Neutral Citation Number: [2019] EWHC 63 (Pat)

Case No: HP-2017-000018

IN THE HIGH COURT OF JUSTICE
BUSINESS AND PROPERTY COURTS OF ENGLAND AND WALES
INTELLECTUAL PROPERTY LIST (Ch D)
PATENTS COURT

Royal Courts of Justice, Rolls Building
Fetter Lane, London, EC4A 1NL

Date: 18/01/2019

Before :

HIS HONOUR JUDGE HACON
(Sitting as a Deputy High Court Judge)

- -

Between :

REGEN LAB SA	**Claimant**
- and -	
(1) ESTAR MEDICAL LIMITED	
(2) ESTAR TECHNOLOGIES LIMITED	
(3) MEDIRA LIMITED	
(4) LAVENDER MEDICAL LIMITED	
(5) ANTOINE TURZI	**Defendants**

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- -

At trial: **Andrew Lykiardopoulos QC**, **Michael Conway** and **Tim Bamford** (solicitor advocate) (instructed by **Collyer Bristow LLP**) for the **Claimant**
Richard Davis and **David Sant** (solicitor advocate) (instructed by **Pearl Cohen Zedek Latzer Baratz UK LLP**) for the **Second to Fourth Defendants**

On 11 January 2019: **Andrew Lykiardopoulos QC** and **Tim Bamford** (solicitor advocate) (instructed by **Collyer Bristow LLP**) for the **Claimant**
Piers Acland QC and **Adam Gamsa** (instructed by **Cameron McKenna Nabarro Olswang LLP**) for the **Second to Fourth Defendants**.

Hearing dates: 19-22, 25, 27-28 June 2018 and 11 January 2019

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Approved Judgment

I direct that pursuant to CPR PD 39A para 6.1 no official shorthand note shall be taken of this Judgment and that copies of this version as handed down may be treated as authentic.

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HIS HONOUR JUDGE HACON

Judge Hacon :

Introduction

1. The Claimant ('Regen', pronounced as are the first two syllables of regenerate) is the proprietor of European Patent (UK) 2 073 862 ('the Patent'). The Patent claims a method for the preparation of blood plasma enriched in platelets and other factors, known as platelet rich plasma, or PRP.

2. The First Defendant is not a legal entity and can be ignored. At the start of the action the Fifth Defendant ('Mr Turzi') was the owner of the Patent; Regen was his exclusive licensee. Mr Turzi was joined as a defendant only for that reason, although as CEO of Regen he gave evidence in support of his company.

3. The Second Defendant is a private company registered in Israel. It makes regenerative biomaterials. The Third and Fourth Defendants are private companies registered in the United Kingdom. Hereafter 'the Defendants' should be taken to mean the Second, Third and Fourth Defendants.

4. Regen alleges that the Defendants supply kits in the United Kingdom subsequently used to prepare PRP according to the method claimed in the Patent, infringing the Patent pursuant to sections 60(1)(b) and (2) of the Patents Act 1977.

5. The Defendants counterclaim for revocation of the Patent on the grounds of lack of novelty, lack of inventive step and insufficiency.

6. Regen has made a conditional application to amend claim 1 of the Patent. The amendment is opposed.

7. At the trial Andrew Lykiardopoulos QC, Timothy Bamford (solicitor advocate) and Michael Conway appeared for Regen, Richard Davis and David Sant (solicitor advocate) for the Defendants.

Technical background

8. Platelets are small unnucleated cells contained in blood plasma, responsible for blood clotting and tissue repair. PRP is plasma in which the platelet count is higher than would be found in the plasma of untreated blood. It is used by clinicians to promote the healing of wounds. There are also non-clinical diagnostic uses of PRP.

9. Where destined for clinical use, the PRP is prepared from the patient's own blood and is referred to as 'autologous PRP'. The platelet content of the patient's plasma is enriched by exploiting the different densities of blood components. Red blood cells (erythrocytes) are the densest, plasma the least dense, with the white blood cells (leucocytes) and platelets being of middling density. If blood is centrifuged, red cells will move to the bottom of the tube, plasma to the top and in the centre will be what is known as the 'buffy-coat' or 'buffy layer' (after its buff colour) containing the leucocytes and platelets.

10. Machines for making PRP date from the 1960s. At the priority date various centrifugation techniques were known to separate the platelet fraction to obtain PRP. It was also known that before the blood was centrifuged it had to be treated with an anti-coagulant to prevent clotting. When the PRP is subsequently applied to the patient for wound healing or tissue regeneration the effect of the anti-coagulant is counteracted by an activator.

11. For some decades before the priority date PRP had another application, *in vitro* diagnostics ('IVD'), checking or screening for conditions associated with blood. IVD was recognised to be a distinct field, self-evidently because its purpose was different but also because reagents that might harm a patient and/or the blood cells could be freely used *in vitro*.

The invention in outline

12. The method claimed in the Patent employs a thixotropic gel. The relevant characteristic of such a gel is that when it is centrifuged it changes phase from solid to semi-liquid. The change means that the gel will migrate in the centrifuge tube to a position consonant with its density relative to the rest of the contents of the tube. At the end of the spin the gel re-solidifies and remains in position.

13. The patented method involves taking blood from a patient and transferring it to a tube containing a thixotropic gel and an anticoagulant. The blood and gel are centrifuged at a slow rate (there is a specified maximum). The gel is selected to have a density such that during the spin it moves to position above the denser red cells and below the less dense buffy layer. The plasma moves to the top of the tube, above the buffy layer. When centrifugation is complete the gel re-solidifies, forming a barrier isolating the buffy layer and plasma from the red cells. About half the plasma is removed from the top and discarded. The remainder of the plasma and the buffy layer are harvested. The platelets and other contents of the buffy layer are then resuspended in the plasma to give the PRP.

The witnesses

The experts

14. Each side provided expert reports from a clinician and a polymer chemist. Regen's clinician was Dr Robert Marx. He is Professor of Surgery and Chief of the Division of Oral and Maxillofacial Surgery at the University of Miami Miller School of Medicine. Dr Marx has been interested in developing devices for preparing PRP since 1992. Dr Marx has published several papers on the use of PRP, mostly for maxillofacial surgery and implant dentistry. In 2005 he published a book entitled 'Dental and Craniofacial

Applications of Platelet-Rich Plasma'. Since 1997 Dr Marx has worked with Harvest Technologies, manufacturers of medical devices including, from 1999, devices for making PRP. Dr Marx was a very good witness.

15. Dr Pawel Stepniak is polymer chemist who provided an expert report for Regen. He is a researcher at the Institute of Organic Chemistry, Polish Academy of Sciences in Warsaw. Dr Stepniak co-manages a research group of around 15 organic chemists and specialises in supramolecular chemistry (large structures of bound molecules). Dr Stepniak, who is Polish, had good English but occasionally struggled to find the correct words. Sometimes Dr Stepniak seemed less than rigorous in providing support for his propositions and this may have been part of the reason.

16. Dr Sean O'Connell, who gave evidence for the Defendants, is Assistant Professor in the Department of Vascular Surgery at Englewood Hospital and Medical Center, Mount Sinai School of Medicine, New York. His experience is in regenerative medicine, immunology, cell biology and tissue repair. Among Dr O'Connell's commercial advisor posts, from 2003 to 2014 he served as Chief Medical Officer at Cascade Medical Enterprises LLC, makers of 'Fibrinet', a device for preparing PRP. Dr O'Connell was an impressive witness.

17. Dr Stephen Daren also provided expert evidence on behalf of the Defendants. In 1998 Dr Daren founded Daren Labs, a consultancy based in Israel which supplies research and development services in the field of polymer chemistry. He was a careful and helpful witness.

The witnesses of fact

18. Mr Turzi was Regen's sole witness of fact. Mr Lykiardopoulos described Mr Turzi as a larger than life character. That he is. In the witness box he frequently took the chance to criticise the Defendants for one reason or another.

19. Mr Davis identified several occasions on which, he said, Mr Turzi had before the trial obstructed the emergence of relevant documents and other evidence. It is not necessary for me to go through each of these and I make no findings. However, it was my impression that Mr Turzi's first concern was to do all he could to advance Regen's case and that he made concessions in cross-examination only when he felt that he had no other credible choice.

20. The Defendants relied on four witnesses in support of their case on prior use: Jon Knight, Kama Levi, Morkel Otto and Arata Yamasaki. Mr Yamasaki's evidence was served under a Civil Evidence Act Notice. Ms Levi's evidence was not challenged. I found Mr Knight and Mr Otto to be honest witnesses.

21. There was also cross-examination of Aaron Esteron who did not provide a witness statement but had signed Regen's product and process description. Mr Esteron was a good witness.

The Patent

22. The Patent has a priority date of 21 August 2006.

23. The specification begins by setting out the background to the invention and the prior art, identifying known means of making PRP. It goes on to explain the invention. The section providing a detailed description of the invention gives a definition of PRP as used in the Patent:

> "[0053] By the expression 'PRP' is intended to mean a platelet-rich plasma, preferably of human origin, more preferably autologous, prepared by the process of the invention in order to pellet and remove erythrocytes and concentrate the plasma in leucocytes, thrombocytes and adhesion proteins as compared to native whole blood."

24. The PRP of the Patent thus contains higher concentrations of leucocytes and adhesion proteins as well as platelets ('thrombocyte' is another term for platelet). Adhesion proteins are found in blood plasma on the surface of cells. They are involved in the binding of cells to each other and play an important role in tissue regeneration.

The claims

25. Claim 1 is as follows:

> "*A process for the preparation of a cell composition, comprising the steps of:*
>
> *(a) Centrifuging whole blood in a separator tube selected from:*
>
> *- a glass separator tube containing a polyester-based thixotropic gel and a buffered sodium citrate solution at 0.10M;*
>
> *and*
>
> *- a polyethylene terephthalate separator tube containing a highly thixotropic gel formed by a polymer mixture and an anhydrous sodium citrate at 3.5mg/mL;*
>
> *(b) Separating enriched platelet rich plasma from full plasma by removing about half of the supernatant containing platelet poor plasma;*
>
> *(c) Re-suspending the enriched plasma;*
>
> *wherein the centrifugation step a) is performed at a force of about 1500g up to about 2000g in a sufficient length of time to form a barrier between plasma containing platelets, lymphocytes and monocytes and a pellet containing erythrocytes; the separation step b) is made by collecting the supernatant from atop of said barrier and wherein the enriched plasma is enriched in leucocytes, thrombocytes and adhesion proteins as compared to native whole blood.*"

26. Lymphocytes and monocytes are types of leucocyte, i.e. they are white blood cells.

Whether claim 1 has a use limitation

27. The central plank in Regen's argument was that although the method claimed was known in the context of making PRP for IVD, it was not known for making PRP intended for therapeutic use such as wound healing or tissue regeneration. Regen relied

on what it says was the failure over many years of those skilled in the art of making PRP for therapeutic use to recognise that the method for making PRP as used in the IVD kits could be transferred to the kits in their field. Regen put it this way in the first paragraph of counsel's written closing submissions:

> "These IVD kits had been under everyone's noses for years; yet the [manufacturers of kits to make PRP for wound healing] kept producing complex and expensive kits. The simplicity of and ability to use the IVD kits was missed."

28. This key argument was available only if claim 1 is construed to be limited by use, i.e. it is a claim to a method for making PRP solely for therapeutic use. Mr Lykiardopoulos argued that that claim 1 was so limited. This was for two reasons. First, because the problem identified in the Patent was to find a better way to make PRP for therapeutic use. Secondly, step (b) in claim 1 is consistent only with making PRP for therapeutic use.

29. I disagree. There is nothing in step (b) or elsewhere in the claim which imposes any sort of limitation regarding the use of the PRP made by the patented method. The description certainly emphasises the advantage of the invention being improved suitability for extemporaneous use (see, for example, paragraphs [0001], [0013] and [0016]). Paragraph [0060] states:

> "[0060] The compositions obtained via the method according to the invention are *particularly* useful in wound or tissue healing or regeneration treatments, especially the treatment of traumatic or surgical wounds …" (my emphasis)

30. That paragraph implies that the PRP made by the process may be used for purposes other than therapeutic use. The rest of the specification goes on to list many examples of applications for the PRP made according to the invention, all of them so far as I can tell therapeutic uses. However, Mr Lykiardopoulos did not draw my attention to any part of the specification that would lead the reader to understand the method of claim 1 includes the limitation that the PRP created by the process is used solely for therapeutic purposes.

31. In my view, the reader would not understand claim 1 as granted to contain such a limitation.

Claim 1 as proposed to be amended

32. Regen barely sought to defend claim 1 if it did not contain that implied limitation, which was an approach consistent with its headline argument, mentioned above. When one of Regen's experts addressed one of the pleaded items of prior art, he only sought to defend the novelty of claim 1 as proposed to be amended. By implication he found claim 1 as granted, if construed without a use limitation, indefensible.

33. Regen's application to amend claim 1 was a bid to make express the use limitation which it sought to imply into the claim. The proposed amendment would add additional words to the beginning of the claim:

> "*A process for the preparation of a cell composition, <u>for wound or tissue healing or regeneration treatments</u>, comprising the steps of: …"*

34. The proposed amended claim raises a point of construction: whether 'for' in the proposed added words means 'suitable for'. In their closing submissions both counsel said that it did. I agree. But Mr Lykiardopoulos did not go on to point to any evidence indicating that a cell composition suitable for therapeutic use would be unsuitable for IVD. I have no reason to believe that this is the case. The proposed amendment therefore fails in its objective to limit the claim to a process for making PRP for therapeutic use only.

35. That said, Mr Davis described the point as moot. This was because, as both sides agreed, claims 3 and 4, and therefore claim 5 as dependent on 3 or 4, were claims in which, by necessary implication, the PRP made by the process was for therapeutic use only. Or as Mr Lykiardopoulos put it, Regen could always fall back on those claims. Claim 3 is:

> "*3. A process according to claim 1 or claim 2, further comprising the steps of: (d) Providing a cell extract where cells are selected from dermal cells, keratinocytes, fibroblasts, melanocytes, Langherans cells, fat cells, bone marrow cells, muscle cells, osteoblasts, chondrocytes, periosteal membrane cells, corneal cells, umbilical cord cells, Schwann cells, tendon cells, pancreas islet cells, adipocytes, adipose stem cells, corneal limbal stem cells, corneal keratinocytes, satellite stem cells, myoblast progenitor stem cells, stem cells, cartilage cells, ligament cells and gingival cells; (e) Admixing the platelet concentrate obtained under step (c) with the cell extract obtained in (d).*"

36. Given the foregoing, the first potentially valid claim of the Patent is claim 3. Virtually no argument was directed to it. So for ease of discussion I will consider the parties' arguments by reference to claim 1 as if it contained the limitation proposed by Regen. Having made findings on that false but convenient assumption, I will return to claims 3, 4 and 5 and discuss the consequences so far as those claims are concerned.

