Date: 20th September 2018

REPORT
Standing Committee on

Biotechnology (Sub-Committee of Pharma and Biotechnology)

Chair: Jürgen MEIER
Responsible Reporter: Ralph Nack

1)
Report on the activities of your Standing Committee during the reporting period
Please provide a general overview of the activities of your Standing Committee over the last 12 months, including at least:
a)
internal meetings of the Standing Committee during the reporting period (whether by telephone, video conference or in person);

During the last AIPPI conference in Sydney, a personal meeting took place with all attending members of the Biotech Subcommittee. This meeting was held jointly with the Pharma Committee and over 25 members from both committees were present. During this personal meeting, the major discussion points were (a) the finalization of the "Gene Patenting Resolution", (b) some additional discussion on the (then) still pending Position Paper on "Microbiological Deposits" and (c) the ongoing joint project of the Pharma and Biotech Committees on "Antibody Patenting". These topics will also be discussed herein below. In addition to these AIIPPI-topics, the EPO Enlarged Board of Appeals decisions G2/12 (Tomatoes II) and G2/13 (Broccoli II) and their consequences on patentability of plants were discussed.

The Biotech Subcommittee held two well-attended telephone conferences in 2018, namely on January 31st and on June 11th. Topics discussed were the "Antibody Patenting Project" and the finalization of the Position Paper on "Microbiological Deposits".

In addition to these formal meetings and conferences, there was an extensive e-mail exchange on the "antibody project" and several electronic votings were held in light of the different surveys and position papers.

b)
were proposals for panel sessions and study questions submitted and/or did your Standing Committee further contribute in this respect (e.g. by providing input to the draft Study

Guidelines)?

The Biotech Subcommittee has supported the 2019 London study Questions on “Plausibility”. Furthermore, together with the Pharma Committee, the topic of “Enforcing therapeutic antibody claims- hampered by structure and/or function?” was proposed as potential panel discussion for one of our up-coming conferences.

c)
any external representation and participation in working groups on behalf of AIPPI by any member of your Standing Committee (e.g. at WIPO, EUIPO);

none

d)
any contribution by your Standing Committee to any external consultations; and

none

e)
any studies or analyses undertaken or position papers prepared by your Standing Committee, with a brief summary of the outcome(s).

As discussed in previous reports, the Biotech Subcommitee had prepared in 2016 and 2017 the “Gene Patenting Resolution” which successfully passed the corresponding Plenary Session during our congress in Sydney. In this resolution, AIPPI urges governments to implement the necessary legislative measures to ensure that genetic materials, when isolated from nature or artificially synthesized, constitute patent eligible subject matter. Furthermore, governments are urged to avoid any measures that would apply a different scope of protection for patent claims to genetic materials and nucleic acids solely by reason of the subject matter of those claims. The full text of the adopted resolution can be found under:

https://aippi.org/wp-content/uploads/2017/10/Adopted-Resolution-Gene-Patenting_English.pdf

During the end of 2017 and in the beginning of 2018, the Biotech Subcommittee has put further efforts in the finalization of the Position Paper on “Microbiological Deposits”. This position paper was prompted by a couple of international litigation cases. The questions the Position Paper addresses are in particular (i) at what point in the patenting procedure should a microorganism deposit be made for the purposes of sufficiency of disclosure, (ii) when should information about the deposit (name of IDA and accession no) appear in the patent specification, (iii) to whom should a third party make a request for a sample of the deposit, the national or regional Patent Office or the IDA, and when, (iv) to whom may the deposit by released and (v) what obligations does the requester have to meet in order for a sample of the deposit to be released to them. This paper was finalized in early 2018 and its current content was agreed upon by the members of the Subcommittee. The corresponding final

draft paper was submitted the Reporter General Team under the title: "*Harmonisation of Practice under the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the purpose of Patent Procedure*" and in currently under final review by RGT. One of the major outcomes of this Position Paper is the proposal of the Biotech Subcommitee that the release of "deposited material" must be accompanied by certain restrictions as to the acts the requester may do with the released sample. For example, he requester must not (i) make available the sample or any biological material derived therefrom to a third party; (ii) export the sample from the country of release (although the IDA may do so; and (iii) use the sample for anything other than experimental purposes relating to the invention. It is proposed that such restrictions upon the requester will expire either upon grant of the patent or upon withdrawal or refusal of the patent application. The (draft) Position Paper also comprises the suggestion that individual contracting states of the Budapest Treaty should be encouraged to provide a harmonized international environment for the recognition of deposits of microorganisms and/or biological material for the purpose of patent procedure by introducing common restrictions upon requesters of such material as to the activities they make undertake with the (released) biological sample. After input from RGT, this Position Paper should be finalized during the upcoming meeting in Cancun. Whereas this Position Paper was very actively discussed within the Biotech Committee, the main, active contributors and discussants to this Position Paper are Claire Baldock (UK), Peter Ludwig (US), Takashi Fujita (JP) and Jürgen Meier (DE).

Several members of the Biotech Subcommitee have actively contributed during 2016 to 2018 to the Pharma Committee Project/Resolution on "Post-filed Data". The corresponding text of the draft resolution (to be presented in Cancun by members of the Pharma Committee) has been approved by all voting members of the Biotech Subcommitee.

Last but not least, one of the major efforts of the Biotech Subcommittee went into the joint "Antibody Project" an international Survey on "Antibody Patenting" that was initiated by the entire Pharma and Biotech Committee. More than 20 members of the Pharma and Biotech Committee have actively participated in this review on the patentability of medically relevant antibodies/antibody constructs. From the current results (to be discussed by the Standing Committee in Cancun), it is evident that antibodies constitute patentable subject-matter in most jurisdictions and corresponding patents are also enforceable. However, national jurisdictions and also the patent offices are not fully aligned how to treat "antibody inventions". Already, the claim structure and format for claiming antibodies varies a lot. Whereas most countries accept a definition of an antibody by decisive sequences, like the CDRs (sometimes with certain restrictions), certain jurisdictions accept the definition of an antibody by its binding-specificity or its "target" (epitope). Some patent offices lately only accept full definitions of the so-called "variable chains" or request even more sequence information. Accordingly, in some jurisdictions, broad patent protection for antibodies can (still) be obtained and enforced (genus protection), whereas in others only one particular antibody as defined by (*inter alia*) its full variable regions can be protected (species

protection). For example, in the US, “patent politics” appears to be changing after the Federal Circuit decision AMGEN v SANOFI No. 2017-1480. Apparently, the US moves away from its genus protection and starts treating antibodies like isolated small molecules. The Pharma and Biotech Committee intends to publish the results of this major survey on “Antibody Patenting” as soon as possible. We still invite comments on this project and we will discuss this project in detail during the next personal meeting in Cancun. The contributors of the current text of the Survey are M. Bensadon (AR), M. Christie (AU), G. Di Blasi (BR), G. Boocock (CA), R. Marre Grez (CL), G. Huang (CN), A. Rincon (CO), N. Mattson and O. Capasso (EP), D. Gilat (IL), H. Subramaniam (IN), T. Fujita and M. Ono (JP), M. Son (KR), I. Jiménez (MX), M. Christie (NZ), C. Fernández-Dávila (PE), M.C. Maranan (PH), M. Kawczynska (PL), R. Krasnoperov (RU), M. Wang (TW), C. Baldock and D. Ribbons (UK) as well as L. Feng and P. Ludwig (US).

Further ongoing projects and study questions comprise the “infringement of gene patent claims” and issues around the revival of “gene therapy approaches”.

2)
Key issues/developments during the reporting period
Please include any significant case law, legislative or regulatory developments, or policy initiatives, including their relevance and/or any implications for the work of your Standing Committee or for AIPPI more generally.

Committee members have reported on developments in their corresponding jurisdictions in Australia, Brazil, China, Europe, Japan, Korea, Philippines and UK (United Kingdom) (in alphabetical order) as occurred in the last year.

(A) Australia

Andrew Blattman provides the following updates on recent Biotech case law in Australia, including a Federal Court decision on the patentability of claims defining practical applications of gene sequences. Andrew has also provided insight into important Pharma cases which are reflected in this year's annual report of the Pharmrma Committee:

1. Full Federal Court Decisions

1.1 Commissioner of Patents v AbbVie Biotechnology Ltd [2017] FCAFC 129 (18 August 2017)

The appeal was related to whether a Patent Term Extension (PTE) can be granted where the claims of the respective pharmaceutical patent are in the form of a Swiss-Style claim (i.e. second medical use claim). The three patents in question were held by AbbVie Biotechnology Ltd and were directed to TNFalpha binding human antibody adalimumab which is produced

by recombinant DNA technology. The Tribunal concluded that Swiss-style claims are not claims to pharmaceutical substances but are considered method or process claims and this differs from the scope of the claims addressed by section 70(2) of the Patents Act.

1.2 Pfizer Ireland Pharmaceuticals v Samsung Bioepis AU Pty Ltd [2017] FCAFC 193 (29 November 2017)

The proceedings provide guidance on the summary nature of a preliminary discovery application and steps that may be required to show a reasonable belief of infringement. The product ENBREL is made by Pfizer in Australia and contains the active ingredient etanercept, used to treat various autoimmune diseases. Samsung Bioepis (SBA) sought to register with the ARTG two 'biosimilar' products under the name BRENYZ. Pfizer suspected that in manufacturing BRENYZ SBA was infringing on 3 of its patents. Pfizer argued that BRENYZ had similar levels of etanercept to ENBREL. They argued that the similarity between the products enables inference that the process used to make each is similar. In the first instance the judge gave consideration to the fact that Pfizer would not disclose the processes used to make ENBREL and held that it was no more than speculation that BRENYZ was made by a similar process.

