FIG. 1

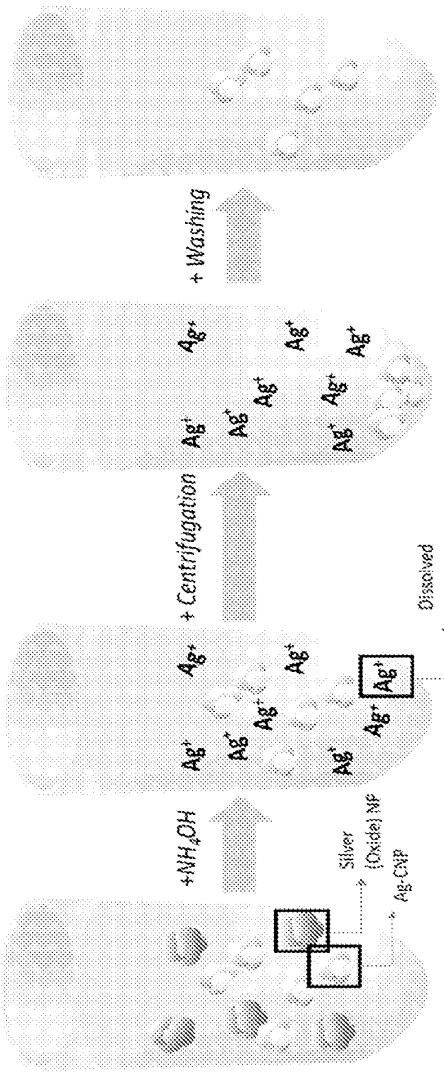

+NH4OH
+ Centrifugation
+ Washing
Silver (Oxide) NP
Ag-CNP
Dissolved silver ions
Post-synthesis AgCNP suspension
Addition of NH4OH induces dissolution of AgNPs and likely forms a charged, coordinated compound with NH2
Centrifugation concentrates AgCNPs in pellet → charged Ag remains in supernatant
AgCNPs re-suspended in dH2O

