The Benefits of Japanese Patent Law System Over those of the US in the Pharmaceutical Area

製薬業界における米国特許法システムに対する日本特許法システムの有利な点について

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Ａ．ポイント：

１．特許権の存続期間の延長制度（主）

２．特許発明該当性

Ｂ．詳細：

１．Comparison Between US v Japanese Patent Term Extension System

特許権の存続期間の延長制度の日米比較

原則：

Patent life is 20 years from filing both in Japan and US, but in both countries; however, if a drug undergoes clinical trial and review period, the patent which covers the drug can be extended up to 5 years.

However there are few major differences between the two systems overall favorable in the Japanese system

相違：

Japanese patent system

Japanese Patent Law Article 67 (2): Where there is a period during which the patented invention is unable to be worked because approvals prescribed … to ensure the safety (i.e. of pharmaceutical and agricultural products)…, patent right may be extended … by a period not exceeding 5 years.

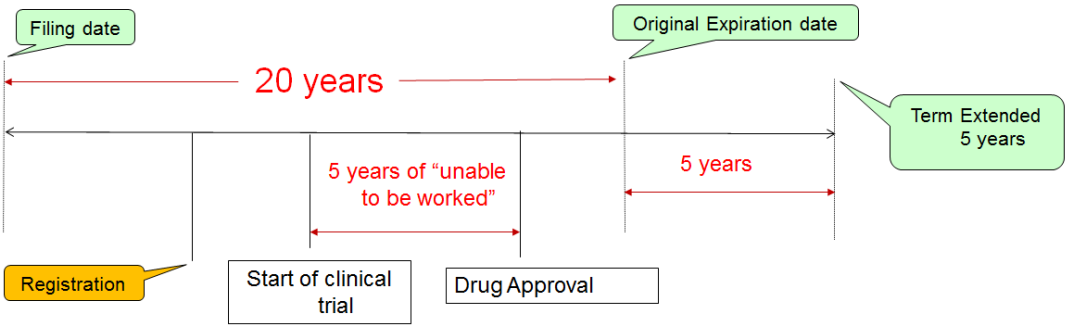
Another improvement: Recent amendment to JP Patent Law took away requirement for at least two years of clinical trial.

US patent system

US Patent Law 35 USC § 156 (paraphrased): Up to five years of extension for (1) 1/2 of IND (Investigational New Drug) period and full review period; but (2) total period of remaining patent term including the extension cannot exceed 14 years from approval; and (3) only one patent extension for one product (active ingredient).

日本の特許権の存続期間の延長制度の図解

Outline of the Japanese PTE system



Applicable for drugs for humans and animals, and agricultural chemicals

日米の対比（日本の制度の方が特許権者に有利）

Japanese PTE system is overall more favorable!

Japan

- Full 5 years – if clinical trial period + review period are 5 years or more (and patent registration occurs before these periods)
- Allows multiple PTEs for same active ingredient directed to e.g. new formulation, dosage, use, etc.
- Same patent can be extended multiple times covering different approved active ingredient

US

- Even if in Japan get 5 years, US could be under 5 years
  - ½ of IND period
  - 14 year cap from approval
- Allows only one PTE per active ingredient
- No extension for the patent already extended once even if it covers different approved active ingredient

具体例（米国特許及び対応する日本特許）

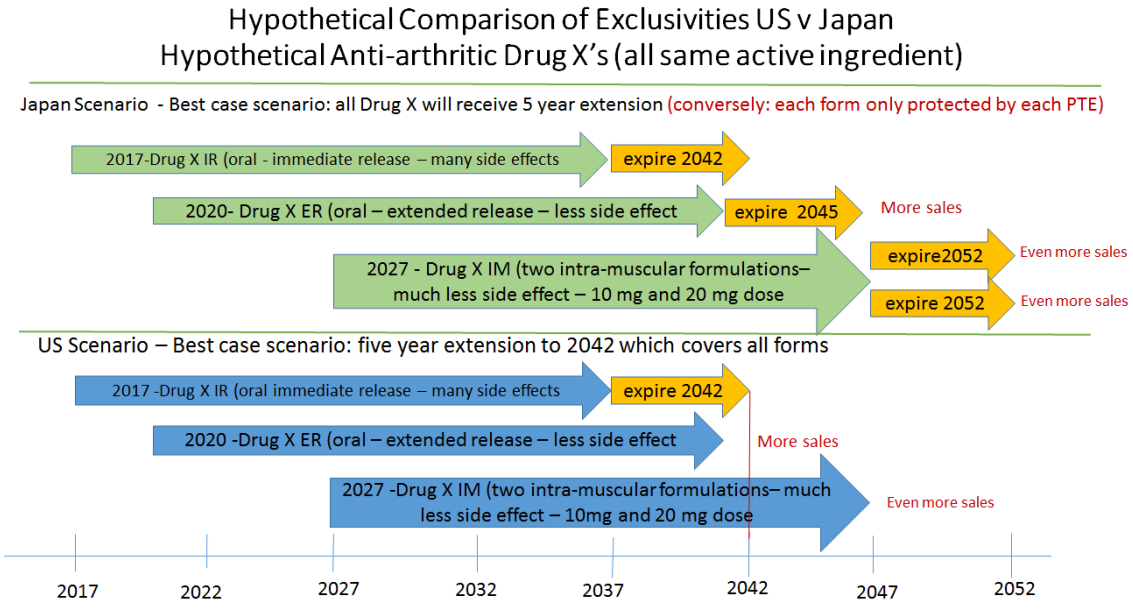
HUMIRA JP patents - multiple and longer extensions

