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**Datasheet for the decision
of 10 December 2020**

Case Number: T 2266/15 - 3.2.02

Application Number: 10183913.2

Publication Number: 2309244

IPC: G01N15/14, C12N5/00, A61D19/00

Language of the proceedings: EN

Title of invention:
Apparatus and methods for providing sex-sorted animal sperm

Applicant:
Inguran, LLC

Headword:

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - (yes)

Decisions cited:

Catchword:



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Case Number: T 2266/15 - 3.2.02

D E C I S I O N
of Technical Board of Appeal 3.2.02
of 10 December 2020

Appellant: Inguran, LLC
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Representative: Jacob, Reuben Ellis
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 15 July 2015
refusing European patent application No.
10183913.2 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman M. Alvazzi Delfrate
Members: S. Böttcher
L. Bühler

Summary of Facts and Submissions

- I. The applicant lodged an appeal against the decision of the Examining Division to refuse European patent application No. 10183913.2 because the subject-matter of claim 1 of the main request lacked an inventive step and claim 1 of the auxiliary request infringed the requirements of Articles 123(2), 76(1) and 56 EPC.
- II. The present case is related to the cases underlying decisions T 2200/15 and T 2265/15. The application in suit has been filed as a divisional application of the earlier applications EP 09014407.2 and EP 04749513.0.
- III. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request (corresponding to the main request on which the impugned decision was based) or on the basis of the first auxiliary request, both filed with the statement of grounds of appeal.
- IV. With a communication dated 2 April 2020, the appellant was informed that the Board considered the subject-matter of claims 1 and 12 to involve an inventive step. Furthermore, the Board raised an objection under Article 123(2) EPC against claim 12 of the main request and of the auxiliary request.
- V. By letter of 26 May 2020, the appellant filed an amended main request and announced that they conditionally withdrew their request for oral proceedings (submitted with the statement of grounds of appeal) subject to the order of the grant of a patent

based on the main request.

VI. With a further communication under Rule 100(2) EPC dated 13 November 2020, the appellant was informed that the Board intended to remit the case to the Examining Division for examination of the compliance with Article 53(a) EPC.

VII. With the submission dated 9 December 2020 the appellant filed a revised main request and requested grant of a patent on the basis of the revised main request.

VIII. Claim 1 of the main request reads as follows:

" A multi-channel system for sorting particles according to one or more characteristics of the particles [sic], the system being characterised in that it includes:
multiple flow cytometry units each of which is operable to sort a desired population of particles in a mixture of particles by interrogating a stream of fluid containing the particles using a beam of electromagnetic radiation, wherein each flow cytometry unit comprises a droplet sorting system, the units sharing an integrated platform including a common fluid delivery system for delivering fluid containing the particles to the flow cytometry units, wherein the common fluid delivery system is capable of supplying one or more of the units at a first flow rate and one or more of the units at a second flow rate."

IX. Claim 12 of the main request reads as follows:

"A multi-channel method of sorting particles according to one or more characteristics of the particles, the method being characterised in that it includes:

providing a plurality of flow cytometry units, wherein at least one of the multiple flow cytometry unit comprises a jet-in-air droplet sorting flow cytometry unit;

operating the flow cytometry units to conduct a plurality of flow cytometry operations, the

operations including forming separate fluid streams each containing a mixture of particles, and sorting desired populations of particles in the mixtures of particles by interrogating the streams using [sic] beams of electromagnetic radiation; and

sharing a common system for delivering carrier fluid, wherein the common system for delivering carrier fluid is capable of supplying one or more of the units at a first flow rate and one or more of the units at a second flow rate."

X. The following document is referred to in this decision:

D7: Seidel G. E. Jr et al, Current status of sexing mammalian spermatozoa; Reproduction (2002); Volume 124, pages 733 to 743

XI. The appellant's arguments relevant for the present decision are essentially those on which the following reasons for the decision are based.

Reasons for the Decision

1. The application relates to apparatus, methods and processes for providing sex-sorted animal sperm. In detail, the main request relates to a multi-channel system (claim 1) and a method (claim 12) for sorting particles (e.g. sperm) according to one or more characteristics of the particles.

Before the sperm cells are fed to a flow cytometry unit of the system, they can be stained by using a DNA-selective dye such that, for instance, Y-chromosome sperm cells have a different colour than X-chromosome sperm cells. The difference in colour is then used to analyze the cells and to sort them in the flow cytometry unit using a droplet sorting system.