FIG. 2

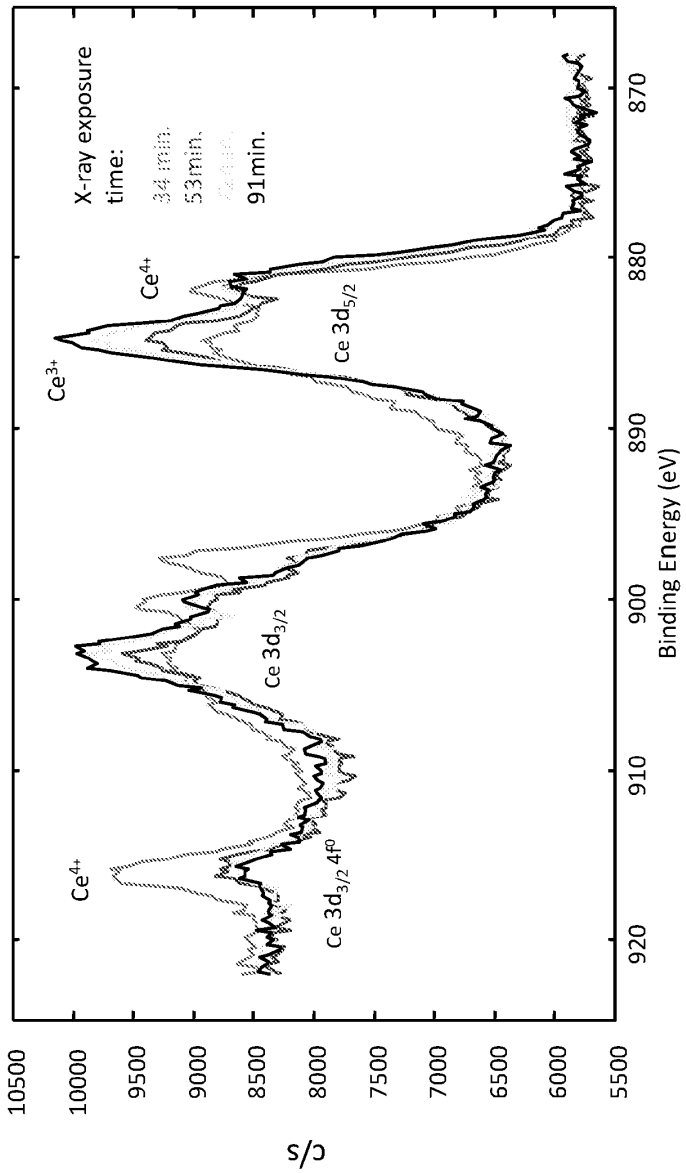
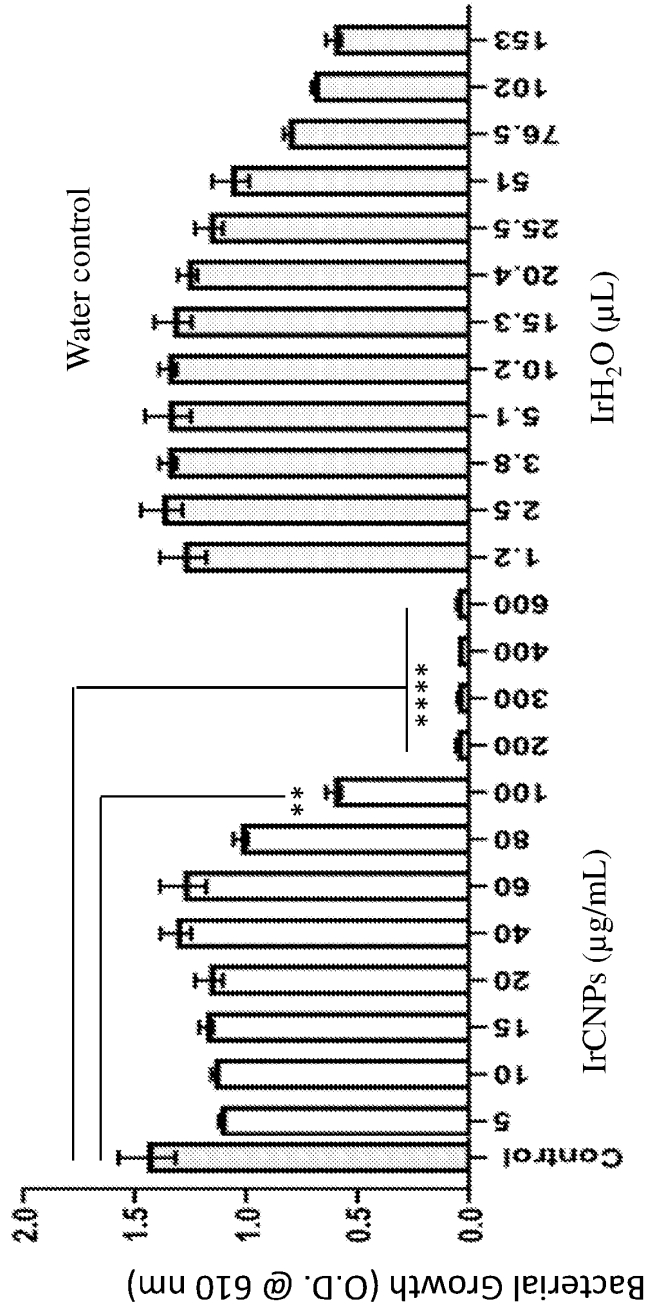

c/s
10500
10000
9500
9000
8500
8000
7500
7000
6500
6000
5500
920
910
900
890
880
870
Binding Energy (eV)
X-ray exposure time:
34 min.
53min.
91min.
Ce4+
Ce3+
Ce4+
Ce 3d5/2
Ce 3d3/2
Ce 3d3/2 4f0

FIG. 3A


Bacterial Growth (O.D. @ 610 nm)
2.0
1.5
1.0
0.5
0.0
Control
5
10
15
20
40
60
80
100
200
300
400
600
1.2
2.5
3.8
5.1
10.2
15.3
20.4
25.5
51
76.5
102
153
IrCNPs (μg/mL)
IrH2O (μL)
Water control
**
****

