Patents Act 1977 **Opinion Number** **21/24**

OPINION UNDER SECTION 74A

Patent	GB2605850
Proprietor(s)	Cellular Origins Ltd.
Exclusive Licensee	-
Requester	Murgitroyd & Company
Observer(s)	GJE Intellectual Property
Date Opinion issued	11 December 2024

The request

1. The Comptroller has been requested to issue an opinion on the validity of the Patent, GB2605850. The Patent was filed on 6th July 2021, and granted on 25th April 2023 and is currently in force.

2. The request includes 8 documents, and challenges whether the Patent is sufficient, whether it contains added matter, and whether the prior art shows that it is not novel or inventive.

3. Observations were subsequently filed by GJE Intellectual Property, contesting whether the opinion should address the question of sufficiency, and arguing against the submissions made on added matter, novelty, and inventive step. Observations in reply then followed from Murgitroyd, which included reference to an additional document. As this additional document D9, US2004/043481 was not provided in the original request, the observer has not had a chance to address it, and it therefore follows that I should not consider it.

4. The original request includes 8 references (D4a and D5a are provided as proof of dates for D4 and D5, respectively) as follows:

Document Ref.	**Cited Document Details:**
D1	WO2022/256404A1
D2	WO2021/183687A2
D3	EP0639384A2
D4	"*Future of T Cell Manufacturing Video*" published on the website of Wilson Wolf and accessible via the following

	URL: https://www.wilsonwolf.com/future-of-t-cell-manufacturing-video/
D4a	Wayback Machine excerpt demonstrating that D4 was available as of 19 March 2019
D5	Sartorius Stedim Biowelder® TC Manual
D5a	"Biowelder TC" published online on 7 January 2015 and accessible via the following URL: https://www.youtube.com/watch?v=CV08EtVbdEE
D6	US2020/0025782A1
D7	EP3284815A1
D8	US2003/141009A1

5. The request notes that D1 and D2 are only relevant to novelty, as they were published after the filing date of the Patent. These documents entered the European regional phase and therefore are relevant under Section 2(3). D1 claims a priority date of 2 June 2021 from a US application, just before filing of this application, and there is no suggestion by Murgitroyd or GJE that it is not entitled to that priority date. D2 was filed on 10 March 2021.

6. I am first asked to consider sufficiency and added matter. The request then focusses its discussion of novelty and inventive step largely on the independent claims 1, 15 and 34. The request does turn on pages 30-32 to the dependent claims. GJE in their observations and Murgitroyd in their subsequent observations in reply do not touch on the dependent claims. I shall therefore focus my discussion first on the independent claims in relation to novelty and inventive step.

Preliminary matters – the request

7. First, the request raises the question of whether the application is sufficient across its breadth. The request notes that during prosecution the examiner raised the question of support in his report of 9 August 2021. GJE Intellectual Property argue that this means that this subject has already been considered, and that I should not therefore return to it. The request relies upon three separate prongs to this argument on the question: i) of aseptic connection and welding, ii) of controlled transfer and iii) the installing of containers. The examiner's objection is clearly directed to the first of these but makes no reference to the "controlled transfer" or "installation." I am therefore content that the second and third points are not ones that the applicant has already been asked to address during examination, and I can therefore consider them. I do not intend to consider the first point, given what was raised during the original examination process on this case.

8. The observations challenge the use of D7 and D8 as they were considered as part of the examination process. However, in the request these documents are used only for an inventive step argument based on a combination of D3 with D8 and separately D5

with D7. Since D3 and D5 were not considered during the examination process, these amount to new arguments, which were not considered during the examination process. I shall therefore consider them in the context of this argument.

9. I also note that in the request Murgitroyd include in its discussion of the video D5 a machine translation, which does not appear to be disputed, and I shall therefore take that translation for the purposes of my analysis below as being correct.

The Patent

10. The Patent includes three independent claims and relates to a bioprocessing system having an element of automation (independent claim 1), an automated system for fluidly connecting two containers (independent claim 15) and a method of performing bioprocessing in an automated manner (independent claim 34).

11. Independent claim 1 of the Patent corresponds to a combination of claims 1 and 3 of the application as filed. Independent claim 15 of the Patent corresponds to a combination of claims 16 and 17 of the application as filed. Independent claim 34 of the Patent corresponds to a combination of claims 36 and 37 of the application as filed.

12. Those claims as granted therefore read:

> *Claim 1. A bioprocessing system, comprising: a series of processing stations for performing operations for bioprocessing; an automated system, comprising: means for manipulating a fluid connection between a first container and a separable second container whereby to create an aseptic connection that enables a controlled transfer of fluid or cell material between the first container and the second container, wherein the means for manipulating a fluid connection is configured to create an aseptic connection that can be disconnected after the transfer of fluid or cell material is complete to enable a further such fluid connection to be manipulated between the first container and a separable third container; means for installing the one or more containers into each of the series of processing stations and moving the containers between stations, and means for controlling an automated sequence of operation of the processing stations.*
>
> *Claim 16. An automated system for fluidly connecting two containers, wherein at least the first container has a tube fluidly connected at a first end thereto, with a second end of the tube configured to form an aseptic connection with another such tube, the automated system comprising: a robotic device configured to engage the second end of the tube that is fluidly connected to the first container, and to position the tube into one or more positions to be manipulated; means for manipulating a portion of the tube towards the second end of the tube whereby to configure the second end of the tube for creating an aseptic connection with another such tube, wherein the means for manipulating a portion of the tube further comprises: means for clamping a portion of the tube towards the second end of the tube whereby to form a pinched portion in the tube such that the tube is fluidly sealed upstream of the pinched portion; and means for removing a section of the tube downstream of*

the pinched portion whereby to remove the second end of the tube such that a new second end of the tube is thereby formed that has not previously contacted another such tube.

