Patent Law

Basics and Hatch-Waxman Infringement

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AAPS ANNUAL MEETING SHORT COURSE
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GOALS

- **To advance the knowledge of patent basics among pharmaceutical scientists (present and FUTURE)**
- **To promote effective communication between pharmaceutical scientists and patent attorneys**

GOALS

- **To advance the knowledge of patent issues pertinent to drug development among pharmaceutical scientists**

OUTLINE (cont'd)

B. INFRINGEMENT CASES (HATCH-WAXMAN ACT)

- INTRODUCTION
- ¶ 4 CERTIFICATIONS
- Infringement Cases
  - Fluoxetine (PROZAC®)
  - Buspirone (BUSPAR®)
  - Omeprazole (PRILOSEC®)

C. CONCLUSION

INTRODUCTION

Patent "Economics"

- **Patents on 65 "blockbuster" drugs expired in 2003**
  - **Revenues of $2 to $10 million per week (per drug)**
- **Drugs commonly lose 40% of market share to competitors within one year after patent expiration**

(http://www.mondaq.com/article.asp?articleid=22997)

INTELLECTUAL PROPERTY

1. PATENTS
2. COPYRIGHT
3. TRADEMARK
4. TRADESECRETS

PATENTS

Meaning of the word “Patent?

OPEN

PROFESSIONALS INVOLVED IN CREATION OF A PATENT

Scientists Invent

Lawyers Patent

“Because there is a general lack of understanding of each culture, these interactions often lead to a cognitive friction that is both disturbing and costly to society.”

A Convergence of Science and Law (National Academy Press, 2001)
http://books.nap.edu/html/science_law/report.pdf

Meaning of words often the grounds for patent dispute

Which word is open to interpretation?

Claim 2.

A touch probe . . . the probe generating a trigger signal when said sensing tip contacts an object . . .

(Touch Probe, US patent 5,491,904)

Which word is open to interpretation?

Claim 2.

A touch probe . . . the probe generating a trigger signal **when** said sensing tip contacts an object . . .

[Renishaw PLC v. Marposs Societa' Per Azioni 158 F.3d. 1243(Fed. Cir. 1998)]

Why patents?
Policy Basis

To promote the Progress of Science and useful Arts

Constitutional Basis for Patents and Copyrights

Article I, § 8, cl 8

PATENT RIGHTS

by securing for limited Times to

Authors and Inventors

the exclusive Right to their respective Writings and Discoveries

Property Right
to exclude others
from:
making,
using,
offering for sale or
selling
the invention or

importing the invention for a limited time

in exchange for public disclosure of the invention

Inventor may

sell,

bequeath,

transfer, or

license

the patent to anyone

Who is granted a patent?

Granted only in the name of the inventor

Employer gets it by assignment

In other words,
a patent is a
limited monopoly

Types/Terms of Patents

1. **Utility - 20 yrs (from filing date)**
2. **Plant (20 years)**
3. **Design (14 years)**

Utility patents

1. Process
2. Machine
3. Manufacture
4. Composition of Matter

A manufacture is

“anything under the sun that is made by man”

Diamond v. Chakrabarthy

Landmark Supreme Court Decision in Biotechnology Patent Law (1980)

FACTS

Patent office denied patent to a genetically modified bacteria capable of degrading crude oil

PTO's reason to deny patent

1. Legal (Plant Patent act of 1930)
2. Need congressional approval

Supreme court overruled

Statutes do not prohibit patenting modified microorganisms

Examples of Utility Patents

1. Chemical compounds (drugs)
2. Medical devices
3. Measuring instruments
4. Processes for making drugs

PATENT REQUIREMENTS

UTILITY PATENTS

Whoever invents or discovers

any new and useful

process, machine, manufacture or composition of matter or

any useful improvement thereof

may obtain a patent (35 USC §101)

1. Composition of matter

- a new molecule

Patent Requirements

1. Allowed by statue
2. Useful

Patent Requirements (cont'd)

4. Not obvious

   to a person of ordinary skill in the art

   from the prior art (at the time of the invention)

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Patent Requirements (cont'd)

3. Novel

in relation to "prior art"

What is prior art?

Concept:

What is known before the time of invention?

Examples of prior art?

1. A publication anywhere
2. A patent anywhere
3. Anything in public use or known in the US

Requirements to Patent an Invention (cont'd)

4. Not obvious

   to a person of ordinary skill in the art from the prior art (at the time of the invention)

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STEPS TO A INVENTION (PATENT)

1.Conception

2. Reduction to Practice

Conception is the formation in inventor's mind of a definite and permanent idea of the complete and operative invention

Example

The **conception of a chemical compound** requires the inventor

to have a **mental picture of its structure**

to define it by its **method of preparation, its physical or chemical properties**

Sometimes, an inventor is unable to establish a **conception until s/he has reduced the invention to practice**

Then , there is simultaneous conception and reduction to practice.