37. Unless I expressly state otherwise, 'claim 1' will mean that claim construed to include the use limitation. The 'claim 1 method' will mean the process according to such a claim.

The skilled team

38. It was common ground that the skilled team would consist of a clinician, a bioengineer and a blood scientist, each of them working in the field of kits for making PRP destined for therapeutic use ('therapeutic kits').

39. The experts agreed that the members of the team would not be the same as those in a team interested in making and/or using kits used to make PRP for IVD ('IVD kits'). The common general knowledge of the two teams would therefore have differed. Most relevantly, because IVD kits used thixotropic gels the common general knowledge about thixotropic gels in the minds of those who made and/or used IVD kits was greater at the priority date. It would have included detailed knowledge of how such gels could in practice be employed to separate blood fractions.

40. Dr O'Connell said that the introduction of a therapeutic kit referred to as the 'Cascade' kit led to a cross-fertilization between the two sets of skilled teams and that this happened well before August 2006. Dr O'Connell's point potentially made a difference to the common general knowledge of the team, but not to the identity of its members.

41. Mr Lykiardopoulos submitted that the present proceedings provided an instance in which the skilled team for inventive step was not the same as the skilled team for insufficiency. For inventive step the skilled team would be drawn from the field of therapeutic kits. In order to perform the invention, however, the skilled team had to include a person with sufficiently detailed knowledge about thixotropic gels. This would be the skilled team for assessing the allegation of insufficiency.

42. In *Schlumberger Holdings Ltd v Electromagnetic Geoservices AS* [2010] EWCA Civ 819; [2010] RPC 33, at [30]-[70], Jacob LJ considered the circumstance in which the invention lies in the application to Field A of a technique known to a skilled person from Field B – here assuming that the two fields are not so close that there is bound to be a cross-fertilization of ideas. In such circumstances, before the invention and therefore for the purpose of considering inventive step, the person skilled in the art must be taken to have come from Field A. However, when it comes to performing the invention explained by the patent, routine expertise in techniques used in Field B may be required. So when considering insufficiency, someone from Field B is included as part of a skilled team in the art. Because of the nature of the invention, the 'art' is changed by the disclosure contained in the patent, leading to a corresponding change in the skilled team.

43. Although I am not sure how much more the skilled team would need to know about thixotropic gels in order to perform the invention, I agree with Mr Lykiardopoulos that in principle, anyway, the skilled team would vary as he suggested. Jacob LJ's reasoning in *Schlumberger* also supports the possibility of invention by importing an idea known in one field into another field where it is unknown. He said this:

> "[65] In the case of obviousness in view of the state of the art, a key question is generally 'what problem was the patentee trying to solve?' That leads one in turn to consider the art in which the problem in fact lay. It is the notional team in that art which is the relevant team making up the person skilled in the art. If it would be obvious to that team to bring in different expertise, then the invention will nonetheless be obvious. Likewise if the possessor of the 'extra expertise' would himself know of the other team's problem. But if it would not be obvious to either of the notional persons or teams alone and not obvious to either sort of team to bring in the other, then the invention cannot fairly be said to be obvious. As it was put in argument before us the possessors of the different skills need to be in the same room and the team with the problem must have some reason for telling the team who could solve it what the problem is."

Common general knowledge

The law

44. The only point of law which emerged regarding common general knowledge was a territorial one. In *Generics (UK) Ltd v Warner-Lambert Company LLC* [2015] EWHC 2548 (Pat); [2016] RPC 3 Arnold J held (at [123]-[124]) that the matter in question

must be shown to have been common general knowledge in the UK. He referred to *Teva UK Ltd v Merck & Co Inc* [2009] EWHC 2952 (Pat); [2010] FSR 17 in which Floyd J observed:

> "[103] … It would seem to me to be an odd result if a patent for the United Kingdom could survive if it was obvious in the light of the common general knowledge in this country. A more difficult question may arise if a fact is only common general knowledge abroad. But that does not arise here."

45. Of course, common general knowledge in this country can and frequently will be acquired from knowledge that first emerged elsewhere; Arnold J's point was that sufficient dissemination into the UK is required. Mr Davis challenged Arnold J's ruling, arguing that it was wrong, although not with detailed submissions.

46. Section 2(2) of the Patents Act 1977 ('the 1977 Act') must be taken into account. It provides:

> "*(2) 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 the 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.*"

47. The state of the art consists of items of information. The skilled person does not consider them with a blank mind. He or she applies to them his or her collective common general knowledge and understands the information accordingly.

48. The various aspects of the common general knowledge will be entirely contained within the state of the art. An item of information forming part of the state of the art may be sufficiently familiar to the skilled person (by which I include sufficient familiarity with the existence of an item of information which can be routinely consulted) such that it attains the status of being part of his or her common general knowledge. It follows that although the state of the art consists of information made available anywhere in the world, the common general knowledge could vary from place to place, even among the Contracting States of the European Patent Convention, if one starts with the premise that the relevant common general knowledge is that of the skilled person in a particular State. The point is that there is no necessary inconsistency between s.2(2) and a territorial view of common general knowledge.

49. Such a territorial view implies that a European Patent could be vulnerable to revocation in one Contracting State but not in another solely because of different common general knowledge among persons skilled in the art across Europe. It also implies that the common general knowledge contemplated by the Examining and Opposition Divisions of the EPO is in principle different to the common general knowledge of the skilled person in each Contracting State. I am not aware of any discussion of the topic by the tribunals of the EPO and I need not speculate about what the EPO's perspective may be. Whatever it is, the attributes of the skilled person in national proceedings, including territorial issues, are left to be determined by national courts. It would be desirable for the courts of the Contracting States to adopt a similar approach, but I have not seen any observations on this from outside England.

50. I will assume that the common general knowledge which matters is that held by a hypothetical skilled team working in the UK although like Arnold J in *Generics* I will take the precaution of considering the common general knowledge in relevant territories outside the UK.

Kits used to make PRP

51. Part of the background to this case was the common general knowledge of devices used to make PRP which were available at the priority date.

52. Dr O'Connell divided the development of therapeutic kits into generations, several manufacturers making devices of each generation. The first, what he called 'Gen 1', were developed in the 1960s. They were bulky, located in the operating room and required highly trained staff. Large volumes of blood were introduced with the fractions being separated by differential centrifugation. As the blood was spun, fractions were removed in order of specific gravity. The devices imposed harsh treatment on the blood components.

53. 'Gen 2' systems were developed in the late 1970s and early 1980s. Dr O'Connell described these as being significantly smaller than Gen 1 units, but still large. Some were table-top models, others on wheeled carts. At least some were mobile enough to be used outside the operation room, at the point of care. They did not require highly trained technicians to operate them. Like the Gen 1 systems they used centrifugation to isolate different parts of the blood by a continuous fractionation process.

54. 'Gen 3' systems use a thixotropic gel. Their main advantage in Dr O'Connell's view was that there is no need for continuous fractionation. Blood and gel are spun, separating out the blood fractions. By selecting an appropriate gel, when the centrifugation stops the gel provides a physical barrier isolating the fraction required and making it more easily available. According to Dr O'Connell the advantages over the earlier systems were considerable. Less blood was required, processing times were shorter, the systems could be used by staff who were not highly trained, and costs were lower.

55. These categorisations were apparently Dr O'Connell's own. Dr Marx did not recognise them and said that he had never heard of anyone else using such a categorisation. Dr Marx also had reservations and qualifications about how Dr O'Connell described Gens 1 to 3. The main criticism was that in Dr Marx's view the majority of Gen 2 devices used a two-step centrifugation. The first separated off the red blood cells and the second further concentrated the platelets, white blood cells and plasma.

56. Despite criticisms, the three stages in the development of therapeutic kits clearly provided some sort of convenient structure to the history of PRP kits and both counsel referred to Gens 1 to 3 during argument.

The Cascade kit

57. Gen 3 kits as defined by Dr O'Connell were mostly developed after August 2006. The only Gen 3 kit alleged to be common general knowledge in August 2006 was the Cascade kit to which I referred earlier. This was a therapeutic kit made by Cascade Medical Enterprises LLC ('Cascade'), a company based in New Jersey. The kit's full

name is the Fibrinet Autologous System for Rapid Tissue Growth. Dr O'Connell was Chief Medical Officer at Cascade from 2003 to 2014 and so well placed to talk about the Cascade kit.

58. The Cascade kit was developed between 2000 and 2012. Cascade filed a patent application to protect the technology, a US application which was published on 14 November 2002. The system consisted of a sterile evacuated tube containing thixotropic gel with a buffered sodium citrate anticoagulant and a second tube containing calcium chloride coagulation activator and a sterile plasma transfer device. The gel was selected and the kit designed to extract the platelet rich portion of blood plasma. Blood was introduced into the first tube and centrifuged. PRP thus obtained was transferred to the second tube. The calcified PRP was ready for injection into the patient's tissue. Alternatively, the second tube could be subjected to a second centrifugation, during which the fibrinogen in the plasma was converted to fibrin and began to cross-link to produce a platelet-rich fibrin matrix.

59. As Regen was keen to emphasise, the defendants did not regard either the Cascade kit itself or Cascade's US application as disclosing sufficient information such as to be useful as cited prior art. The significance attached to the Cascade kit centred on whether it and more particularly the way it worked were common general knowledge in August 2006. If so, the idea of using a thixotropic gel in a therapeutic kit formed part of the skilled team's common general knowledge.

60. In his report Dr O'Connell said that the Cascade kit was promoted and marketed from May 2004. In his estimation the kit itself and its operation would have been common general knowledge by mid-2005. However, in cross-examination Dr O'Connell accepted that in August 2006 those skilled in the art in Northern Europe, including the UK, would not have known about the Cascade Kit. Dr O'Connell had apparently searched for papers published before August 2006 which referred to the Cascade kit. He found one, published in June 2006, a paper which neither expert had come across before these proceedings and which reported poor data for the Cascade kit.

61. Dr Marx said that he had never heard of the Cascade kit before these proceedings.

62. For reasons explained above, I am assuming that the only relevant common general knowledge is that existing in the United Kingdom in August 2006. But in case that is wrong I will also consider the common general knowledge outside this country.

63. The evidence provided no support for the idea that the Cascade kit, or therefore an awareness of how it worked, formed part of the common general knowledge in the UK.

64. It is harder to reach a conclusion about the position outside the UK. There was evidence of a greater awareness in the United States and in Italy. Both experts are and were in August 2006 based in the United States yet held opposite views on this. Dr O'Connell was employed by Cascade in 2006 and he was part of the team promoting its kit. The Cascade kit was a large part of his world and inevitably there may be a tendency for him to overestimate its significance to others at the time. Dr Marx's unawareness of the Cascade kit did not necessarily reflect that of the skilled team in August 2006 either.

65. The value of sales of Cascade's kits in the United States was $800,000 in 2005 and $680,000 in the first three months of 2006. I have no doubt that Cascade was active in

promoting the kit and I was shown promotional material. Missing from the evidence were textbooks or the sort of widely read review article that would have supported the idea that the Cascade kit had become part of the everyday knowledge of the skilled team in the United States. Neither was there evidence of an equivalent textbook or article published in Italy by August 2006. There was not even evidence of the quantity of sales in Italy.

66. I find that the Cascade kit was not part of the common general knowledge of the skilled team in either the United States or in Italy.

The Regen Kit

67. There was some suggestion by Mr Davis that the Regen kit was common general knowledge by August 2006. I am not sure which Regen kit was meant, but there was no evidential support for any Regen kit being common general knowledge anywhere.

Thixotropic gels

68. Dr Marx accepted that the blood scientist in the team would have known at the priority date of the existence of thixotropic gels and that they had been used for the separation of blood fractions in IVD kits. This implies knowledge of how a thixotropic gel functions. I take this to have been the case for the skilled team in the UK and elsewhere in August 2006. I find that the common general knowledge of the relevant skilled team regarding thixotropic gels would have extended no further.

The number of spins used in CGK systems

69. Dr O'Connell said that the therapeutic kits which formed part of the common general knowledge in August 2006 used two centrifugal spins of the blood to obtain PRP, with the exception of one, referred to as 'GPS II'. He also said that GPS II used a lot of blood and was harsh, tending to cause haemolysis.

70. Dr Marx's evidence was that it would have been part of the common general knowledge that two spins produced consistently better results, but one spin achieved satisfactory results. Dr O'Connell accepted that there were Gen 2 single-spin machines, by which he presumably meant the GPS II although this was not made explicit. In his opinion they were incapable of separating and concentrating platelets to a therapeutic level.

71. I conclude that at the priority date the skilled team would have taken the view that using two spins was much to be preferred over a system which employed only one spin, although a kit using one spin might be suitable for some less demanding therapeutic applications.

Novelty

The law

72. The general principles of the law on the novelty of an invention, explained by Lord Hoffmann in *Synthon BV v SmithKline Beecham plc* [2005] UKHL 59; [2006] RPC 10, raised no issue between the parties.

Prior disclosure and confidentiality

73. Section 2(2) of the 1977 Act (quoted above) provides that any matter relied as forming part of the state of the art must have been available to the public by the relevant date. It has long been settled that this will not be the case if the prior art were made available under an obligation of confidence.

74. Both counsel referred to the three classic elements to an action for breach of confidence elaborated by Megarry J in *Coco v A N Clark (Engineers) Ltd* [1968] FSR 415: (1) there must be information which is confidential, (2) the defendant must be under an obligation not to use or disclose the information and (3) the defendant must have used or disclosed the information in breach of the obligation.

75. It was common ground that if information is made available to one person before the priority date then it is made available to the public within the meaning of s.2(2), see *Bristol Myers Co's Application* [1969] RPC 146, at 155.