Pfizer appealed the decision and each judge of the Full Court was satisfied that there was a requisite "reasonable belief" that Pfizer's process patents may have been infringed by SBA in the manufacture of BRENZYS. The decision suggests that the threshold evidentiary requirement to seek preliminary discovery requires only a 'reasonable belief' that a patent has been infringed.

2. Federal Court

2.2 Interlocutory Injunctions

F.Hoffmann-La Roche AG v Sandoz Pty Ltd [2018] FCA 874 (12 June 2018)

The decision represents the first interlocutory injunction granted to restrain a biosimilar product in Australia. The proceedings were sought by Hoffmann-La Roche AG (Roche) to impose an interlocutory injunction to restrain Sandoz Pty Ltd (Sandoz), from launching its biosimilar rituximab product in Australia. Roche's rituximab product available for sale as MABTHERA is used to treat a number of conditions including non-Hodgkin's lymphoma, chronic lymphocytic leukaemia and rheumatoid arthritis. Sandoz obtained regulatory approval from the ARTG for two biosimilar rituximab products branded RIXIMYO. The Pharmaceutical Benefits Advisory Committee were considering whether Sandoz products should be listed as part of the PBS. The Court held that Roche had established a strong arguable case that the patents would be infringed if Sandoz commenced supplying the RIXIMYO products in Australia, and a *prima facie* case for relief. The Court decided that Roche should be granted interlocutory injunctive relief to restrain Sandoz from infringing Roche's

patents.

2.3 Appeal from Australian Patent Office (APO) Decision

Meat & Livestock Australia Limited v Cargill, Inc [2018] FCA 51 (9 February 2018)

The decision by the Federal Court held that claims directed to methods involving correlating a gene sequence to a particular trait in cattle is considered patentable subject matter in Australia. The appeal followed an unsuccessful Patent Office opposition by MLA and Dairy Australia limited against a patent application by Branhaven LLC and Cargill, Inc. directed to animal genomics and genetic improvements of livestock. The judge considered that the case did not involve "the discovery of a correlation between genotype and phenotype". Reference to lack of patentable subject matter having regard to decisions in the US were rejected. The decision provides certainty in relation to the patentability of claims defining practical applications of gene sequences, including methods of genetic screening. The grounds for opposition and corresponding grounds for appeal were rejected.

3. APO decision

Evolva SA [2017] APO 57 (14 November 2017)

The decision is one of the first which addresses the enhanced description requirements implemented (as part of the "Raising the Bar" amendments (encompasses applications after 15 April 2013). The patent application was related to methods and materials for enzymatic synthesis of mogroside compounds. The claims were drafted as encompassing polypeptides 'having at least 90% sequence identity' to the sequences set out in the sequence listings. The new legislation requires a specification to provide sufficient information to enable the skilled person to perform the invention over its entire scope of the claims without undue burden or need for further invention. The Examiner considered that the skilled person would need to produce every polypeptide with a 10% different from the listed sequences in order to determine which would work and therefore the claims were not adequately enabled across their full scope and represent an undue burden. The Hearing Officer overruled the Examiner's objections and held that the degree of variability afforded by the 90% sequence identity related to a limited number of variants and that a PSA, armed with the knowledge provided in the specification, can use techniques to create and identify variants which displayed the claimed activity. The Hearing Officer found that such activity did not represent an "undue burden" and while it could involve a reasonable degree of trial and error and even be time consuming, such work did not "constitute a research program".

(B) Brazil

Gabriel di Blasi comments on recent developments in Brazil with emphasis on “fast-track prosecution / fast-track patent examination” in the BPTO of patent application in the medical space, including “rare” diseases :

1. BRAZIL EXPANDS FAST-TRACK PATENT APPLICATIONS TO INCLUDE INNOVATIONS RELATED TO AN EXTENDED LIST OF DISEASES

The BPTO shares the definition of "rare diseases" with the one provided by the World Health Organization (WHO). "Neglected Diseases" would be those listed in Annex I contained in Resolution No. 217/2018, which included Chikungunya and Zika, added to those listed by the Ministry of Health and WHO.

The Brazilian Patent and Trademark Office (BPTO) Resolution No. 217/2018 came into force, revoking the prior Resolution No. 80/2013, with its primary development being the inclusion of Zika and Chikungunya diseases, as well as rare diseases, which are defined as those that affect up to 65 people in every 100,000 individuals, in the list of disease-related applications eligible for fast-track patent examination.

According to both resolutions, fast-track is granted to new patent applications of pharmaceutical products and processes, as well as equipment and materials for use in the health field, associated with Acquired Immunodeficiency Syndrome (AIDS), Cancer, Rare Diseases and/or Neglected Diseases.

Fast-track examination may be required by the Ministry of Health, when considered strategic within the scope of the Brazilian Unified Health System (SUS), and/or by any interested party, when the request relates to diagnosis, prophylaxis and treatment of such diseases.

The BPTO shares the definition of "rare diseases" with the one provided by the World Health Organization (WHO). "Neglected Diseases" would be those listed in Annex I contained in Resolution No. 217/2018, which included Chikungunya and Zika, added to those listed by the Ministry of Health and WHO.

The BPTO has a significant patent examination backlog, and those resolutions make themselves necessary in order to accelerate patent applications considered strategic, aligning them with public health care policies.

2. PATENT PROSECUTION HIGHWAY BETWEEN BRAZIL AND EUROPE BECAME EFFECTIVE DECEMBER 1, 2017

The Brazilian PTO issued Resolution No. 202/2017, which refers to the expedited examination pilot program Patent Prosecution Highway (PPH) between the Brazilian Patent Office (BPO) and the European Patent Office (EPO) for patent applications related to chemical inventions or technologies applied to medical field, except drugs.

Brazilian Patent and Trademark Office (BPTO) recently revised Resolution No. 202/2017, which regulates the Patent Prosecution Highway (PPH) between the BPTO and the European Patent Office (EPO). The agreement to enter into the PPH between the two offices was executed in October of this year.

The procedure to take advantage of the new PPH requires the following steps:

- The applicant will file, via national deposit, the first invention patent application at the BPTO or the EPO, or alternatively via the Patent Cooperation Treaty (PCT), selecting either one of the mentioned patent offices as “receiving office”;
- The applicant will then file the second patent application, indicating the priority of the first patent application;
- After the EPO publishes the granting of the patent application, the applicant may then apply at the BPTO for use of the PPH;
- The request to use the PPH will go through an analysis and, if it is granted, the BPTO will proceed with expedited examination.

The grant to expedite the procedure will depend on certain requirements, such as: the patent application must not be on hold for the compliance with an official office action; its annual fees must be paid in full; and the patent application cannot be under judicial dispute in Brazil, among other requirements.

The PPH will be effective for 2 years, and the BPTO will expedite the examination of up to 300 patent applications as the latter examining office each year.

Through the BPTO-EPO PPH, patent applications in the technical fields of chemistry and technologies applied to medicine, except for the pharmaceutical area, will be able to be expedited.

3. Further comments

The new guidelines related to the examination of patent applications in the chemistry area, which are in force since last year

(C) Canada

Graeme Boocock reports on the still ongoing dispute over (medical) diagnostic patents/claims in Canada:

Difficulties continue for the examination of medical diagnostic applications in Canada. In 2015, the Canadian Intellectual Property Office (CIPO) established new guidelines for the examination of these claims that are widely perceived to contravene multiple Supreme Court decisions on the issues of claim construction and subject matter eligibility. In late 2017, these guidelines were formally incorporated into CIPO's Manual of Patent Office Practice (MOPOP).

In 2018, this issue garnered significant press attention in Canada, and was covered by two national newspapers and by an influential Canadian legal blog.[1,2,3]

Material about CIPO's practice obtained under the Access to Information Act (AIA) continues to be posted online anonymously.[4] Documents released in 2018 contain otherwise unpublished details of CIPO's examination practice. For example, one email from the Acting Biotechnology Division Chief explains that diagnostic claims are always to be treated as aggregations.[5]

Internal summary documents prepared by CIPO in response to press and social media attention express the view that CIPO has made a good faith interpretation of the case law, and state that only a court can correct CIPO at this point.[6,7,8]

An email sent by the Assistant Commissioner of Patents in March to the Acting President of the Canadian Institutes of Health Research (CIHR) – a major government granting agency – stated that "a very small subset" of applications is affected.[9] This characterization does not accord with the experience of applicants, but may be due to (i) how CIPO defines a "diagnostic invention" and (ii) a lack of awareness at CIPO of forthcoming abandonments. The email also states that diagnostic patents are still granting. This is somewhat of an oversimplification. Patent *will* grant for new analytes, reagents, and associated physical components of a test kit. However, patent *will not* grant for methods based on the discovery of a new biological correlation for a known analyte unless an applicant places significant technical limitations on its claims to establish that a "data acquisition problem" was solved, i.e. that the analyte in its sample context is novel, independent of the biological correlation.

On April 6, 2018, the Intellectual Property Institute (IPIC) of Canada, under the guidance of President Grant Lynds, announced that IPIC and CIPO had agreed to initiate a joint working group to further study the issues around medical diagnostic patent claims.

1. https://business.financialpost.com/opinion/the-disturbing-problem-at-canadas-p-tent-office-its-suddenly-denying-medical-test-patents

2. https://www.theglobeandmail.com/politics/article-diagnostic-patents-denie--to-researchers-who-link-known-body-chemicals

3. http://www.sufficientdescription.com/2018/01/diagnostic-methods-at-cipo.html

4. https://ipflyonthewall.wordpress.com

5. https://ipflyonthewall.files.wordpress.com/2018/08/a-2017-01612598-diagnostic-methods-as-aggregations.pdf

6. https://ipflyonthewall.files.wordpress.com/2018/08/a-2017-01612187-191-talking-points-on-recent-article.pdf

7. https://ipflyonthewall.files.wordpress.com/2018/08/a-2017-01612185-186-diagntic-methods-at-cipo.pdf

8. https://ipflyonthewall.files.wordpress.com/2018/08/a-2017-01612537-538-talking-points-on-siebrase-blog-post.pdf

9. https://ipflyonthewall.wordpress.com/access-to-information-request/email-fro--the-assistant-commissioner

(D) China

Gesheng Huang from China reports on novel legislative activities, including draft provisions on the acceptance of "post-filing" data, and gives an overview of selected "medical use" and "antibody" invalidation cases before the PRB:

1. Stipulations regarding Drug Patent Linkage

1.1 The executive meeting of the State Council of China decided to enhance intellectual property protection of innovative chemical medicines.