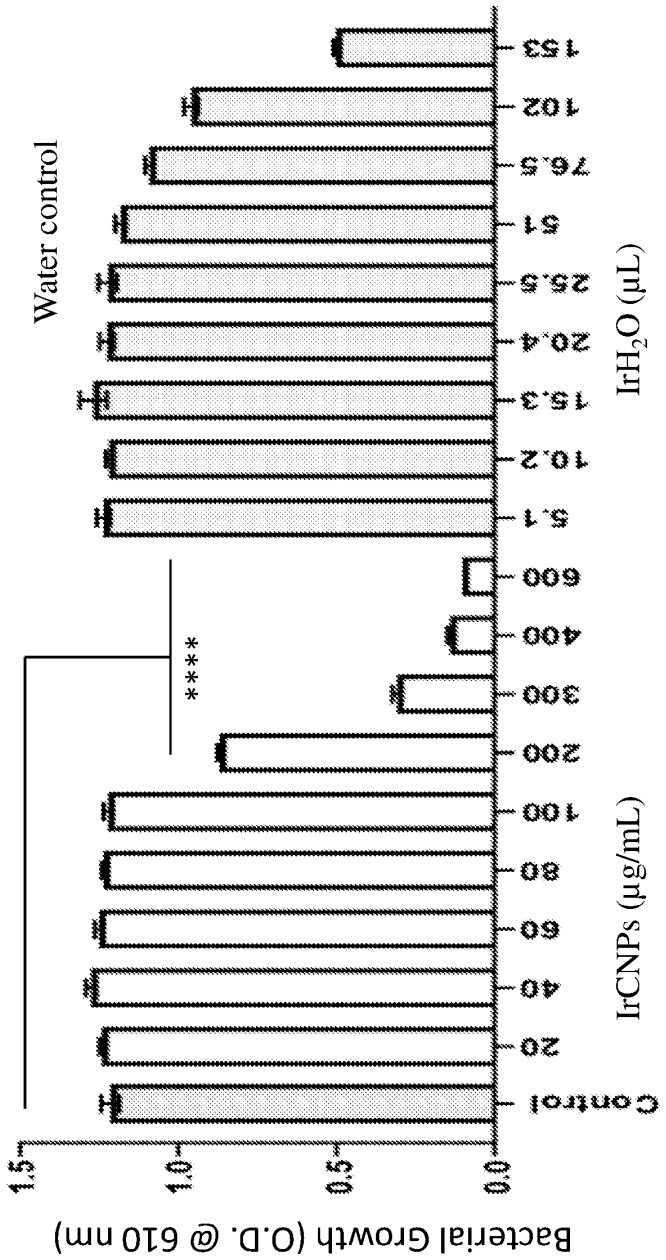

Bacterial Growth (O.D. @ 610 nm)
1.5
1.0
0.5
0.0
Control
20
40
60
80
100
200
300
400
600
IrCNPs (μg/mL)
****
Water control
5.1
10.2
15.3
20.4
25.5
51
76.5
102
153
IrH2O (μL)

FIG. 3C

FIG. 3B

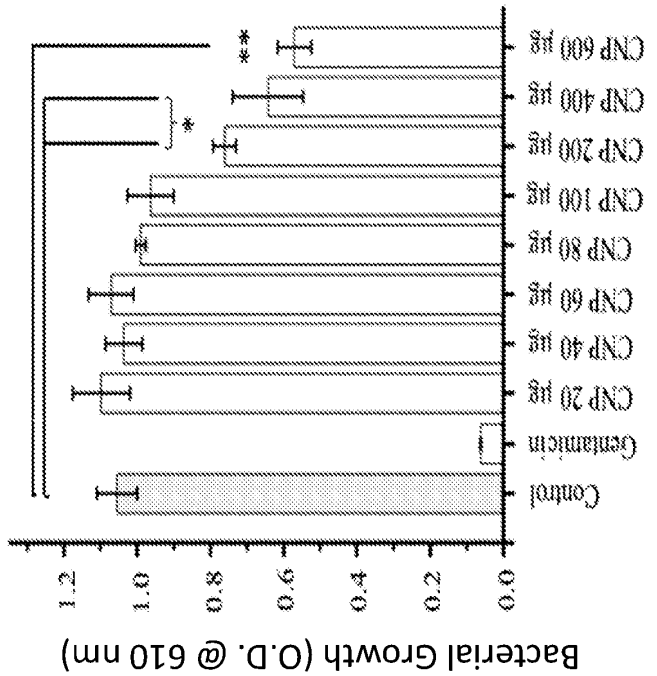
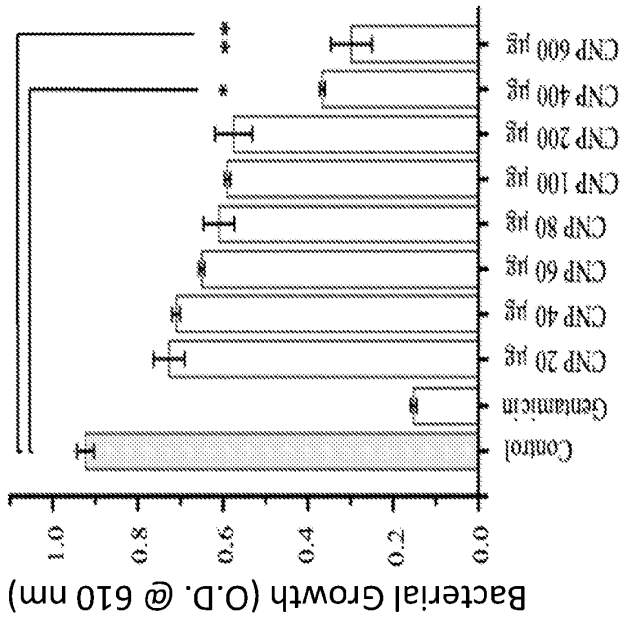