76. The *Guidelines for Examination in the European Patent Office*, at Part G, Chapter IV, November 2018 edition, set out a recent synthesis of principles drawn from decisions of the Enlarged and Technical Boards of Appeal of the EPO:

> "**7.2.1 General principles**
>
> Subject-matter is regarded as made available to the public by use or in any other way if, at the relevant date, it was possible for members of the public to gain knowledge of the subject-matter and there was no bar of confidentiality restricting the use or dissemination of such knowledge. … This may, for example, arise if an object is unconditionally sold to a member of the public, since the buyer thereby acquires unlimited possession of any knowledge which may be obtained from the object. Even where in such cases the specific features of the object may not be ascertained from an external examination, but only by further analysis, those features are nevertheless to be considered as having been made available to the public. This is irrespective of whether or not particular reasons can be identified for analysing the composition or internal structure of the object. These specific features only relate to the intrinsic features. Extrinsic characteristics, which are only revealed when the product is exposed to interaction with specifically chosen outside conditions, e.g. reactants or the like, in order to provide a particular effect or result or to discover potential results or capabilities, therefore point beyond the product *per se* as they are dependent on deliberate choices being made. Typical examples are the first or further application as a pharmaceutical product of a known substance or composition (see Art. 54(4) and (5)) and the use of a known compound for a particular purpose based on a new technical effect (see G 2/88). Thus, such characteristics cannot be considered as already having been made available to the public (see G 1/92).
>
> …
>
> **7.2.2 Agreement on secrecy**
>
> The basic principle to be adopted is that subject-matter has not been made available to the public by use or in any other way if there is an express or tacit agreement on secrecy which has not been broken.

> In order to establish whether there is a tacit agreement, the division must consider the particular circumstances of the case especially whether one or more parties involved in the prior use had an objectively recognisable interest in maintaining secrecy. If only some of the parties had such an interest, it must be established if the other parties implicitly accepted to act accordingly. For example, this is the case when the other parties could be expected to maintain secrecy in accordance with the usual business practice in the relevant industry. For establishing a tacit agreement important aspects to be considered are, *inter alia*, the commercial relationship between the parties and the exact object of the prior use. The following may be indicators of a tacit secrecy agreement: A parent company – subsidiary relationship, a relationship of good faith and trust, a joint venture, the delivery of test specimens. The following may be indicators of the absence of such an agreement: An ordinary commercial transaction, the sale of parts for serial production."

77. I was referred to the decision of the Board of Appeal in T 1081/01 of 27 September 2004. Mr Lykiardopoulos relied on this sentence in paragraph 7:

> "If at the time of receipt of the information the recipient is in some special relationship to the donor of the information, then he cannot be treated as a member of the public, and the information cannot be regarded as published for the purpose of Article 54 EPC."

78. I think that this is liable to take the eye off the ball. A 'special relationship' between the donor and the recipient of information might take any of a wide variety of forms. What matters is whether the information was confidential and disclosed under an obligation of confidence. In T 1081/01 itself the relevant information was provided under a confidentiality agreement. The point of dispute was the effect of expiry of the agreement.

79. More relevant to the facts of the present case is the effect of differing views and differing states of knowledge between the parties as to confidentiality. A range of non-contractual possibilities can be imagined. For instance, the donor of the information may retain a genuine but perverse belief that it is confidential, while the recipient knows that the information has been fully and widely disclosed without restriction. Alternatively, the information may be of an apparently confidential nature, the donor fully believes it to be so, whereas the recipient has a genuine although false belief that the world must have learnt of the information by now one way or another. In such cases what criteria govern whether the information has been made available to the public?

80. As a matter of English law, the principles which have been developed by the courts in breach of confidence cases (generally outside the field of intellectual property law) provide the answer. In *Coco v Clark* Megarry J said this (at p.420-421):

> "It may be that that hard-worked creature, the reasonable man, may be pressed into service once more; for I do not see why he should not labour in equity as well as at law. It seems to me that if the circumstances are such that any reasonable man standing in the shoes of the recipient of the information would have realised that upon reasonable grounds the information was being given to him in confidence, then this should suffice to impose upon him the equitable obligation of confidence. In particular, where information of commercial or

> industrial value is given on a business-like basis and with some avowed common object in mind, such as a joint venture or the manufacture of articles by one party for the other, I would regard the recipient as carrying a heavy burden if he seeks to repel a contention that he was bound by an obligation of confidence"

81. Megarry J's test is consistent with the broad principle identified by Lord Goff in *Attorney General v Observer Ltd* [1990] AC 109, at 281:

> "I start with the broad general principle (which I do not intend in any way to be definitive) that a duty of confidence arises when confidential information comes to the knowledge of a person (the confidant) in circumstances where he has notice, or is held to have agreed, that the information is confidential, with the effect that it would be just in all the circumstances that he should be precluded from disclosing the information to others."

82. In *Gurry on Breach of Confidence*, 2nd ed., the authors discuss this issue in some detail as it has arisen in English cases on breach of confidence (see Chapter 7) and derive from *Coco v Clark* and other cases what they call the 'notice of confidentiality test'. They explain it in this way (at 7.37, omitting footnotes):

> "The notice of confidentiality test asks whether the circumstances in which the information was acquired or received indicate (objective) knowledge or notice of the confidentiality of the information. The relevant factors for establishing such knowledge or notice include: the nature of the information (whether it is banal, trivial, common knowledge, commercially valuable, or intimately personal); the steps taken to preserve or emphasize the secrecy of the information (eg whether it is marked 'confidential' or 'private'; or if special care is taken that there is restricted disclosure to others); the manner in which the information was disclosed or obtained (whether it is informal, social, commercial, or professional); the understanding of the parties involved (i.e. did they in fact regard the information as confidential or themselves as being under an obligation of confidence); and where the information is disclosed for a specific, limited purpose and it is understood, from the legal and cultural context of the disclosure, that the information will not be used for another purpose."

83. Like the EPO *Guidelines*, this is a way of saying that all relevant matters must be considered, with a further list of helpful examples provided (not all of them likely to arise in the context of a patent action).

84. Such relevant matters will go to answering Megarry J's implied question: would any reasonable man standing in the shoes of the recipient of the information have realised upon reasonable grounds that the information was being given to him in confidence?

The pleaded allegations of prior disclosure

85. The Re-Re-Re-Amended Grounds of Invalidity plead that claim 1 of the Patent lacks novelty having regard to:

    (1) sales by Regen of kits known as 'the Vacutainer Regen THT kit'; and

(2) publication of a document entitled 'BD Vacutainer CPT – Cell Preparation Tube with Sodium Citrate' (the 'BD Vacutainer Instructions').

Alleged Prior Use by sales of Vacutainer Kits

86. The Defendants' pleaded case on prior disclosure by Regen's sales of its Vacutainer kits was put in a variety of ways. Alternative types of kits were said to have been sold to several customers.

87. Four of those customers gave evidence on behalf of the Defendants. Supplies to three of them were ultimately relied on by the Defendants. They were first, J. Hewitt Co, a Japanese company, secondly Levi Medical Srl, an Italian company and thirdly Cosmedicate Limited, a UK company which has since been dissolved.

88. Evidence about these supplies was given from Regen's side by Mr Turzi. The three CEOs of the customers each gave evidence (in the case of Cosmedicate Limited, the former CEO), respectively Mr Knight, Ms Levi and Dr Otto. Counsel both personalised the sales as having been to Mr Knight, Ms Levi and Dr Otto, which may have been *de facto* the case. Ms Levi's evidence was not challenged. Mr Knight and Dr Otto were cross-examined.

89. In his witness statement Mr Turzi said that before the priority date the Vacutainer kits sold by Regen were all prototypes of the kit which was later commercialised. The commercialised kits, developed between 2004 and 2006, used according to their instructions would lead to performance of the invention claimed in the Patent. These were sold only after the priority date. The prototype kits, developed between 2002 and 2003, were different in significant ways. They were supplied to assist Regen in its evaluation of the product and to seek potential distributors.

90. According to Mr Turzi the prototype kits had two tubes, called respectively the THT and Z tubes. THT stood for thrombocyte harvesting tube; it was not made clear what Z signified and it didn't matter. The THT tubes contained thixotropic gel which, Mr Turzi said, comprised polyethylene glycol and azelaic acid. He provided a copy of the instructions for use ('IFU') supplied with the prototype tubes. These instructed the user to centrifuge the blood in the THT tube and then decant the separated plasma into the Z tube. The user was instructed to perform a second centrifugation, this time of the Z tube. Some of the plasma, about 2ml, was removed from the top and the platelets were re-suspended in the remaining plasma. The instructions described the second centrifugation as

> "Important step to increase the concentration of the thrombocytes."

91. However, the instructions added:

> "Note: If wound surface is large, skip the second centrifugation step and use all the plasma to suspend the thrombocytes into the Vacutainer Z or utilize a second Regen PRP-Kit."

92. A modified picture emerged after cross-examination. THT tubes were supplied by Becton Dickinson to Regen under a contract signed by Mr Turzi, dated October 2003. These tubes contained a polyester gel and 0.10 molar buffered sodium citrate solution.

The assertion in Mr Turzi's witness statement that the gel comprised polyethylene glycol and azelaic acid might have been strictly accurate – Mr O'Connell said that these are constituents of a polyester – but it was certainly misleading and was a false distinction relied on by Regen.

93. Mr Turzi's division between prototype kits with two tubes sold before the priority date and patented kits with one tube sold after that date was not accurate either. Mr Turzi was referred to a price list supplied by Regen to Mr Knight which Mr Knight had dated 9 December 2005. Mr Turzi did not challenge the date. The documents showed two types of Regen PRP kits then on offer, designated Kit A and Kit AZ. Mr Turzi accepted that the former did not have a Z tube and were used employing only one centrifugation.

94. In the Defendants' closing submissions the Regen Vacutainer THT kits were divided into two types:

(a) Kits with two tubes: a THT tube which contained a thixotropic gel and a Z tube. These were the 'AZ Kits'.

(b) Kits with a THT tube but no Z tube. These were the 'A Kits'.

95. Both the THT and Z tubes were of a type sold by Becton Dickinson under Becton Dickinson's trade mark 'Vacutainer'. They are evacuated tubes, i.e. the interior is at less than atmospheric pressure, which assists in uses such as the collection of blood. They were part of the common general knowledge and could contain reagents suitable for the purpose to which they were put. Regen's THT and Z tubes were made by Becton Dickinson to the order of Regen. The THT tube was developed jointly with Regen.

The Defendants' case in closing

96. The Defendants' case was put three ways by Mr Davis in his written closing submissions. Regen had made the claim 1 method available to the public in one or more of the following three ways:

(1) Sales of AZ Kits were made to Mr Knight, Ms Levi and others unspecified along with "some form of single centrifuge IFU (of which a copy no longer exists)".

(2) Mr Turzi demonstrated the claim 1 method to Mr Knight and Japanese clinicians in June 2005.

(3) Sales of A Kits were made to Mr Knight, Dr Otto and Ms Levi, together with an IFU "in or generally in the form of the single centrifuge IFU at Annex 2A [to the Grounds of Invalidity]".

97. During Mr Davis' argument I detected a tendency to suggest that leaving aside what may have been disclosed by Regen to its customers, the customers themselves had gone on to behave in such a way that they made the claim 1 method available to the public. That was not an argument open to the Defendants. No application was to amend the Grounds of Invalidity to plead such a case. Had it been made during the trial I would have refused permission. Regen's investigations and evidence on this part of the debate had been directed solely to what Regen had disclosed. It would have been unfair to allow the Defendants at trial to broaden an already scattered attack by including alleged

disclosures of the claim 1 method which Regen had not had the opportunity to investigate.

Sales of AZ Kits with unknown IFU

98. This allegation did not start with a solid foundation. There was no copy in evidence of an IFU supplied with the AZ Kits which taught the claim 1 method.

99. A key feature of claim 1 is that the method requires only one centrifuge step. It was not in doubt that before the priority date Regen supplied an IFU with at least some of its kits instructing a single spin where the wound surface is large (see above). However those instructions also stated that the whole of the plasma should be used on the wound, as opposed to removing about half the supernatant containing platelet poor plasma before resuspending the bulk of the platelets in the remaining plasma, as claim 1 requires.

100. Mr Davis argued that some time before the priority date another IFU was used, instructing the user to employ the patented method. This was to be inferred from two sets of PowerPoint slides, neither created by Mr Turzi or anyone else at Regen. I find this inference too remote to carry any weight. If the PowerPoint slides have any relevance, it is in relation to what may have been disclosed by Mr Turzi in Tokyo, one of Mr Davis' alternative allegations of prior disclosure.

101. The best evidence concerned the IFUs accompanying the AZ kits Mr Knight received in Japan. Mr Knight accepted that the IFUs would have instructed the user to spin the blood in the THT tube and then transfer the plasma to the Z tube for a second centrifugation.

102. Regen PRP kits were supplied to a clinical team based in Nagoya and Tokyo in 2006. This led to a paper being published in 2007 (Mizuno *et al., Bone degeneration of dental implant dehiscence defects using a cultured periosteum membrane*, Clin. Oral. Impl. Res. 10.1111). It referred to PRP gels being made according to the manufacturer's instructions. The method stated involved two spins and corroborates what Mr Knight said.

103. I accept Mr Knight's evidence. The IFUs supplied with AZ Kits did not disclose the invention of the Patent.

Demonstrations by Mr Turzi in Tokyo in June 2005

104. Regen's second allegation was that Mr Turzi demonstrated the Regen PRP Kits to Mr Knight and Japanese clinicians in June 2005 and in doing so explained the claim 1 method of using the kits.

105. Mr Knight contacted Mr Turzi in November 2004 having seen the PRP Kits on Regen's website. Mr Turzi visited Tokyo in June 2005 where he demonstrated the kits to Mr Knight and to clinicians. It was during this visit that he was alleged to have disclosed the claim 1 method.

106. Mr Turzi's evidence in his second witness statement was that he did not make any such disclosure and he maintained this in cross-examination.

107. Mr Davis argued that two sets of PowerPoint slides proved Mr Turzi wrong. The first set was created by Mr Knight's staff in Tokyo in December 2005 for the purpose of demonstrating Regen's AZ Kits to potential customers. The slides contained photographs of Mr Turzi taken in June 2005. The argument was that these slides disclosed the claim 1 method and that the information can only have come from Mr Turzi.