Claim 34. A method of performing bioprocessing in a system having a series of processing stations for performing operations for bioprocessing using one or more containers, the method comprising: configuring an automated system to: manipulate a fluid connection between a first container and a separable second container whereby to create an aseptic connection that enables a controlled transfer of fluid or cell material between the first container and the second container, wherein manipulating the fluid connection creates an aseptic connection that can be disconnected after the transfer of fluid or cell material is complete to enable a further such fluid connection to be manipulated between the first container and a separable third container; and controlling an automated sequence of operation of the processing stations according to a predetermined workflow.

13. Before considering the documents put forward in the request, I will need to construe the claims of the patent following the well-known authority on claim construction which is *Kirin-Amgen and others v Hoechst Marion Roussel Limited and others* [2005] RPC 9. This requires that I put a purposive construction on the claims, interpret it in the light of the description and drawings as instructed by Section 125(1) and take account of the Protocol to Article 69 of the EPC. Simply put, I must decide what a person skilled in the art would have understood the patentee to have used the language of the claim to mean. None of the submissions suggest that there is any particular difficulty in interpreting the claim. However, there are a couple of points brought out.

14. I would note that the mapping provided in the request by Murgitroyd means that different features have the same letter, as they are set out in the order they appear in the claim. I have not adopted that notation as a result. There are a few terms in the claim which are discussed later, and it is therefore worth noting them here.

15. Claims 1 and 34 include the term “bioprocessing”. Murgitroyd suggest that bioprocessing is a broad term that encompasses the use of living cells, organisms, or other biological material to produce a product including pharmaceuticals, vaccines, biological therapeutics, and blood products. They do not provide any particular documents or arguments to support that breadth.

16. GJE argue that in practice there are key differences in batch segregation, cell processing and sterile practices –and lead the skilled person to distinguish between blood product manufacture and bioprocessing. Again, they do not provide any particular documentation to support that contention.

17. The first sentence of the description says that the bioprocessing system is for manipulating biologic samples and may be used to perform automated cell therapy. The next passages go on to talk about the importance of using cells rather than small molecules in recent years as an additional therapeutic approach. I note that in page 17 this includes discussion of processing blood samples as one of the possible consumables. This leads Murgitroyd to suggest that the claimed invention can be used in range of bioprocessing applications including cell therapy. GJE agree at that

broad level.

18. However, as I shall set out further later, in relation to D3, there is an argument as to whether blood processing amounts to bioprocessing. I would also note that claim 34 only requires that the apparatus be "suitable for" bioprocessing. It may therefore be that I can make some progress without directly determining this question. However, I also note the Oxford English Dictionary definition of a bioprocess as being "*A process in which living cells, or components of them (such as enzymes), are used to produce a desired product.*" This makes a distinction between bioprocessing and processing of biological material in general. I am therefore tentatively inclined more towards the GJE contention that blood processing might not be covered by the term bioprocessing, but it is certainly an area where expert witness or other documentary evidence might have given me greater confidence in that view.

19. Claims 1 and 34 include the term "controlled transfer". The Patent on page 6 discusses the use of valves to prevent flow, on page 14 discusses the use of a pumping unit, gravity, or addition of a gas, and on page 15 the use of pinching of a tube to prevent flow. Whilst these are of course examples and there may be other ways of controlling the flow, I do not think there is any real difficulty in interpreting the term controlled transfer.

20. Claims 1 and 34 include the term "installing" in the context of moving containers. Murgitroyd in the request suggest that this should be interpreted as any way in which a container can be provided to a processing station (such as docked, connected, secured, maintained, placed in the processing station.) GJE note the Oxford English dictionary definition as being "place or fix (equipment or machinery) in position ready for use." I therefore think that there is agreement on the construction of this term in the claim.

21. The term "aseptic" appears in all three independent claims. GJE say that in modern cell culture and growth standard practice for grade A cleanroom would be an example of the sort of sterile practices that are required. They go on to suggest that blood processing does not involve cell culture and has less stringent requirements. In the Patent, on page 8 and 9, the aseptic connection is used to ensure that there is no exposure to the surrounding air or the atmosphere, and it suggests that the term is equivalent to a "closed connection" or a "sterile connection". Given this definition in the Patent, the skilled person reads the term aseptic connection to be, a closed or a sterile connection. It may of course be as GJE suggest that the skilled person, implementing this system, imports much of the standards they know well such as those associated with a grade A cleanroom, or whatever other standard they choose to work to (ISO or the other Good Manufacturing Processes standards). However, I should not import that context in my interpretation of the claim as it stands. The Patent does not require a specific such standard.

22. There is also discussion of what limitation is placed on "the means" in the passage that reads "*means for manipulating a fluid connection between a first container and a separable second container whereby to create an aseptic connection …., wherein the means for manipulating a fluid connection is configured to create an aseptic connection."* There is of course some precedent in the application, particularly claims 2 and 10, for the means for manipulating having further functions. Namely "sealing a connection" and "applying a force on either side to determine a

mechanical property,", which in practice require additional components to create a seal, clamp or apply a force and make measurements. I read "the means" as being an open list of components, but ones that must achieve the goals specified.

