Summary

This problem is solved by the means and methods of the present invention, with the features of the independent claims. Preferred examples, which might be realized in an isolated fashion or in any arbitrary combination are listed in the dependent claims and throughout the specification.

Accordingly, the present disclosure relates to an implantation needle comprising an implantable element receiving portion, a capsule receiving portion, and a tip portion, wherein the capsule receiving portion comprises at least one fixing element selected from the group consisting of a mechanical barrier and an adhesive surface.

In one aspect, the present disclosure provides an implantation needle comprising an implantable element receiving portion, a capsule receiving portion, and a tip portion, wherein the capsule receiving portion comprises at least one fixing element selected from the group consisting of a mechanical barrier and an adhesive surface, wherein the implantation needle is an open implantation needle.

In another aspect, the present disclosure provides an implantation kit comprising the implantation needle as described herein, an implantable element comprised in the implantable element receiving portion of said implantation needle, and a capsule comprised in the capsule receiving portion of said implantation needle.

As used in the following, the terms “have”, “comprise” or “include” or any arbitrary grammatical variations thereof are used in a non-exclusive way. Thus, these terms may both refer to a situation in which, besides the feature introduced by these terms, no further features are present in the entity described in this context and to a situation in which one or more further features are present. As an example, the expressions “A has B”, “A comprises B” and “A includes B” may both refer to a situation in which, besides B, no other element is present in A

(i.e. a situation in which A solely and exclusively consists of B) and to a situation in which, besides B, one or more further elements are present in entity A, such as element C, elements C and D or even further elements.

Further, as used in the following, the terms "preferably", "more preferably", "most preferably", "particularly", "more particularly", "specifically", "more specifically" or similar terms are used in conjunction with optional features, without restricting further possibilities. Thus, features introduced by these terms are optional features and are not intended to restrict the scope of the claims in any way. The invention may, as the skilled person will recognize, be performed by using alternative features. Similarly, features introduced by "in an embodiment" or similar expressions are intended to be optional features, without any restriction regarding further embodiments of the invention, without any restrictions regarding the scope of the invention and without any restriction regarding the possibility of combining the features introduced in such way with other optional or non-optional features of the invention. If not otherwise indicated, the term "about" relates to the indicated value with the commonly accepted technical precision in the relevant field, preferably relates to the indicated

Claims

1. An implantation needle comprising an implantable element receiving portion, a capsule receiving portion, and a tip portion, wherein the capsule receiving portion comprises at least one fixing element selected from the group consisting of a mechanical barrier and an adhesive surface, wherein the implantation needle is an open implantation needle.

2. The implantation needle of claim 1, wherein said mechanical barrier is selected from the group consisting of a tongue, a crimp, a bulge, a spring element, and a taper; and/or wherein said adhesive surface comprises, an adhesive which is shear thickening, biocompatible, and/or biodegradable.

3. An implantation kit comprising the implantation needle according to claim 1 or 2, an implantable element comprised in the implantable element receiving portion of said implantation needle, and a capsule comprised in the capsule receiving portion of said implantation needle.

4. The implantation kit of claim 3, wherein said capsule comprises at least one pharmaceutical compound and, optionally, at least one excipient.

5. The implantation kit of claim 4, wherein said at least one excipient is a biodegradable polymer.

6. The implantation kit of claim 4 or 5, wherein said at least one pharmaceutical compound comprises a compound improving tolerance of said implantable element in the body of a subject.

7. The implantation kit of any one of claims 4 to 6, wherein said at least one pharmaceutical compound comprises an immunosuppressive, anti-allergic, and/or anti-inflammatory agent.

8. The implantation kit of any one of claims 4 to 7, wherein said at least one pharmaceutical compound comprises dexamethasone or a derivative thereof.

9. The implantation kit of any one of claims 3 to 8, wherein said implantable element is a sensor or a cannula.

10. The implantation kit of any one of claims 3 to 9, wherein said implantation of said implantable element and said capsule into the body of a subject is simultaneous implantation.

11. The implantation kit of any one of claims 3 to 10, wherein said implantable element and said capsule are implanted into the body of a subject simultaneously via said implantation needle.