HOLLY IP

Judgment of the UK Supreme Court: Human Genome Sciences, Inc v Eli Lilly and Company [1]

Summary

This decision of the UK Supreme Court mostly concerns industrial applicability of a patent to a new gene and protein. The Supreme Court found that the subject matter of the patent did have industrial applicability even though the listed uses of the protein in the patent were only predictions based on the new gene being a member of the TNF ligand family. The decision overturns the judgment of the Court of Appeal. The Supreme Court's view was that the Court of Appeal had applied a test for industrial applicability that was too strict. The Supreme Court also held the patent to be sufficient.

The Subject Matter of Patent EP-B-939804

The patent concerns a new member of the TNF ligand family that was discovered by Human Genome Sciences, Inc. The claims which were under consideration are shown in the Annex to this circular. They include claims to the gene and protein sequences for Neutrokine-α and to antibodies that bind Neutrokine-α protein. The patent provides a list of conditions that can be treated by using the protein or by modulating Neutrokine-α activity in a patient. The conditions that can be treated were predicted based on the properties of known members of the TNF ligand superfamily. The only 'wet' experimental data given in the patent concerning the properties of Neutrokine-α is tissue expression data. No data is provided concerning the activity of Neutrokine-α or its use in therapy.

Background to the Case

The UK Court of Appeal agreed with the High Court in finding the patent to lack industrial applicability and sufficiency. Essentially the list of conditions that could be treated was viewed as too speculative. The Court of Appeal's analysis was based, at least in part, on consideration of how plausible the skilled person would consider the disclosure in the patent relating to treatment of the listed conditions.

Eli Lilly, the Respondent in this case, had also opposed the European patent from which the UK patent derives. In those proceedings the Board of Appeal decided that the patent did have industrial applicability, essentially judging it to be plausible that the listed conditions could be treated using the invention.[2]

Why is 'Plausibility' Relevant to Patents Directed to New Genes?

According to case law of the Boards of Appeal of the European Patent Office (EPO) a compound that does not have a use lacks inventive step.[3]

[1] Judgment of 2 November 2011, [2011] UKSC 51
[2] T18/09 (Neutrokine/HUMAN GENOME SCIENCES)
[3] T939/92 (Herbicides/AgrEvo)

Further, the biotech directive[4] requires the industrial application of a sequence or a partial sequence of a gene to the disclosed in the patent application.

In the case of a new gene it will normally be possible to predict one or more activities of the encoded protein based on similarity of the protein sequence to known proteins with characterised activities, and hence to also predict uses of the protein. In order to assess whether such predicted activities are enough to satisfy requirements of inventive step and industrial applicability the EPO Boards of Appeal are required to assess the 'plausibility' of the uses. In the case of inventive step plausibility can be tied to the question of whether the technical problem has been solved, and this provides a basis for determining exactly which assertions are required to be plausible. However for industrial applicability, which is not related to the technical problem being solved, the situation may be less clear-cut. In the present case the Supreme Court ultimately disagreed with the Court of Appeal on what needed to be plausibly shown by the disclosure in the patent.

How the Supreme Court Assessed Industrial Applicability

The Supreme Court placed emphasis on assessing industrial applicability according to relevant decisions of EPO Boards of Appeal. Several EPO decisions are specifically mentioned. However it could be argued that the EPO decisions are quite case-specific and one could probably cherry-pick decisions and extracts from them to support different conclusions on industrial applicability. The Supreme Court derived fifteen general principles from the EPO decisions and felt that several of these had not been followed by the Court of Appeal. However it is probably not surprising that two courts will disagree using a test based on so many principles.

The original High Court judgment was critical of the large number of biological effects and activities of Neutrokine-α listed in the patent, all based on predictions from the known properties of the TNF ligand family. The list was seen as 'extravagant and sometimes contradictory'. The Court of Appeal agreed with this view of the patent and ultimately assessed industrial applicability by asking whether the patent provided strong evidence of Neutrokine-α's effectiveness in any specific therapy. The Supreme Court took the view that other biological roles of Neutrokine-α listed in the patent had not been given due weight by the Court of Appeal . The Supreme Court came to the conclusion that it was clear from the patent that Neutrokine-α would have a use and that was enough to meet the requirement of industrial applicability.

Sufficiency

Eli Lilly had asserted that the claims require the Neutrokine-α protein to have 'Neutrokine-α activity' and the patent was insufficient because it does not provide clear guidance on how to establish such an activity. The claims which were under consideration no longer contained any references to 'Neutrokine-α activity'. The Supreme Court disagreed with Eli Lilly's construction of the claims,

[4] Directive 98/44/EC of the European Parliament and of the Council of 6 July 1988 on the legal protection of biotechnological inventions

finding no reason for the Neutrokine-α activity to be required by the claims and held the patent to be sufficient.

Influence of Policy Considerations

The BioIndustry Association (BIA) had filed an intervention to the Supreme Court proceedings. The BIA's intervention warned of a detrimental effect on the UK bioscience sector if the Court of Appeal's test for industrial applicability was followed. The BIA felt that patent protection should be available before expensive experimental work was done to investigate the uses of a new protein, and the Court of Appeal's decision seemed to require at least some experimental work to be done to verify the use of a new protein. The Supreme Court clearly took the intervention into account.

It is also apparent from the judgment that the Supreme Court placed more emphasis than the Court of Appeal on the UK being consistent with the EPO in assessment of industrial applicability. The decision of the Board of Appeal in the parallel EPO proceedings was therefore given greater weight.