23. I would also note that the description notes a range of options for sterilisation (including UV or gamma beams) which would require additional components in the overall apparatus. That is to say, I see the claim as requiring some cooperation between (a configuration that allows) the manipulation and the means for sterilisation, but I do not consider that the claims require them to be co-mounted, or the sterilisation means to be in some way a component of the "robot" or other manipulation means.

24. I also note the point made by Murgitroyd in the request that the Patent provides examples of robots, robotic arms, and "one or more actuators" as being robotic devices. Murgitroyd suggest that there could be other examples. It seems to me that a robot includes programmable devices with actuators.

25. On similar lines, there is discussion of what steps are required to be automated in claim 15. That claim starts "An automated system for fluidly connecting two containers…. the automated system comprising…a robotic device…" In the Patent the embodiments relate to a system in which both the fluid transfer and the robotic device are automated. I also note the background passage on pages 1 and 2 of the Patent discusses the problems of labour-intensive manual processes. It suggests that "often [in the prior art], the system is still not capable of performing all the steps required for a complete bioprocessing method…which means that additional labour…is required." It therefore seems to me that the skilled person would read this opening passage as requiring that the fluid transfer step be automated (be that in using a pump or another actuator, such as a valve to control flow), and the robotic steps are automated – to provide a system with less manual input.

26. It is also worth noting that on page 8, the Patent defines the term "automated system" as preferably suggesting a system operated or controlled by automation." It is not clear to me what the intended meaning of the word "preferably" is in that definition, certainly the long list of possible actuators might be incomplete, and some may or may not be used in envisaged embodiments. However, the term "preferably" is used again later in that definition. Does it mean that an automated system is envisaged which is not operated or controlled by automation? Given the arguments raised, it may be that I do not have to determine this question. Suffice to say that the automated system in claim 15, must in my view automate at least one step of the process of fluid connection, and this is separate to the robotic process for tube manipulation, clamping and cutting the tube.

27. I also note that a number of the dependent claims include preferable or examples of devices. As set out in the Manual of Patent Practice at Section 14.132 these phrases are determined as placing no restriction on the scope of the claims. I can generally ignore these clauses in the claim.

28. I would also note that claims 31-33 relate to features of the tube. In its discussion attacking the dependent claims, the request seems to suggest that they are not part of the claimed subject matter. However, I note that claim 15 includes the term "a tube" and provides antecedence for the tube, so I think that they are properly

dependent claims.

Sufficiency

29. In *Eli Lilly v Human Genome Sciences [2008] RPC 29* at [239] Kitchin J gave the following summary of the relevant principles to be applied when assessing whether an application satisfies this section of the Act:

> *The specification must disclose the invention clearly and completely enough for it to be performed by a person skilled in the art. The key elements of this requirement which bear on the present case are these: (i) the first step is to identify the invention and that is to be done by reading and construing the claims; (ii) in the case of a product claim that means making or otherwise obtaining the product; (iii) in the case of a process claim, it means working the process; (iv) sufficiency of the disclosure must be assessed on the basis of the specification as a whole including the description and the claims; (v) the disclosure is aimed at the skilled person who may use his common general knowledge to supplement the information contained in the specification; (vi) the specification must be sufficient to allow the invention to be performed over the whole scope of the claim; (vii) the specification must be sufficient to allow the invention to be so performed without undue burden.*

30. Murgitroyd make direct reference to *Biogen v Medeva plc [1997] RPC1* in order to suggest that point v) is where they take issue with the claims, that is to say whether the disclosure is sufficient to enable the whole width of the claimed invention to be performed.

31. I would also note from *Kirin-Amgen Inc v Hoechst Marion Roussel [2005] RPC 9* that Lord Hoffmann said:

> *But the notion of a "principle of general application" applies to any element of the claim, however humble, which is stated in general terms. A reference to a requirement of "connecting means" is enabled if the invention can reasonably be expected to work with any means of connection. The patentee does not have to have experimented with all of them.*

32. In the request, Murgitroyd suggest that the Patent does not sufficiently disclose ways to enable controlled transfer of material. As I have noted above, the Patent on page 6 discusses the use of valves to prevent flow, on page 14 discusses the use of a pumping unit, gravity, or addition of a gas, and on page 15 the use of pinching of a tube to prevent flow. Murgitroyd suggests that the skilled person would not have knowledge of providing this control. In so doing, they link this control of flow to the means for manipulating a fluid connection. GJE in their observations note the tube welding arrangements which Murgitroyd noted, but also point to a duckbill valve arrangement discussed on page 28, line 21 to page 29 line 32.

33. I am not convinced based on the arguments presented here, that in this case, there is really such an issue with the disclosure of the application. The claims require that controlled transfer and manipulation take place, and more than one example is set

out, and it seems to me that other means could reasonably be expected to work, without the need for the patentee to have experimented with them and laid them all out.

34. In a similar vein, Murgitroyd in the request suggest that the term “installing” is not well defined and suggests that the robotic device described starting from page 12 of the Patent does not install the containers into the stations. GJE argue that the skilled person is not placed under an undue burden in implementing such robots. Again, it seems to me that these sort of automated processing systems are well established, and it seems to me that the addressee would understand that such arrangements could reasonably be expected to work, without the need for the patentee to have experimented with them and laid them all out.