108. The text of the slides was in Japanese, but an unchallenged translation was provided by the Defendants. One of the purposes identified for the PRP made with the Regen kit was cosmetic surgery. Slide 4 showed injection of PRP into the face of an individual (not Mr Turzi). Mr Knight's evidence was that he had conceived the idea of using PRP to inject into wrinkles to rejuvenate the skin. He regarded this as his own idea.

109. Slide 3 was headed 'Contents of Regen Kit' and the stated contents included 'Concentration adjustment tube (brown) cap / For 2nd centrifugation'. The remaining slides made no mention of a second spin. Slide 6 said that the THT tube containing blood should be centrifuged. Slide 7 showed two photographs, at least one of which features Mr Turzi. This slide stated:

> "• Remove from the centrifuge. (Usually about 4cc of plasma can be collected from one sampling tube.)
>
> • To obtain PRP necessary for injection, use a syringe to remove excess plasma and discard it. (Usually 2 ml or more)
>
> • This can also be used as fibrinogen glue (bioadhesive)"

110. The final slide, headed 'Step 6 Start Injection' indicated that the audience for the presentation was likely to have been interested in Mr Knight's cosmetic applications for PRP.

111. The second PowerPoint presentation was made by Dr Kubota of the Kubota Junichiro Clinic in Japan in about February 2006. Dr Kubota had been informed of Regen's kits by Mr Knight. There was no evidence from Dr Kubota himself, but his presentation was seen by Arata Yamasaki who created an English translation in March 2006 which was in evidence. Mr Yamasaki is the CEO of a Japanese company dealing in medical equipment. He provided a witness statement.

112. Like Mr Knight, Dr Kubota was apparently interested in the use of PRP for cosmetic surgery. One slide showed the contents of a Regen PRP kit, including both a THT and a Z tube. Mr Davis drew attention to the following slide which said this:

> "Preparation of your own PRP
>
> Draw 100cc of blood
>
> Centrifuge separation. 8 minutes
>
> Remove 50% of plasma
>
> Mix remaining plasma and platelet using syringe needle, draw this mixture to the syringe. Add 0.2cc of calcium chloride, $CaCl_2$."

113. Both PowerPoint presentations are consistent with the claim 1 process. Mr Davis submitted that the only reasonable inference to draw was that Mr Turzi had disclosed the patented method to Mr Knight and through him to Dr Kubota. This had been done some months earlier than both presentations, in June 2005.

114. I am not able to accept this inference based solely on the PowerPoint presentations. There is the obvious possibility that Mr Knight, and in the case of the second slides Dr Kubota, may have introduced their own ideas. Such a possibility is sufficient to obviate a finding of prior user based on the PowerPoint slides alone. The Defendants' argument required support from the witnesses who gave evidence at the trial.

115. Mr Turzi's answers about this in cross-examination were not always easy to follow. He accepted that the first PowerPoint slides showed the preparation of a plasma enriched in leucocytes, thrombocytes and adhesion proteins. But he denied that the process shown in the slides had been disclosed to Mr Knight by him. He also said that photographs taken of him had been presented in the wrong order by whomever made the PowerPoint slides:

> "If we look at the photos in the correct order, I am taking calcium chloride in a syringe, then I add lyophilised thrombin. When I put together, in contact plasma and the lyophilised thrombin, we obtain a biological glue, which is as strong as can actually adhere to a plasticized piece of paper. This is a demonstration for plastic surgery and nothing else." (Day 2, 260 lines 7-13).

116. Mr Turzi's point appeared to be that his demonstration to Mr Knight and the clinicians had differed from the method of the Patent in that (i) he had made what he called a 'biological glue' (ii) by adding lyophilized thrombin to the plasma (iii) for use in plastic surgery.

117. Claim 1 of the Patent is not limited by reference to the use of the cell composition made by the method claimed. The description refers several times to its use for reducing skin wrinkles (see, for example, paragraphs [0046], [0052] and [0064]). The description also teaches the addition of thrombin to the plasma (see [0057]) although it was not made clear whether there was any significance in the thrombin being lyophilised. Of the three allegedly missing elements, the one emphasised by Mr Lykiardopoulos in closing was that Mr Turzi had only been demonstrating how to make a biological glue, a point which Mr Turzi himself made more than once.

118. Paragraph [0096] of the Patent may be relevant. It forms part of a long list of embodiments of the invention:

> "[0096] In another further embodiment, herein disclosed is a process for the preparation of a wound or tissue healant composition wherein the coagulation activator which is admixed under step b) is a thrombin enriched preparation. A method for preparing thrombin for use in a biological glue is described in US 6,472,162 by the addition of 8 to 20% ETOH to a volume of plasma and this preparation may be used as a thrombin enriched preparation."

119. It is not clear to me what this paragraph means by 'step b)'. It is not, as might at first be thought, a reference to element b) in either of shortly preceding paragraphs [0092]

or [0093]. Those are both constituents of a platelet concentrate or wound healant, not steps in a process involving the admixture of a thrombin enriched preparation. Nor can it be a reference to step b) of the process as claimed in claim 1 because that is not about adding thrombin either. I could guess that it is reference all the way back to paragraph [0020]:

> "[0020] In a preferred aspect, the present invention provides a process for the preparation of a wound healant composition comprising:
>
> a) Providing a platelet concentrate obtained via the method of the invention;
>
> b) Admixing the platelet concentrate with a coagulation activator in a vol. ratio (platelet concentrate: coagulation activator) of about 10:1 up to about 10:3;
>
> c) Optionally admixing autologous cell extract, such as extract of keratinocytes, bone marrow, fibroblasts, periosteum or corneal cells, melanocytes and Langheran's cell; fat cells such as myoblasts and satellite cells; osteoblasts; chondrocytes; umbilical cord cells; Schwann cells or Achilles tendon cells."

120. It may therefore be that the first two sentences of paragraph [0096] teach that the paragraph [0020] process, a preferred aspect of the patented process, can be carried out using a thrombin enriched preparation in step b). How to make such a preparation is described in US Patent No. 6,472,162, apparently in the context of making a biological glue.

121. Although this may be correct, it is not a line of reasoning on which I can place much weight because it is not the product of argument from counsel or technical comment by any expert. I can say, though, that if it is right, the biological glue Mr Turzi was referring to was known in the art at the priority date of the Patent. I was not shown US Patent 6,472,162.

122. In cross-examination about the supply of A Kits, discussed further below, Mr Turzi said that these kits were used to make biological glue.

123. Ms Levi said in her witness statement that Mr Turzi had promoted Regen's biological glue, based on its THT tube, at a trade fair in Düsseldorf in November 2004.

124. If Mr Turzi is to be taken at his word, his presentation in Tokyo in June 2005 was not, at least not self-evidently, a demonstration of the claim 1 invention. Mr Turzi's other point was that in his demonstration, after centrifugation of the blood there was no removal of the supernatant containing platelet poor plasma. By implication, such a step was not required for the making of biological glue. Inconsistently with this assertion the first PowerPoint slide presentation suggested that glue was made by removing and discarding excess plasma. But the slides were part of Mr Knight's disclosure, not Mr Turzi's.

125. Mr Turzi was not a reliable witness, so I turn to the evidence of Mr Knight.

126. Mr Knight explained that the first PowerPoint slides, referred to above, were put together in December 2005 by Asano Yumiko, a staff member a J. Hewitt, at Mr Knight's request, using photographs taken during Mr Turzi's visit in June 2005. During Mr Turzi's visit Mr Turzi made three separate presentations of the Regen PRP kit and how it was used to doctors from Kyoritsu Hospital, the Seibi Clinic and Tokyo Women's University.

127. In his witness statement Mr Knight did not provide details of the method disclosed by Mr Turzi in June 2005. But he said that he had considered his company registering the Regen kit in Japan to give it legitimacy and a competitive advantage and in that context stated the method employed when using a kit:

> "My reasoning was that I saw nothing proprietary in the RegenKit – I was familiar with the vacutainer catalogue (blood separation tubes) produced by Becton Dickinson and the tube in the RegenKit appeared to be one of their standard vacutainer tubes. The process consisting as it did of centrifuging (at a conventional g and for a conventional time); withdrawal of some of the supernatant from atop the set gel to 'concentrate' the proportion of platelets followed by dispersal by gently inverting the tube a few times also seemed entirely non-proprietary."

128. In cross-examination Mr Knight was asked about Ms Yumiko's PowerPoint slides. One of the slides showed PRP being injected into the face of Tom Kyuta, J. Hewitt's vice president. Mr Turzi had stated that this had not been done during his presentations in June 2005 and that it was a photograph taken later for the slides. Mr Knight said that this was wrong. Mr Turzi had been present. He also said that the method demonstrated by Mr Turzi was a modified version of the method stated in the IFU, involving only one spin, then removing a large level of the plasma leaving plasma with concentrated platelets (Day 2, 170 line 7 to 172, line 10):

> A. … We did not do a double spin. This was a modified protocol so there was not the double spin. There was never the double spin. What you did was -- see, you did not want to resuspend everything, so what you did was you wanted to remove a large level of the plasma and just leave a smaller amount above the gel line, but also where you have a smaller amount above the gel line with mostly your concentrated platelets and a lot less plasma, so there was no need to do any kind of a second spin. We only used those tubes to either wash, to remove product. Basically you could inject right out of the -- you could inject right out of the THT tubes or the CPT tubes, so that was the protocol. There was no need to use the second tube at all, there was never a second spin.
>
> Q. When you gave evidence that what he demonstrated accorded with the instructions that we went through, which had a double spin and which are attached to the product, you are now saying actually ---
>
> A. This was a modified, this is correct. That was not the protocol. This was not the protocol we found or used for the wrinkle augmentation. The rationale again for this was most of the use for a double spin is not to remove the whole lot of the plasma, they remove some, but it is a further

> concentration of the platelet. There is just no need to do this so this was the modified protocol that needed to be taught to doctors in Japan for wrinkle augmentation.
>
> Most of the PRP again is used for burns and wound healing, for diabetic ulcers, things of this nature. You know the wrinkle, putting PRP for the wrinkle required a modified protocol, because you are not injecting, you know, 8ccs or what not, you wanted a concentrated 1cc or 2ccs that is at the maximum. So it is a modified protocol for wrinkle augmentation. That Turzi helped -- yes.
>
> Q. So as I understand, where we said yes earlier that what was shown was as in the instructions for use, what you are saying now is that what was demonstrated to these doctors was a modified protocol, specifically for wrinkle.
>
> A. For clinical -- that is correct, a clinical use for wrinkle augmentation.
>
> Q. When we saw in the slide that it referred to a concentration adjustment tube brown cap for centrifugation, that reflects what was in the instructions for use but you say that these demonstrations with these clinicians, that was not actually used?
>
> A. That is correct. But it makes sense for that, for this procedure. It is quite different from using it for diabetic, to heal wounds or burns, et cetera.
>
> Q. This is part of the procedure that at the time you were excited about as being, I think you have said, your concept for this new use of PRP?
>
> A. That is correct, exactly. This is what makes this so memorable, that is one thing, but you are correct, sir.

129. Although Mr Knight was not asked what he meant by ‘a large level of the plasma’ being removed after centrifugation, on the evidence I heard I take the view that removing ‘a large level’ and removing ‘about half’ of the supernatant containing platelet poor plasma were both sufficiently general expressions such that they overlapped.

130. Dr Otto said that in April 2006 Mr Turzi had no clue that PRP could be injected into the skin to cure wrinkles and that Mr Turzi thought it would not work. I prefer the more detailed and convincing evidence on this point from Mr Knight. I accept that Mr Turzi was present when PRP was injected into the forbearing Mr Kyuta in June 2005. Dr Otto’s perception is also inconsistent with an email dated 22 January 2005 from Mr Knight to Mr Turzi, which included this:

> “What I need to know is if you can inject the material back into the wrinkles or for skin rejuvenation.”

131. Mr Turzi was dubious about use of PRP for skin rejuvenation and there was no record of a response to Mr Knight. Later, when Mr Turzi expressed to Dr Otto the view that

using PRP for wrinkles would not work, it is likely that Dr Otto wrongly assumed that Mr Turzi had not even given the idea any thought.

132. On the evidence of Mr Knight I draw the conclusion that in June 2005 Mr Turzi demonstrated to Mr Knight and Japanese doctors a method for making PRP using Regen's kits which was a modified version of the methods set out in the IFU. The demonstrated method was for making PRP to be used in the treatment of wrinkles. It involved only one centrifugation of blood in the THT tube, followed by the removal of about half the plasma from the top and resuspension of the platelets in the remaining plasma.

133. These are the key features of the claim 1 method as advanced by Regen. I was not shown any document or other source by which Mr Knight and the Japanese clinicians would have known that the glass THT tube contained a polyester-based thixotropic gel and a buffered sodium citrate solution at 0.10M. But it doesn't matter. The question is whether Mr Knight and the clinicians could have performed the invention after Mr Turzi's demonstration. It was not in dispute that the demonstration was done using a Regen THT tube and so much was confirmed by the first PowerPoint slides referred to above. Those tubes were available for purchase from Regen before the priority date. The PCT priority document identifies (at p.18) the content of those tubes at the priority date:

> "A separator tube according to the invention is for example an approximately 15mL glass tube (16mm diameter and 130mm in length) containing 3mL of polyester-based thixotropic gel as well as 1mL of sodium citrate solution at 0.1M and containing a usable vacuum of or about 8.5mL. This separator tube constitutes a ready-to-use device for the preparation of a platelet concentrate composition via the method of the invention (also called RegenTHT^{TM} (Thrombocyte Harvesting Tube) from Regen Lab, Switzerland)."

134. As Mr Turzi confirmed, the tubes were supplied to Regen by Becton Dickinson under a supply agreement dated 30 October 2003. This shows that the THT tubes were Vacutainer tubes with polyester gel and 0.1M buffered sodium citrate.

135. In fact, had they been curious as to the contents of the THT tubes they could have found out that they contained a polyester-based gel. In the context of their evidence about infringement, both Dr Daren and Dr Stepniak described methods to ascertain whether a gel is a polyester-based gel, one of which was infrared spectroscopy. Dr Stepniak described this as a standard tool. I take this to mean that in June 2005 it would have been possible for Dr Knight to find out that the THT tubes supplied to him were polyester-based.