An executive meeting of the State Council of China was held on April 12, 2018 and presided by Premier Mr. Li Keqiang. According the meeting, the following measures were decided to enhance the intellectual property protection:

(1) The data exclusivity period for innovative chemical medicines is 6 years at maximum, and medicines of the same species shall not be authorized to commercialize within this period.

(2) A maximum of 5 years' compensation of patent term will be offered for innovative new medicines which are applied for marketing on domestic and overseas simultaneously.

1.2 "The Opinions on Deepening the Reform of Examination and Approval System

and Encouraging Innovation of Drugs and Medical Devices" states to promote drug innovation and generic development.

The General Office of the CPC Central Committee, and the General Office of the State Council issued on October 8, 2017 "The Opinions on Deepening the Reform of Examination and Approval System and Encouraging Innovation of Drugs and Medical Devices", which includes the followings regarding data protection and patent linkage in the Section "Promote drug innovation and generic development":

Setting up an Approved Drugs Catalog.

Drugs newly approved and launched or having passed the generic quality and efficacy consistency evaluation will be recorded in the China Approved Drug Catalog, documenting the relevant information such as the nature of the innovative drug, the improved innovative drug and the generic drug that has passed the quality and efficacy consistency evaluation, and the information including the active ingredient, dosage form, strength, marketing authorization holder, patent rights and clinical trial data protection, etc.

Exploring the possibility of establishing a Patent Linkage System.

To protect the legitimate rights and interests of the patentees, to reduce the risks of patent infringement of generic drugs, and to encourage the development of generic drugs, efforts will be made to set up a patent linkage system between drug evaluations and approvals and drug patents. Together with the submission of a drug registration application, the applicant should provide a statement about the statuses of relevant patents and their ownership and should notify the relevant drug patentees within the prescribed timeline. If there is any dispute over the patent right, the concerning party may file a lawsuit before court. During this period, the drug technical evaluation will not be halted. For those drugs having passed the technical evaluation, the CFDA will make a decision whether to grant the marketing authorization based on the court's effective judgment, ruling or mediation document; if the court does not issue an effective judgment, ruling or mediation document within a certain period of time, CFDA may grant the marketing authorization of the drug.

Carrying out a pilot program of patent term compensation for drug patents.

Some new drugs will be selected as pilot projects, and certain patent term compensation will be granted if the delay of market authorization is caused by clinical trials and examination and approval.

Improving and implementing a drug clinical trial data protection system.

The applicant may apply for clinical trial data protection when submitting a drug registration application. For innovative drugs, orphan drugs, pediatric drugs, innovative therapeutic biologics and drugs that have successfully challenged certain patents, a certain protection period will be granted for undisclosed clinical trial data, and other data that is obtained and submitted independently by the applicant. The protection period will start from the date of marketing authorization approval. During the protection period, the CFDA will not approve any other application for a drug of the same variety unless the applicant provides its own data or gets an endorsement from the drug marketing authorization holder.

2. Supreme people's court issued “Provisions on Several Issues Concerning the Trial of Administrative Cases for Patent Reexamination and Invalidation (I) (draft for public comments)”

Supreme people’s court issued on June 1, 2018, “Provisions on Several Issues Concerning the Trial of Administrative Cases for Patent Reexamination and Invalidation (I) (draft for public comments)”, wherein in Rule 13, it is stipulated that:

“If the applicant and the patentee for chemical invention patents submit the experimental data after the application date to further prove that the technical effects described in the specification have been fully disclosed, and the technical effects can be confirmed by those skilled in the art on the filing date according to the specification, the drawings, and the common knowledge, the people's court should generally review those experimental data.

If the applicant and the patentee for chemical invention patents submit the experimental data after the application date to further prove that the patent application or patent have different technical effects from the prior art, and the technical effects can be directly and undoubtedly confirmed based on the disclosure of the patent application documents, the people’s court should generally review those experimental data.”

3. Typical cases:

3.1 Patent invalidation case relating to patent titled “Combination Therapies for B-Cell Lymphomas Comprising Administration of Anti-CD20 Antibody”

PRB Invalidation Decision 35201 (Issue date: March 13, 2018)

Patentee: IDEC PHARMA CORP (hereinafter referred as “IDEC”)

Petitioner: Shanghai Henlius Biotech,Inc (hereinafter referred as “Henlius”)

Patent in dispute:

The patent in dispute is the invention patent titled “Combination Therapies for B-Cell Lymphomas Comprising Administration of Anti-CD20 Antibody” with IDEC as the patentee.

The claims in dispute read as follows (amended claims based on the previous invalidation (Invalidation Decision No. 18785)):

Claim 2. Use of an anti-CD20 antibody in the manufacture of a medicament comprising the antibody and chemotherapy for the treatment of a low-grade/follicular non-Hodgkin's lymphoma in a human patient, wherein the antibody and the chemotherapy is formulated to provide a greater therapeutic effect than the sum of the respective effects of said agents, wherein said antibody is rituximab and said chemotherapy is selected from CHOP.

Claim 4. Use of an anti-CD20 antibody in the manufacture of a medicament comprising the antibody and chemotherapy for the treatment of a low-grade/follicular non-Hodgkin's lymphoma in a human patient, wherein the antibody and the chemotherapy is formulated to provide a greater therapeutic effect than the sum of the respective effects of the agents, wherein the antibody is rituximab, the medicament is used as a first line therapy, and the chemotherapeutic comprises an agent selected from cyclophosphamide, adriamycin, vincristine and prednisone, said chemotherapeutic comprising CHOP.

Claim 5. The use of any of claims 2, 4, wherein the anti-CD20 antibody is formulated for administration prior to chemotherapy.

Claim 6. The use of any of claims 2, 4, wherein the anti-CD20 antibody is formulated for administration after chemotherapy.

Claim 7. The use of any of claims 2, 4 wherein the anti-CD20 antibody is formulated for simultaneous administration with chemotherapy.

Facts:

(1) The Petitioner held in the invalidation proceeding that

a). claims 2, 4-7 are not sufficiently disclosed in the specification, and thus could not be supported from the specification. This patent specification does not provide a drug containing antibodies and chemotherapy, nor does it provide any qualitative and quantitative experimental data to prove that the drug can achieve "a greater therapeutic effect than the sum of the various effects of the agent".

b). Claims 2, 4-7 lack novelty based on Evidences 1 and 2. Evidence 1 discloses the treatment in patients with low-grade lymphoma with anti-CD20 antibody IDEC-C2B8 (Rituximab) combined with CHOP chemotherapy. Evidence 2 discloses the use of IDEC-C2B8 in combination with CHOP chemotherapy in the treatment of patients with low-grade

lymphoma. The technical features of claims 2, 4-7 are disclosed by Evidence 1 or 2.

c). Claims 2, 4-7 are not inventive based on Evidences 1 and 2. The combination therapy disclosed by Evidences 1 and 2 treats lower grade or follicular non-Hodgkin's lymphoma with superior anti-tumor activity and therapeutic effect compared to antibody alone or CHOP alone. Based on evidence 1 or 2, the skilled person in the art can easily conclude the technical solution defined with “the antibody and the chemotherapy are formulated to provide a greater therapeutic effect than the sum of the respective effects of said agents”.

(2) The Patentee held that

a) claims 2, 4-7 are novel since nor Evidence 1 or Evidence 2 discloses any synergistic effect of rituximab and CHOP in the treatment of NHL, let alone the formulation of rituximab and CHOP to provide synergistic effect. The specification has proved the unexpected synergistic effects of the combination of rituximab and CHOP.

b) The issues regarding to the sufficient disclosure and supportment have been decided by Decision No. 18785, and thus should not be considered anymore.

Legal issues

(1) Should the PRB further make examination on the support issue and sufficient disclosure issues raised by the Petitioner different than previous Petitioner?

(2) Can the features of medical use confer novelty/inventive step on the claims?

PRB’s Reasoning

Upon examination, PRB held that,

(1) The facts and reasons put forward by the petitioner regarding the invalidation in accordance with Article 26, paragraphs 3 (sufficient disclosure) and 4(supportment) of the Patent Law are identical to those in the prior invalidation raised by another Petitioner. The corresponding facts and reasons have been examined and recognized clearly in the prior decision. The PRB will not consider those facts and reasons anymore.

(2) Evidence 1 clearly discloses a specific technical solution for the combination administration of rituximab and CHOP, the preliminary experimental data of the technical solution clearly proved that the combination administration of rituximab and CHOP are significantly superior to their single use in the treatment of low-grade or follicular non-Hodgkin's lymphoma.

The synergistic antitumor activity of the antibody rituximab or CHOP as proved by the specification has no substantial difference from those in Evidence 1.

The medical use feature of the claims does not lead the claimed technical solutions have any substantial difference from the prior art.

Claims 2, 4-7 lack novelty in view of Evidence 1.

PRB Decision

The patent was totally invalidated by the PRB.

Discussion

(1) If the technical feature on pharmaceutical use in a claim does not result in substantial differences between the claimed technical solutions and the prior art and thus those skilled in the art cannot distinguish the two, the pharmaceutical use claims are not novel.

