Intellectual Property Office

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PATENTS ACT 1977

APPLICANT	Tate and Lyle Technology Limited and Tate & Lyle Ingredients Americas LLC
ISSUE	Whether patent application GB 2007535.4 complies with Section 1(1)(b)
HEARING OFFICER	Dr C L Davies

DECISION

Introduction

1 This decision relates patent application GB 2007535.4 ("the application") entitled "A protein", in the name of "Tate and Lyle Technology Limited" and "Tate & Lyle Ingredients Americas LLC" ("the applicants"). The application was published as GB 2583417 A on 28 October 2020. It is a divisional application from GB 1220554.8 which was filed on 15 November 2012 and has been granted as GB 2508586 on 4 August 2020, and which claims priority from US patent application 61/706338 with a filing date of 27 September 2012.

2 There have been a number of rounds of correspondence between the examiner and the applicants' attorney, throughout which the examiner has maintained that the claimed invention does not involve the inventive step required by Section 1(1)(b) of the Patents Act 1977 ("the Act"). The examiner summarised the arguments concerning the lack of an inventive step in the pre-hearing report of 1 September 2020.

3 In this report the examiner also raised an objection concerning lack of support for the claimed invention. However, the amendments to the description filed by the applicants with their agent's letter of 14 October 2020 have now addressed this objection satisfactorily and so no further consideration of this matter is required.

4 With the position concerning inventive step unresolved, the matter came before me at a hearing conducted remotely on 11 November 2020. The issue of inventive step before me was set out in the examiner's pre-hearing report of 1 September 2020. The applicants position is set out in their attorney's skeleton argument of 4 November 2020, which formed the basis of the submissions made to me at the hearing. The applicants were represented at the hearing by attorney Dr Will Arends of Marks and Clerk LLP, assisted by Ms Sophie Topham. I was assisted by Dr Patrick Purcell.

The invention

5 The invention relates to a protein comprising a polypeptide that has at least 90% sequence identity with but is not identical to a peptide sequence identified as SEQ ID NO: 6 and which has psicose 3-epimerase activity. Nucleic acids encoding this peptide, vectors and host cells comprising the encoding nucleic acid are further claimed.

6 As discussed in the description these epimerase enzymes have utility in producing allulose which is a C3 epimer of fructose (a type of sugar) and which has utility as a "zero-calorie" sweetener. Epimerases catalyse stereochemical inversions of a substrate about an asymmetric carbon atom and psicose 3-epimerase catalyses the interconversion of fructose to allulose. Many different ketose epimerases which act on different sugars are known in the prior art.

7 The sequence of the psicose 3-epimerase is given in the description and it is demonstrated to have an apparently improved activity compared to previously known psicose 3-epimerases (as shown in Example 1 and Fig. 6 of the specification). However, no examples of any sequence variants of this enzyme having greater than 90% sequence identity are disclosed in the application as filed.

8 The latest set of claims, filed on 14 August 2020, consists of 9 claims and are set out below:

> *1. A protein comprising a polypeptide sequence having at least 90% sequence identity to SEQ ID NO: 6, wherein the protein has psicose 3-epimerase activity and the polypeptide sequence is not identical to SEQ ID NO: 6.*
>
> *2. A protein according to claim 1, wherein the polypeptide sequence has 90% to 99% sequence identity to SEQ ID NO: 6.*
>
> *3. A protein according to claim 1 or 2, wherein the polypeptide sequence has at least 95% or 99% sequence identity to SEQ ID NO: 6.*
>
> *4. A protein according to any one of claims 1 to 3, wherein the protein is immobilized on a solid substrate.*
>
> *5. A nucleic acid molecule comprising a polynucleotide sequence encoding a protein according to any one of claims 1 to 4.*
>
> *6. A nucleic acid molecule according to claim 5, comprising a polynucleotide sequence which:*

i) has at least 90%, 95% or 99% sequence identity to SEQ ID NO: 5; or
ii) hybridizes under highly stringent conditions to a polynucleotide having a sequence complementary to the sequence set forth in SEQ ID NO: 5.

7. A vector comprising a nucleic acid molecule according to claim 5 or 6.

8. A host cell comprising a recombinant nucleic acid molecule according to claim 5 or 6.

9. A host cell according to claim 8, wherein the host cell is E. coli.

9 I note that the parent application GB 1220554.8 was granted with claims directed to the use of a protein having at least 90% sequence identity to SEQ ID NO: 6, wherein the protein has psicose 3-epimerase activity, for synthesizing allulose or methods of producing allulose using a vector encoding a nucleic acid encoding such a protein.

