SUPPLEMENTARY INFORMATION:

Fluorescent magnetosomes for controlled and repetitive drug release under the application of an alternating magnetic field in conditions of limited temperature increase (< 2.5 °C).

*Corresponding author Email address: edouardalphandery@hotmail.com, phone: 0033632697020
SUPPLEMENTARY INFORMATION:

SUPPLEMENTARY TABLE:

Table S1: Percentage of healthy cells, measured with the FL1-H signal, and percentage of cells containing RhB, measured with the FL3-H signal, for MDA-MB-231 cells incubated with Ca, Ca and MC, or Ca and MCR400.

SUPPLEMENTARY FIGURES:

Figure S1: Optical microscopic images of magnetotactic bacteria cultivated in the absence of RhB, (a), and in the presence of 400 µM of RhB, (b).

Figure S2: Histogram representing the distribution of magnetosome sizes for whole bacteria cultivated without RhB, (a), and magnetotactic bacteria cultivated in the presence of 400 µM of RhB.

Figure S3: Transmission electron microscopic image of a magnetotactic bacterium cultivated without RhB showing MC, (a), and of magnetotactic bacteria cultivated in the presence of 400 µM of RhB showing MCR400, (b).

Figure S4: (a), Fluorescence spectrum of a MCR400 suspension at 170 µg/mL dissolved at pH 0.84. (b), Fluorescence spectrum of a solution of free RhB at 730 nM and pH 0.84. (c), Fluorescence intensity of free RhB at pH 0.84 as a function of RhB concentration for an excitation at 405 nm and a detection at 576 nm.

Figure S5: (a), variation of the fluorescence intensity of RhB as a function of the quantity of RhB mixed with brain tissue in the same conditions as for MCR400. (b), variation of the fluorescence intensity of RhB as a function of the quantity of RhB introduced in a mouse brain in the same conditions as for MCR400.
**Figure S6:** (a) Fluorescence spectrum of 10 ng of RhB mixed with brain tissue as a function of time. (b), Fluorescence spectrum of 30 ng of RhB introduced in a mouse brain as a function of time.

**Figure S7:** For 20 µl and 200 µl of a MCR400 suspension at 20 mg/mL introduced in a mouse brain at a depth of 1, 2, or 3 mm, percentage of the magnetosomes in the injection volume as a function of the injection depth, (a). $\Delta F/\delta t$, (b), $\Delta R/\delta t$, (c), and $R_{600s}$, (d), as a function of the percentage of MCR400 in the injection volume.
<table>
<thead>
<tr>
<th>Samples</th>
<th>Percentage of healthy cells (FL1-H)</th>
<th>Percentage of cells containing Rhodamine B (FL3-H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDA-MB-231 + Ca</td>
<td>100 %</td>
<td>0 %</td>
</tr>
<tr>
<td>MDA-MB-231 + Ca + MC</td>
<td>98 %</td>
<td>5 %</td>
</tr>
<tr>
<td>MDA-MB-231 + Ca + MCR400</td>
<td>97 %</td>
<td>99 %</td>
</tr>
</tbody>
</table>
Figure S2
Figure S3
Figure S4
Figure S5

(a) Tissue

(b) Brain
Figure S6

(a) 10 ng of free Rhodamine B mixed with brain tissue

(b) 30 ng of free Rhodamine B in brain
Figure S7