- HUMIRA – Abbvie product (9 indications) – 2015 worldwide sale $12.5 billion (ex-US about $4.5 billion)

One patent family	Normal expiration	No of Extensions /patent	Actual latest expiration
US6090382 (base case)	2/09/2016	One (no other patents extended)	12/31/2016 (326 days)
JP Counterparts			
JP3861118	2/10/2017	7	8/20/2021
JP4404181	2/10/2017	9	9/10/2020
JP4890997	2/10/2017	2	8/1/2018
JP5422501	2/10/2017	None (recently granted)	2/10/2017
JP56899902	2/10/2017	None (recently granted)	2/10/2017
JP5759526	2/10/2017	None (recently granted)	2/10/2017
JP5951056	2/10/2017	None (recently granted)	2/10/2017

- In US, base case expired; Amgen et al filed for biosimilar applications; Abbvie asserts over 60 patents against Amgen!
- Kyowa Hakko/Fujifilm developing Humira biosimilar

仮想事例（日米の対比）：



２．特許発明該当性

<u>最近の米国事情</u>

（１）自然界に存在するが、人工的に単離されたものは、特許されてきた。

Current Risks Affecting Pharmaceutical, Diagnostic, and Nutraceutical Companies in the US

- Since 19th century, US patent office has granted patents on “products” found in nature isolated by man
- US730176 - adrenaline “practically free from…associated gland tissue” (issued 1903)

No. 730,176. Patented June 2, 1903.

UNITED STATES PATENT OFFICE.

JOKICHI TAKAMINE, OF NEW YORK, N. Y.

GLANDULAR EXTRACTIVE PRODUCT.

SPECIFICATION forming part of Letters Patent No. 730,176, dated June 2, 1903.

Original application filed November 5, 1900, Serial No. 35,546. Divided and this application filed January 14, 1903. Serial No. 138,969. (No specimens.)

To all whom it may concern:

Be it known that I, JOKICHI TAKAMINE, a subject of the Emperor of Japan, residing in the city of New York, county and State of New York, have invented and produced a new and useful Glandular Extractive Product of which the following is a specification.

The present application is a division of a former application, Serial No. 35,546, filed November 5, 1900, in which is described a process for obtaining the herein-described product. Other applications—viz., Serial Nos. 37,729 and 37,730, filed November 26, 1900, and Serial No. 156,746, filed May 12,

- US2449866 – claim 13: streptomycin (issued 1948)

（２）ヒトの病気を診断する方法に対しても特許してきた。

・USPTO also issued patents on diagnostic methods for human diseases.

（３）2010 年代の前半から大きく変わって来た。

Current Risks Affecting Pharmaceutical Industry, Diagnostic, and Nutraceutical Companies in the US

- USPTO also issued patents on diagnostic methods for human diseases
- But dramatic changes started to occur since early 2010 following;
  - *Mayo v Prometheus* (method of adjusting drug dosage; Supreme Court, 2012);
  - *AMP v Myriad (human genes;* Supreme Court, 2013)
  - *Sequenom v Ariosa* (genetic diagnostics; CAFC 2015, *cert denied*)
  - Uncertainties on patent eligibility on potential important pharmaceutical assets
    - Proteins, antibiotics, and other pharmaceutically active agents found, and isolated from nature which could to be developed as medicines
    - Innovative personalized diagnostics for predicting and/or diagnosing autism, cancer, schizophrenia…
      - The enforceability of already issued patents yet to be fully determined
      - May be affecting in-licensing, patent filings and maintenance activities

（４）米国の特許発明該当性

Patent Eligibility

35 U.S.C. § 101　INVENTIONS PATENTABLE

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter….. may obtain a patent…

- But courts have always maintained "judicial exceptions" of (a) pure laws of nature, (b) natural phenomenon, and (c) abstract idea not patentable themselves, but their application patentable.

Supreme Court in *Myriad*

"A naturally occurring DNA segment is a product of nature and not patent eligible merely because it has been isolated…."

