Title: ULTRASONICALLY TARGETED DRUG DELIVERY IN CYSTIC FLUIDS, SUCH AS THE CEREBROSPINAL FLUID, USING BUOYANCY SPECIFIC DRUG CARRIERS

Abstract: A method for delivering drugs into cystic fluid, the method comprising injecting a drug delivery system (DDS) into a cystic fluid space at an injection site, the DDS comprising at least one therapeutic agent encapsulated in biodegradable polymers, applying ultrasonic energy proximal to the injection site, and controlling the at least one of buoyancy, delivery location, mixing, and dispersion of the DDS to a targeted area using the ultrasonic energy.

Fig. 5
## INTERNATIONAL SEARCH REPORT

### A. CLASSIFICATION OF SUBJECT MATTER
- **IPC(8) -** A61K 41/00 (2016.01)
- **CPC -** A61K 9/0009, A61K 41/00, A61K 41/0028

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)**
  - IPC(8) - A61K 41/00 (2016.01)
  - CPC - A61K 9/0009, A61K 41/00, A61K 41/0028

- **Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched (CPC) A61K 41/0033, A61M 37/0092**
  - (Search term limited; see below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
- PubWest (PGDB, USPT, EPAB, IPAB); Google; PatBase (All);
- Search Terms: ultrasonic, acoustic, sound, wave, pressure, vibrat, energy, navigat, guilt, propet, displac, steer, propulsion, propet, vesical, pleural, peritoneal, ocular, space, cavity, inter, intra, intravesical, intervesical, intraperitoneal, intraocular, interocular, cy

### 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>X</td>
<td>US 2003/0215394 A1 (SHORT et al.) 20 November 2003 (20.11.2003) Entire document, especially Abstract, para[0013]; para[0016], para[0022], para[0035] and FIG. 1.</td>
<td>1, 4, 6b, 7-9</td>
</tr>
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<td>X</td>
<td>US 2014/0142468 A1 (HOSSACK et al.) 22 May 2014 (22.05.2014) Entire document, especially Abstract, para[0015], para[0071], para[0104]; para[0106], para[0238] and FIG. 12A.</td>
<td>1-3</td>
</tr>
<tr>
<td>A</td>
<td>US 2015/0013304 A1 (WANG et al.) 15 January 2015 (15.01.2015) Entire document.</td>
<td>1-5, 6a, 6b, 7-9</td>
</tr>
<tr>
<td>A</td>
<td>US 2011/0125080 A1 (SHI et al.) 26 May 2011 (26.05.2011) Entire document.</td>
<td>1-5, 6a, 6b, 7-9</td>
</tr>
<tr>
<td>A</td>
<td>US 2007/0071683 A1 (DAYTON et al.) 29 March 2007 (29.03.2007) Entire document.</td>
<td>11-5, 6a, 6b, 7-9</td>
</tr>
<tr>
<td>A</td>
<td>US 6,281,492 B1 (ALMESASKER) 28 August 2001 (28.08.2001) Entire document.</td>
<td>1-5, 6a, 6b, 7-9</td>
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  - **“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) 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

- **“Z”** document member of the same patent family

Date of the actual completion of the international search: 21 November 2016

Date of mailing of the international search report: 27 DEC 2016

Authorized officer: Lee W. Young

- **PCT Helpdesk:** 571-272-4300
- **PCT OSP:** 571-272-7774

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