Bacterial Growth (O.D. @ 610 nm)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
Control
Gentamicin
CNP 20 μg
CNP 40 μg
CNP 60 μg
CNP 80 μg
CNP 100 μg
CNP 200 μg
CNP 400 μg
CNP 600 μg
*
***

FIG. 3D


Bacterial Growth (O.D. @ 610 nm)
0.0
0.2
0.4
0.6
0.8
1.0
Control
Gentamicin
CNP 20 μg
CNP 40 μg
CNP 60 μg
CNP 80 μg
CNP 100 μg
CNP 200 μg
CNP 400 μg
CNP 600 μg
*
***

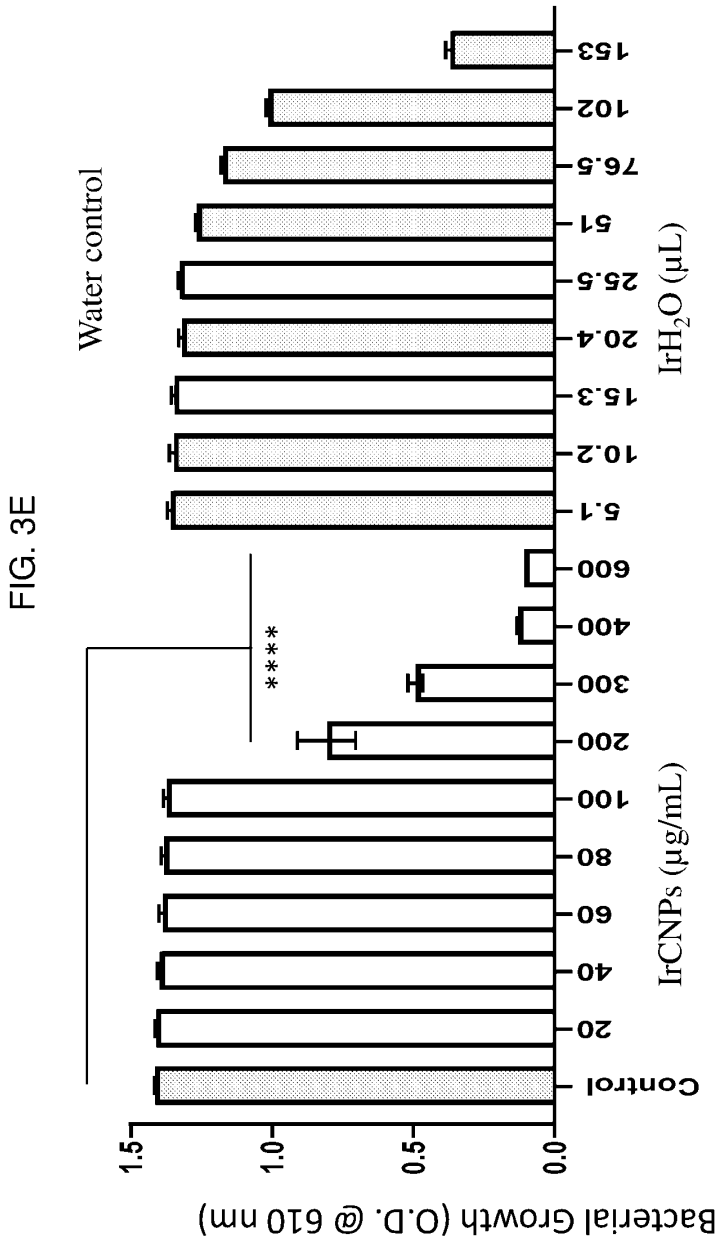

Bacterial Growth (O.D. @ 610 nm)
1.5
1.0
0.5
0.0
Control
20
40
60
80
100
200
300
400
600
5.1
10.2
15.3
20.4
25.5
51
76.5
102
153
IrCNPs (µg/mL)
IrH2O (µL)
****
Water control