- BRCA1/2 genes are "law of nature"
- Isolated DNA not patent subject matter under § 101, unless it is significantly different from found in nature. (adopted the analysis of *Mayo*)
  - cDNA is patentable because it not naturally occurring

＊自然界から単離しただけの生成物は、特許発明該当性がはない。

（５）日米の審査ガイドラインの比較

Examination Guidelines JP vs US

USPTO Interim Guidance on Subject Matter Eligibility

- Dec 2014, Nature–Based Product Examination Guideline (also see May 2016 Life Science Examples)
  - Antibiotic L (protein) – not patent eligible
  - Purified antibiotic L – patent eligible (when purified takes different form)
  - "Purified Amazonic acid" – not patent eligible

Japanese Patent Law

- Article 29 (1),… an invention that is industrially applicable may be entitled … a patent....
- Article 2, paragraph 1 defines invention as "the highly advanced creation of technical ideas by which a law of nature is utilized".

Japanese Examination Guideline

- Invention does not include simple "natural law" or "simple observation" (same as US)
- But invention include chemical products, micro-organisms, etc. which are isolated by man from nature
  - DNA patent eligible so long as function known and having utility (2000 Examination Guideline)

- Japanese "Myriad Counterparts" lived their lives peacefully
  - In 2015, FALCO (Kyoto company) took exclusive license from Myriad, and conducting BRCA1/2 tests in Japan
  - Japanese gene patents and natural products patents still useful

＊米国の中間の審査ガイドラインが発行された。日本の審査基準は変化無し。

（６）具体例：日米の診断方法特許について

What about Personalized Diagnostics Patents?

- US6033857 (BRCA2) – CAFC ruled not patent eligible
  - Claim 2. A method of diagnosing a predisposition for breast cancer…[by] comparing … BRAC2 from a subject [to] the wildtype… wherein alteration…indicates a predisposition to said cancer

- JP3399539 (BRCA1) (lived its life fullest to 2015)
  - Claim 1 – A method to identify the presence of breast and ovarian cancer gene in an individual by comparing BRCA1 gene from the individual to that of the wildtype wherein alteration indicates the presence of the cancer gene

- JPO Examination Guideline (effective Oct 2015) – patent eligible
  - Example 5: A method of examining the susceptibility…to hypertension by determining the type of base …in X gene…and comparing…with standard

＊米国で特許発明該当性がないとされたものの例。対応する日本の特許（特許発明該当性有）。

So what's with Personal Diagnostics Patents?

- Until recently, fetal chromosomal abnormalities detected by highly invasive amniocentesis and villus chorionic assays involving high risk to the fetus.

- Inventors found presence cffDNA in mother's blood and developed innovative non-invasive method of detecting cffDNA to do prenatal genetic tests. Filed patent (US625840) assigned to ISIS.

- Sequenom commercialized MATERNIT21® under license from ISIS using cffDNA detection; Ariosa launched competing method named HARMONY™

- In *Ariosa v Sequenom* (Fed Circuit 2015) [Also Inter Partes Review attack]

  - CAFC ruled that certain methods claimed in US6258540 patent ineligible

    - Claim1. Amplifying paternally inherited DNA from plasma or serum from pregnant female; and (2) detecting the presence of such DNA of fetal origin

- Sequenom could not block entry of HARMONY™. Now at least three players using this method in US.

＊米国での診断方法の特許が特許発明該当性がないとされた例。

Reasons behind CAFC's decision

- Claims are directed to natural phenomenon (paternally inherited cffDNA present in maternal blood/serum), and recited steps of amplifying and detecting cffDNA are routine methods

- Applied analysis of *Mayo*
  - First determine if claim is directed to "judicial exceptions" (i.e. law of nature, natural phenomenon, or abstract ideas), if so, determine if significantly more is added to the claim.
  - Judge Dyke in denying hearing "en banc" said the claims might be patentable if "narrow in scope" otherwise they are overbroad
    - Narrower the claim, the invention will be designed around

- JP4245666 – Claim 1 substantially identical to US claim still alive, and clinical trial on the technology started 2016 in Japan

＊米国で特許発明該当性がないとする理由。日本の対応する特許は特許発明該当性有。

（７）米国の特許発明該当性がないとするアタックが続く一方、日本の特許に基づく訴訟により、日米欧の特許において、巨額の和解を勝ち取る例もある。

Another Attack under § 101

- In 2017, the District of Delaware would have addressed Merck's § 101 challenge (BMS/Ono v Merck) to three "Honjo patents" for methods of treating cancers using anti-PD1 antibodies
  - eg US9067999
    1. A method of treating a lung cancer comprising administering a composition comprising a human or humanized anti-PD-1 monoclonal antibody…
- In April 2016, Delaware court accepted Merck's argument that the claims were directed to the natural phenomenon of using T cells to activate the immune system, thereby satisfying the first prong of § 101 analysis under *Mayo*
  - Second prong of whether claims "add enough" beyond the natural phenomenon would have been addressed in early 2017
- Update
  - Oct 24, 2016, Ono sued Merck for infringement under counterparts JP4409430 and JP5159730
  - Jan 20, 2017, Merck and Ono/BMS settled in US/EP/Japan for high royalty.
    - Japanese patents also contributed to extraction of royalties !!