Race to get a patent

Priority
who is first to invent?

Inventor who and conceives first and reduces to practice first WINS always

Inventor who conceives first but reduces it to practice second can win if s/he was diligently works to reducing the invention to practice

Erythropoietin

Amgen v. Chugai & GI (1991)

Chugai/GI patent date 6/ 30/87

Amgen patent date 10/27/87

Chugai/GI argued they conceived the “E” gene in 1981 and reduced to practice in 1984

Amgen completed both steps in 1983 and argued Chugai/GI infringed their patent

Court ruled that Chugai/GI could not have conceived the invention till they had reduced it to practice.

Amgen won!

How to get a patent

The patenting process

1. File application with USPTO with full **disclosure** of invention

The patenting process (cont'd)

Drafting an application requires special knowledge and style

Major Sections of a Patent

- **SPECIFICATION**
- **CLAIMS**

SPECIFICATION

“DETAILS” OF YOUR INVENTION

CLAIMS

Defines “boundries” of your invention

(Like boundaries of your real (estate) property

Claims

The name of the game is the claim

METHOD FOR TREATING PAIN BY ADMINISTERING 24 HOUR ORAL OPIOID FORMULATIONS

- **US Patent No. 5,672, 360**
- **Issued : 9/30/1997**
- **Inventors: Richard S. Sackler, Robert F. Kalko and Paul Goldenhelm**
- Assignee: Purdue Pharma L.P.

Claims

What is claimed is:

1. A method of effectively treating pain in humans comprising orally administering to a human on a once-a-day basis an oral sustained release dosage form containing an opioid analgesic or salt thereof which upon administration provides a time to maximum plasma concentration (Tmax) of said opioid in about 2 to about 10 hours and a maximum plasma concentration (Cmax) which is more than twice the plasma level of said opioid at about 24 hours after administration of the dosage form, and which dosage form provides effective treatment of pain for about 24 hours or more after administration to the patient

Claims (cont'd)

2. The method of claim 1, wherein Tmax occurs in about 2 to about 8 hours after oral administration of said dosage form

3. The method of claim 1, wherein Tmax occurs in about 6 to about 8 hours after oral administration of said dosage form

Claims (cont'd)

4. The method of claim 1 wherein the said opiod analgesic is morphine sulfate

What cannot be patented?

Some examples

1. **Laws of nature**: $E = mc^2$
2. **Naturally occurring things like minerals, plants, animals**

HATCH-WAXMAN ACT

DRUG PRICE COMPETITION AND PATENT TERM RESTORATION ACT OF 1984

H-W POLICY ISSUES

To Protect Intellectual Property

– ***Encourage Innovation***

Foster Competition

- ***Consumer Benefit***

Patents and H-W ACT

- **NDAs are required to include:**
  - **patent number and**
  - **expiration date of any patent that claims either**
    - **the drug (active ingredient and/or composition or formulation) or**
    - **method of use (i.e., indication)**

Patents and H-W Act (cont'd)

- **FDA required to list the submitted patent information in its "Orange" book**

- **Approved Drug Products with Therapeutic Equivalence Evaluations**

ANDA and Paper NDA

ANDA [FDCA 505 (j)]

NDA under H-W for generic copies of FDA-approved drug products ("listed drugs")

Not required to contain safety and effectiveness data

ANDA and Paper NDA (cont'd)

Paper NDA [FDCA 505 (b)]

NDA under H-W for generic copies of FDA-approved drug products

Required to contain full safety and effectiveness data

- may rely on published reports ("not conducted by or for the applicant…")

FDAs Role in ¶ 4 certification issues

- **None (essentially)**
  - **FDA does not examine the propriety of the patent(s) listed by the innovator**
  - **Upon complaints by generic company about improper patent listing, FDA makes mere inquiry of innovator regarding propriety of patent(s) listed**

H-W Certifications

A generic company (the ANDA/503(b)2 applicant) must certify that drug :

- **I) has not been patented;**
- **II) patent has expired;**
- **III) patent will expire on a given date and that generic will not be marketed prior to that date; OR**
- **IV) patent is not infringed or invalid**
  - **»Most complicated of the 4 certifications**

Paragraph IV Certification

- **Generic Company Must Notify Innovator (Pioneer) about its Filing**

- **Describe Reasons why Patent**
  - **Will Not be Infringed**
  - **Is Invalid**

Paragraph IV Certification (cont'd)

- Innovator has 45 days after notice to file an infringement suit*
- **FDA stays ANDA for 30-month if suit filed, unless**
  - **- Patent Expires**
  - **- Patent Found Invalid by Courts**

