The present invention is concerned with immunoglobulin (Ig)-like molecules or fragments thereof for use in treatment, prevention, or progression of adverse cardiac remodelling and conditions resulting from or relating to pressure-overload, such as heart failure, aneurysm formation and remote myocardial fibrosis and for use in improving angiogenesis, preferably after ischemic injury. The invention also provides nucleic acid molecules encoding said Ig-like molecules, vectors comprising same, and host cells comprising same.

**Abstract**

The present invention relates to the use of immunoglobulin-like molecules or fragments thereof for treating or preventing adverse cardiac remodelling and conditions resulting from or related to pressure-overload, such as heart failure, aneurysm formation, and remote myocardial fibrosis. The invention also provides nucleic acid molecules encoding these molecules, vectors comprising the same, and host cells comprising the same.

**Title**

IMMUNOGLOBULIN-LIKE MOLECULES DIRECTED AGAINST FIBRONECTIN-EDA

**Language**

English

**Publication Number**

WO 2016/093700 A3

**Applicant**

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**Inventor**

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**Agents**

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**Designated States**

(Area where protection is sought)


**Effective Date**

22 December 2016

**Publication Date**

16 June 2016 (16.06.2016)
**A. CLASSIFICATION OF SUBJECT MATTER**

INV. C07K16/18 A61P9/10

**ADD.** According to International Patent Classification (IPC) and to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

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<td>wo 2012/057613 AI (UMC UTRECHT HOLDING BV [NL]; ARSLAN FATIH [NL]; PASTERKAMP GERARD [NL]) 3 May 2012 (2012-05-03) cited in the applications on page 3, line 28 - page 4, line 6 page 4, line 35 - page 6, line 8 claims 1-14; example 2</td>
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<td>SOPHIE ASTROF ET AL: &quot;Fi bronectins in vascular morphogenesis&quot;, ANGIogenesis, KLUWER ACADEMIC PUBLISHERS, vol. 12, no. 2, 14 February 2009 (2009-02-14), pages 165-175, XP019668698, ISSN: 1573-7209 page 168, left-hand col. umn., paragraph 1 - page 172, col. umn. 2, paragraph 1</td>
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**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Date of the actual completion of the international search: 20 July 2016

Date of mailing of the international search report: 10/10/2016

Name and mailing address of the ISA/European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016

Authorized officer: Bayer, Annette

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) on which it is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"W" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"Z" document member of the same patent family

Further documents are listed in the continuation of Box C.

See patent family annex.
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<td>KONSTANDIN MATHIAS H ET AL: &quot;Fibronec tin contributes to pathological cardiac hypertrophy but not physiological growth&quot;, BASIC RESEARCH IN CARDIOLOGY, STEINKOPFF, DARMSTADT, DE, vol. 108, no. 5, 4 August 2013 (2013-08-04), pages 1-12, XP035366364, ISSN: 0300-8428, DOI: 10.1007/S00395-013-0375-8 [retrieved on 2013-08-04] abstract page 5, left-hand column, paragraph 2 - right-hand column, paragraph 2 discussion; figures 2, 3</td>
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<td>wo 2015/088348 AI (UMC UTRECHT HOLDING BV [NL]) 18 June 2015 (2015-06-18) the whole document</td>
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Relevant to claim No.:
1-4
1-8, 29,
30
This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
   because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
   because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☑ Claims Nos.:
   because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

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This International Searching Authority found multiple inventions in this international application, as follows:

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see additional sheet
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1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☑ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

   1-8, 29, 30 (all partially)

4. ☑ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

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**Remark on Protest**

☑ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.
This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-4 (partially)

   An anti body that binds fibronectin n-EDA or an anti gen-bi nding fragment thereof for use in improving angiogenesis, preferably after tissue injury and related subject-matter.

   ---

2. claims: 1-4, 9-28 (partially)

   An anti body that binds fibronectin n-EDA or an anti gen-bi nding fragment thereof for use in improving angiogenesis, preferably after tissue injury, wherein the anti body or anti gen-bi nding fragment thereof binds an am i no ac i d sequence as set forth in SEQ ID NO: 1 and related subject-matter.

   ---

3. claims: 1-4, 9-28 (partially)

   An anti body that binds fibronectin n-EDA or an anti gen-bi nding fragment thereof for use in improving angiogenesis, preferably after tissue injury, wherein the anti body or anti gen-bi nding fragment thereof binds an am i no ac i d sequence as set forth in SEQ ID NO: 28 and related subject-matter.

   ---

4. claims: 5-8, 29, 30 (partially)

   An anti body that binds fibronectin n-EDA or an anti gen-bi nding fragment thereof for use in the treatment of a condition associated with pressure-overload, and related subject-matter.

   ---

5. claims: 5-30 (partially)

   An anti body that binds fibronectin n-EDA or an anti gen-bi nding fragment thereof for use in the treatment of a condition associated with pressure-overload, wherein the anti body or anti gen-bi nding fragment thereof binds an am i no ac i d sequence as set forth in SEQ ID NO: 1 and related subject-matter.

   ---

6. claims: 5-30 (partially)

   An anti body that binds fibronectin n-EDA or an anti gen-bi nding fragment thereof for use in the treatment of a condition associated with pressure-overload, wherein the anti body or anti gen-bi nding fragment thereof binds an am i no ac i d sequence as set forth in SEQ ID NO: 28 and related
FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

subject-matter. ---
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