136. Irrespective of any analysis of the gel, I am satisfied that the claim 1 method in its entirety was disclosed by Mr Turzi in June 2005.

Sales of A Kits with an Annex 2A IFU

137. The sales of A Kits relied on were to Mr Knight, Dr Otto and Ms Levi. The alleged disclosure under this head was by means of the IFUs sent by Regen with the A Kits. Mr Davis said that the sales to Ms Levi added nothing and that I can disregard those.

138. Mr Turzi's evidence was that A Kits had two THT tubes. Both contained blood. One was centrifuged to produce PRP. 95% ethanol was added to the other which had the effect of getting rid of some of the products in the blood, as Mr Turzi put it, providing serum with activated thrombin. After 30 minutes this was also centrifuged. The whole of the PRP from the first tube was added to the serum and thrombin from the second to give a biological glue. He said that the biological glue was used for plastic surgery.

139. It was put to Mr Turzi that the A Kits had gone out with an IFU in the form forming Annex 2A to the Particulars of Claim. This IFU had appeared on Regen's website in May 2006. Mr Turzi said that this was a prototype IFU which contained technical mistakes. It had wrongly been put on the website and had not been supplied with any products.

140. Invoices to Mr Knight and to Dr Otto show that both were sold A Kits before the priority date. Mr Knight's witness statement only discussed how AZ Kits were used, confirming that the IFUs instructed the use of two spins. Dr Otto's witness statement referred to a demonstration of Regen's kits by Dr Kubota but said nothing about the content of IFUs for any type of kit.

141. It was not established on the evidence that the sale of A Kits to Mr Knight, Dr Otto or to anyone else were accompanied by an IFU containing instructions to use the kits according to the method of claim 1.

Confidentiality of the disclosures

142. Regen argued that all the disclosures relied on by the Defendants were made in confidence.

The AZ Kits

143. An exchange of emails between Mr Turzi and Mr Knight in May 2005 indicates that Mr Knight wanted Mr Turzi to disclose the material used in the tubes in the Regen kits for customs clearance. Mr Turzi agreed that this could be done after Mr Knight had signed a distribution agreement. Mr Knight was emphatic that a distribution agreement had been concluded, but it was not among the papers in court and its date was not established.

144. However, before this AZ Kits had already been supplied to Mr Knight in April 2005, the kits which had apparently caused difficulty with Japanese customs. These had been sent without any restriction as to the confidentiality of their contents.

145. I find that at least the AZ Kits sent to Ms Levi and those sent to Mr Knight in April 2005 were not supplied by Regen under any obligation of confidentiality.

Mr Turzi's demonstrations in June 2005

146. Mr Knight was present when Mr Turzi demonstrated the use of Regen kits to Japanese clinicians in June 2005. He agreed in cross-examination that none of the clinicians would have thought themselves free to take a note of what they had been shown or to make their own competing products; they would have known that this would not be ethical. In my view this did not establish that the method demonstrated by Mr Turzi

was confidential. There were alternative and to my mind more likely possibilities regarding what the clinicians might take a note about, or why they would not make competing products.

147. As to taking notes, I think Mr Knight's response in cross-examination should not be taken too literally. There would have been no need to take a note of anything so far as it was explained in the IFU accompanying a Regen kit. That left the idea of using PRP to smooth wrinkles and the amendments to the method, i.e. using a single spin together with removing about half the supernatant. None required a note to be remembered.

148. Mr Knight's interest in the Regen's kits was to make PRP for use to cosmetic effect. He regarded this as very much his idea and he would have been sensitive to it being used without some benefit to him. The demonstrations to the Japanese clinicians were intended to show the potential of PRP for the Japanese aesthetic medical market and thereby to set up sales of the kits. The demonstrations involved the injection of PRP close to one of Mr Kyuta's eyes. Although neither Mr Turzi nor Mr Knight in any way suggested to the clinicians that the demonstrations were confidential, the clinicians probably appreciated that the purpose of the demonstrations was a commercial one. Mr Turzi and Mr Knight were willing to explain how PRP could be used to minimise wrinkles and in return, if the clinicians liked the idea, Mr Turzi and Mr Knight expected them to buy Regen's kit to make the PRP. I think it is likely that the confidential aspect of the demonstration, as the clinicians saw it, was the idea of using PRP for wrinkles. It follows that they would not have found it ethical to exploit the idea without providing financial benefit to Mr Knight and Mr Turzi. The financial *quid pro quo* was to be the purchase of Regen kits.

149. Mr Turzi and Mr Knight were either expressly or by implication encouraging the clinicians to buy those kits. The clinicians were expected and were expecting to use those kits, as demonstrated, in front of their colleagues at a hospital or clinic. It would not, I think, have occurred to the clinicians that such uses were to be made only under obligations of confidence.

150. It seems to me that reasonable persons standing in the shoes of the clinicians, or Mr Knight, would not have believed upon reasonable grounds that the way to use the kits being demonstrated by Mr Turzi was a method being disclosed in confidence. Any ethical concern they had about the demonstration was bound up solely with the idea of using PRP for wrinkles.

151. This is corroborated by the view of Mr Turzi's which emerges from a contemporaneous document. The only indication from Mr Turzi to anyone that there was anything confidential about the kits was in his email of 12 May 2005 to Mr Knight in which he said:

> "…no problem to disclose the contents of the tube, after distribution agreement signed with you."

152. Mr Turzi was only concerned about the contents of the tube. It may well be that the contents of the tube was information available to any purchaser of a Regen THT tube who wished to conduct an analysis. The point, however, is that Mr Turzi showed no interest in maintaining confidentiality in the method he demonstrated. I think it is probable that at the time it did not occur to Mr Turzi that there was anything confidential

in what he was explaining; he wanted to sell kits. His asserted belief in confidentiality was more likely the product of subsequent reflection.

The A Kits

153. The sales of A Kits to Mr Knight were not shown to be on terms relevantly different to the terms governing sales of the AZ Kits and so were not made under an obligation of confidence.

154. Dr Otto said in his witness statement that he had been informed by Mr Turzi that the kits were patented and therefore he assumed that no confidentiality attached to the kits. Nothing he said in cross-examination was inconsistent with this. I accept that evidence.

Conclusion in relation to alleged prior disclosure of the claim 1 method

155. I find that all three heads of disclosure relied on by the Defendants, i.e. sales of the AZ Kits, the demonstrations by Mr Turzi in Japan and sales of the A Kits, were conducted free of any obligation of confidence.

156. Neither the sale of AZ Kits or A Kits constituted a disclosure of the claim 1 invention. Mr Turzi's demonstrations in Tokyo in June 2005 did. Claim 1 lacks novelty over the prior use of the invention in June 2005.

Inventive Step

The Law

157. There was no dispute about the general law on inventive step.

Combining information from pages of a website

158. A matter arose concerning inventive step and what the skilled team would have understood from a series of documents available on Regen's website. Mr Davis emphasised that it is, of course, possible to reach a finding that an invention is obvious having regard to the combined teaching of two or more documents. He referred to Lord Reid's statement of law in *Mills & Rockley (Electronics) Limited v Technograph Printed Circuits Limited* [1972] RPC 346, at 355:

> "When dealing with obviousness, unlike novelty, it is permissible to make a 'mosaic' out of the relevant documents, but it must be a mosaic which can be put together by an unimaginative man with no inventive capacity."

159. In relation to printed documents, there are three circumstances in which the skilled person may be taken to read a document cited as prior art and combine its teaching with that of another document without the need of inventive capacity. First, if the cited document refers to the other document. Secondly, if the other document forms part of the skilled person's common general knowledge. Thirdly, if faced with the problem to which the patent is addressed, the skilled person would as a matter of routine consult the other document (not necessarily part of his common general knowledge, although the distinction may be nuanced) and notionally read it together with the cited document. See *Pfizer Ltd's Patent* [2001] FSR 16 at [65]-[66] and *Richter Gedeon Vegyeszeti Gyar Rt v Generics (UK) Limited* [2016] EWCA Civ 410, at [18]-[24].

160. Outside those three circumstances it cannot be assumed that the disclosures of two documents in the same technical field may be combined when assessing inventive step, see *Generics (UK) Ltd v Daiichi Pharmaceutical Co Ltd* [2009] EWCA Civ 646; [2009] RPC 23, at [27].

161. Within the three circumstances, the teaching of more than two documents might be combined but the evidence must show that, unusually, this is what the skilled person would have done.

162. In principle the position is no different in the context of a website. A website may not invariably be treated as a single document. Some websites are vast. If a single page is cited as prior art, it does not follow that the skilled person can be taken to have read every part of the website from which it came. There may have to be evidence about which pages the skilled person would look at before and/or after reading the cited page with interest.

163. Also, an argument based on the combined teaching of two or more pages from a website cannot ignore other pages that the skilled person would have read. There should be no inappropriate selection. Assuming the evidence establishes that the skilled person's browsing would have extended widely, all the browsed website pages must be taken into account, including those containing what Floyd J described as "inconvenient details of the kind found in documentary disclosures, such as misleading directions or distracting context", albeit with a different point in mind, see *Ratiopharm GmbH v Napp Pharmaceutical Holdings Ltd* [2008] EWHC 3070 (Pat); [2009] RPC 11 , at [158].

Summary of the Defendants' case on inventive step

164. The Defendants' case on lack of inventive step was based on any of the following done or published before the priority date:

(1) Supplies of AZ and A Kits with accompanying IFUs.

(2) Documents on Regen's website.

(3) The BD Vacutainer Instructions.

(4) US Patent No. 5,667,963 ("Smith").

165. I need not consider Mr Turzi's demonstrations in Tokyo since I have found that they deprived claim 1 of novelty. I would add this, though. I rejected the two PowerPoint presentations as establishing prior disclosures of the claim 1 method by Mr Turzi because they were both done by persons other than Mr Turzi some months after he had left Tokyo. There was a sufficient possibility that Dr Knight's team and Dr Kubota had added to what Mr Turzi had said to produce slides which demonstrated only one spin and removal of about half the plasma after the single spin, followed by resuspension of the platelets in the remaining plasma. However, on the assumption that these features were ideas that came to Mr Knight and Dr Kubota independently of anything Mr Turzi disclosed, I regard this as strong secondary evidence that those further features were both obvious.

The supplies of AZ and A Kits with IFUs

166. So far as was established, the AZ and A Kits were sold with IFUs explaining that two centrifugations should be conducted. Alternatively, for large wounds, a single spin could be done, in which case none of the plasma was removed before resuspension of the platelets, so there would be no concentration of the platelets.

167. Mr Davis concentrated on the method for large wounds and argued that removing about half the plasma after the single spin was obvious. Dr O'Connell thought that it would have been obvious to do this. He said in cross-examination that by August 2006 where the PRP was to be used for cosmetic purposes, there was a single spin and then withdrawal of half the plasma. Dr O'Connell was based in the United States and was not addressing this remark to what was going on in Japan; he had nothing to do with Japanese developments.

168. Dr Marx thought that the Regen kits were not devices that the skilled team would have been interested in trying to change. But the change that Dr Marx mainly had in mind was one spin instead of two.

169. Mr Lykiardopoulos' principal argument was that the idea of one spin and removing half the plasma was developed solely in the context of making PRP for cosmetic use. That application of PRP and the new method of making PRP were confidential in August 2006.

170. The question is whether a skilled team which acquired an AZ or A Kit would have found it obvious to perform the claim 1 method.

171. According to Dr O'Connell, if the skilled team had considered using the PRP for cosmetic surgery, the answer is yes. Mr Knight and Dr Kubota decided to use their Regen kits in exactly that way, corroborating Dr O'Connell's view. Apparently some teams in the United States were using PRP for cosmetic surgery by August 2006 and there was no suggestion that they were doing so in confidence. They had access to Regen kits.

172. In cross-examination Dr Marx conceded that the method of removing half the plasma after centrifuging before resuspending the platelets was a technique for concentrating platelets which was part of the common general knowledge. He said that if the skilled team were reading the passage in the Regen IFU teaching the use of one spin for larger wounds, it would have been an obvious option for the skilled team to use that technique.

173. I have already mentioned Regen's principal argument on inventive step, an argument of long-felt want. The use of a single spin and thereafter removal of half the supernatant was a technique used for IVD kits, it was there to be picked up and used in therapeutic kits, but this was not done until Regen came up with the idea.

174. This secondary evidence was relevant but did not overwhelm the rest of the evidence. Designers of therapeutic kits were slower than their IVD kit colleagues in appreciating the possibility that one spin might be enough, provided some of the supernatant was removed after the spin, but it does not follow that by August 2006 the team skilled in therapeutic kits had still not reached that appreciation. The evidence indicated that it had.

175. The claim 1 method was obvious by August 2006 to a skilled team in possession of Regen's AZ or A Kit with accompanying IFU.

Documents on Regen's website

176. The Defendants relied on three documents, appearing as Annexes 2A, 2B and 2C to the Grounds of Invalidity and referred to by their annex numbers. Regen accepted that on the evidence the skilled team looking at Regen's website would look at all three and take them in combination.

177. Mr Davis said that the skilled team would realise that the Regen kit being promoted on these pages used a tube containing a thixotropic gel. Annex 2A on its first page showed two tubes. The first was 'Vacutainer RegenTHT' and the second 'BD Vacutainer Z'. It was put to Dr Marx that the skilled team would know that 'Vacutainer' implied that it contained a thixotropic gel. Dr Marx said that he would not have known himself but guessed that another member of the team would likely have known.

178. Mr Davis argued that doubt would have been dispelled by Annex 2B, a PowerPoint presentation which appeared on Regen's website. One slide referred to 'conventional IVD tubes'. He said that this must mean a BD Vacutainer tube, which was known to contain a thixotropic gel. Assuming that to be the case, slide 11 added confusion by distinguishing the gel separator in the Regen tube, stating that it acts differently to the conventional tube.

179. Annex 2C was a brochure on the website. The experts agreed that the separator gel used in the kit was a thixotropic gel.

180. There was then the question whether these documents taught the use of only one spin. Annexes 2B and 2C expressly taught two spins. So did the first page of Annex 2A, identifying the THT tube for the first spin and the Z tube for the second spin. The idea of a single spin was said to come from the second page of Annex 2A. There, under 'Instructions', a three-step process was described. Step 2 was centrifugation and step 3 included:

> "In case physician needs 3 to 4 time thrombocyte concentration, remove 2ml of PRP in supernatant, before homogenize to resuspend cells and withdraw the PRP solution."

