Abstract:

Title: UNDERCARB OXYLATED/UNCARBOXYLATED OSTEOCALCIN INCREASES BETA-CELL PROLIFERATION, INSULIN SECRETION, INSULIN SENSITIVITY, GLUCOSE TOLERANCE AND DECREASES FAT MASS

Abstract: The present invention relates to methods and compositions for treating and diagnosing disorders related to energy metabolism and the OST-PTP signaling pathway involving gamma-carboxylase, osteocalcin and adiponectin. Such disorders include, but are not limited to, metabolic syndrome, glucose intolerance, diabetes types 1 and 2, atherosclerosis and obesity.
### A. CLASSIFICATION OF SUBJECT MATTER

IPC: A61K 38/00 (2006.01)

USPC: 514/2,824,866,909

According to International Patent Classification (IPC) or to both national classification and IPC

### B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S.: 514/2, 824, 866, 909

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CAS-ONLINE, MERCK, CA, USPATALL, EAST

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>US 5,164,483 A (KURIHARA et al.) 17 November 1992 (17.11.1992), see the entire document.</td>
<td>1-122</td>
</tr>
</tbody>
</table>

### D

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents

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

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

"L" document which may throw doubts on priority claim(s) or which 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

"T" 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

"&" document member of the same patent family

Date of the actual completion of the international search: 03 July 2008 (03.07.2008)

Date of mailing of the international search report: 25 JUL 2008

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