3.2 Patent invalidation case relating to patent named “Combination Therapies for B-Cell Lymphomas Comprising Administration of Anti-CD20 Antibody”

PRB Invalidation Decision No. 35867 (Issue date: May 8, 2018)

Patentee: IDEC PHARMA CORP (hereinafter referred as “IDEC”)

Petitioner: Shanghai Henlius Biotech,Inc (hereinafter referred as “Henlius”)

Patent in dispute:

The patent in dispute is the invention patent titled “Combination Therapies for B-Cell Lymphomas Comprising Administration of Anti-CD20 Antibody” with IDEC as the patentee.

The claims in dispute read as follows:

Claim 1. Use of an anti-CD20 antibody for the manufacture of a medicament for the treatment of recurrent B-cell lymphoma in a human patient, wherein the patient has relapsed after treatment with an anti-CD20 antibody.

Claim 2. The use of claim 1 wherein the patient has relapsed after treatment with rituximab.

Claim 3. Use according to any one of claims 1-2, wherein the anti-CD20 antibody is used to

prepare the medicament is chimeric or humanized.

Claim 4. The use of claim 3, wherein the anti-CD20 antibody is used to prepare the drug is rituximab.

Claim 5. The use according to any one of claims 1 to 4, wherein the B cell lymphoma is selected from the group consisting of low-grade/follicular non-Hodgkin's lymphoma (NHL), small lymphocyte (SL) NHL, intermediate/follicular NHL. , intermediate diffuse NHL, chronic lymphocytic leukemia (CLL), advanced immunoblastic NHL, advanced lymphoblastic NHL, advanced small non-lytic cell NHL, bulky disease NHL, mantle cell lymphoma , AIDS-related lymphoma and Waldenstrom's macroglobulinemia.

Claim 6. The use according to any one of claims 1 to 4, wherein the B cell lymphoma is chronic lymphocytic leukemia.

Claim 7. The use according to any one of claims 1 to 4, wherein the B cell lymphoma is Waldenstrom's macroglobulinemia.

Claim 8. The use according to any one of claims 1 to 4, wherein the B cell lymphoma is a painless lymphoma.

Claim 9. The use according to any one of claims 1 to 4, wherein the B cell lymphoma is an invasive lymphoma. ”

Facts:

(1) The Petitioner held in the invalidation proceeding that

a). Claims 1-4 and 5(partial) do not have novelty. Evidence 1 discloses the treatment of patients with recurrent low-grade Hodgkin's lymphoma by IDEC-C2B8 (Rituximab) anti-CD20 monoclonal antibody. Therefore, all of the technical features of claims 1-4 and 5(partial) were disclosed by Evidence 1 and thus were not novel over Evidence 1.

b) Claims 1-9 does not have inventive step. Evidence 1 has taught that patients with B cell lymphoma who have relapsed after treatment with anti-CD20 antibody can be treated with anti-CD20 mAb (Rituximab), and those skilled in the art can obtain the claimed technical solutions without inventive labor based on Evidence 1. In addition, whether the anti-CD20 antibody is used to treat patients who have relapsed with chemotherapy or the patients who have relapsed after treatment with anti-CD20 antibody, the mechanism of action of the antibodies is identical, that is, by blocking the CD20 antigen expressed by lymphoma.

c) Claims 5-9 are not sufficiently disclosed in the specification, and thus could not be supported from the specification. The specification of the patent only provides the treatment results of re-treatment on recurrent low-grade NHL with Rituximab. There are no specific treatment regimens, such as the inclusion and exclusion criteria of the patients, the

therapeutic dose and treatment process of the drug, the statistical and judgment criteria of the treatment effect, etc. The patent does not provide treatment regimens and therapeutic effects for other types of B-cell lymphoma other than recurrent low-grade NHL.

(2) The Patentee deemed that

a) Evidence 1 does not disclose the technical feature of claim 1 "wherein the patient has relapsed after treatment with an anti-CD20 antibody", since Table 1 in Evidence 1 does not mention treatment with anti-CD20 antibody. It would be understood to the skilled person in the art that the patient in Evidence 1 has relapsed after chemotherapy, not IDEC-C2B8 treatment. Claims 1-9 have novelty in view of Evidence 1.

b) The patent specification details the principles of treatment on various B-cell lymphomas with anti-CD-20 antibodies (especially Rituximab) and also provides data on the efficacy of anti-CD20 antibodies in the treatment of various B-cell lymphomas. On the basis of this, there is no reason to suspect that the invention claimed in the claims cannot be implemented by those skilled in the art.

Legal issue

(1) Can the feature of different subject to be administered confer any novelty on the Swiss-style claims?

(2) Can the prior art disclosing “a process using an agent X to treat a disease Y” destroy the novelty of a medical use claim “Use of X in the manufacture of a medicine for treating Y”?

PRB’s Reasoning

Upon examination, PRB held that,

(1) Regarding to the Novelty

(i) The technical feature of the subject to be administered do not have a limiting effect on the invention for medical use as claimed in claim 1, and should not be considered in the novelty and inventive judgment, for the following reasons:

a. Patients with B-cell lymphoma who relapsed after the first treatment with anti-CD20 antibody, or patients with B-cell lymphoma who relapsed after the first treatment with other treatment regimens, were both re-treated with anti-CD20 antibody based on the same activity of the antibody. The difference of the patients will not lead to difference in the manufacture of the medicine.

b. The anti-CD20 antibody treatment of various types of recurrent B-cell lymphoma depends on the presence of CD20 antigen on the surface of B lymphocytes. The specification does not differentiate the technical effects of CD20 antibody treatment on recurrent B-cell lymphomas which have received different pre-treatment.

The patentee did not provide any evidences to prove whether "recurrent B-cell lymphoma patients after the first treatment with different treatment regimens" have any differences in treatment mechanism, disease occurrence and disease development, nor provide any evidences to prove the recurrent B-cell lymphoma indications can be subdivided according to the different first treatment regimen. Therefore, there is no reason to conclude that the limitation on the subject to be administered can limit the recurrent B-cell lymphoma into a new indication.

(ii) The active ingredient used in the treatment disclosed in Evidence 1 is an anti-CD20 antibody, and the indication for the treatment is recurrent B cell lymphoma. Since the anti-CD20 antibody is required to prepare anti-CD20 into a medicine during the treatment of recurrent B-cell lymphoma, the evidence implicitly discloses the technical feature of preparing anti-CD20 into a medicine. The technical solutions of claim 1 and Evidence 1 are substantially the same, both are applicable to the tumor pharmaceutical art, solve the technical problem of treating recurrent B-cell lymphoma, and have certain curative effect. Therefore, claims 1-4 and 5 (partial) do not have novelty in view of Evidence 1.

(2) Regarding to the Inventive step

Evidence 1 gives clear teachings for the use of anti-CD20 antibodies for the treatment of other types of recurrent lymphomas, the indication types and phenotypes in claims 5-9 belong to common lymphoma types known in the prior art, or to known Lymphoma-associated neoplastic disorders. It is a common to pursuit in the oncology art to treat these diseases effectively and the skilled person in the art is motivated to select various types of recurrent lymphomas known in the art for antibody therapeutic trials and to verify the treatment effect. Claim 5(partial) and claims 6-9 do not have inventive step in view of Evidence 1.

PRB Decision

The patent was totally invalidated by the PRB.

Discussion

(1) In the judgment of novelty of Swiss-style claims, if the technical feature of subject to be administered can only have limitation in the administration process, but cannot affect the

pharmaceutical manufacture, nor make the indications different from those in the prior art, said technical feature could not confer novelty on the Swiss-style claims.

(2) For a medical use claim written in "Use of Substance X in the manufacture of a medicament for the treatment of a disease" or the like, if a prior art document only states that substance X is used in the treatment of the disease, since the use of substance X to treat the disease necessarily need the preparation of substance X into a medicine, said prior art document has implicitly disclosed the technical feature of manufacture of substance X into a medicine. Even said document does not have a written description of preparing the substance X into a medicine, it can still be used as a document that destroys the novelty of the invention.

(3) The motivation for improving the prior art can be derived from the teachings of the prior art as well as from the general needs that are in line with technological trends. If the prior art or the technological trend in the art gives sufficiently clear teachings, the prior art also discloses the technical means to make such improvement within the knowledge and ability of the skilled person, and the effects of the improvement is predicable by the skilled person, the claimed technical solutions are obvious.

(E) Europe/European Patent Office

Claire Baldock and Jürgen Meier provide the following update on the “Early Certainty Initiative(s)” at the European Patent Office:

The “Early Certainty” Initiatives

A lack of speed in the processing of patent applications and oppositions at the European Patent Office (EPO) has often been a source of frustration to users of the system. It has not been uncommon for cases to lie dormant for several years at a time and the consequential lack of legal certainty can hinder the development of business strategies.

The EPO is aware of the importance of timeliness to its users and over the last four years has set out to address the issue with the introduction of the so-called “Early Certainty” initiatives.

In July 2014 “Early Certainty from Search” (ECfS) was implemented whereby a Search Report and Written Opinion on patentability are issued within six months of the filing date of the application. It is of note that the EPO carries out approximately 36% of all international (PCT) search procedures and was, in 2017, involved in mare than 60% of all international preliminary examinations. Also here, the EPO delivers the International Search Report now in average within 3 month from the receipt of the (PCT) application, whether via direct filing or

from the corresponding Internal Searching Authority.

In July 2016 the Early Certainty Initiative was extended to examination and opposition procedures. Under these initiatives grants are to be concluded within 12 months after the start of the examination procedure and oppositions with no specific legal complications (and excluding Appeal proceedings) are to be concluded within 15 months.The EPO intends to reach these goal “step-by-step” in order to get there by 2020.