35. I do not therefore believe that claims 1 and 34 lack sufficiency given the arguments raised here.

36. Murgitroyd turn then to claim 15, raising a similar issue in relation to manipulation of a portion of the tube, using a pinched portion and removing the tube downstream. Murgitroyd go on to argue that the skilled person does not understand how it would be possible to provide a connection, absent of any means of creating a connection between the two tubes. In the Patent, there is some discussion of the use of a heat source to cut through the tube, and RF source being used to seal tubes. I also note the process shown in figure 7c and 7f of cutting tubes, which refers to a blade 140, and that shown in figures 7g and 7h of welding tubes. Murgitroyd argue in the request that that amounts to only one way to implement the invention and argues that at the priority date of the Patent the skilled person would not be aware of any other such means. GJE in their observations say that this amounts to several alternative ways to create new connections.

37. Here again, I am not convinced that the skilled person has any real difficulty in understanding that other alternatives could reasonably achieve the same effect. I do not therefore see that claim 15 is insufficient.

Added matter

38. GJE in the request assert that the pre-grant amendments added matter not in the application as filed. The test for added matter is set out in *Bonzel and Schneider (Europe) AG v Intervention Ltd [1991] RPC 553* and asks me to consider whether an amendment to the description had the result that a patent as granted disclosed matter which extended beyond that disclosed in the application. Aldous J described his task as
(1) to ascertain through the eyes of the skilled addressee what is disclosed, both explicitly and implicitly in the application;
(2) to do the same in respect of the patent as granted;
(3) to compare the two disclosures and decide whether any subject matter relevant to the invention has been added whether by deletion or addition. The comparison is strict in the sense that subject matter will be added unless such matter is clearly and unambiguously disclosed in the application either explicitly or implicitly.

39. As summarised in *Richardson-Vicks Inc.’s Patent [1995] RPC 568*, “the test of added

matter is whether a skilled man [person] would, upon looking at the amended specification, learn anything about the invention which he could not learn from the unamended specification."

40. As Murgitroyd set out in their request, claim 27 was not originally dependent on original claim 17, and only on original claim 16. During examination, these claims were combined to give the features of the granted claim 15. They argue that the original claims 17 and 27 present the skilled person with two options, clamping and removing a section or means for sterilising the second end of the tube.

41. GJE in their observations note the embodiment on page 24 where jaws of a clamping unit are closed to pinch the tube, and a heated blade used to sterilise the blade before cutting, and the tube is held in place for long enough to melt the ends of the newly formed tube. They argue that such a period would be sufficient to sterilise the tube, and that this would be apparent to the person skilled in the art. I note however that the passage on page 24 describes a pause before the blade is used (after sterilisation) for cooling before cutting takes place. Whilst it seems to me that the blade may still be hot, this may be open to debate.

42. I have a slight difficulty with that interpretation in the wording of the claims in that claim 25 requires that the means for manipulating "further comprises means" for sterilisation. To me, that implies that additional means, that is to say additional apparatus is provided, rather than the existing means "further" have the effect of sterilising the tube. I note also that the description notes steam or other sterilising fluids may be used, and later expands that list to include other methods such as Ethanol sterilisation (Et0H) Ethylene Oxide sterilisation (Et0), gamma radiation, UV sterilisation, electron beam sterilisation, or any combination of the above.

43. There are clearly some factual questions here around the possibility that different tubes may be cut using different temperatures, or the extent to which different cutting time periods, heating temperature and cooling periods might or might not achieve the same sterilisation and/or cutting effects. Those are not issues where I have been provided with expert opinion or other evidence.

44. Murgitroyd suggest that the other details, such as temperature, are inextricably linked to the functionality, and that they should not have been omitted. That I think points to the Houdaille test set out by the EPO Board of Appeal in *T331/87 Houdaille/Removal of feature [1991] E.P.O.R. 194* and summarised in the Court of Appeal in *Nokia Corporation v IPCOM GMBH & Co KG (No. 3) [2013] R.P.C. 5]* The test was summarised by Kitchin L J:

> *The skilled person must be able to recognise directly and unambiguously that (1) the [omitted] feature is not explained as essential in the original disclosure, (2) it is not, as such, indispensible for the function of the invention in light of the technical problem it serves to solve, and (3) the replacement or removal requires no real modification of other features to compensate for the change.*

45. The Bonzel test asks me to consider the extent to which the skilled person would have appreciated anything new in the patent as granted, that they could not derive from the application as filed. It seems clear to me that the skilled person is taught

that cutting is required, and they are also taught that sterilisation is required. They would I believe appreciate that this can be achieved in different ways, given the context, and given the disclosure in the Patent. Specifically, it seems to me that the skilled person here would appreciate that different methods of sterilisation can be used. I do not therefore believe that the skilled person has learnt something from the granted patent that they could not have learnt from the application as filed.

46. I do not therefore believe that the collation of claim 16 and 17 as filed into a new independent claim (15 as granted) – means that the combination with claim 25 (as granted) amounts to added matter.

The prior art and the independent claims.

47. Given that there are eight citations, I shall address each citation in turn.

D1

48. Murgitroyd provide a mapping of the claim features to D1. In response GJE argue that D1, WO2022/256404, does not disclose a means for manipulating a fluid connection that is configured to create an aseptic connection. They do not question the mapping of the citation to other features of the claim, and they appear to me to be correct.

49. The relevant part of claim 1 reads: *means for manipulating a fluid connection between a first container and a separable second container whereby to create an aseptic connection …., wherein the means for manipulating a fluid connection is configured to create an aseptic connection...*

50. GJE argue that paragraphs 91 and 92 do not show these features, instead showing as stated in paragraph 91 that the robot "*puts the tube connected to a device for measuring the density/cell count into the welding mount*". Rather GJE suggest that the aseptic connection is instead performed by a welding mount.