The issue to be decided

10 The issue for me to decide is whether the invention involves an inventive step as required by section 1(1)(b) of the Act.

The law

11 The relevant provisions of the Act are reproduced below:

Section 1(1)
A patent may be granted only for an invention in respect of which the following conditions are satisfied, that is to say –
(a) the invention is new;
(b) it involves an inventive step;
(c) it is capable of industrial application;
(d) the grant of a patent for it is not excluded by subsections (2) and (3) or section 4A below;
and references in this Act to a patentable invention shall be construed accordingly.

and

Section 3
An invention shall be taken to involve an inventive step if it is not obvious to a person skilled in the art, having regard to any matter which forms part of the state of the art by virtue only of section 2(2) above (and disregarding section 2(3) above).

12 Section 2(2) explains what is meant by the state of the art for the purposes of inventive step:

The state of the art in the case of an invention shall be taken to comprise all matter (whether a product, a process, information about either, or anything

else) which has at any time before the priority date of that invention been made available to the public (whether in the United Kingdom or elsewhere) by written or oral description, by use or in any other way.

13 The examiner and applicants both agree that the structured approach for assessing inventive step, set out in *Windsurfing International Inc. v Tabur Marine (Great Britain) Ltd, [1985] RPC 59* and reformulated as the "Windsurfing/Pozzoli" test in *Pozzoli SPA v BDMA SA [2007] EWCA Civ 588*. The Windsurfing/Pozzoli test is as follows:

(1)(a) Identify the notional "person skilled in the art"
(1)(b) Identify the relevant common general knowledge of that person;
(2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;
(3) Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed;
(4) Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?

14 According to section 125(1) of the Act, the claims are interpreted as they would be understood by the skilled person in light of the description and any drawings in the application as filed:

For the purposes of this Act an invention for a patent for which an application has been made or for which a patent has been granted shall, unless the context otherwise requires, be taken to be that specified in a claim of the specification of the application or patent, as the case may be, as interpreted by the description and any drawings contained in that specification, and the extent of the protection conferred by a patent or application for a patent shall be determined accordingly.

Arguments and analysis

15 The examiner maintains that the invention as set out in claims 1-9 is obvious in view of the disclosures in:

D1: UniProt, 2011, "F5SL39", UniProt.org, [online], Available from: https://www.uniprot.org/uniprot/F5SL39

D2: NCBI Accession No. ZP_08466075.1 (2011); "D-tagatose 3-epimerase [Desmospora sp. 8437]"

and the common general knowledge as disclosed in a number of documents that are identified below:

D3: CN 102373230 A (TIANJIN INST. OF IND. BIOTECH.)

D4: Bioscience, Biotechnology, and Biochemistry, Vol. 58, No. 12, 1997, Itoh et. al., "Purification and Characterization of D-Tagatose 3-Epimerase from

Pseudomonas sp. ST-24", pp. 2168-2171. Available from: https://www.tandfonline.com/doi/abs/10.1271/bbb.58.2168

D5: Journal of Biotechnology, Mu et. al., 2010, Vol. 150, Suppl. 1, "Characterisation of a novel D-tagatose 3-epimerase from Clostridium scindens ATCC 35704", pp. S536-S537. Available from: https://www.sciencedirect.com/science/article/abs/pii/S0168165610017852

D6: Journal of Agricultural and Food Chemistry, Mu et. al., 2011, Vol. 59, "Cloning, expression, and characterization of a d-psicose 3-epimerase from Clostridium cellulolyticum H10", pp. 7785-7792. Available from: https://doi.org/10.1021/jf201356q

D7: Biotechnology Letters, Zhu et. al., 2012, Vol. 34, "Overexpression of D-psicose 3-epimerase from Ruminococcus sp. in Escherichia coli and its potential application in D-psicose production", pp. 1901-1906. Available from: https://doi.org/10.1007/s10529-012-0986-4

D8: Applied Microbiology & Biotechnology, Mu et. al., June 2012, Vol. 94, "Recent advances on applications and biotechnological production of d-psicose", pp. 1461-1467. Available from: https://pubmed.ncbi.nlm.nih.gov/22569636/

16 Both documents D1 and D2 disclose hypothetical sequences of enzymes that have been obtained by bio-informatic analysis of nucleic acid sequence databases. Both the sequences disclosed in these documents encode a hypothetical protein that has 100% identity with SEQ ID NO: 6 as disclosed in the application. The function of this protein is hypothetically identified as a tagatose epimerase, not a psicose 3-epimerase.