Now, two years on from these initiatives, users are beginning to see the effects. By the end of 2017, the average duration of the examination phase is down to about 22 month. Also the average duration of opposition preceedings in the EPO Oppostion Division was down to abour 22,5 month at the end of 2017. While broadly positive, in that there is most certainly greater efficiency and the previous long delays are being avoided certain, possibly unintended, consequences are becoming apparent.

There is now real effort being made by Examiners in prosecution to indicate at an early stage the subject matter which might be allowable. However, some Examiners may make what they consider minor amendments themselves, in order to push applications through to grant. This can result in the running up of costs for an applicant if the amendments need to be challenged. Furthermore, in the event that the applicant is not able to satisfactorily address any objections after one Examination Report, then a final rejection in the form of a Summons to Oral Proceedings is issued, much earlier in the prosecution than would previously have been the case. Preparation and attendance at such hearings is a considerable expense for applicants relatively soon after the filing of the application.

A further disadvantage is that the timescale for amassing experimental evidence which may be needed to support sufficiency of disclosure or inventive step is much reduced. This is particularly pertinent for biotech and pharma applications where the evidence may be data from an ongoing clinical trial so that the lead time needed to produce it is significant.

In the case of oppositions, one of the instruments for speeding up the proceedings has been to remove the possibility of an automatic extension of time beyond four months for the patent proprietor to respond to an opposition. Special circumstances are required for more time to be granted. Thus, while an opponent has nine months to prepare an opposition against a patent, the patent Proprietor has only four months to prepare a defence. So far though the EPO does seem to be allowing some extra time where a patent proprietor is facing multiple oppositions, which is common for pharma and biotech cases.

The new shortness of the opposition procedure, as with examination, means that oral proceedings arise sooner. There is thus less time for the Primary Examiner of the Opposition to issue the Preliminary Opinion of the Division, which usually accompanies a Summons. While such communications are intended to assist the parties in their preparation for the hearing by identifying the issues that need to be addressed, it is now increasingly observed that they are merely a factual commentary without opinion, thus leaving the parties in the dark about the Division’s position, making preparations more difficult and hence expensive.

The changes in procedure due to the Early Certainty initiatives are still bedding in at the

present time and users need time to get used to them. However, it does appear that, for the life sciences at least, the absence of any real mechanism to slow things down is problematic where, in the interests of a fair result, experimental evidence is required

(F) Japan

Takashi Fujita and Osamu Yamamoto provide the following information:

1. Laws

1.1 Grace Period extended from six months to one year

Article 30 of the Japanese Patent Law stipulates "Exceptions to lack of novelty for an invention that has lost novelty." As of June 9, 2018, Article 30 is revised to stipulate that the grace period is extended from six months to one year. This revision is applied to patent applications filed on or after June 9, 2018, and also is applied to inventions that were disclosed on or after December 9, 2017. Please note that a PCT application or a Japanese application should be filed within one year from initial disclosure in order to utilize the revised grace period in Japan.

1.2 Recent Cases

(1) Two Invalidation Trail cases before the JPO relating to an "antibody defined by function", whereby the JPO allowed the definition of an antibody by functional features (cases now pending before the Intellectual Property High Court)

Amgen Inc. v. Sanofi

Is it acceptable to define an antibody merely by reference to a functional feature? Decisions in invalidation trials filed by Sanofi against Amgen patents were issued in August, 2017. The cases are now pending before the Intellectual Property High Court.

PCT/US2008/074097 titled “Antigen binding proteins to Protein Convertase Subtilisin Kexin Type 9 (PCSK9)” was entered into the Japanese national phase. The patent application was patented as JP No. 5441905 on December 27, 2013; additionally, the first divisional patent application was patented as JP No. 5705288 on March 6, 2015, and the second divisional patent application was patented as JP No. 590633 on March 25, 2016.

The patented inventions of JP No. 5441905 include an antibody defined by structural features thereof. On the other hand, those of the first divisional patent (D1) and the second divisional patent (D2) include an antibody defined by functional features, as shown below. Please be advised that the specification discloses two reference antibodies named 21B12 and 31H4.

First Divisional Patent (D1)

D1 includes two independent claims, Claim 1 and Claim 5, relating to a monoclonal antibody. The claimed isolated monoclonal antibody is defined by functional features reciting a part of reference antibody 21B12.

Claim 1: An isolated monoclonal antibody, which can neutralize binding of PCSK9 and LDLR protein, and which is competitive for the binding to PCSK9 with the antibody including the heavy chain comprising CDR1, CDR2 and CDR3, shown as SEQ ID No. 368, 175, and 180, respectively, and the light chain comprising CDR1, CDR2, and CDR3, shown as SEQ ID No. 158, 162, and 395, respectively.

Claim 5: An isolated monoclonal antibody, which can neutralize binding of PCSK9 and LDLR protein, and which recognize an epitope the same or partially the same as an epitope for the antibody including the heavy chain comprising CDR1, CDR2, and CDR3, shown as SEQ ID No. 368, 175, and 180, respectively, and the light chain comprising CDR1, CDR2, and CDR3, shown as SEQ ID No. 158, 162, and 395, respectively.

Second Divisional Patent (D2)

D2 includes two independent claims, Claim 1 and Claim 3, relating to a monoclonal antibody. The claimed isolated monoclonal antibody is defined by functional features reciting a part of reference antibody 31H4.

Claim 1: An isolated monoclonal antibody, which can neutralize binding of PCSK9 and LDLR protein, and which is competitive for the binding to PCSK9 with the antibody including the heavy chain comprising CDR1, CDR2, and CDR3, shown as SEQ ID No. 247, 256, and 265, respectively, and the light chain comprising CDR1, CDR2, and CDR3, shown as SEQ ID No. 222, 229, and 238, respectively.

Claim 3: An isolated monoclonal antibody, which can neutralize binding of PCSK9 and LDLR protein, and which recognize an epitope the same or partially the same as an epitope for the

antibody including the heavy chain comprising CDR1, CDR2, and CDR3, shown as SEQ ID No. 247, 256, and 265, respectively, and the light chain comprising CDR1, CDR2, and CDR3, shown as SEQ ID No. 222, 229, and 238, respectively.

Opposition was filed against D1 in the name of a patent firm on October 22, 2015. An opposition decision was issued on January 6, 2016 in which D1 was maintained with the claims as patented. Sanofi filed an invalidation trial against D1, Invalidation Trial No. 2016-800004, before the JPO on January 18, 2016. The alleged reasons for invalidation raised by Sanofi were lack of support, enablement, clarity, and inventive step. A decision in the invalidation trial was issued on August 10, 2017 in which D1 was maintained with correction of Claim 1 and cancellation of Claim 5 etc. Corrected Claim 1 is as follows:

Claim 1: An isolated monoclonal antibody, which can neutralize binding of PCSK9 and LDLR protein, and which is competitive for the binding to PCSK9 with the antibody including the heavy chain variable region consisting of the amino acid sequence shown as SEQ ID No. 49, and the light chain variable region consisting of the amino acid sequence of SEQ ID No. 23.

As for D2, Sanofi filed an invalidation trial, Invalidation Trial No. 2016-800066, before the JPO on May 31, 2016. The alleged reasons for invalidation raised by Sanofi were lack of support, enablement, clarity, and inventive step. A decision in the invalidation trial was issued on August 10, 2017, in which D2 was maintained with correction of Claim 1 and cancellation of Claim 3 etc. Corrected Claim 1 is as follows:

Claim 1: An isolated monoclonal antibody, which can neutralize binding of PCSK9 and LDLR protein, and which is competitive for the binding to PCSK9 with the antibody including the heavy chain variable region consisting of the amino acid sequence shown as SEQ ID No. 67, and the light chain variable region consisting of the amino acid sequence of SEQ ID No. 12.

Sanofi argued in the case of D1 that the descriptions in the corrected Claim 1 are merely functional definitions and therefore the claimed invention encompasses antibodies of a wide variety of structures, but in the specification only the reference antibody 21B12 antibody is experimentally described. Thus, it is not possible to extend or generalize the 21B12 antibody to the entirety of corrected Claim 1. Substantially the same arguments were presented in the case of D2.

The JPO judged in the case of D1 that the specification includes detailed descriptions on how to prepare anti-PCSK9 monoclonal antibody and competitive assay. Also, twenty-three kinds of antibodies are described with their sequence information as antibodies competing with 21B12. It is also well known that an antibody that competes with a reference antibody generally has similar functional properties to a reference antibody. In fact, it was confirmed that twenty of the above-mentioned twenty-three types of competing antibodies are strongly neutralizing antibodies, and the two types are weak neutralizing antibodies. Substantially the same decision was issued in the case of D2.

The JPO allowed an antibody to be defined by reference to functional features. As mentioned above, both cases have been brought to the Intellectual Property High Court. Our report on the cases will follow.

(2.) An Intellectual Property High Court Case on "Enablement" and/or "support" Requirements

"IMMUNE REGULATORY OLIGONUCLEOTIDE (IRO) COMPOUNDS TO MODULATE TOLL-LIKE RECEPTOR BASED IMMUNE RESPONSE"

Patent Applicant: Idera pharmaceuticals

JP A 2009-515823 WO2007/047396) Trail Number 2014-14059

Issue: Enablement and / or Support Requirements (other issues are omitted here)

The claimed invention relates to "Immune Regulatory Oligonulceotide" (IRO) that antagonized activation of Toll like Receptors by agonists.

Representative claims are as follows:

[Claim 1] An immunity regulation oligonucleotide (IRO) compound, wherein the aforementioned compound has a structure of 5' -Nm-N3***N2N1CG***$N^1N^2N^3$-N^m-3' : wherein ---(Omitted)---- and;N2N1 is G#A# or G#U#, ---(Omitted).

[Claim 14] A composition comprising the aforementioned compounds claimed in any one of claims 1-7 for the therapeutic treatment of a vertebrate having a disease mediated by a TLR, wherein the TLR(s) is TLR7, TLR8, and/or TLR9.