51. Murgitroyd in their observations in reply, accept this point, but note the passage in paragraph 92 which sets out:

> *"The robot further puts the tube connected to a device for measuring the cell density/cell count into the welding mount as well as a fresh tubing/spool piece. Next the controller conducts the claimed method of sterile automated liquid transfer."*

52. This they argue means that the combination of the robot and the welding mount maps onto "the means for manipulating the fluid connection."

53. As I have set out above in my construction of the claims, I am not convinced that the claim has the narrow construction that GJE imply. Given my broader construction, and what is disclosed in paragraphs 91 and 92 it appears to me that WO2022/256404 anticipates claims 1 and 34.

54. Murgitroyd again set out a mapping of D1 to claim 15 in the request, which GJE do not quibble with, and appears to me to be correct. However, GJE in their

observations rely on the passage in claim 15 which reads: "*wherein the means for manipulating a portion of the tube further comprises: … and means for removing a section of the tube downstream of the pinched portion…"* to suggest that the claim is distinguished. They suggest that this is a similar argument to that on the other independent claims.

55. Murgitroyd identify paragraph 92 and figures 4-7 which show pinch grippers being used to remove a section of tubing. Fresh tubing may then later be added. As an aside, it seems to me that the removal and replacement of sections of the tube, are ways of manipulating the tube.

56. I agree with Murgitroyd that the pinch grippers of D1 anticipate the feature of removing a section of the tube downstream of the pinched portion and it is therefore my view that D1 anticipates the features of claim 15.

D2

57. I turn next to D2, WO2021/183687. Again, Murgitroyd provide a mapping of this document to the claim features of claims 1 and 34 and suggest that they are not novel. Murgitroyd do not argue against claim 15. GJE in their observations, argue that the D2 does not provide a fluid connection to a third container. D2 uses the term cartridge (which the Oxford English Dictionary defines as a small part with a particular purpose that can be easily replaced with another similar part, used in a larger piece of equipment), and therefore seems to me to provide third containers. GJE assert that a separate robot is associated with each fluid connector in D2. GJE do not question the mapping of the citation to other features of the claim, and the mapping appears to me to be correct.

58. Again here, as I have construed the claim more broadly, such that the means for manipulating a connecting are not limited to a single robot. I therefore believe that D2 anticipates claims 1 and 34.

D3

59. D3, EP0639384, relates to a blood product manufacturing system using robotic elements. Again, Murgitroyd in the request provide a detailed mapping to the claims. GJE in their observations assert that bioprocessing and blood processing are distinct fields, with distinct regulations, requirements, and standards.

60. As I have noted above, the Patent does not give a clear pointer on the exclusion or inclusion of blood manufacturing processes within its intent, nor have I been presented with direct evidence on how the skilled person understands this term. Murgitroyd assert that blood products are derived from biological sources and are therefore a form of bioprocessing. If bioprocessing encompasses blood product manufacture, then it appears that both Murgitroyd and GJE believe that the claims are anticipated, save for a question around feature 1H - the installation and moving of containers. As I concluded above, my view matches the GJE contention that blood processing does not fall within the scope of the term bioprocessing.

61. In case I am wrong on my construction of "bioprocessing", then I can also ask whether the blood processing system would be "suitable for" bioprocessing in the

context of claim 34? That I think leads me to a similar question to that which I would be faced with in relation to claim 1: does the skilled person recognise that a blood processing system could alternatively be used for bioprocessing (such as in cell therapy.) GJE assert in their observations that there are some key differences in terms of batch segregation, cell processing and sterile practices. Again, I am not presented with any expert evidence or documentation to support that. If these differences between blood processing and bioprocessing are readily apparent to the skilled person, are they also things that are obvious for the skilled person to implement when adapting a blood processing system to a cell therapy system? These are questions that are not directly argued in the request, observations and observations in reply, and I shall not therefore come to what would be an imperfect view, given the gap in evidence I have been presented with here.

62. GJE also assert that D3 does not disclose a means for installing the containers into each of the series of processing stations and moving the containers between stations. Murgitroyd had pointed to the cup conveying system in figure 2. GJE argue that the mechanism moves the cup accommodating a blood bag to a centrifuge and then moves it to a cup retaining member, where it remains for the rest of its processing, and suggest that the only other step which could be considered a bioprocessing station is a chemical solution supply device (where red blood cell preserving liquid is added). I note that in paragraph 483 one of the positions is an information reading unit which reads barcodes, and the cup is conveyed between the tray and the centrifuge.

63. GJE are therefore making two contentions: that the term “installation” is a narrow one, and that the installation must be into each of the processing stations. I note that claim 1 requires that the series of processing stations be suitable for performing operations suitable for bioprocessing. Murgitroyd in their observations in reply characterise GJE as asserting that there cannot be any intervening component between the container and means for installing/moving that container. I do not see that point in GJE’s observations. Those observations suggest that the means installs the cup into a centrifuge and a cup retaining member. In these positions processing (centrifuging, information reading and preserving liquid addition) is conducted. As I have noted above, it seems to me that “installing” is a broad term. I am content to conclude that the moving of containers does amount to installation into a series (a reading station, tray, centrifuge...) of stations. That leaves the question of whether these steps are bioprocessing steps, I am not convinced based on the evidence before me that claims 1 and 34 are anticipated.

64. Given the gap in the request in showing that the skilled person would see the blood processing system as being readily applicable to a bioprocessing system have not concluded that claim 34 is obvious in view of D3, nor is it obvious to combine with D6 and D7 in order to arrive at the invention.