17 The applicants do not agree with this assessment and argue that the closest prior art is represented by D3 listed above, which discloses a peptide that has been identified as and shown in experiments to be a psicose 3-epimerase, but with a different sequence. The skilled person they argue, looking at the prior art with their common general knowledge at the time of filing of the application would not consider the sequences disclosed in either of D1 or D2 as being the starting point. Even though the sequences disclosed in these documents are identical to that of SEQ ID NO: 6, these peptides were not identified in the databases as having a psicose 3-epimerase function but a different enzymatic function. Rather their opinion is that the skilled person would start from an enzyme that had been identified as having the required function, and so the claimed invention is not obvious from this starting prior art as the known enzyme has a different sequence. The sequence identity between SEQ ID NO: 6 (and the proteins identified in either of D1 or D2) and the peptide disclosed in D3 is only 51%. Taking this as the starting point, they argue that the skilled person would not arrive at claimed invention with their common general knowledge. In coming to this assessment, they consider that the examiner is incorrect in considering the documents referred to above as being part of the common general knowledge of the skilled person and therefore neither of documents D1 and D2 represent the "closest prior art" from which the skilled person would be starting their work.

18 The applicants also submitted later filed evidence (Annexes C and E with their letter of 4 November 2020) from Dr Ayano Sakai, a principal scientist with Tate & Lyle Ingredients Americas LLC where evidence is presented regarding the psicose 3-epirermase activity of an enzyme having 96.5% sequence identity with SEQ ID NO: 6, and a phylogenetic analysis of SEQ ID NO: 6 compared to 16 other known tagatose 3-epimerases.

19 I will now consider whether independent claim 1 is inventive using the Windsurfing/ Pozzoli test. However, this will require me to determine who the skilled person is and what would be their common general knowledge, in particular whether the documents D5-D8 referred to above would form a part of that knowledge.

Step 1(a) and 1(b): identify the "person skilled in the art" and their relevant common general knowledge

20 Both the examiner and the applicants agree that the skilled person would be a molecular biologist working in the field of sweeteners, experienced in the manipulation of molecular sequences, and with common general knowledge of allulose and ketose 3-epimerases known to interconvert fructose and allulose. I see no reason to disagree with this.

21 In the pre-hearing report, the examiner sets out that documents D3-D8 and in particular D5-D8, represent the common general knowledge of the skilled person, but apart from having identified the skilled person as above the examiner does not explain why these documents would form part of the common general knowledge, other than that these documents all show there is not necessarily a high degree of sequence similarity between epimerases, even if they act on the same target sugar. The examiner contends that the skilled person would be aware of all of the enzymes and their sequence similarities as discussed in these four papers, the low level of sequence similarity (ranging from 29% to 58%) and that these are possibly capable of functioning as psicose 3-epimerases, so that even if primarily identified as tagatose 3-epimerases this would not present a technical prejudice to the skilled person in assessing the teaching of either of D1 or D2. They would not be deterred by the lack of similarity between the peptide of SEQ ID NO: 6 and other known psicose 3-epimerases, even if SEQ ID NO: 6 was previously identified as being a tagatose 3-epimerase. Further, the examiner considers that these documents also show that there is some ambiguity into how these enzymes are labelled, in respect of which ketose they may be able to act upon, which the skilled person would be aware of such that even enzymes labelled as D-tagatose 3-epimerases can convert D-fructose to D-psicose. The examiner also asserts that the skilled person would be aware of D4, which demonstrates that tagatose 3-epimerases as apparently disclosed in either of D1 or D2 have a useful industrial property in producing other sugars such as sorbose.