[**Claim 15**] The composition according to claim 14 wherein the disease is cancer, autoimmune disease, airway inflammation, an inflammatory disease, infection, skin disease, allergy, asthma, or a disease caused by a pathogen.

From Specification

Example 11 in the Description discloses Inhibition of immune stimulatory oligonucleotides and lists Table 5 and Table 6 that demonstrate that IROs inhibited activity of IMO.

Table 5. Percent inhibition of immune stimulatory oligonucleotide 1. IMO1(TLR agonist) concentration was 0.25 mg/ml and IRO concentration was 2 mg/ml

IRO #	Sequence	%Inhibition
5	5′-*CTATCT***GA**CG*TTCTCTGT*-3′	52.5%
25	5′-*CTATCT*GAC2G*TTCTCTGT*-3′	17.5%
26	5′-*CTATCT*GACG2*TTCTCTGT*-3′	15.3%
33	5′-*CTATCT*GAC3G*TTCTCTGT*-3′	38.1%
39	5′-*CTATCT***GA**C4G*TTCTCTGT*-3′	52.8%
41	5′-*CTATCT***GA**C5G*TTCTCTGT*-3′	42.6%
43	5′-*CTATCT***GA**C6G*TTCTCTGT*-3′	23.6%

[Table 6]. Percent inhibition of immune stimulatory oligonucleotide 1.

IMO1 concentration was 0.25 mg/ml and IRO concentration was 3 mg/ml.

IRO #	Sequence	% Inhibition
5	5′-CTATCT**GA**CG*TTCTCTGT*-3′	76.5%
17	5′-CTATCT**GA**CG1*TTCTCTGT*-3′	76.4%
34	5′-CTATCTGACG3*TTCTCTGT*-3′	32.2%
37.	5′-CTATCT**GA**CG4*TTCTCTGT*-3′	78.3%

(Board of Appeals)

The Board of Appeals alleged in the notice of rejection of Claim 13 that is now numbered claim 14 that instant specification confirmed antagonistic activity of various IRO only as antagonist of TLR7, TLR8, or TLR 9 among TLRs and did not confirmed antagonistic activity towards other TLRs.

The Board of Appeals also mentioned those IROs listed in the Examples shown to be effective as TLR9 antagonist are all in common in that all IROs have 5’-CTATCT and *TTCTCTGT*-3’or *TTCTCUGU*-3, then the board required the applicant to explain why other 5' terminals and 3' terminals are equally effective .

Furthermore, the board indicated that only specific chemical modifications at specific sites are exemplified thus claim should be limited only to those exemplified.

To this, the applicant amended claims to limit types of chemical modification and site of chemical modification only to those exemplified, and made it clear in the claims that "TLR" are limited to "TLR7, TLR8 and/or TLR9".

But the applicant submitted table below (edited) that shows chemical modification of N2N1 CG motif in the IROs changed the IROs from agonist to antagonist.

The Board of appeals decided that the specification does NOT enable the claimed invention because there exists no technical common knowledge that any 5'-terminal sequence represented by Nm-N3 in the IROs other than 5’-CTATCT may work as an antagonist to TLR9. The Board indicated there exists no technical common knowledge that any 3' terminal

sequence represented by $N^1N^2N^3$-Nm-3'may work. the specification failed to convey that any sequence other than those having 5'-CTATCT and *TTCTCTGT*-3'or *TTCTCUGU*-3'may work as TLR9 antagonist.

(IP High Court)

The court found that among IROs 12 IROs namely, IRO5, 10, 17, 25, 26, 33, 34, 37, 39, 41, 43, and 98 are verified as TLR9 antagonist. Among these 12 IROs, 11 IROs excluding IRO 98 are referred as same sequence antagonist compound that share same nucleotide sequence as IMO when chemical modifications were disregarded. The instant specification indicates that non-methylated CpG motif in microbial or synthetic DNA activates immunologic system or induces anti-tumor activity, and subsequent study revealed TLR9 recognize non-methylated CpG motif in microbial or synthetic DNA.

The same sequence antagonist compounds have a sequence of 5'-CTATCTGACGTTCTCTG--3', wherein chemical modification is introduced into "GACG" portion to produce N2N1CG motif, and the modification change TLR9 agonist to TLR9 antagonist (the change is called " revert function") .

From the above, regarding TLR9, it would be natural that a person in the art considers that the revert function is caused by the introduced chemical modification in N2N1CG motif because the sequences are same in other portion. Thus at least for TLR9, a person in the art would recognize that compounds having N2N1CG motif, that is, including other than those shown Example 11, would highly probably have antagonistic activity.

Thus, the Board erred in respect of TLR9 antagonist.

Rescinded

(**Discussion)**

It often happens that examiners or Board of Appeals require an applicant to limit claims based on its disclosure or examples by raising lack of enablement / support requirements. Instant case reveals that there is a case that sufficiency of disclosure may be confirmed by showing how a person in the art would understand the claimed limitation.

(G) Korea

Yoon Suk Shin and Min Son from Korea provide the following case law updates in (1) the assessment of inventive step in a vaccine case and (2) on the enablement_/support

requirement in “medical use inventions”. Furthermore, they inform us on the establishment of an “international Panel” in Korean courts hearing cases in English language:

1. KOREAN Case law updates

1.1 Patentability of Vaccine Inventions Recognized by the Korean Patent Court

SK Chemicals, a Korean pharmaceutical company, challenged the validity of a patent relating to Pfizer’s Prevenar®, which claims a pneumococcal polysaccharide-protein composition comprising 13 different capsular polysaccharide (1, 3, 4, 5, 6A, 6B, 7F, 9V, 14, 18C, 19A, 19F and 23F) derived from *Streptococcus pneumoniae* in combination with CRM197 carrier protein for use as a pneumococcal vaccine. (“Subject Patent”).

In Case No. 2015 Heo 4613 issued on October 11, 2017, the Patent Court acknowledged the novelty and inventive step of the Subject Patent and dismissed SK’s appeal against the IPTAB’s decision. Specifically, the Patent Court ruled that the Subject Patent has novelty over an article in Pediátrika. 2004, Vol 24, No. 4 on the basis that the prior art discloses the research for commercialization of a heptavalent conjugate vaccine, the addition of serotypes 1 and 5 thereto (a nonavalent vaccine), the addition of serotypes 3 and 7F thereto (a nonavalent vaccine) and the addition of serotypes 6A and 19A thereto (a tridecavalent vaccine), but does not disclose what type of carrier protein the conjugate vaccine having 13 serotypes is conjugate to or whether such conjugate vaccine could be produced and exhibit the immunogenicity against all 13 serotypes.

Moreover, another prior art was deemed to only disclose the possibility that a tridecavalent pneumoniae conjugate vaccine comprising CRM197 as carrier protein can be produced, and not disclose whether the tridecavalent vaccine has been produced, which one of the identified 90 serotypes was selected to be conjugate to the carrier protein, or what immunogenicity such conjugate vaccine has. For such reasons, the Patent Court acknowledged the novelty of the Subject Patent over the prior art.

The Patent Court also acknowledged the inventive step of the Subject Patent on the following basis: even if types of serotype and carrier protein had been individually disclosed in the field of pneumococcal conjugate vaccine at the time of the priority date of the Subject Patent, it would not be easy to develop a pneumococcal carrier protein conjugate vaccine, which maintains immunogenicity; a multivalent pneumococcal conjugate vaccine generates immunological interference, and a plurality of carriers are used to avoid the immunological interference; it was observed that a conjugate vaccine generated immunological interference when using CRM197 carrier; it would be difficult to identify the cause of immunological interference and to anticipate immunological interference; the competing pharmaceutical companies have different techniques and plans for coping with the immunological interference; excessive time and cost are required for research and development of conjugate vaccine; and the Subject Patent has immunogenicity to all 13 serotypes.

During the appeal proceeding before the Patent Court, Merck Sharp & Dohme intervened for

SK, and Medicines Sans Frontières filed an amicus brief in support of the invalidity of the Subject Patent. However, the Patent Court upheld the validity of the Subject Patent. The Patent Court decision is significant in that the patentability of vaccine inventions is determined taking into consideration of the overall circumstance of the industry and technology standard at the time the application was filed. The Patent Court decision was appealed to the Supreme Court, and the industry is awaiting the Supreme Court's ruling on the patentability of vaccine inventions.

1.2 Enablement Requirement and Support Requirement Distinguished in Medical Use Invention.

In Patent Court Case No. 2017 Heo 3522 issued on June 29, 2018, the Patent Court held that the criteria for the support requirement for claims under Article 42(4)(i) of the Patent Act. should be distinguished from the criteria for the enablement requirement under Article 42(3)(i) of the Patent Act.

Previously, in a case involving a patent application in the technical field of computer communications, the Supreme Court had held that the two requirements are different in terms of purpose, and thus, different criteria should be applied in determining compliance with the requirements (see Supreme Court Case No. 2012 Hu 832, issued on September 4, 2014). Notwithstanding this ruling, examiners and trial judges of Korean Intellectual Property Office had taken the position that, in the case of a medical use invention, the criteria for determining compliance with the enablement requirement can exceptionally be applied to determine compliance with the support requirement on the basis that inventions in such technical field are much less predictable and reproducible than inventions in other technical fields.

However, the Patent Court now has made it clear that the two requirements should be separately determined even in the case of a medical use invention, and that the lack of pharmacological data or a detailed description in place thereof in the specification cannot be a basis for determining non-compliance with the support requirement. The court ruled that the support requirement should be determined based on whether the specification has descriptions corresponding to the claims and whether the claimed inventions can be expanded or generalized from the descriptions in the specification. It is expected that there will be a substantial change in the current practice of determining compliance with the support requirement for medical use invention solely based on the presence or absence of pharmacological data in the specification.