65. On claim 15, Murgitroyd again supply a mapping, which includes the assertion that the tube loading device 350 is “a robotic device.” GJE in their observations do not question the mapping to claim 15, asserting that the bioprocessing and installation in a series of stations distinguishes claims 1, 15 and 34. Of course, those two features are not required in claim 15, and having reviewed the mapping, it appears correct.

66. I therefore conclude that claim 15 is anticipated.

D4

67. Again, Murgitroyd in the request supply a mapping of the video D4 to claims 1 and 34, but they do not suggest that claim 15 is anticipated. Within that mapping, they note that at 33-51 seconds into the video, the media filling and cell seeding operations are shown. Murgitroyd argue that the septum needle is inherently aseptic.

68. GJE in their observations assert that D4 does not disclose the use of an aseptic connection which can be disconnected to enable a further connection to be made. GJE suggest that the use of a septum and needle arrangement means that there is a significant risk of leakage and exposure to the air. GJE suggest that such operations are typically (or at least preferentially) conducted in a grade A cleanroom – noting EU Annex 1 guidance to assert that needle and septum is not considered intrinsically sterile and suggest that wiping with 70% IPA might ensure minimisation of contamination. They are therefore suggesting that other solutions for managing contamination risks are available. Murgitroyd counter this argument in their observations in reply suggesting that given the system is used for T cell manufacture that it must inherently be aseptic. Murgitroyd further suggest that the problem of ensuring sterility would be apparent to the skilled person and the skilled person would therefore ensure the necessary changes are made.

69. There is clearly disagreement between the two sides here, and I have not been presented with the Annex referred to, nor expert evidence or other documentation which would indicate to me what the skilled person would consider implicit in that video. In my opinion, the evidence before me is insufficient to reach a finding that the skilled person would ensure necessary changes are made to ensure sterility. I am not therefore convinced that claims 1 and 34 can be said to be anticipated or obvious.

D5

70. Murgitroyd in the request suggest that the manual of D5 and the associated video in D5a, anticipates claim 15 (but make no assertion against claim 1 or 34). GJE in their observations dispute this, suggesting that human intervention is required for many steps of the process – noting manual insertion of the blade (page 16), insertion of tube holder set (page 18), insertion of tubes into tube holder and closing cover (page 17), removing the blade (page 18) and pinching the tube (page 18).

71. In the observations in reply, Murgitroyd make an alternative argument suggesting that D5 is a valid inventive step citation but focus the discussion on the extent to which manual steps need to be replaced with automated ones. They also note that claim 15 defines an automated system but assert that this only requires some of the steps to be automated, and that some manual steps are envisaged in the set-up of the Patent.

72. It is clear that D5 relates to a robotic device for welding to tube parts, but on its own it does not show fluidly connecting containers. In the request, Murgitroyd also point to the latter half of the video they provide in D5a. However, that shows the cutting of two tubes, and the connection through a weld to the opposite tubes. The D5 and D5a combination does not therefore show each of the features explicitly.

73. In saying that, I note what is said on page 9 of D5, that the blade is kept sterile, and that the welds made are of sufficient quality and strength for sterile fluid transfer. However, I must also note that the document on its own does not discuss the context in which the welded tube might be used. It is clear that D5 is envisaged to be used for sterile fluid transfer, but there is no mention of it being used for fluid transfer between containers in an automated system. GJE in the request do not address the question of whether this feature is implicit in D5, and I think I can therefore turn to the question from the standpoint of inventive step.

74. The request turns to the question of inventive step by looking at D5 alongside D8, so I shall return to that question later. I also note that the request does not raise objection using D5 against any of the dependent claims.

Inventive Step

75. In the request, there is no definition of the skilled person, or a determination of the common general knowledge. The inventive step argument is based on a determination of the problem solved by the distinguishing feature. This seems to me to be based on the EPO approach to inventive step. The request argues that claims 1 and 34 are obvious in light of D6 or D7 combined with D3 and claim 15 is obvious given the combination of what is disclosed in D5 with D8.

76. In the observations, GJE respond to those arguments, focussing first on whether D3 is a suitable starting point for a bioprocessing system, given that D3 relates to the manufacture of blood products, suggesting that that is a completely different field of art for claims 1 and 34. They make a similar argument in relation to the D5 and D8 combination, suggesting that they are not used in an automated system.

77. To determine whether an invention defined in a particular claim is inventive over the prior art, I will rely on the principles established *in Pozzoli SPA v BDMO SA [2007] EWCA Civ 588*, in which the Windsurfing steps were reformulated:

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

78. It seems to me that the skilled person is someone involved in the manufacture of automated systems for medical clean room or "clean" medical environments for the testing or processing of fluids.

79. None of the submissions here suggest the extent to which D6, US2020/0025782 or D7, EP3284815A1, D8, US2003/141009A1, or indeed D3, D5 were widely known, or whether they might amount to common general knowledge.

80. In order to demonstrate a lack of inventive step based on a mosaic of documents, it must be likely that the skilled person would have considered those teachings together. Laddie J in *Pfizer Ltd.'s Patent [2001] FSR 16* at paragraph 66 stated:

> *When any piece of prior art is considered for the purposes of an obviousness attack, the question asked is "what would the skilled addressee think and do on the basis of the disclosure?" He will consider the disclosure in the light of the common general knowledge and it may be that in some cases he will also think it obvious to supplement the disclosure by consulting other readily accessible publicly available information. This will be particularly likely where the pleaded prior art encourages him to do so because it expressly cross-refers to other material. However, I do not think it is limited to cases where there is an express cross-reference. For example if a piece of prior art directs the skilled worker to use a member of a class of ingredients for a particular purpose and it would be obvious to him where and how to find details of members of that class, then he will do so and that act of pulling in other information is itself an obvious consequence of the disclosure in the prior art.*

81. I am also conscious of what was said in the Technical Board of Appeal of the EPO decision T 176/84, OJEPO 2 which suggests it is reasonable to look for suitable parallels in a neighbouring field so closely related that they would take developments therein into account, or in the broader general field in which the same or similar problems extensively arise and of which they must be expected to be aware.

