

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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PHIGENIX, INC.  
Petitioner

v.

IMMUNOGEN, INC.  
Patent Owner

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CASE: IPR2014-00676  
Patent 8,337,856

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**DECLARATION OF JOYCE O'SHAUGHNESSY, M.D.**

*Inter Partes Review of USPN 8,337,856  
Declaration of Joyce O'Shaughnessy, M.D. (Exhibit 2105)*

**TABLE OF CONTENTS**

I.	Overview.....	1
II.	My background and qualifications .....	6
III.	Person of ordinary skill in the art .....	8
IV.	The '856 patent and T-DM1 (Kadcyla <sup>®</sup> ) .....	9
V.	T-DM1 is unexpectedly superior to Herceptin <sup>®</sup> in combination with a chemotherapeutic in Herceptin <sup>®</sup> -resistant patients.....	12
VI.	T-DM1 was praised throughout the field of breast cancer treatment.....	19
VII.	Conclusion .....	23

***Inter Partes Review of USPN 8,337,856  
Declaration of Joyce O'Shaughnessy, M.D. (Exhibit 2105)***

I, Joyce O'Shaughnessy, M.D., do hereby declare as follows:

**I. Overview**

1. This declaration is based on my personal knowledge as an oncologist and my opinions as an expert in the field of cancer research and treatment, including breast cancer. I understand that this declaration is being submitted together with ImmunoGen, Inc.'s Patent Owner Reply to Phigenix, Inc.'s Petition for *inter partes* review ("IPR") of claims 1-8 of U.S. Patent No. 8,337,856 ("the '856 patent," Ex. 1001). I also understand that this declaration is being submitted together with a Declaration by Linda T. Vahdat, M.D. (Ex. 2103). I have read Dr. Vahdat's Declaration and agree with the facts and opinions expressed therein.

2. I have been retained as an expert witness on behalf of ImmunoGen, Inc. for this IPR. I am being compensated for my time in connection with this declaration at my standard consulting rate of \$500 per hour. I have no personal or financial interest in the outcome of this proceeding. I am over the age of eighteen and otherwise competent to make this declaration.

3. I understand that the '856 patent issued on December 25, 2012, and resulted from U.S. Application No. 11/949,351, filed on December 3, 2007. I also understand that the U.S. Patent and Trademark Office ("USPTO") records state that the '856 patent is currently assigned to ImmunoGen, Inc.

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4. The face page of the '856 patent lists a series of patent applications. I understand that the '856 patent is related to these patent applications. The earliest filing date of any of those applications is March 16, 2000. It is my understanding that the earliest date to which the '856 patent may claim priority is that March 16, 2000 date.

5. I am providing this declaration to establish that:

- T-DM1 achieved unexpectedly superior results over prior Herceptin<sup>®</sup>-based treatments for metastatic HER2-positive breast cancer and received praise in the industry.

6. In preparing this declaration, I have reviewed the '856 patent (Ex. 1001). I have also considered each of the documents listed in the table below or cited herein, in light of general knowledge in the art.

<b><i>Exhibit #</i></b>	<b><i>Description</i></b>
<b>1001</b>	U.S. Patent No. 8,337,856 B2
<b>1008</b>	Herceptin <sup>®</sup> Label
<b>1012</b>	Chari, R., <i>et al.</i> , "Immunoconjugates containing novel maytansinoids: promising anticancer drugs." <i>Cancer Res.</i> , 52: 127-131 (1992).
<b>1018</b>	Rosenblum, M., <i>et al.</i> , "Recombinant immunotoxins directed against the <i>c-erbB-2/HER2/neu</i> oncogene product: <i>in vitro</i> cytotoxicity, pharmacokinetics, and <i>in vivo</i> efficacy studies in xenograft models." <i>Clin. Cancer Res.</i> , 5: 865-874 (1999).
<b>1020</b>	Pegram, M., <i>et al.</i> , "Inhibitory effects of combinations of HER-2/ <i>neu</i> antibody and chemotherapeutic agents used for treatment of human breast cancers." <i>Oncogene</i> , 18: 2241-2251 (1999).

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Declaration of Joyce O'Shaughnessy, M.D. (Exhibit 2105)**

<b>Exhibit #</b>	<b>Description</b>
<b>1029</b>	Trail, P.A., <i>et al.</i> , "Monoclonal antibody drug conjugates in the treatment of cancer," <i>Current Opinion in Immunology</i> 11: 584-588 (1999), Exhibit F to Declaration of Barbara Klencke, M.D., filed on July 6, 2010, in U.S. Appl. No. 11/949,351  Laino, C., "Targeted Breast Cancer Drug Shrinks Tumors: Study Shows T-DM1 Helps Patients Who Were Unsuccessfully Treated with Other Drugs," <i>WebMD</i> (2009), Exhibit I to Declaration of Barbara Klencke, M.D., filed on July 6, 2010, in U.S. App. No. 11/949,351
<b>2012</b>	Krop, I., <i>et al.</i> , "Trastuzumab emtansine versus treatment of physician's choice for pretreated HER2-positive advanced breast cancer (TH3RESA): a randomised, open-label, phase 3 trial," <i>Lancet Oncology</i> 15: 689-699 (2014)
<b>2016</b>	Cao, Y., and Rosenblum, M.G., "Design, Development, and Characterization of Recombinant Immunotoxins Targeting HER2/neu," in <i>Antibody-Drug Conjugates and Immunotoxins: From Pre-Clinical Development to Therapeutic Applications</i> , Chapter 18, pp. 319-348 (2013)
<b>2017</b>	Engert, A., <i>et al.</i> , "The Emerging Role of Ricin in A-Chain Immunotoxins in Leukemia and Lymphoma" in <i>Clinical Applications of Immunotoxins</i> by Frankel, A.E., (Ed.), pp. 13-33(1998)
<b>2018</b>	Roth, B., <i>et al.</i> , "Clinical Cancer Advances 2012: Annual Report on Progress Against Cancer From the American Society of Clinical Oncology," <i>Journal of Clinical Oncology</i> 31: 131-161, 2063 (2013)
<b>2019</b>	Gochenauer, G., "Roche/Genentech's "Magic Bullet" in HER2+ Breast Cancer," <i>available at</i> <a href="http://www.kantarhealth.com/blog/gordon-gochenauer/2012/06/03/Roche_Genentech_Magic_Bullet_in_HE R2_Breast_Cancer">http://www.kantarhealth.com/blog/gordon-gochenauer/2012/06/03/Roche_Genentech_Magic_Bullet_in_HE R2_Breast_Cancer</a> (last visited Jan. 14, 2015) pp. 1-2 (2012)
<b>2020</b>	Miller, K., <i>et al.</i> , "T-DM1: Golden Age in HER2+ Breast Cancer?" pp. 1-6 <i>available at</i> <a href="http://www.medscape.com/viewarticle/765248">http://www.medscape.com/viewarticle/765248</a> (last visited Jan. 14, 2015)

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