22 In their letter dated 4 November 2020 and at the hearing, Dr Arends and Ms Topham explained to me why they disagreed with the examiner's assessment of the common general knowledge of the skilled person. Ms Topham spent some time taking me through their arguments on this matter, in particular why they disagreed with the examiner's position as explained at paragraph 28 of the pre-hearing report that D3-D8 represented part of the common general knowledge, although they agreed about the skilled person and that their knowledge would include both allulose and ketose 3-

epiremases. Ms Topham brought to my attention specific case law in support of their argument on this point. In particular she asserted that the examiner had not provided any evidence of these documents being part of the common general knowledge, and also directed me as the most important points in their skeleton on this matter to the comments of Laddie J in *Raychem Corp's Patents [1998] RPC 31* that:

> *"This does not mean that everything on the shelf which is capable of being referred to without difficulty is common general knowledge"* (MOPP, 3.30)

23 Further Ms Topham also highlighted the statement by Luxmore J in *British Acoustic Films (53 RPC 221 at 250)* that:

> *'In my judgment it is not sufficient to prove common general knowledge that a particular disclosure is made in an article, or series of articles, in a scientific journal, no matter how wide the circulation of that journal may be, in the absence of any evidence that the disclosure is accepted generally by those who are engaged in the art to which the disclosure relates. A piece of particular knowledge as disclosed in a scientific paper does not become common general knowledge merely because it is widely read, and still less because it is widely circulated. Such a piece of knowledge only becomes general knowledge when it is generally known and accepted without question by the bulk of those who are engaged in the particular art; in other words, when it becomes part of their common stock of knowledge relating to the art*.' (MOPP3.33)

24 In the absence of any evidence from the examiner to substantiate this point and the above case law, Ms Topham argued these documents D5-D8 cannot be considered to be part of the common general knowledge as they are not generally known and so are not accepted by those working in the art to which the disclosure relates, merely because they are published papers.

25 At the hearing Dr Arends was asked whether their analysis of the common general knowledge took account of database searching being an acknowledged part of the routine ordinary search techniques as noted by **Sales** J **in *Teva***[i]. He responded with two main points regarding documents D5-D8 identified by the examiner. He argued that these documents might well have been found by the examiner in database searching, but there is a significant difference between what might have been found and references that form part of the common general knowledge. Otherwise he explained one is in danger of inadvertently mosaicking lots of references together, which is not the correct approach to inventive step and so it would not be correct to sweep them together into the common general knowledge. Secondly even if these were referred to, then as shown in Annex E of their submission, at best the position is not clear because not all tagatose 3-epimerase enzymes have the psicose 3-epimerase activity, and so they are not necessarily direct substitutes for each other. In discussion on this point, whilst recognising that this was not a part of UK patent law, he also referred to the examination guidelines of the European Patent Office that common general knowledge was that *found in a text book*.

26 As has been agreed by both the examiner and the applicants, the skilled person would have knowledge of allulose and ketose 3-epimerases known to interconvert

fructose and allulose. As such I consider that they would be well aware, as the examiner has suggested in the pre-hearing report at paragraph 28, that there is a lack of sequence similarity between many of the known epimerases and their capability to produce allulose and function as an psicose 3-epimerase, and that not all enzymes with this function have been correctly identified in the prior art. However having now reflected on the applicants submissions on this point, I do not consider it correct that the academic papers D5-D8 and the detailed information in each of them concerning all the enzymes and their sequence similarities would be part of the common general knowledge as asserted by the examiner. I cannot see from the evidence that the examiner has presented that the skilled person would be aware of the teaching of each documents, in particular all the enzymes and their sequence similarities and be able to draw any firm conclusions from these disclosures. I believe it would not be the case that, as held by **Luxmore J** and as referenced above by Ms Topham, this level of detailed knowledge would be "… *generally known and accepted without question by the bulk of those who are engaged in the particular art;"* . I believe the confirmation that these disparate documents, although all concerning epimerase enzymes, extends beyond the limit of the common general knowledge is further supported by the evidence presented in Annex E that no consistent picture or trait can be identified as demonstrated by the phylogenetic analysis of known epimerases, their function and the degree of sequence similarity. From this it is apparent there is no particular consistent association of any degree of sequence similarity and the specific epimerase function. There is thus no clear suggestion that the skilled person would be aware of the teaching of all four of these documents, D5-D8.

27 To this extent I believe this is further emphasised when considering the passage by the examiner at paragraph 28 of the pre-hearing report where he quotes from D7, Zhu et al. When discussing a hypothetical protein from Ruminococcus sp. identified in the databases in comparison with other known psicose 3-epimerases, it is only suggested that this protein with 50 % sequence identity *"..may be a potential DPE [DPEase] that can convert D-fructose to D-psicose."* The teaching from this document is thus not so clear and established to demonstrate to me that this would conclusively form part of the wider common general knowledge of the skilled person, over and above a general understanding of ketose epimerases may have a varying degree of different target sugar specificity and thus function.