2. GENERAL TOPIC: ENGLISH LANGUAGE IN KOREAN COURTS

The International Panel Established in Korean Courts in June 2018

In June 2018, an international panel was established in the Korean courts for intellectual

property related actions, to allow parties to submit briefs and evidences and make oral arguments in English.

As the number of lawsuits involving foreign parties has been continuously increasing in Korean courts each year (i.e. over 40% of cases in 2016), there has been a subsequent rise in the need to establish an international panel to resolve international patent disputes.

According to the revised Court Organization Act, which was passed on November 24, 2017, the Seoul district court, which hears first instance infringement actions, and the Patent Court, which hears second instance cases, such as appeals in infringement actions or appeals against Intellectual Property Trial and Appeal Board (IPTAB) decisions, will each have an international panel to hear international disputes in English.

Under the previous system, the Korean language was the only language used in Korean courts. However, the revision will now allow parties to submit briefs and evidences and make oral arguments in a foreign language (English) upon consent of the parties. The international panel will also provide an official English translation of its decision.

This new panel will provide foreign entities with smooth and fair trial proceedings and a reduction in trial costs including translation costs. It is expected that more and more intellectual property disputes will be brought to Korean courts by foreign IP holders, and Korean courts will become a popular venue for resolving international disputes.

(H) Phillippines

Maria Carmela Marnan provides the following information on the revised “Guidelines on the Examination” of biotech applicationsthe Philippines:

1. Legislation/Regulations

There are no updates on laws and regulations dealing with biotechnology in the Philippines. However, on January 2018, the Philippine Intellectual Property Office has issued the Revised Guidelines on the Examination of Biotechnological Applications (“Biotech Guidelines”) which aims to supplement the Philippine Intellectual Property Code, the Amended Implementing Rules and Regulations (IRR) on Patents, Utility Models and Industrial Designs and the Manual of Substantive Examination Practice (MSEP) in the substantive examination of biotech patent applications.

The Biotech Guidelines provide for the best practices and approaches in resolving issues involving nucleic acids, polypeptides, stem cells and transgenic cells, antibodies, microorganisms, and other biotech inventions. The Guidelines also address the current technical and ethical issues in biotech applications, and anticipate future issues that may be

raised against such applications.

2. Jurisprudence

There are no recently decided or pending cases regarding biotechnology before the Philippine Supreme Court and lower courts.

(I) UK (United Kingdom)

Claire Baldock and Daniel Lim provide the following updates on important cases for the UK.

1. Regeneron Pharmaceuticals, Inc v Kymab Ltd and Novo Nordisk A/S

A dispute between Regeneron Pharmaceuticals and two defendants, Kymab Ltd and Novo Nordisk A/S under Regeneron Patents EP1360287 ('287 patent) and EP2264163 ('163 patent) was heard by the Court of Appeal in October 2017 and judgement was handed down in March 2018. The invention concerned the production of hybrid antibodies containing human variable VDJ regions and mouse constant regions by creating a so-called "reverse chimeric locus". It was explained in the patent that the hybrid antibodies were produced more efficiently and with higher affinity than fully human antibodies previously produced in transgenic mice. Further, the hybrid antibodies produced could subsequently be converted to fully human antibodies, thus avoiding any human anti-mouse response (HAMA) when used therapeutically in humans.

The claims at issue were as follows:

> **The '287 patent**
>
> *1. A method of modifying an endogenous immunoglobulin heavy chain variable region gene locus in an isolated mouse embryonic stem (ES) cell by an in situ replacement of V, D and J gene segments of the endogenous locus with orthologous human V, D and J gene segments, to create a modified immunoglobulin locus that produces hybrid antibodies containing human variable regions and mouse constant regions, said method comprising:*
>
> *a) obtaining a large cloned genomic fragment greater than 20kb containing orthologous human V, D, and J gene segments;*

b) using bacterial homologous recombination to genetically modify the cloned genomic fragment of (a) to create a large targeting vector for use in a mouse ES cell (LTVEC);
c) introducing the LTVEC of (b) into a mouse ES cell to replace said V, D, and J segments in situ with the orthologous human V, D and J gene segments; and
d) using a quantitative assay to detect modification of allele (MOA) in the mouse ES cell of (c) to identify a mouse ES cell in which said V, D and J segments have been replaced in situ with the orthologous human V, D and J gene segments.

5. A genetically modified eukaryotic cell or a mouse comprising a genetically modified immunoglobulin heavy chain variable region locus obtainable by the method of any one of the preceding claims in situ *in place of the endogenous immunoglobulin heavy chain variable region gene locus.*

6. A mouse embryonic stem (ES) cell containing a genetically modified immunoglobulin heavy chain variable region gene locus obtainable by the method of any one of claims 1 to 4 in situ *in place of the endogenous immunoglobulin heavy chain variable region gene locus.*

The '163 patent

1. A transgenic mouse that produces hybrid antibodies containing human variable regions and mouse constant regions, wherein said mouse comprises an in situ replacement of mouse VDJ regions with human VDJ regions at a murine chromosomal immunoglobulin heavy chain locus and an in situ replacement of mouse VJ regions with human VJ regions at a murine chromosomal immunoglobulin light chain locus.

In the first instance decision the antibody producing transgenic mice developed by Kymab were held to infringe claims 5 and 6 of the '287 patent and claim 1 of the '163 patent. However, both patents were held invalid for insufficiency because it would not have been possible at the priority date to make insertions into the genome of the size required by the claims (said originally to be 75kb) without undue burden.

The Court of Appeal upheld the finding of infringement but overturned the finding of insufficiency and held both patents valid. It was considered that Regeneron had made a major contribution to the art with the principle of the 'reverse chimeric locus' because it overcame a significant problem which those working in the field faced, namely that transgenic mice producing fully human antibodies were immunologically sick and could not produce antibodies efficiently. It was a principle of general application which justified the scope of the claims.

Furthermore, for sufficiency it did not matter if those skilled in the art could not fulfil the specific steps of Example 3 of the patent with regard to the size of the inserts or deletions because it would be obvious from common general knowledge how to realise the invention of

Example 3. Technical evidence suggested that it would be possible to insert the human VDJ regions into the endogenous immunoglobulin heavy chain variable region using a so-called 'minigene' in which all the intragenic regions had been removed, making an insert of about 20kb for the VDJ regions. Minigenes were known in the art at the priority date and considered part of the common general knowledge of the skilled person. The use of this technology would allow the invention to be produced without undue burden notwithstanding that the use of minigenes was not mentioned in the patent.

In addition to the minigene method, the Court of Appeal further held that it would have been obvious to the skilled person to try a smaller insert than that specified in Example 3 to achieve a working reverse chimeric locus.

This case is one which very much turned on its particular facts and was determined by the weight of technical evidence before the Court. Nevertheless it strongly reaffirms the importance of the common general knowledge of one skilled in the art in judging sufficiency of disclosure under English law.

Kymab sought leave to appeal to the Supreme Court, however this was refused by the Court of Appeal on the basis that they are not persuaded that the appeal "*raises a point of law of general public importance*"; however, Kymab may still apply directly to the Supreme Court for leave. Further, both patents have been under opposition at the European Patent Office. The '287 patent has been maintained by the Technical Board of Appeal with the claims set forth above and which were the subject of the decision of the Court of Appeal in the UK.

2. Illumina, Inc & Ors v Premaitha Health plc & Anor

In July 2017 the High Court (per Carr J) heard two related disputes concerning a group of patentees and licensees comprising Illumina, Inc, Sequenom, Inc, Stanford University, Verinata Health, Inc and the Chinese University of Hong Kong, against two separate sets of defendants: (1) Premaitha Health plc and Premaitha Limited (**Premaitha Action**); and (2) TDL Genetics Limited, the Doctors Laboratory Limited and Ariosa Diagnostics, Inc (**Ariosa Action**). Judgment was handed down in November 2017.

Five patents belonging to three separate patent families were in issue:

- EP (UK) 0,994,963 ("Lo 1")
- EP (UK) 1,981,995 ("Quake 1") and its divisional EP (UK) 2,385,143 ("Quake 2")
- EP (UK) 2,183,693 ("Lo 2") and its divisional EP (UK) 2,514,842 ("Lo 3")

The Claimants alleged that the Premaitha Defendants' "IONA Test" infringed all five patents and that the Ariosa Defendants' "Harmony Test" infringed Lo I. Both sets of defendants counterclaimed for the invalidity of the patents asserted against them.

Broadly speaking, the inventions in question related to processes and products for non-invasive prenatal testing ("NIPT") for Down Syndrome and other chromosomal aneuploidies,

by way of genetic and bioinformatic analysis of extracellular DNA present in the blood of pregnant women, which comprises a mixture of fetal and maternal DNA. NIPT by way of such molecular analysis offers a more sensitive and specific alternative for prenatal screening compared to existing non-invasive screening methods (e.g. the Combined Test or Triple Test) whilst avoiding the risk of miscarriage associated with invasive prenatal techniques (e.g. amniocentesis or chorionic villus sampling).

The principal claims of the primary patents in issue were as follows:

Lo 1

Claim 1: "*A detection method performed on a maternal serum or plasma sample from a pregnant female, which method comprises detecting the presence of a nucleic acid of foetal origin in the sample, wherein said nucleic acid is a paternally inherited sequence which is not possessed by said pregnant female*."

Claim 5: "*A method according to claim 4 [being a method according to any one of claims 1 to 3, wherein said detecting comprises amplifying said nucleic acid], wherein said amplification is by the polymerase chain reaction*."

Claim 7: "*A method according to any one of the preceding claims, wherein the presence of a foetal nucleic acid sequence from the Y chromosome is detected*."

Claim 8: "*A method according to claim 7, for determining the sex of the foetus*."