The Quality of Decisions of the Boards of Appeal of the EPO

In its justification of why it came to a different conclusion from an EPO Board of Appeal, the Court of Appeal hints that the UK Courts take a more rigorous approach. The Supreme Court decision does not comment on the quality of the decisions of the EPO Boards of Appeal. However due to their work load the EPO Boards of Appeal do have more experience of considering the patentability of biotech subject matter, and in particular of new genes and proteins. This may mean that they are better at judging patentability on a case-by-case basis, having less need to rely on developing general principles. Whilst this leads to decisions which contain less reasoning than UK Court decisions, it may be a better approach to follow when assessing complex biotech cases like the present one.

The UK Courts have had a reputation of being strict when considering the validity of patents. In part this may be due to the Courts allowing a rigorous assessment of validity to become a more strict assessment. Further in the Court of Appeal decision there is criticism that is essentially of the quality of the drafting of the patent specification. Whilst the imperfections in the way a patent specification is written do become apparent when it comes under intense scrutiny, this should be kept in perspective. The EPO Boards of Appeal are perhaps better at focusing on the claims and not giving undue importance to the quality of the rest of the specification.

Practical Implications of the Decision

The UK Courts will now become more cautious in disagreeing with the EPO Boards of Appeals, giving applicants and patentees greater certainty. This will probably lead to a greater leniency in the way that industrial applicability is assessed in the UK in biotech cases. The UK Courts will hopefully also take into account that experimental work in biotech is costly and takes time, and it is simply not practical for it all be to done before a patent application is filed.

Annex

The Claims of EP-B-939804 Considered By the Supreme Court

1. An isolated nucleic acid molecule comprising a polynucleotide sequence encoding a Neutrokine-α polypeptide wherein said polynucleotide sequence is selected from the group consisting of:
   (a) a polynucleotide sequence encoding the full length Neutrokine-α polypeptide having the amino acid sequence of resides 1 to 285 of SEQ ID N:2; and
   (b) a polynucleotide sequence encoding the extracellular domain of the Neutrokine-α polypeptide having the amino acid sequence of residues 73 to 285 of SEQ ID NO:2.
2. A nucleic acid molecule of claim 1, wherein the amino acid sequence of said full-length Neutrokine-α polypeptide is the one encoded by the cDNA clone contained in ATCC Deposit No. 97768.
3. A nucleic acid molecule of claim 1, wherein the amino acid sequence of said extracellular domain of the Neutrokine-α polypeptide is the one encoded by the cDNA clone contained in ATCC Deposit No. 97768.
4. The nucleic acid molecule of any one of claims 1 to 3, which is DNA or RNA.
5. A method of making a recombinant vector comprising inserting the nucleic acid molecule of any one of claims 1 to 4 into a vector.
6. A recombinant vector containing an isolated nucleic acid molecule consisting of a polynucleotide sequence encoding a Neutrokine-α polypeptide wherein said polynucleotide sequence is selected from the group consisting of:
   (a) a polynucleotide sequence encoding the full length Neutrokine-α polypeptide having the amino acids sequence of residues 1 to 285 of SEQ ID NO:2; and
   (b) a polynucleotide sequence encoding the extracellular domain of the Neutrokine-α polypeptide having the amino acid sequence of residues 73 to 285 of SEQ ID NO:2.
7. The vector of claim 6 in which the nucleic acid molecule is operatively linked to an expression control sequence allowing expression of said polynucleotide in prokaryotic or eukaryotic host cells, wherein the expression control sequence is a promoter.
8. A method of making a recombinant host cell comprising introducing the vector of claim 6 or 7 into a host cell.
9. A mammalian host cell genetically engineered with the recombinant vector of claim 6 or 7.
10. An isolated Neutrokine-α polypeptide consisting of the amino acid sequence selected from the group consisting of:
    (a) The full length Neutrokine-α polypeptide having the amino acid sequence of residues 1 to 285 of SEQ ID NO:2; and
    (b) The extracellular domain of the Neutrokine-α polypeptide having the amino acid sequence of residues 73 to 285 of SEQ ID NO:2.
11. The polypeptide of claim 10 which is labeled.
12. The polypeptide of claim 11 which is radiolabeled.
13. An isolated antibody of portion thereof that binds specifically to
    (a) the full length Neutrokine-α polypeptide (amino acid sequence of residues 1 to 285 of SEQ ID NO:2); or
    (b) the extracellular domain of the Neutrokine-α polypeptide (amino acid sequence of residues 73 to 285 of SEQ ID NO:2).
14. The antibody or portion thereof of claim 13 which is selected from the group consisting of:
    (a) a monoclonal antibody;
    (b) a polyclonal antibody;
    (c) a chimeric antibody;
    (d) a Fab fragment; and
    (e) an $F(ab')_2$ fragment.
15. The antibody of portion thereof of claim 13 or 14 which is labelled.
16. The antibody or portion thereof of claim 15 which is labelled with a label selected from the group consisting of:
    (a) an enzyme label;

(b) a radioisotope;
(c) a fluorescent label; and
(d) biotin.

17. The antibody or portion thereof of claim 15 which is labelled with a label selected from the group consisting of
(a) ^{125}I ;
(b) ^{121}I;
(c) ^{131}I;
(d) ^{112}In; and
(e) ^{99m}Tc.

18. A pharmaceutical composition comprising the polypeptide of any one of claims 10 to 12, or the antibody or portion thereof of any one of claims 13 to 17 and optionally, a pharmaceutically acceptable carrier.

19. A diagnostic comprising the nucleic acid molecule of any one of claims 1 to 4, the polypeptide of any one of claims 10 to 12, or the antibody or portion thereof of any one of claims 13 to 17.