***ANDA submission with ¶ 4 certification creates grounds for infringement action by patent holder**

Case Study 1

- The "Prozac" case (decided August 9, 2000)
  - 272 F.3d 973

- Facts
  - fluoxetine (active ingredient of Prozac)
  - Barr Labs submitted ANDA in December 1995 for generic fluoxetine with ¶ IV certification
  - Lilly brought action alleging Barr's ANDA application infringed its patents

“Barr”argued that claim 7 of the “549” patent was invalid for double patenting

Double Patenting

"[T]he extension of exclusive rights through claims in a later patent that are not patentably distinct for claims in an earlier patent"

(222 F.3d at 985)

Issue for Court

To determine whether Claim 1 of the "895 patent covers subject matter claimed in claim 7 of the "549" patent (the later patent)

A method of blocking the uptake of serotonin by brain neurons in animals comprising the administering to said animal of fluoxetine (claim 7, “549” patent)

A method of treating human suffering from depression which comprises administering to said human of an effective antidepressant dose of fluoexitine (claim 1, “895” patent)

Case Study 2

- The "Prilosec" case (decided 10/11/02)
  - 222 F. Supp. 2d 423
- Facts
  - Omeprazole – active ingredient of Prilosec (Acid Labile)
  - KUDCO submitted ANDA for generic omeprazole with ¶ IV certification
  - Patent Holder Astra Aktiebolag filed infringement suit ("505" patent)

Omeprazole Case (cont'd)

- **The main issue:**
  - **Did the Kremers Urban Development Co. (KUDCo) formulation contain an alkaline reacting compound (ARC)?**

Omeprazole Case (cont'd)

- **Claim 1 ("505"Patent)**
  - **An oral pharmaceutical preparation comprising:**
  - **(a)** **a core region comprising effective amount of a material selected from the group consisting of omeprazole plus an alkaline reacting compound (ARC), an alkaline omeprazole salt plus an ARC and an alkaline omeprazole salt alone**

Omeprazole Case (cont'd)

- **Formulation Differences**
  - **Core Composition**
- **KUDCo microtablet has 3 parts:**
  - **a core, a subcoat and enteric coat**
  - **The Court concluded that the subcoat and the enteric coat of the microtablet do not differ from the "505" patent**

Omeprazole Case (Cont'd)

DECISION

- **The Court held that there was no infringement of "505" patent by the KUDCco microtablet because "[KUDCo]… designed around the "505"… patent by developing a formulation that did not require an ARC in its core"**
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Omeprazole Case (cont'd)

- **There were 3 other generic companies that had also filed ANDAs**
  - **Andrx Pharmaceuticals, Cheminor Drugs, and Genpharm, Inc.**

They all were found to infringe on several of the claims of the Astra patent(s)

Case Study 3

- The "Buspirone" Case (decided 2/14/2002)
  - 185 F. Supp. 2d 340
  - Facts
    - Bristol Myers Squibb Listed two patents with respect to their Buspar® NDA
      - "763" expiration date: 7/21/2000)
      - "365" obtained hours before "763" expired
    - Danbury, Watson & Mylan had tentative FDA approval to market generic buspirone on 7/22/00 following expiration of the "763"

Buspirone Case (Contd)

- **Facts (cont'd)**
  - **BMS obtained patent "365" on 7/21/2000 and requested FDA to list this patent in the Orange Book with a declaration that the new patent "is a method-of-use patent covering, among other things, a method of using BuSpar for all its approved indications" (http://www.cato.org/pubs/regulation/regv24n4/v24n4-2.pdf)**

Buspirone Case (Cont'd)

- **Facts (cont'd)**
  - **FDA then informed the three generic applicants that their ANDA was incomplete and needed certification that their generic buspirone will not infringe upon the "365"patent.**
  -

Buspirone Case (Cont'd)

- Facts (cont'd)
- **A method for the palliative treatment of neurosis in which anxiety symptoms are prominent which comprises administering a non-toxic anxiolytically effective dose of busprione or a pharmaceutically acceptable acid addition salt thereof to a neurotic patient ("763" patent claim)**
- **A process for ameliorating an undesirable anxiety state in a mammal comprising systemic administration to the mammal of an effective but non toxic dose of 6-hydroxy metabolite or a pharmaceutically acceptable acid addition salt or hydrate thereof ("365" patent claim)**

Buspirone Case (Contd)

The 3 generic companies moved for summary summary judgment on BMS allegation of patent infringement based on the argument that:

a) **generic buspirone would not infringe the "365" patent or**

b) **The "365" patent is invalid**

Buspirone Case (Cont'd)

Decision

The Court granted the motion for summary judgment by the 3 generic companies that " the '365' Patent does not cover uses of buspirone"

CONCLUSION

Creation and Protection of Pharmaceutical Patents Requires that Scientists and Lawyers Work Closely To Develop Strategies for the Life Cycle of the Drug