

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

ARGENTUM PHARMACEUTICALS LLC  
Petitioner

v.

MERCK PATENTGESELLSCHAFT  
Patent Owner

Patent No. 8,673,921

Issue Date: March 18, 2014

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

---

*Inter Partes* Review No.: Unassigned

---

**DECLARATION OF DR. ROBIN D. ROGERS, PH.D.**

## **TABLE OF CONTENTS**

I.	Introduction .....	1
II.	My Background and Qualifications.....	1
III.	Materials Reviewed .....	8
IV.	Legal Principles .....	8
	A. Anticipation .....	8
	B. Obviousness.....	9
V.	Summary of Opinions .....	10
VI.	Person of Ordinary Skill in the Art.....	11
VII.	The '921 Patent.....	12
VIII.	Claim Construction .....	17
IX.	Technical Background .....	19
	A. What is a crystal?.....	19
	B. Characterizing crystals.....	25
	C. Identifying Crystals.....	28
	D. Crystallization Techniques.....	33
X.	State of the Prior Art .....	35
	A. U.S. Patent No. 5,532,241 ('241 Patent) (Ex. 1004).....	35
	B. Bartoszyk (Ex. 1005) .....	37
	C. Brittain (Ex. 1010).....	39
	D. Byrn, 2 <sup>nd</sup> Edition (Ex. 1012) .....	43
	E. Gould (Ex. 1011) .....	44
	F. Lieberman (Ex. 1013) .....	45
	G. Vippagunta (Ex. 1027).....	46
	H. Hancock (Ex. 1028) .....	49
	I. Beckmann (Ex. 1029) .....	50
	J. Zinnes (Ex. 1030) .....	51
	K. Armarego (Ex. 1031) .....	51
	L. Pavia (Ex. 1032) .....	52

XI.	Ground 1: Claims 1, 14, and 15 Are Anticipated by the '241 Patent As Characterized by Patent Owner Admissions.....	52
A.	Claim 1 .....	52
B.	Claim 14 .....	57
C.	Claim 15 .....	59
XII.	Ground 2: Claims 1, 14, and 15 are Obvious over the '241 Patent as Characterized by Patent Owner Admission and Bartoszyk.....	59
A.	Claim 1 .....	60
B.	Claim 14 .....	64
C.	Claim 15 .....	68
XIII.	Ground 3: Claims 1 and 11 are Obvious over the '241 Patent as Characterized by Patent Owner Admissions, Byrn, and Pavia .....	70
A.	Why the Test or Data is Being Used .....	70
B.	Comparing the Designed Experiments with Example 4 of the '241 patent and the Patent Owner Admissions of the '921 patent.....	71
C.	How the Tests Were Performed and the Data Was Generated.....	74
1.	First Experiment .....	74
2.	Second Experiment .....	77
3.	Third Experiment.....	80
4.	Fourth Experiment .....	80
5.	Fifth Experiment .....	81
D.	How the Data was Used to Determine a Value.....	82
1.	Data Generated from the First Experiment.....	86
2.	Data Generated from the Second Experiment .....	92
3.	Data Generated from the Third Experiment .....	103
4.	Data Generated from the Fourth Experiment.....	105
5.	Data Generated from the Fifth Experiment .....	107
E.	Claims 1 and 11 are Obvious in view of the 241 Patent as characterized by Patent Owner Admissions, Byrn, and Pavia .....	110
1.	Claim 11 .....	110
2.	Claim 1 .....	130

XIV. Ground 4: Claims 1, 12 14, and 15 are Obvious over the '241 Patent as Characterized by Patent Owner Admissions, Bartoszyk, Byrn, and Pavia ..	132
1. Claim 12 .....	132
2. Claim 1 .....	135
3. Claim 14 .....	137
4. Claim 15 .....	141
XV. No Objective Evidence Supporting Non-Obviousness .....	144
XVI. Conclusion.....	145

I, Robin Rogers, do declare as follows:

## **I. Introduction**

1. I am over the age of eighteen (18) and otherwise competent to make this declaration.

2. I have been retained as an expert witness on behalf of Argentum Pharmaceuticals LLC for an *inter partes* review (“IPR”) for U.S. Patent No. 8,673,921 (“’921 patent”) (Ex. 1001). I am being compensated for my time in connection with this IPR at my standard consulting rate, which is \$700 per hour. I understand that my declaration accompanies a petition for *inter partes* review involving the above-mentioned U.S. Patent.

## **II. My Background and Qualifications**

1. I am currently a Research Professor at The University of Alabama, Tuscaloosa, AL USA and an Adjunct Professor at McGill University, Montreal, Quebec, Canada. Formerly, I was Canadian Excellence Research Chair in Green Chemistry and Green Chemicals at McGill University (2015-2017) and Distinguished Research Professor, Robert Ramsay Chair of Chemistry, and the Director of the Center for Green Manufacturing at the University of Alabama (1996-2015). I am also Honorary Professor in the Institute for Process Engineering at The Chinese Academy of Sciences in Beijing, China. In addition to my academic

# 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.