28 Consequently, after careful consideration I agree with the arguments presented by the Dr Arends and Ms Topham that the skilled person, whilst having a general knowledge and understanding of ketose epimerases, they would not be readily aware of the teaching of each of the documents D3-D8 identified by the examiner and in particular all the enzymes and their sequence similarities. However, I would not go as far as accepting the suggestion such knowledge is only to be found in a text book. Consequently, the skilled person may well be aware that epimerases are diverse and do not necessarily display great sequence similarity, but there is not a clear and consistent teaching that can be drawn from these disclosures such that it would form part of the common general knowledge over and above these broad assumptions about these enzymes.

Step 2: Identify the inventive concept of the claim in question or if that cannot be readily done, construe it

29 There is agreement between the examiner and the applicants that the inventive concept relates to a protein that has at least 90% sequence identity, but is not identical to SEQ ID NO: 6 and that has psicose 3-epimerase activity, as set out in claim 1. The applicants in their submissions further emphasise that this enzyme has greater activity when compared with previously known psicose 3-epimerases, as disclosed in Fig. 6 of the application, but not necessarily an increased activity when compared to the original protein sequence. I agree with this assessment of the inventive concept.

Step 3: Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed

30 At the hearing, Dr Arends spent time discussing how the prior art was to be understood in the light of having establishing the nature of the skilled person and their common general knowledge as discussed above. In particular he contended this was fundamental to the assessment of inventive step in the light of what the applicants consider to be the closest prior art, contrary to the assessment of the examiner in this respect.

31 The examiner identified both documents D1 and D2, which disclose a hypothetical protein that has the same sequence as that of SEQ ID NO: 6 although functionally these are assigned to be tagatose 3-epimerases, as the starting point for assessing inventive step, with the skilled person considering these to be the state of the art. The difference between the sequences found in these documents and the claimed invention is that the sequence of the claimed invention has been mutated within the parameters set out in the claim. I would further note that the claim also requires that the modified enzyme has the piscose 3-epimerase catalytic function.

32 Dr Arends contends that starting from D3, the difference between the sequence disclosed in this document is that this known psicose 3-epimerase enzyme has only 51% sequence identity compared to the sequence of the claimed protein, which is identified as a tagatose 3-epimerase in the databases. Furthermore, this claimed peptide has a technical effect, an improved psicose 3-epimerase activity compared to known psicose 3-epimerases, as shown in Figure 6 of the application.

33 As I have set out above I agree with the applicants' assessment of the relevant common general knowledge of the skilled person. In the light of this, I therefore agree with the applicants that the skilled person would consider D3, which relates to a peptide that has been identified as having the desired psicose 3-epimerase activity, to represent the "state of the art" rather than either of documents D1 or D2, which identified as hypothetical tagatose 3-epimerases, as suggested by the examiner.

Step 4: Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?

34 In the pre-hearing report the examiner considers that there was a lack of inventive step in light of either D1 or D2 because the skilled person would apply routine and established molecular biology methods to the sequences disclosed in either of these

documents to produce the claimed mutated sequences without any inventive skill. Based on the common general knowledge the examiner had suggested was found in documents D5-D8, the lack of any sequence similarity or the desired function being assigned to the peptides identified in either of D1 or D2 does not necessarily mean the sequences in question are not piscose epimerases and so would not represent a deterrent to them starting with this art. Modifying these sequences within the limits of the claims would be within the technical ability of the skilled person without requiring any inventive ingenuity, whilst retaining the desired activity.

35 The examiner also argued in the pre-hearing report that in light of the emphasis being placed by the attorney of an improved performance of the modified sequences, these modified sequences could be considered to be a selection invention. Consequently the later filed evidence previously filed in prosecution of the application and as presented in Annex C of the applicants' skeleton argument of 4 November 2020, did not provide support for the invention having a technical effect, because it was not disclosed in the application as filed. The examiner further made the assertion (at paragraph 26 of the pre-hearing report) that it would be reasonable for the skilled person to consider both D1 and D2 as the closest prior art when bearing in mind both what is stated in MOPP at para 3.37.1 that "*Any disclosure falling within the s.2(2) field may be used as the starting-point for an inventive step objection*." and that "…, *as made clear at paragraphs 27-29 of Actavis UK Ltd v Novartis AG [2010] EWCA Civ 82 I am not obliged to consider only a single piece of "closest prior art" in the Windsurfing/Pozzoli approach*."

