1016	<i>Intentionally omitted</i>
1017	<i>Intentionally omitted</i>
1018	Byrn et al., <i>Solid-State Chemistry of Drugs</i> (1d ed. 1982)

Petition for *Inter Partes* Review

U.S. Patent No. 8,673,921

1019	<i>Intentionally omitted</i>
1020	VIIBRYD® (vilazodone), Full Prescribing Information, <a href="https://www.accessdata.fda.gov/drugsatfda_docs/label/2011/022567s000lbl.pdf">https://www.accessdata.fda.gov/drugsatfda_docs/label/2011/022567s000lbl.pdf</a>
1021	File History of U.S. Patent Application No. 14/032,183
1022	File History of U.S. Patent No. 5,532,241
1023	<i>Curriculum Vitae</i> of Dr. Robin D. Rogers
1024	<i>Curriculum Vitae</i> of Dr. Sanjay Mathew
1025	<i>Intentionally omitted</i>
1026	<i>Intentionally omitted</i>
1027	Vippagunta, S. et al., <i>Crystalline Solids</i> , <i>Advanced Drug Delivery Reviews</i> , Vol. 48, pg. 3-26 (2001) (“Vippagunta”)
1028	Hancock B. & Zografi G., <i>Characteristics and Significance of the Amorphous State in Pharmaceutical Systems</i> , <i>J. Pharm. Sci.</i> , Vol. 86, pg. 1-12 (1997) (“Hancock”)
1029	Beckmann, W. & Budde U., <i>Crystallization</i> , <i>Encyclopedia of Separation Science</i> , 1999, Vol. 3 (“Beckmann”)
1030	United States Patent No. 4,132,792 (“Zinnes”)
1031	Armarego, W.L.F. & Perrin, D.D., <i>PURIFICATION OF LABORATORY CHEMICALS</i> , 4 <sup>th</sup> Edition (1996) (“Armarego”)
1032	Pavia, D et al., <i>INTRODUCTION TO ORGANIC LABORATORY TECHNIQUES A CONTEMPORARY APPROACH</i> , 3d. edition (1988) (“Pavia”)
1033	<i>Intentionally omitted</i>
1034	Scanned Pages of the Laboratory Notebook of Dr. Gabriela Gurau, Ph.D. from October 23, 2017 to December 12, 2017
1035	United States Application No. 2014/071,930 (“’930 Application”)
1036	Wang, S et al., <i>Vilazodone for the Treatment of Depression: An Update</i> , <i>Chonnam Med. J.</i> , Vol. 52, pg. 91-100 (2016)

# Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

## Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

## Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

## Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

## API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

## LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

## FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

## E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.