82. The Manual of Patent Practice in section 3.43 summarises the factors to consider in making such a combination as:

> *(a) How the nature and the contents of the documents influence whether the person skilled in the art would combine them. For example where the disclosed features seem at first sight to have an inherent incompatibility or where one document has a tendency to lead from the mosaic, this would be a pointer towards the combinations being inventive see 3.91*
> *(b) Whether the documents came from the same technical field or from neighbouring or remote technical fields see 3.26-3.28.2 and see 3.44*
> *(c) The presence of references in one document to another*
> *(d) The amount of selection required to isolate the separate disclosures from the surrounding documentary material*
> *(e) Whether the contents of one document are so well known that the skilled person would always have them in mind in reading other documents see 3.45*
> *(f) The age of the documents see 3.37.2-3.39.1*

83. Here, there are no references to the other documents in the documents themselves, and they come from what might be argued to be neighbouring technical fields. It seems to me that there are numerous competing products in this sort of sterile processing environment. I note that there is no suggestion that any of the documents here are so well known that the skilled person would always have them in mind. I therefore think that on the evidence provided to me I cannot conclude that these documents amount to examples of common general knowledge, nor are they so well known as always to be in the skilled person's mind. I have concluded that they come

from neighbouring fields, and that some degree of selection is required. I am therefore not convinced that the case has been made for me to combine their teachings effectively.

84. I recognise also that the skilled person would appreciate that the recommended sterile working practices that surround different processes, such as blood product manufacture or cell therapy, will differ. I believe that they would also appreciate that automation of processing steps will be advantageous.

85. The inventive concepts of claims 1 and 34 and claim 15 all relate to an automated system enabling aseptic process of disconnecting tubes and making connections for controlled fluid connection between containers. In claims 1 and 34, that is in a bioprocessing system, in claim 15 that involves clamping and manipulation in the context of an automated system for fluidly connecting two containers.

86. In the request, Murgitroyd argue that the difference between D6 or D7 is the need to provide an aseptic connection and disconnection. In their observations, GJE assert that D6 discloses a system that employs an open pipette in a controlled environment. They argue that there is therefore no motivation for the skilled person to look for a solution to ensure a clean process. They then argue that the skilled person would look for a solution in bioprocessing, rather than looking to the field of blood processing. Murgitroyd in their observations in reply maintain that the field of bioprocessing is broad and includes blood products. As I concluded earlier, I have construed the term bioprocessing to exclude blood products. However, there is no discussion by the parties of what alternative solutions might be available to the skilled person trying to solve a problem in ensuring a sterile, clean, or aseptic process. I would therefore say that it is not clear to me that there are not a range of alternative ways in which the pipette arrangement in the embodiment of D7 for example, which would be available to the skilled person.

87. I am not therefore convinced on the evidence given to me that the skilled person is led specifically to the combination as a mosaic of D3 with D6 or D7. Moreover, none of these documents are shown or alleged to be part of the common general knowledge, and there is no argument or evidence on the alternative selections that might be available to the skilled person. I am not therefore convinced that the combination of these documents is obvious to the skilled person following the case law I have highlighted above.

88. I then turn to the argument made in relation to claim 15, which again picks up D5, and asks me to look at D8, US2003/141009. Here the request points to the problems that D8 seeks to address, as set out in paragraph 12, in making an automated process which is better for those with low dexterity or visual impairments. The request also highlights its use of a crimp and pinch roller system, which Murgitroyd argue could be implemented in D5. GJE in their observations do not address D8. Murgitroyd focus on the automated rollers discussed in paragraphs 144-145 to suggest that this provides automation of the tube manipulation process.

89. However, I also noted that claim 15 requires the use in an automated system for fluid transfer between two containers, which D5 does not show explicitly.

90. D8, US2003/141009 *is used for dialysis treatment, particularly by people with low*

dexterity. It describes the use of the tubes to transfer fluids between a container and the patient. I am not convinced that the skilled person would therefore consider this document as applicable to the automated system of connecting separate containers in the claimed invention.

91. GJE assert that D5 is not used withing the context of an automated system. Murgitroyd in their observations in reply suggest that this argument relies on the automated steps being ones that install and move containers between processing stations, which are not a requirement of claim 15. That is correct. However, I must also consider whether the skilled person would appreciate that the Biowelder, produced by Sartorius Stedim Biotech, and suitable for welding PharMed BPT and SaniPure BDF for example, could be used in an automated system. It seems to me that they would appreciate that it could be used in an automated, industrial bioprocessing system, and one where for example a pump is used to transfer fluids through the welded tube from one container to another.

92. I would therefore conclude that claim 15 is obvious in the light of D5.

The Dependent claims

93. In the request, Murgitroyd go on to raise objection to each of the dependent claims. Neither the observations nor the observations in reply touch on these, focussing on the independent claims. The request only notes D1-D4 in its brief discussion, and D4 has fallen away, so I shall only consider those points made. Given my conclusions above, some of these attacks to dependent claims have fallen away. I shall address the remaining questions, in claim order.