36 In contrast Dr Arends argued that starting from the sequence disclosed in D3 it would not have been obvious to reach the claimed invention. Nor, he submitted, was there anything in D3 that would motivate the skilled person to look for a protein with an improved activity, nor how to actually improve the activity of the protein disclosed therein. The difference in the sequence of this protein is such, at 51% compared to the sequences disclosed in either D1 or D2, that the skilled person would not be able to start from this sequence and arrive at the claimed protein, without exercising some inventiveness, especially given that no common function had been identified.

37 Even if the skilled person was to refer to either of D1 or D2, Dr Arends further argued that whilst these documents may form an "accidental anticipation" of the sequence of SEQ ID NO: 6, D3 still represented a "fair starting point" for the consideration of inventive step. In particular, when considering the points raised by the examiner at paragraph 26 of the pre-hearing report that any disclosure may be used as the starting point he observed that whilst this may be the case, the relevance of the prior art should be considered through the eyes of the skilled person. Thus, when looking at the disclosures in either D1 or D2 they would observe that these disclosed hypothetical tagatose 3-epimerases not psicose 3-epimerases, and so do not have the desired function. Further, even if they then tested the activity of these enzymes then they would find that these are not even tagatose 3-epimerases (as they have been incorrectly identified in the databases) and so still discard them on this basis. Therefore, contrary to the assertion by the examiner, these documents would not form "closest prior art" because there are clear reasons why the skilled person would not find them to be more relevant than D3.

~~38~~ Dr Arends further contested whether the examiner was correct that the invention was in fact a selection invention. The claimed invention is directed to modified and

different variants of the initial starting sequence, and so in fact is broader in scope than the initial starting point of a single defined sequence. In contrast a selection invention is directed to a selected and narrower subset of a broader starting point. Further, he explained that the invention was directed to a psicose 3-epimerase that had improved activity compared to known psicose 3-epimerase, as demonstrated at Figure 6 of the application. It was not claiming enzymes that had improved activity compared to the starting point SEQ ID NO: 6, and so the late filed evidence (although in fact demonstrating that the variant of SEQ ID NO: 6 tested did have a greater activity than the original wild type form) was not demonstrating a technical effect that was not rendered plausible by the patent specification as originally filed. This further rendered the examiner's assertion that the invention was a selection invention mistaken.

Summary

39 As I have set out above whilst I agree with both the examiner and the applicants about the definition of the skilled person, I do not consider that the documents D3-D8 form a part of their common general knowledge as asserted by the Examiner. In light of this I do not consider that either of documents D1 or D2 as identified by the examiner would form the closest prior art from which the skilled person would start. I am persuaded by the arguments presented by Dr Arends that the skilled person would consider that D3 represents the closest prior art, as it discloses a known peptide sequence that has demonstrated psicose 3-epimerase activity unlike either of documents D1 or D2.

40 Therefore, when viewed without any knowledge of the alleged invention as claimed and starting from this prior art, I conclude the skilled person would require an inventive step in order to arrive at the claimed invention. The sequence disclosed in document D3, although a psicose 3-epimerase, has no more that 51% homology with the sequence of the claimed invention. Whilst the common general knowledge of this skilled person would include knowledge of ketose epimerases it would not be such that the skilled person would consider either of documents D1 or D2 as being the closest prior art, nor necessarily the motivation to investigate whether these particular sequences also have psicose 3-epimerase activity in addition to the hypothetical tagatose 3-epimerase activity assigned to them. D3 only provides information concerning the protein it discloses and does not provide teaching about any other proteins, including those that would have an improved activity over this protein. Modifying the sequence of D3 to such a large degree to arrive at the claimed invention would in my view therefore require an inventive step and would not be obvious to the skilled person, nor would the skilled person have the motivation to do so. I am therefore persuaded by the arguments presented on behalf of the applicants at this hearing that the application is inventive and should be granted.

Conclusion

41 I find the invention set out in the claims 1-9 as filed on 14 August 2020 involves an inventive step according to section 1(1)(b) and therefore complies with section 18(3). As this was the only issue in front of me, I remit the application back to the examiner to complete the examination process and granting of the application.

Appeal

42 Any appeal must be lodged within 28 days after the date of this decision.

Dr C L Davies
Deputy Director, acting for the Comptroller

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[i] *Teva UK Limited & Anor v AstraZeneca AB* [2014] EWHC 2873 (Pat)