181. This, taken at face value, required the user to remove PRP, not plasma, from the supernatant. Dr Marx said in his witness statement that the skilled person would find this strange and not a promising approach for making PRP. In cross-examination he appeared to assume that the sentence was probably telling the reader to remove 2ml of supernatant, not PRP. Dr O'Connell made the same assumption.

182. I think it was possible to find all the elements of claim 1 on Regen's website. I also think that there was a degree of selection by the Defendants from among the pages, especially by the time of closing argument. The skilled team must be taken to have read in totality the pages on the website that notionally it would have looked at, distractions and all. The issue was whether, having read all those pages, the team would have pulled together the various elements of claim 1 and so realised into mind the claim

1 method. Dr O'Connell did not address this. In his witness statement Dr Marx said not and he was not challenged on that overall assessment.

183. It was not established that the claim 1 method was obvious having regard to the documents on Regen's website.

The BD Vacutainer Instructions and Smith

184. The Defendants' arguments regarding both the BD Vacutainer Instructions and Smith depended on the Cascade kit being part of the common general knowledge. I have found that it was not.

Insufficiency

The Law

185. There was no discussion of the law on insufficiency. After the trial I noticed that cross-examination and argument was based on the relevant date for assessing sufficiency of disclosure being the priority date, 21 August 2006. It is in fact the date on which the application was filed, 21 August 2007, see *Biogen Inc v Medeva plc* [1997] RPC 1, at pp.53-54. I have no reason to believe that it makes any difference.

The Point at Issue

186. The argument on insufficiency turned on the final part of claim 1:

> "*…and wherein the enriched plasma is enriched in leucocytes, thrombocytes and adhesion proteins as compared to native whole blood.*"

187. The Defendants submitted that the specification did not disclose how to make plasma enriched in adhesion proteins and therefore did not sufficiently disclose the invention.

188. Regen relied on the process enriching the adhesion protein vitronectin. In his first report Dr Marx said it would have been known at the priority date that vitronectin is secreted by platelets. The Patent discloses a means to enrich platelets and along with that there would be an enrichment of vitronectin.

189. Dr O'Connell's evidence was that vitronectin was known at the priority date but not well known. He went on to say that the blood specialist in the team would have known that the vitronectin secreted by platelets is a "spit in the ocean" compared to what is in the plasma. Mr Davis put it to Dr Marx that the ratio of vitronectin secreted by platelets and present in the plasma was 1:100. Dr Marx could not confirm or deny this figure, although he said that the amount secreted by platelets was much less.

190. The evidence of the experts indicated that enriching platelets would lead to an enrichment of vitronectin. Neither expert put a figure on it, although enrichment would be small. With some doubt, I have not reached the view that the enrichment of vitronectin would be *de minimis*, particularly since there was no discussion of what that would mean in this context. I do not find claim 1 invalid for insufficiency.

The Application to Amend

191. I have found that claim 1 is invalid even on the assumption that the proposed amendment would have the effect of introducing the use restriction which Regen intends. The application to amend is therefore dismissed.

192. I need deal only briefly with the other objections to the proposed amendment. The Defendants say that the proposed amended claim 1 would (i) disclose matter extending beyond that disclosed in the application as filed, (ii) lack clarity and (iii) be invalid for insufficiency.

Added matter

193. The application as filed has at page 18 a paragraph the same as paragraph [0060] of the Patent, the beginning of which I have quoted above. This is in the context of the invention being described generally. Proposed amended claim 1 discloses no added matter.

Lack of clarity

194. The Defendants submitted that the word 'for' to be added to claim 1 is ambiguous and that the claim would therefore lack clarity. The word would be given the usual meaning: 'suitable for'. There would be no lack of clarity.

Insufficiency

195. The Defendants argued that it was not plausible that the invention of proposed amended claim 1 would produce PRP which would work for all therapeutic uses. This was not made out on the evidence.

Conclusion on the validity of the claims

196. I have found that claim 1 is invalid. Regen did not at trial argue that claim 2 would be independently valid. Claims 3-5 could be, but only because they introduce an implied restriction of therapeutic use of the PRP. My findings in relation to claim 1 were made on the assumption that claim 1 already contained that restriction.

197. I find all the claims invalid for lack of novelty and inventive step.

Infringement

198. It makes no difference on the facts, but in this part of the judgment I will maintain the convenient assumption that claim 1 imposes a use limitation on the PRP.

The law on the scope of patent claims

199. The judgment of the Supreme Court in *Actavis UK Ltd v Eli Lilly & Co* [2017] UKSC 48; [2017] RPC 21 was reviewed by the Court of Appeal in *Icescape Limited v Ice-World International BV* [2018] EWCA Civ 2219. Kitchin LJ summarised the Supreme Court's ruling on the new approach to the scope of claims:

> "[66] The whole approach to interpretation and scope of protection therefore involves the following steps, considered through the eyes of the notional addressee:

i) Does the variant infringe any of the claims as a matter of normal interpretation?

ii) If not, does the variant nevertheless infringe because it varies from the invention in a way or ways which is or are immaterial? This is to be determined by asking these three questions:

a) Notwithstanding that it is not within the literal (that is to say, I interpolate, normal) meaning of the relevant claim(s) of the patent, does the variant achieve substantially the same result in substantially the same way as the invention, i.e. the inventive concept revealed by the patent?

b) Would it be obvious to the person skilled in the art, reading the patent at the priority date, but knowing that the variant achieves substantially the same result as the invention, that it does so in substantially the same way as the invention?

c) Would such a reader of the patent have concluded that the patentee nonetheless intended that strict compliance with the literal meaning of the relevant claim(s) of the patent was an essential requirement of the invention?

[67] Of course, in order to establish infringement in a case where there is no infringement as a matter of normal interpretation, a patentee would have to establish that the answer to questions (a) and (b) above is 'yes' and that the answer to question (c) is 'no'."

200. Floyd LJ agreed, noting:

> [96] It is now clear from the Supreme Court's decision in *Actavis* that purposive construction forms but the first stage in the determination of the scope of protection conferred by the claims. In a sense, the first extreme referred to in Article 1 of the Protocol has been replaced by purposive construction, because it now represents the minimum protection afforded by the patent. There is a second, non-interpretative exercise which allows the patentee a degree of protection outside the normal, purposive meaning of the claims where the variant from the claim achieves substantially the same effect in substantially the same way."

201. Longmore LJ agreed with both judgments.

Normal construction

202. At [60] Kitchin LJ pointed out that the normal construction of the first step involves a purposive interpretation. He continued:

> "But I would add this: the question of equivalence is now addressed in issue (ii), as I will now explain."

203. I understand this to imply that the purposive interpretation carried out in the first step is not the same as the single purposive construction formerly carried out according to the law as explained in *Kirin-Amgen Inc v Hoechst Marion Roussel Ltd* [2005] RPC 9.

204. In *Actavis* Lord Neuberger referred (at [53]) to Lord Hoffmann's view that the principle of purposive construction, that is to say his single approach to the construction of a patent claim, embraced equivalents to the extent necessary. The single construction complied with the requirement in art.2 of the Protocol to art.69 EPC 2000 that due account shall be taken of any element which is equivalent to an element specified in the claims. The old *Improver* questions, although part and parcel of the single purposive construction, were intended to deal with that part of the scope of a claim which embraced equivalents, see *Kirin-Amgen* at [49]-[52].

205. Lord Neuberger left no doubt that the assessment of what might be called the equivalents part of the scope of a claim should now be conducted separately from the assessment of scope according to the normal construction of the claim. The single, conflated, interpretation of the scope of a patent claim in *Kirin-Amgen* was wrong in principle, see *Actavis* at [55].

206. Therefore, although one way of approaching the single purposive construction of a claim used to be to go through the three *Improver* questions, this would not be a correct way of approaching the first step in *Actavis*, the normal construction of a claim. The three *Improver* questions, in revised form, have been relocated to the second step exclusively.

207. It would follow that the normal construction of the claim is confined to interpreting the words of the claim in the context of the specification as a whole. This is to be done in a manner akin to, although of course it could never be identical to, the interpretation of a contract according to the principles explained by Lord Hodge in *Wood v Capita Insurance Services Ltd* [2017] 2 WLR 1095, at [8] to [15], see *Actavis* at [58]. Lord Hodge said:

> "[10] The court's task is to ascertain the objective meaning of the language which the parties have chosen to express their agreement. It has long been accepted that this is not a literalist exercise focussed solely on a parsing of the wording of the particular clause but that the court must consider the contract as a whole and…give more or less weight to elements of the wider context in reaching its view as to that objective meaning."

208. In the case of a patent, the objective meaning is ascertained through the eyes of the skilled person who will bring the wider context by reason of his or her common general knowledge.

Equivalence

209. Three issues arose on the application of the law on equivalence to this case.

Multiple differences

210. The first was whether multiple differences between the alleged infringement and the claim on a normal construction should be assessed separately, or whether the correct

assessment is in relation to a single variant product or process with all differences taken together. Art.2 of the Protocol to art.69 EPC 2000, which is an integral part of the Convention pursuant to art.164(1), provides:

> "***Article 2***
>
> ***Equivalents***
>
> *For the purpose of determining the extent of protection conferred by a European Patent, due account shall be taken of any element which is equivalent to an element specified in the claims.*"

211. Particularly if there is some interaction between the relevant elements of a claim, the answers to the revised *Improver* questions could lead to one result if the equivalents are considered separately and the opposite result if considered together. In my view only the latter result is relevant. The question is whether the accused product or process is a variant falling within the scope of the claim taking all equivalents into account. Of course, it will often be convenient to consider equivalents one by one, but there must be a single overall answer in relation to each accused product or process.

Numerical claims

212. One of the differences relied on by the Defendants was that their anticoagulant had a molarity of 0.136, not 0.10 as specified by claim 1. Mr Davis argued that the doctrine of equivalence could not apply in relation to a numerical claim.

213. The law on claims with a numerical content was revisited by the Court of Appeal in *Jushi Group Co. Ltd v OCV Intellectual Capital LLC* [2018] EWCA Civ 1416. Floyd LJ, with whom Kitchin and Henderson LJJ agreed, said:

> "[36] The principles applicable to the construction of numerical limits were recently reviewed by this court in *Smith & Nephew Plc v Convatec Technologies Inc* [2015] R.P.C. 32. Kitchin LJ (with whom Briggs and Christopher Clarke LJJ agreed) summarised them as follows at [38]:
>
> > "…the approach to be adopted to the interpretation of claims containing a numerical range is no different from that to be adopted in relation to any other claim. But certain points of particular relevance to claims of this kind do emerge from the authorities to which I have referred and which are worth emphasising. First, the scope of any such claim must be exactly the same whether one is considering infringement or validity. Secondly, there can be no justification for using rounding or any other kind of approximation to change the disclosure of the prior art or to modify the alleged infringement. Thirdly, the meaning and scope of a numerical range in a patent claim must be ascertained in light of the common general knowledge and in the context of the specification as a whole. Fourthly, it may be the case that, in light of the common general knowledge and the teaching of the specification, the skilled person would understand that the patentee has chosen to express the numerals in the claim to a particular but limited degree of precision and so intends the claim to include all values which fall within the claimed range when

> stated with the same degree of precision. Fifthly, whether that is so or not will depend upon all the circumstances including the number of decimal places or significant figures to which the numerals in the claim appear to have been expressed."
>
> [37] In any particular case, therefore, it is necessary to consider the relevant integer of the claim in the light of the disclosure of the patent, the common general knowledge and all other relevant circumstances. It is clear that the court was not laying down a rule of law as to how numerical ranges should be interpreted in all cases."

214. The first point to note from *Jushi* and *Smith & Nephew* is that the approach to claims containing one or more numerical limits (hereafter for brevity referred to as 'numerical claims') is no different to that applicable to any other claim. I do not believe that *Actavis* has changed that. It seems to me that the second to fifth points of relevance set out in *Smith & Nephew* will arise when assessing the normal construction of the claim. (The first raises questions which I need not consider here.)

215. Having arrived at a normal construction, *Actavis* requires the court to go on to step two: equivalence. The hypothesis is that having considered the specification as a whole, the number of decimal places used and so on, the skilled person has concluded that on a normal construction of the claim the accused product or process falls outside the claim. If the third *Improver* question is reached, he or she has also decided that the variant achieves substantially the same result in substantially the same way as the invention and so much would have been obvious to the skilled person at the priority date.

216. The point raised by Mr Davis was this: do the reasons for reaching the conclusion that on the normal construction of a numerical claim the accused product or process falls outside the claim necessarily drive the skilled person to the view that the patentee intended that strict compliance with the relevant numerals is an essential requirement of the inventive concept? Mr Davis submitted that they do.

217. I disagree. First, it would put numerical claims into a special class: the doctrine of equivalence does not apply to them. Secondly, the normal construction of a claim may be narrower than the purposive construction according to *Kirin-Amgen*, so if Mr Davis were right the effect of *Actavis* could be to narrow the scope of numerical claims, which I believe would run contrary to the intention underlying the Supreme Court's judgment.

218. It seems to me that in principle it is possible to conclude that as a matter of normal construction a numerical limit cannot be stretched to cover the accused product or process, but that the variant has a numerical value sufficiently equivalent to that defined in the claim such that the variant falls within its scope. Whether or not this is the case will depend on the application of the revised *Improver* questions.

<u>*Step v Emson* and the third *Improver* question</u>

219. This brings me to a further argument. Mr Davis referred to the dictum of Hoffmann LJ in *Société Technique de Pulverisation Step v Emson Europe Ltd* [1993] RPC 513, at 522, submitting that it holds good in law and is important in the application of the third *Improver* question. The relevant passage of that judgment states:

> "The well known principle that patent claims are given a purposive construction does not mean that an integer can be treated as struck out if it does not appear to make any difference to the inventive concept. It may have some other purpose buried in the prior art and even if this is not discernible, the patentee may have had some reason of his own for introducing it."