According to claim 1, the multi-channel system includes multiple flow cytometry units, wherein each flow cytometry unit comprises a droplet sorting system. The units share an integrated platform including a common fluid delivery system for delivering fluid containing the particles to the units. The common fluid delivery system is capable of supplying one or more of the units at a first flow rate and one or more of the units at a second flow rate.

Claim 12 relates to a multi-channel method of sorting particles, the method including:
providing a plurality of flow cytometry units, wherein at least one of the units comprises a jet-in-air droplet sorting unit;
operating the units to conduct a plurality of flow cytometry operations, the operations including forming separate fluid streams and sorting desired populations of particles; and sharing a common system for

delivering carrier fluid, wherein the common system for delivering carrier fluid is capable of supplying one or more of the units at a first flow rate and one or more of the units at a second flow rate.

2. Main request - Articles 123(2) and 76(1) EPC

The Board sees the features of claims 1 and 12 of the main request as originally disclosed (see in particular paragraphs [0410], [0464], [0465] of the application as originally filed and the corresponding passages of the earlier applications EP 09014407.2 and EP 04749513.0). In particular, since claim 12 now specifies that the fluid delivered by the common system is a carried fluid as disclosed in paragraph [0410] of the original application, the objection raised by the Board in the communication of 2 April 2020 has been met. Therefore, claim 1 of the main request satisfies the requirements of Articles 123(2) and 76(1) EPC.

3. Main request - inventive step

D7, which can be considered the closest prior art for both independent claims (see appealed decision, points 2.1.1.1 and 2.1.2 of the Reasons), discloses a system for sorting particles according to one or more characteristics of the particles, the system including a flow cytometry unit operable to sort the particles by interrogating a stream of fluid containing the particles using a beam of electromagnetic radiation, wherein the flow cytometry unit comprises a droplet sorting system (page 737, left hand column, last two paragraphs).

The system of claim 1 differs from this system in that

it is a multi-channel system that includes multiple flow cytometry units sharing an integrated platform including a common fluid delivery system for delivering fluid containing the particles to the units, wherein the common fluid delivery system is capable of supplying one or more of the units at a first flow rate and one or more of the units at a second flow rate.

D7 also discloses a method of sorting particles, from which the method of claim 12 differs in the following steps:

providing a plurality of flow cytometry units;

operating the flow cytometry units to conduct a plurality of flow cytometry operations, the operations including forming separate fluid streams each containing a mixture of particles; and

sharing a common system for delivering carrier fluid to the streams, wherein the common system for delivering carrier fluid is capable of supplying one or more of the units at a first flow rate and one or more of the units at a second flow rate.

By providing multiple flow cytometry units sharing a common system for delivering carrier fluid the system may be run more efficiently and profitably. The multiple flow cytometry units are adapted to conduct flow cytometry operations in parallel, thereby providing for a higher throughput. Furthermore, the capability to supply fluid to the units at different flow rates provides for the technical effect of being able to manage the throughput of the units. Thus, the problem to be solved may be regarded as to provide for a more efficient sorting process with a higher

versatility.

Neither this problem nor its solution as defined in claims 1 and 12 has been addressed in the available prior art. Hence, it would not be obvious for the person skilled in the art to provide multiple flow cytometry units sharing a common fluid delivery system as defined in claims 1 and 12.

The Examining Division considered that the person skilled in the art did not have to exercise inventive skills in order to come up with the integration of several flow cytometry units into one system and that the selection of a common system for delivering carrier fluid as specified in claim 1 represented just one of several straightforward possibilities which the person skilled in the art would select.

The Board does not concur with this view. The integrated system used in the claimed method decreases the time required to sort the cells since multiple flow cytometry operations may be conducted in parallel (page 136, line 35 to page 137, line 17). At the same time, the use of a common carrier fluid delivery system, allows the system to be run more efficiently and to achieve more consistent results among channels. These combined benefits cannot be considered obvious for the person skilled in the art without using ex post facto analysis.

The Examining Division further held that it was obvious to provide a common carrier fluid delivery system that is capable of supplying fluid to different units at different flow rates.

The Board cannot agree with this position. The

possibility to vary the flow rate of each unit independently from the other units clearly enhances the versatility of the system and allows for instance selected units to be operated independently from the others (page 134, lines 20-36). It cannot be regarded as straightforward to implement these features in the system of the prior art.

Consequently, the subject-matter of claims 1 and 12 involves an inventive step.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the examining division with the order to grant a patent on the basis of claims 1 to 21 according to the main request filed with the submission dated 9 December 2020 and a description to be adapted.

The Registrar:

The Chairman:



D. Hampe

M. Alvazzi Delfrate

Decision electronically authenticated