Quake 1

Claim 1 (including conditional amendment): "*A method of detection of foetal aneuploidy in a mixture of maternal and foetal genetic material, in a sample of maternal tissue, characterized by:*

> *(a) distributing the genetic material into reaction samples, wherein each sample contains on average not more than about one target sequence per sample, wherein DNA to be analyzed will be either present or absent in a reaction sample, due to random variations between reaction samples;*
>
> *(b) measuring the presence of different target sequences in the reaction samples by digital analysis to obtain binary results providing differential detection of the target sequences in a mixture of maternal and foetal genetic material, wherein said target sequences comprise sequences from two chromosomes, one of which is possibly aneuploid and one of which is presumed diploid;*
>
> *(c) analyzing the binary results from step (b) by counting the frequency of positive responses from target sequences followed by (d) statistical analysis of the results of step (c) whereby the frequency of positive responses from target sequences*

provides data sufficient to distinguish euploid from aneuploid target sequences, wherein the measuring step comprises direct sequencing of the maternal and foetal genetic material."

Lo 2

Claim 1 (including unconditional amendment): "*A method for performing prenatal diagnosis of a foetal chromosomal aneuploidy in a biological sample obtained from a female subject pregnant with a foetus, wherein the biological sample is maternal plasma or serum and wherein the sample includes cell-free nucleic acid molecules from the female subject and the foetus, the method comprising:*

performing a random sequencing on at least a portion of a plurality of the nucleic acid molecules contained in the biological sample to obtain a pre-determined number of sequences, wherein the sequences represent a fraction of the human genome;

aligning, with a computer system, each sequence to a human genome;

determining a first amount of sequences identified as being aligned to a first chromosome;

determining a second amount of sequences identified as being aligned to one or more second chromosomes;

determining a parameter from the first amount and the second amount; wherein the parameter represents a relative amount between the first and second amounts; and

comparing the parameter to one or more cut-off values, to determine a classification of whether a foetal chromosomal aneuploidy exists for the first chromosome."

In a lengthy 513 paragraph judgment Carr J considered a wide range of issues raised by the parties across the two disputes. Extensive non-infringement arguments were raised by both sets of defendants, in addition to a wide variety of priority, obviousness, insufficiency and added matter attacks. Title issues and declarations of non-infringement were also considered. Given the sheer breadth of matters in issue, we will not attempt to summarise each of those issues, but instead focus below on the ultimate outcome and the aspects of the judgment of most interest from a comparative law perspective.

Lo 1 findings

In relation to Lo 1, only claim 8 survived the various attacks on its validity, and this claim was found to be infringed by the particular variants of both the IONA Test of the Premaitha

Defendants and Harmony Test of the Ariosa Defendants involving the determination of the sex of the fetus.

Unpatentable subject matter

Significantly, and by contrast to the outcome of *Ariosa Diagnostics, Inc v Sequenom, Inc*[http://www.cafc.uscourts.gov/sites/default/files/opinions-orders/14-1139.Opinion.6-10-2015.1.PDF] (in which the US equivalent of Lo 1 was held to be invalid for lack of eligible subject matter, as a naturally occurring phenomenon), Carr J rejected the argument that the invention of Lo 1 related to unpatentable subject matter as a "discovery as such". He found that "*the claims are not directed to information about the natural world, but rather to a practical process, namely a "detection method" which uses information about the natural world*" and that the samples of plasma or serum the subject of the detection method, as well as that claimed method of detection are artificial and do not exist in the natural world; accordingly he found that "*the actual contribution of the invention, as a matter of substance, does not fall solely within the excluded subject matter and is technical in nature*".

Insufficiency and principle of general application

Both sets of defendants/cross-claimants made various allegations of insufficiency stemming from the fact that neither of their respective methods (conceived over a decade after the filing of Lo 1) were disclosed or enabled by Lo 1 and yet were alleged to fall within its claims, such that the scope of the claims of the patent exceeded its technical contribution to the art.

In response, the Claimants argued that Lo 1 claims a principle of general application and that there was no requirement that the patent enable improvements and anticipate future technology in order to be sufficient, merely that at least one method of exploiting it without undue burden is disclosed.

Reciting the principles of enablement, Carr J noted that "*A principle of general application simply means an element of the claim which is stated in general terms. Such a claim is sufficiently enabled if one can reasonably expect the invention to work with anything which falls within the general term*; *Kirin-Amgen Inc v Hoechst Marion Roussel Ltd* [2004] UKHL 46, [2005] RPC 9 at [112] – [113]". Agreeing with the Claimants, he observed that "*The principle of enablement across the breadth of the claim is of considerable importance, but it is not absolute. It does not require a patentee who has claimed a principle of general application to anticipate inventive improvements which make use of that principle, nor future advances in technology, which would be an impossible task*"

Carr J found that "*the Lo 1 Priority Document clearly and unambiguously discloses that cell-free foetal DNA is present in detectable amounts in the maternal plasma and serum of a pregnant female*" and that Lo 1 "*discloses a principle of general application for detection of such nucleic acid sequences using paternally inherited cell-free foetal DNA as the source material to be analysed*" that was credible at the priority date and "*revolutionised the approach to non-invasive prenatal testing*".

Quake Patent findings

The Quake Patents were found to be non-obvious and infringed by the IONA Test. Although claim 1 of Quake 1 as granted was found to be invalid for added subject matter and insufficiency, that claim as proposed to be amended was found to be valid.

Lo 2 and Lo 3 findings

Lo 2 and Lo 3 were found to be non-obvious and infringed by the IONA Test.

Declarations of non-infringement

The Premaitha Defendants sought declarations of non-infringement in relation to all five patents in respect of two different proposed amended processes. One of those processes related to the off-shoring of a number of intermediate data processing steps to Taiwan (where the Claimants did not have any equivalent patents granted) before sending the results from those steps back into the UK.

In very brief remarks on this issue, Carr J considered that the crucial question to be asked is "where, in substance, is the Alternative Proposed Process to be used?" In relation to each patent Carr J considered that the answer to that question was the United Kingdom, accepting the Claimants' submission that "*any other result would make it far too easy to avoid infringement of patents of this nature, given the ease of digital transmission and the ability to off-shore computer processing*". The judgment did not squarely address the Premaitha Defendants' submission that the steps of detection and analysis that were to be off-shored were those that were crucial to the inventive concept of each of the patents. As the judge accepted the Claimants' case based on direct infringement under s 60(1)(b) he did not proceed to consider any of the arguments based on s 60(1)(c) infringement via importation of a direct product of the patented process (in the form of the diagnostic data/results), which may have required consideration of the German *Rezeptortyrosinkinase* decisions, or s 60(2) indirect infringement.

Closing remarks

Other than the issues highlighted above, the case turned on its particular facts and was determined by the weight of technical evidence and contemporaneous art before the Court (especially on the issue of obviousness, which was the primary attack on the Quake and Lo 2 and 3 patents).

The outcome of the case on validity in relation to Quake 1 and Lo 2 (if not the reasoning), including the amendments ultimately made by the patentees, closely mirrored the outcome

of the opposition proceedings in relation to those two patents before the European Patent Office.

Appeals from the first instance judgment have been filed by both the Ariosa Defendants and Premaitha Defendants.

3)
Any recommendations for AIPPI involvement/action for the next 12 months
This need not be limited to recommendations for your Standing Committee but can be recommendations for AIPPI more broadly. For example, please include:

In each case, please explain why such involvement/action is recommended, by whom it should be undertaken and any relevant time frames.
a)
any recommendations for involvement/action in relation to any upcoming or foreshadowed case law, legislative or regulatory developments, or policy initiatives;

As already proposed in the last annual report, the Biotech Subcommittee encourages a close survey of the onging "Brexit" negotiations.

b)
any other recommendations for AIPPI involvement/action;

none

c)
any recommendations for the work programme of your Standing Committee.

In 2016, the European Directive on the Protection of Biotechnological Inventions (“Biotech Directive”) 98/44/RG was interpreted by the European Commission in its Notice 2016/C411/03 in as far as the patentability of plants or animals obtained by “essentially biological processes” is excluded from patent protection. Following this Notice, the Administrative Council of the EPO has decided to amend relevant Rules 27 (b) and 28 (2) of the EPC. This new situation will be discussed within the Study Committee.

The “revival” of gene therapy approaches and the upcoming novel recombinant technologies, like the CRISPR-Cas technology should be closely followed.

4)
Outline of the work programme of your Standing Committee for the next 12 months
Please set out specific activities and priorities having regard to the matters in 1) - 3) above,

including any relevant time frames.

As done in previous years, the Biotech Subcommittee will further support our sister-committee “Pharma” and shall finalize the Antibody Survey Project. Members representing further jurisdictions will be actively approached to provide for their input in our “antibody questioner”. It is our vision to provide a broader public with the results of this survey and a corresponding publication is envisaged.

Besides our personal meeting in Cancun, it is again intended to schedule at least two world-wide telephone conferences on latest developments and to co-ordinate the ongoing study questions and projects.

New projects will be discussed during the personal meeting in Cancun and new study questions will be identified.

Names and Functions of Committee Members

Chair	Jürgen MEIER	Germany
Vice Chair(s)	Peter LUDWIG	United States of America
	Thomas BOUVET	France
Members	Saeko AKETANI	Japan
	Juan ARIAS SANZ	Spain
	Claire BALDOCK	United Kingdom
	Andrew BLATTMAN	Australia
	Jeroen BOELENS	Netherlands
	Graeme BOOCOCK	Canada
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	Sigrid Toft FLøYSTAD	Norway
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	Israel JIMENEZ HERNANDEZ	Mexico
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	Yoon S. SHIN	Republic of Korea
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	Hariharan SUBRAMANIAM	India
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	Osamu YAMAMOTO	Japan