220. Although the revision to the third *Improver* question made in *Actavis* is on its face modest, the judgment reveals a significant change:

> "[65] The third *Improver* question as expressed by Hoffmann J. is whether the notional addressee would have understood from the language of the claim that the patentee intended that strict compliance with the primary meaning was an essential requirement of the invention. That is in my view an acceptable test, provided that it is properly applied. In that connection, I would make four points. First, although "the language of the claim" is important, consideration of the third question certainly does not exclude the specification of the patent and all the knowledge and expertise which the notional addressee is assumed to have. Secondly, the fact that the language of the claim does not on any sensible reading cover the variant is certainly not enough to justify holding that the patentee does not satisfy the third question. Hence, the fact that the rubber rod in *Improver* [1990] F.S.R. 181 could not possibly be said to be "an approximation to a helical spring" (to quote from p. 197) was not the end of the infringement issue even in Hoffmann J.'s view: indeed, as I have already pointed out, it was because the rubber rod could not possibly be said to be a helical spring that the allegedly infringing product was a variant and the patentee needed to invoke the three *Improver* questions. Thirdly, when considering the third question, it is appropriate to ask whether the component at issue is an 'essential' part of the invention, but that is not the same thing as asking if it is an 'essential' part of the overall product or process of which the inventive concept is part. So, in *Improver*, at p. 197, Hoffmann J. may have been (and I mean 'may have been') wrong to reject the notion that "the spring could be regarded as an 'inessential'": while it was undoubtedly essential to the functioning of the 'Epilady', the correct question was whether the spring would have been regarded by the addressee as essential to the inventive concept, or inventive core, of the patent in suit. Fourthly, when one is considering a variant which would have been obvious at the date of infringement rather than at the priority date, it is, as explained in [63] above, necessary to imbue the notional addressee with rather more information than he might have had at the priority date."

221. The focus is now on the inventive concept, see also *Icescape* at [74]. This mirrors a similar shift in the application of *Improver* question 1, which as revised concerns whether the inventive concept is exploited in substantially the same way to achieve substantially the same result, no longer whether the variant has a material effect on the way the invention as a whole works.

222. Thus, the distinction between the invention as a whole and the inventive concept matters. The invention is that which is claimed, see s.125(1) of the Patents Act 1977. I take the inventive concept or core of the invention to be the new technical insight conveyed by the invention – the clever bit – as would be perceived by the skilled person. This will be assessed by reference to the specification and the evidence.

223. Turning to the third revised *Improver* question and *Step*, I agree with Mr Davis to this extent: now, as before *Actavis*, it is not legitimate just to disregard an integer of a claim without further reasoning (as apparently was done at first instance in *Step*). It is also true that Hoffmann LJ referred to the effect of the integer on the inventive concept. However, Hoffmann LJ's observation was firmly rooted in the principle that the scope of a claim is coterminous with its limits on a single construction. If it was ever the case that the scope of a claim must accommodate the literal meaning of every integer unless the specification signals otherwise, in case the integer has a buried purpose, I do not agree that this remains an accurate statement of the law.

224. The third *Improver* question requires the court to consider whether the relevant integer, that corresponding to the alleged equivalent, would have been regarded by the skilled person as an essential part of the inventive concept. It is clear from Lord Neuberger's judgment that having done so, it is possible for the court to reach a view that even though the language of the claim does not on any sensible reading cover the variant, this is not of itself enough to justify answering yes to the third question.

The law on prosecution history

225. The use and relevance of the prosecution history was also a matter before the Supreme Court:

> "[88] While it would be arrogant to exclude the existence of any other circumstances, my current view is that reference to the file would only be appropriate where (i) the point at issue is truly unclear if one confines oneself to the specification and claims of the patent, and the contents of the file unambiguously resolve the point, or (ii) it would be contrary to the public interest for the contents of the file to be ignored. The first type of circumstance is, I hope, self-explanatory; the second would be exemplified by a case where the patentee had made it clear to the EPO that he was not seeking to contend that his patent, if granted, would extend its scope to the sort of variant which he now claims infringes."

The issues on infringement

226. The Defendants' case on non-infringement was:

(1) the thixotropic gel of their product was not polyester-based; and

(2) the buffered sodium citrate solution was at 0.136M, not 0.1M as required in claim 1.

227. In response, Regen argued that the Defendants' thixotropic gel *was* polyester-based, although this argument was pursued only briefly in Regen's closing written submissions and not at all orally. The molarity of the Defendants' buffered sodium citrate was accepted.

Whether the Defendants' gel was polyester-based

228. The sole issue of fact in the dispute on infringement was whether the Defendants' gel was polyester-based.

229. The Defendants provided a product and process description identifying the composition of their gel. The only ester was Tris (2-ethylhexyl) trimellitate. It was common ground that this was not a polyester. Regen argued that gamma radiation, used in the sterilisation of the product, could cause polymerisation of the gel, a possibility supported by Dr Stepniak in his report. In cross-examination his position was more cautious: he could not exclude formation of a polymer due to irradiation but that he would not expect polymers could be created in a big amount.

230. Dr Darren analysed samples of the Defendants' gel before and after gamma irradiation using Fourier Transfer Infra-Red spectroscopy. He concluded that there was no chemical change in the samples after irradiation and that therefore there was no polyester in the gels after irradiation. Various possible imperfections in the inferences which Dr Darren sought to draw from his experiments were put to him in cross-examination but he maintained, convincingly to my mind, that he had been entitled to conclude that the post-irradiated samples contained no polymer.

231. I accept Dr Darren's evidence. I find on the balance of probabilities that the Defendants' gel was not polyester-based.

Equivalence

232. Both in opening and in closing, Mr Lykiardopoulos stated that Regen's main argument on infringement was based on equivalence. I take the reformulated *Improver* questions in sequence.

<u>The first question</u>

233. First, does the variant achieve substantially the same result in substantially the same way as the invention, i.e. the inventive concept revealed by the patent? The Court of Appeal in *Icescape* underlined that the first question requires attention to be directed to the inventive core (at [72]) or inventive concept. If the inventive concept is exploited in substantially the same way to achieve substantially the same result, the answer to the first question will be yes.

234. Sometimes during argument in the present case the inventive concept was identified by restating practically the entirety of the claim. This did not focus matters. It is both helpful and necessary to simplify the inventive concept as much as can accurately be done.

235. I would identify the inventive concept of claim 1 (still including the use limitation) as the preparation of PRP for solely therapeutic use by employing a thixotropic gel wherein (a) there is only one centrifugation and (b) after centrifugation about half the supernatant is removed and the platelets are then re-suspended in the enriched plasma.

236. As indicated above, the Defendants' variant process has two differences from that claimed: the gel is not polyester-based and the buffered sodium citrate is of a different molarity. The report from the Defendants' expert, Dr O'Connell, did not suggest that either of these matters much. He said:

> "256. As far as the operation of the method of the patent is concerned, the key property of the gel is its density (or specific gravity). This is what

> determines where it separates to during the centrifuge step and so which blood components will lie on top and which underneath it when that step has concluded. From this perspective it makes no difference upon what chemical composition the gel is based.
>
> 257. However, as I have said the skilled addressee [at] the priority date would know of the existence of different types of gel and that they would have somewhat different performances. The skilled addressee would, I believe, consider that polyester gel was specified for a reason, even though no reason was explicitly stated in the patent."

237. Dr O'Connell expanded on this in cross-examination. He said that irrespective of their composition, no two gels will work in exactly the same way. Any gel's performance will vary according to how it is formulated. Each gel must therefore be tested, and if necessary tuned, whatever its composition.

238. Drs Daren and Marx added nothing of substance because neither had expertise in thixotropic gels. Dr Stepniak's evidence was consistent with that of Dr O'Connell, although PRP preparation was not his area of expertise either.

239. Mr Davis referred to another part of Dr O'Connell's evidence, characterised to be that the composition of the gel might affect how the platelets were trapped and therefore using a non-polyester-based gel might make a difference. This was said to come from Dr O'Connell's second report, but I do not at all read the report as saying that.

240. I accept Dr O'Connell's evidence that it was of no matter to the exploitation of the inventive concept whether the thixotropic gel was polyester-based or not.

241. With regard to the sodium citrate anticoagulant, Dr O'Connell said in his report:

> "137 … The molarity [of the sodium citrate] per se is not important – it is the absolute amount of anticoagulant which is important and whether this is sufficient to prevent any coagulation of the blood at a set pH."

242. Taking the two differences in sum, I find that the inventive concept of claim 1 is exploited in substantially the same way to achieve substantially the same result if the process uses a non-polymeric thixotropic gel of the type used by the Defendants and the sodium citrate anticoagulant has a molarity of 0.136 instead of 0.10.

The second question

243. The second question is whether it would be obvious to the skilled person, reading the Patent at the priority date, but knowing that the variant achieves substantially the same result as the invention, that it does so in substantially the same way as the invention.

244. Both Mr Lykiardopoulos and Mr Davis assumed that Dr O'Connell's evidence was consistent with the view that a skilled person would have taken at the priority date and there was no reason to think otherwise. I find that the answer to the second question is yes.

The third question

245. The third question is whether the skilled person, reading the Patent at the priority date, would have concluded that the patentee nonetheless intended that strict compliance with the literal meaning of claim 1 was essential to the inventive concept.

246. I take the 'literal' meaning of claim 1 to be that which defines its scope according to the normal construction of the claim (see also *Icescape* at [74]). Equivalence need be considered only if the variant does not fall within the normal construction of the claim.

247. Mr Davis' argument under this head centred on the requirement that the sodium citrate has a molarity of 0.10. There were three reasons why the skilled person would understand that strict compliance was required here. First, the figure stated is 0.10M, as opposed to 0.1M. Secondly, the molarity is specified only in the context of the process using a glass separator tube; it must be assumed that the molarity has been selected to match the tube. Thirdly, Hoffmann LJ's dictum in *Step v Emson* [1993] RPC 513, at 522, quoted above, still holds good.

248. As I indicated earlier, I do not take the view that the doctrine of equivalence is to be disapplied to numerical claims. I accept that the use of the extra decimal place, 0.10M rather than 0.1M, is relevant, although I think it relates to the question whether 0.10M can be stretched to cover 0.136M as a matter of normal construction rather than the question of equivalence.

249. Mr Lykiardopoulos did not argue that a process using 0.136M sodium citrate fell within the normal construction of the claim. I think it would be unfair for me to assume that there was an implied concession that it did not. As I understood him, his position was that it didn't matter: even if it brought the Defendants' process outside the normal construction of claim 1, a 0.136M solution was equivalent to a 0.10M solution. I will in any event consider the argument advanced on equivalence.

250. The fact that the molarity of the anticoagulant is stated only in relation to the process when employing a glass tube seems to me to add little. If a PET tube is used, the anticoagulant is anhydrous sodium citrate, so the molarity of a solution does not arise.

251. Regarding *Step v Emson*, for the reasons I have given I do not think that Hoffmann LJ's dictum rules out the possibility of answering the third question yes. I must apply the third question to a numerical integer in the same way as any other integer.

252. The evidence indicated that the molarity of the sodium citrate is not essential to the inventive concept and would not have been so regarded by the skilled person at the priority date. That being so, it seems to me that the third question would only be answered yes if there had been a sufficiently clear indication to the skilled person that strict compliance with the figure of 0.10M was intended. In the present case anyway, I think that could only have come from the patent specification or something in the skilled person's common general knowledge. There was no such indication.

253. There remains the possibility that the prosecution history restricts Regen's room for manoeuvre in relation to the scope of the claim, considered next. Subject to that, in my judgment the answer to the third *Improver* question is no.

The prosecution history

254. The Defendants relied on a letter dated 31 May 2013 from Regen to the EPO during the prosecution of the Patent. On page 3 the writer addressed objections raised by the EPO by reference to the Smith prior art. The letter stated that Smith did not disclose the specific tubes of claim 1 and continued:

> "Hence for each tube, a specific combination of a particular tube's material, particular thixotropic gel and particular anticoagulant is claimed. In addition, depending on the tube used, the anticoagulant is to be present in a specific state (solution or anhydrous) and at a specific concentration.
>
> …
>
> In summary, the primary feature of the processes which distinguishes them from those disclosed in [Smith] is the use of specific tubes."

255. I think that the letter of 31 May 2013 satisfies neither requirement specified by Lord Neuberger. There is no issue of construction or scope which is truly unclear if one confines oneself to the specification and claims of the patent, for the reasons discussed above. Nor would it be contrary to the public interest for the letter to be ignored. Regen argued before the EPO that the scope of the claim they were advancing did not overlap the disclosure of Smith. It does not. That is consistent with Regen's argument on scope before me.

256. In my view the prosecution history has no effect on the scope of claim 1.

Conclusion

257. The Patent is invalid for lack of novelty and inventive step. Regen's application to amend the Patent is refused on the ground that the amended Patent would still be invalid. Had the Patent been valid, it would have been infringed.

The Defendants' application to reopen the trial

258. After the conclusion of the trial, on 23 October 2018 CMS Cameron McKenna Nabarro Olswang LLP ('CMNO') wrote to the court stating that they were newly instructed by the Defendants and that new evidence had been discovered. CMNO added that their clients would be filing an application to amend its Grounds of Invalidity and to re-open the trial to deal with the new evidence. An application notice was filed on 29 November 2018 with draft Re-Re-Re-Re-Amended Grounds of Invalidity served on Regen thereafter. The Defendants' application was heard on 11 January 2019.

259. I dismissed the application and said that I would give my reasons in this judgment. They follow.

The new evidence

260. The new evidence on which the Defendants sought to rely is contained in two witness statements, both dated 2 October 2018, which have been filed in opposition proceedings before the EPO. One of these was from Ms Levi and the other from Mr Sant, the solicitor advocate who appeared with Mr Davis for the Defendants at trial.

261. In her statement Ms Levi says that in early September 2018 her son found various articles in his bedroom connected with his mother's business. Ms Levi looked at these on 20 September 2018 and discovered that they included an unopened Regen PRP kit ('the Discovered Kit'). Ms Levi believes that the articles were stored in her son's bedroom some years previously when there was a risk of flooding of the lower floors of her home. They were then forgotten.

262. Mr Sant was notified, the Discovered Kit was sent to him and opened in the presence of witnesses. The Discovered Kit's lot number and documents retained by Ms Levi are said to show that it was supplied by Regen to Ms Levi before the priority date of the Patent. Enclosed with the Discovered Kit was an IFU. The Defendants said that the IFU reveals alternative ways of using the Discovered Kit, including one way which conforms with the claim 1 method, and that this established a prior disclosure of that method.