94. I am not provided with a direct mapping, and there is no detailed discussion of these claims, so I am hesitant to set out an argument on each of these claims in detail. However, I am conscious that a preliminary or prima facie view might be of assistance, and the request does address these claims, albeit at a high level. Given that lack of mapping, and that these issues may be secondary, I have not exhaustively trawled through the documents to find features.

95. D1 and D2 both provide for seals to prevent fluid flow, and pumps to enable fluid transfer and therefore anticipate claims 2 and 3. It seems to me that the purpose of creating a sterile connection is to avoid contamination from a non-sterile atmosphere. If it is not explicitly disclosed then I believe it is implicit in D1 and D2 that they are used in a non-sterile environment, and I do not therefore believe that claim 4 distinguishes the Patent.

96. The request suggests that both documents inspect the fluid connection and that this is done automatically. In D2, I note that there are for example bubble sensors for a fluid conduit (paragraph 352). I have not been able to identify an equivalent in D1, for example I am not convinced that a flow rate sensor can be said to be inspecting the fluid connection. I therefore believe that D2 anticipates claims 5, 6.

97. D2 shows the use of a leak sensor and therefore anticipates claim 8. The request does not identify a particular passage in D2 of what the leak sensor is, and I have not identified one. I suspect that it is likely that it is implicit that this is a fluid or

pressure sensor, although I have not been presented with argument on this point for claim 9.

98. Paragraph 89 of D1 discloses the use of a pressure sensor for the cutting device, which it says can be used to determine whether the tubing is being cut under the defined operation conditions, but it does not say whether that is specifically configures to application of a force on either side of the connection such that a mechanical property can be determined. I am not therefore convinced that the attack against claim 10 has been made out.

99. I am content that the cutting process of D1 and D2 amounts to a workflow as required in claim 11, and that these claims do not distinguish the Patent.

100. D1 has washing and incubating steps but does not appear to me to disclose a concentration step. D2 appears to have all three steps and therefore appears to anticipate claim 12.

101. Both D1 and D2 are manufacturing processes and therefore claim 13, which requires parallel processing of containers, and claims 14 and 35, which allow for different workflows for different containers, appear to be anticipated.

102. Both D1 and D3 provide a pump, and therefore anticipate claim 16. The request does not provide a mapping to claim 17, and I have not easily been able to identify such a feature in D1 and D3.

103. Both D1 and D3 provide a robotic device separate to the clamping and cutting stations and therefore anticipate claims 18 and 19. D1 discloses the uses of grippers and therefore anticipates claim 20. It seems to me that the use of a robotic arm to provide clamping or cutting means is likely to be obvious in the light of D3.

104. Both D1 and D3 involve the use of a blade or heating device and therefore anticipate claim 21. In the request it is asserted that D1 shows a cutting device without contact, and it seems to me that a laser is such a device, but I have not had argument from the observer, or specific evidence on that point. Murgitroyd also assert that indirect means such as lasers are widely known in the art. Based on an incomplete picture, I am minded to agree with the requester on D1, but I am not convinced that the case has been fully made out for D3.

105. Again, in respect of claim 23, the request does not include a mapping for D1 or D3 to a crimping/pinching mechanism that remains fluidly sealed when the tube is removed, and I have not readily identified such a feature. Both D1 and D3 appear to include mechanisms which allow a fluidic path to be established and anticipate claim 24.

106. In respect of claim 25, the request suggests that the heated welding blade will inherently sterilise the end of the tube. As it stands, this is an assertion, and I have not been provided with documentary or expert evidence that this will be the case. I do not therefore believe that the case against claim 25 has been made out.

107. In respect of claim 26, the request asserts that the tube in D1 and D3 includes an internal valve. In D1 an interlock valve is disclosed and in D3 a midway tube is

provided, but not shown. In neither document is it clear to me that this must be an internal valve.

108. Both D1 and D3 provide for welding to another tube and therefore anticipate claims 27 and 28. Paragraph 84 of D1 discloses the use of intermediate tubing and therefore anticipates claim 29.

109. As I noted earlier D1 provides the use of grippers in relation to claim 20, which amount to the gripping units, and I therefore think anticipates claim 30. On the same basis, it seems to me that claim 30 will be obvious in light of D3.

110. In the request, claims 31-33 are described as relating to the tube per se, and therefore not to be part of the claimed subject matter. As I have construed the claims, they are dependent claims, and the argument raised in relation to these claims falls away.

Opinion

111. It is therefore my opinion that the application is sufficient and that it does not contain added matter.

112. Further, it is my opinion that: D1 anticipates claims 1, 15 and 34, D2 anticipates claims 1 and 34, D3 anticipates claim 15. It is further my opinion that claim 15 is obvious in the light of D5.

113. I have come to a preliminary view on the dependent claims, but as I noted above that these claims were not argued at length, and my review of them is limited. However, it seems to me that:

- D1 appears to show that claims 2-4, 11, 13, 14, 16, 18-22, 24, 27-30 and 35 are not novel.
- D2 appears to show that claims 2-6, 8, 9, 11-14 and 35 are not novel.
- D3 appears to show that claims 16, 18, 19, 21, 24, 27 and 28 is not novel.
- D3 appears to show that claims 20 and 30 are obvious.

Robert Shorthouse
Examiner

NOTE

This opinion is not based on the outcome of fully litigated proceedings. Rather, it is based on whatever material the persons requesting the opinion and filing observations have chosen to put before the Office.