263. In a witness statement filed in support of Regen's resistance to the application, Timothy Bamford, the solicitor advocate who appeared with Mr Lykiardopoulos at the trial, stated that the Discovered Kit was a confidential prototype supplied to Ms Levi, never intended for sale or public demonstration.

The law

264. It was not in dispute that I have a discretion to reopen the trial. Even after judgment has been handed down, provided the order has not been sealed a court may reopen the trial and hear further evidence. Most, although not all the relevant authorities deal with the circumstance in which the judgment has been handed down, or at least a draft has been provided, and where one side seeks to have the decision revisited. I think the same principles apply whether or not the parties are yet aware of the decision.

265. Mr Acland QC, who with Mr Gamsa appeared for the Defendants at this application, relied principally on the judgment of Birss J in *Vringo Infrastructure Inc v ZTE (UK) Ltd* [2015] EWHC 214 (Pat); [2015] RPC 23. Birss J considered the relevant authorities including the judgment of the Supreme Court in *In re L and another (Children)* [2013] UKSC 8; [2013] 1 WLR 634, *Charlesworth v Relay Roads Ltd* [2000] RPC 300, *Coflexip SA v Stolt Comex Seaway MS Ltd* [2001] RPC 9 (CA) and *Swain v Hillman* [2001] 1 All ER 91 (CA). He said:

> "[38] I can summarise the principles in this way. The court has a jurisdiction, at least before the order is drawn up, to entertain an application of this kind as in [issue] here. The principle to be applied generally is the overriding objective to deal with cases justly and at proportionate cost. This involves dealing with cases expeditiously and fairly and allocating an appropriate share of the court's resources to a dispute. In a case like this one, in which the application is to amend the statement of case, call fresh evidence and then have a further trial, the principles relevant to amending pleadings have a role to play but the *Ladd v Marshall* factors are also likely to have real significance.
>
> [39] As regards principles applicable to amendments, the modern view is probably the Court of Appeal in *Swain v Hillman* [2001] All ER 91. If the court would not have permitted the amendment before trial, it is hard to see how it is likely to be admitted after trial, apart from some very unusual circumstances.

> Nevertheless, just because a court would have permitted the amendment sought before, or even during the trial, if it had been raised at that stage, it does not mean that it should be permitted after judgment."
>
> [40] As to *Ladd v Marshall*, the trial judge is in some ways in a better position than the appellate court to assess the significance of a new point and new evidence. In any case, at this stage the *Ladd v Marshall* factors should be applied more leniently to an applicant than they might be applied in an appellate court; but, all the same, the *Ladd v Marshall* factors are clearly relevant because the application is an attempt to call new evidence after judgment. If those factors, even applied more leniently, are against the applicant, it is likely that powerful factors in the applicant's favour will be needed to justify the application."

266. The judge considered characteristics of patent cases which may have a bearing and continued:

> "[44] In the end, however, although *Ladd v Marshall* and the principles applicable to amendments to statements of case should be considered and provide a useful framework, it is important to look at the matter overall and consider the overriding objective to do justice."

267. The well-known *Ladd v Marshall* factors are taken from the judgment of Denning LJ in *Ladd v Marshall* [1954] 1 WLR 1489:

> "To justify the reception of fresh evidence or a new trial, three conditions must be fulfilled: first, it must be shown that the evidence could not have been obtained with reasonable diligence for use at the trial; secondly, the evidence must be such that, if given, it would probably have an important influence on the result of the case, though it need not be decisive; thirdly, the evidence must be such as is presumably to be believed, or in other words, it must be apparently credible, though it need not be incontrovertible."

268. Mr Lykiardopoulos, who as at the trial appeared for Regen, referred to a more recent judgment of Birss J in *Liqwd Inc v LOréal (UK) Ltd* [2018] EWHC 1845 (Pat) in which Birss J stated (at [27]) that the primary guide to whether a court should reconsider its judgment after trial was *In re L (Children)* [2013] UKSC 8; [2013] 1 WLR 634, in particular paragraph 27 of Baroness Hale's judgment. This is paragraph 27:

> "[27] Thus one can see the Court of Appeal struggling to reconcile the apparent statement of principle in the *Barrell* case [1973] 1 WLR 19, coupled with the very proper desire to discourage the parties from applying for the judge to reconsider, with the desire to do justice in the particular circumstances of the case. This court is not bound by the *Barrell* case or by any of the previous cases to hold that there is any such limitation upon the acknowledged jurisdiction of the judge to revisit his own decision at any time up until his resulting order is perfected. I would agree with Clarke LJ in *Stewart v Engel* [2000] 1 WLR 2268, 2282 that his overriding objective must be to deal with the case justly. A relevant factor must be whether any party has acted upon the decision to his detriment, especially in a case where it is expected that they may do so before the order is formally drawn up. On the other hand, in *In re Blenheim Leisure (Restaurants) Ltd*, Neuberger J gave some examples of cases where it might be just to revisit

> the earlier decision. But these are only examples. A carefully considered change of mind can be sufficient. Every case is going to depend upon its particular circumstances."

269. My Lykiardopoulos continued that although each case must turn on its own facts, in practice any post-trial application which would lead to a second trial is likely to amount to an abuse of process, relying on *Teva UK Ltd v Gilead Sciences Inc* [2018] EWHC 2416 (Pat).

270. In that case Arnold J heard the trial and referred questions to the Court of Justice of the European Union. Answers were given and the claimant applied for judgment in the light of the CJEU's ruling. The defendant applied for permission to file further expert evidence and sought directions for a further trial.

> "[27] In my judgment it is not appropriate to give the parties permission to adduce further evidence at this stage precisely because it would necessitate a second trial.
>
> [28] It seems to me that there is a strong analogy between Gilead's application and an application by a patentee to amend the claims of its patent so as to attempt to validate the claims after trial and the rendering by the court of a judgment concluding that the existing claims are invalid. If this would require a second trial, it will usually amount to an abuse of process and therefore will not be permitted: see *Nikken Kosakusho Works v Pioneer Trading Co* [2005] EWCA Civ 906, [2006] FSR 4, *Vector Corp v Glatt Air Techniques Ltd* [2007] EWCA Civ 805, [2008] RPC 10 and *Nokia GmbH v IPCom GmbH* [2011] EWCA Civ 6, [2011] FSR 15 and *Generics (UK) Ltd v Warner-Lambert Co LLC* [2016] EWCA Civ 1006, [2017] RPC1.
>
> [29] Counsel for Gilead pointed out that this issue is currently before the Supreme Court in *Generics v Warner-Lambert* . That is so, but I must take the law as it presently stands. Counsel for Gilead submitted that Gilead's application could not amount to an abuse of process given that the proceedings had been stayed pending the reference to the CJEU and that there had been no final judgment yet, let alone a perfected order of the Court. He further submitted that the test which the Court should apply, following *Re L*, was simply to consider whether admitting the further evidence would be in accordance with the overriding objective.
>
> [30] In my view Gilead's application does amount to an abuse of process for similar reasons to those given in the post-trial amendment cases. In substance it amounts to an attempt by Gilead to amend its case and adduce fresh evidence after trial and judgment, and thereby get a second bite at the cherry, in circumstances where it could and should have brought its whole case, including any expert evidence, before the Court at the trial. It is true that the Court has not yet delivered final judgment, but that is only because the case raised an issue of European law upon which a preliminary ruling by the CJEU was required first. Now that the CJEU has given its ruling, the Court is in a position to give its final judgment and make an order accordingly.

> [31] In any event, even if the application does not amount to an abuse of process, in my judgment it is not in accordance with the overriding objective to give Gilead permission to adduce further evidence and direct a second trial at this stage, with the consequential expense and delay which that will involve …"

271. In one of the authorities referred to by Arnold J, *Nokia GmbH v IPCom GmbH* [2011] EWCA Civ 6; [2011] FSR 15, Jacob LJ referred to *Johnson v Gore-Wood & Co (No 1)* [2002] 2 AC 1 and the House of Lords' application of the rule in *Henderson v Henderson* (1843) 3 Hare 100. Jacob LJ said (at [108]):

> "…where a party fails to advance a case he could have advanced much earlier and does so without any real justification, he is abusing the process and the other party is therefore entitled to object. It is not normally procedurally fair to subject the other side to successive cases when you could readily have put them all in one go."

272. The Supreme Court in its judgment in *Warner-Lambert* [2018] UKSC 56 unanimously approved the reasoning of *Nikken Kosakusho Works v Pioneer Trading Co* [2005] EWCA Civ 906; [2006] FSR 4 and of *Nokia* in relation to the amendment of patent claims after trial.

273. This line of authority beginning with *Henderson v Henderson* down to *Warner-Lambert* is distinct from that considered by Baroness Hale in *In re L* but still relevant to the issue here.

274. I would summarise the law as follows:

(1) The court has a discretion after the conclusion of the trial to order a further hearing at which the decision can be revisited, or alternatively further argument can be heard in advance of the decision being given, and where appropriate to permit the filing of further evidence, provided the order has not been sealed.

(2) Each case will depend on its circumstances. The court must be primarily guided by the requirement of the overriding objective that cases are dealt with justly and at proportionate cost. The assessment will involve taking into account the matters set out in CPR 1.1(2).

(3) A relevant factor is whether any party has acted upon the decision following the trial to his detriment, especially in a case where it is expected that they may do so before the order is formally drawn up.

(4) The three *Ladd v Marshall* factors on the filing of fresh evidence are also likely to be relevant but will not be determinative.

(5) Where a party seeks after the trial to advance a new case which it could have pleaded and advanced before the trial and there is no justification for failing to have done so, the application to amend will amount to an abuse of process pursuant to the rule in *Henderson v Henderson.*

This case

275. The parties were not agreed as to whether the Defendants could have pleaded reliance on the Discovered Kit before the trial.

276. A witness statement from Ms Levi was filed in these proceedings before the trial. In it she gave evidence of sales of Regen kits to her before the priority date but, oddly, said nothing about the content of the IFUs which accompanied the kits. Nor did she state the method of use of those kits which she demonstrated or otherwise explained to her customers. No doubt for this reason Mr Davis told me that Ms Levi's evidence added nothing.

277. In a first witness statement filed in the EPO, dated 20 September 2018, Ms Levi stated that in September 2018 Mr Sant contacted her again and requested that she provide details of the methodology employed by her and her staff when demonstrating the use of Regen kits. In a second witness statement filed at the EPO, dated 2 October 2018, Ms Levi described the discovery of the Discovered Kit in her son's bedroom and exhibited a copy of the IFU enclosed with it, said to disclose the claim 1 method.

278. The Defendants' draft Re-Re-Re-Re-Amended Grounds of Invalidity seem to have been in a state of evolution leading up to the hearing before me on 11 January 2019. I found them confusing. At the hearing Mr Acland clarified his clients' position. The Defendants wished to rely only on the contents of Ms Levi's second EPO witness statement plus that of Mr Sant. In doing so, they wanted to run two new points (only). First, that the supply of the Discovered Kit by Regen to Ms Levi, with an IFU disclosing the claim 1 method, was by itself a prior disclosure. Second, that Ms Levi supplied kits to customers which contained an IFU like the one enclosed with the Discovered Kits and that these were also prior disclosures. I will assume that any amended pleading would limit the revisions to the Defendants' case unambiguously to those two points.

279. Mr Acland said that the first was not in truth a new point at all. The Defendants merely sought to file fresh particulars in support of an old point, namely that Regen had disclosed the claim 1 method to Ms Levi. He conceded that the second was a new point but said that the Defendants were justified in not having pleaded it before the trial because it had only been made possible by the emergence of the Discovered Kit.

280. Mr Lykiardopoulos argued that both points could have been pleaded before the trial. As to the first, Ms Levi could have been asked in advance of the trial what was stated in the IFUs enclosed with kits supplied to her before the priority date. As to the second, Ms Levi could have been asked about the content of IFUs supplied to her customers. The emergence of the Discovered Kit was a smokescreen behind which the Defendants sought to plead new cases which could and no doubt would have been pleaded had Ms Levi been asked obvious questions before trial. Failing to do so was not an excuse.

281. In response Mr Acland speculated that the IFU supplied with the Discovered Kit might have been unique. If Ms Levi had been asked before the trial about the contents of IFUs in kits supplied to her and supplied by her to customers, she might have said that they did not disclose the claim 1 method.

282. Yet Ms Levi was clear that the Discovered Kit had been unopened. If its IFU was unique then the argument on prior disclosure to Ms Levi's customers falls away. The alleged prior disclosure by means of the supply of the Discovered Kit itself to Ms Levi

remains a possibility, although the unique Discovered Kit then begins to look a lot like a prototype, possibly confidential.

283. I will assume (this was also disputed) that Ms Levi's finding the Discovered Kit was fortuitous, unconnected with Mr Sant's inquiries made to her in September 2018. Even so, I agree with Mr Lykiardopoulos that the Defendants' proposed case on prior disclosure by means of kits and IFUs supplied by Ms Levi to her customers could and should have been pleaded before the trial. It did not happen because the Defendants failed to ask Ms Levi obviously relevant questions. I disallow the pleading of this new case as an abuse of process.

284. On the other hand, I accept that the Defendants could not before trial have pleaded anything to do with the Discovered Kit. I am not able to be sure that it was a confidential prototype, so with some doubt I accept that there could be substance to this allegation of prior use.

285. Nonetheless I am clear that I should not accede to the Defendants' application. The outcome of a further hearing on prior use could make no difference to the outcome of the trial as a whole. Of course my judgment may be appealed. If it is, the Defendants could file a respondents' notice challenging this part of the judgment. In the event that the Court of Appeal were to disagree with my view on the validity of the Patent and also to decide that evidence about the Discovered Kit might make all the difference, the case could be remitted to this court for a further hearing. This would not be ideal. But that possibility is easily outweighed by the certainty that if I were to order a further hearing now significant expense would be incurred and there would be a further delay in handing down a final judgment.

286. The Defendants say that the additional hearing would take only one day. I doubt it. At the least Ms Levi and Mr Turzi would give further evidence, particularly regarding the alleged confidential status of the Discovered Kit. Neither counsel could rule out additional expert evidence. My guess is that at least two days would be required. An order allowing a further hearing would not be in accordance with the need to deal with the case as expeditiously as is possible and at proportionate cost. It would also not allot to these proceedings an appropriate share of the court's resources.