FIG. 3E

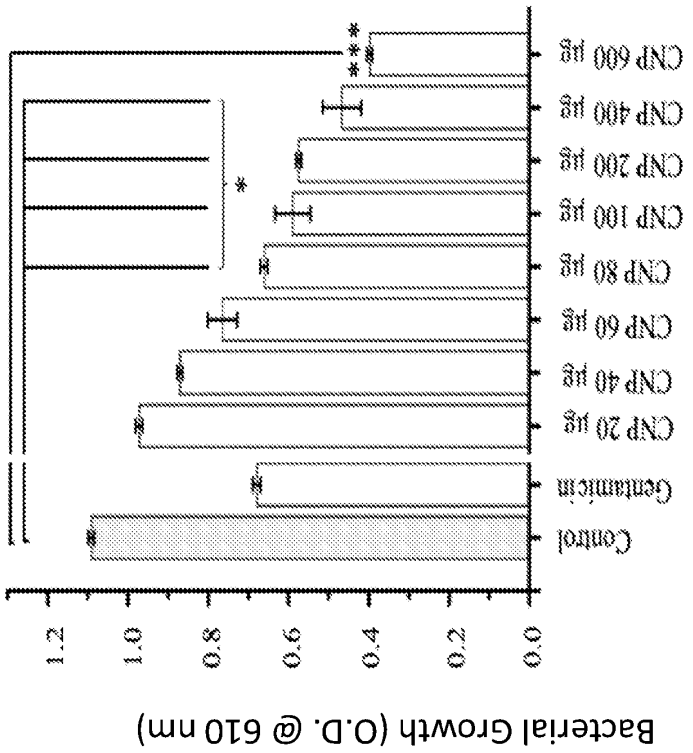

Bacterial Growth (O.D. @ 610 nm)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Control
Gentamicin
CNP 20 µg
CNP 40 µg
CNP 60 µg
CNP 80 µg
CNP 100 µg
CNP 200 µg
CNP 400 µg
CNP 600 µg
*
*
*

FIG. 3F

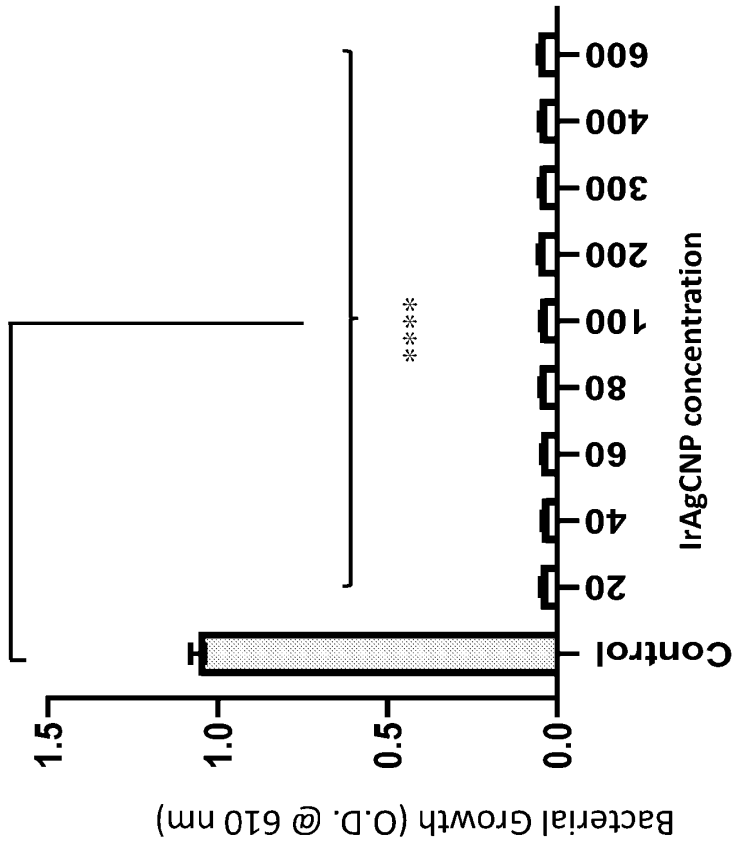
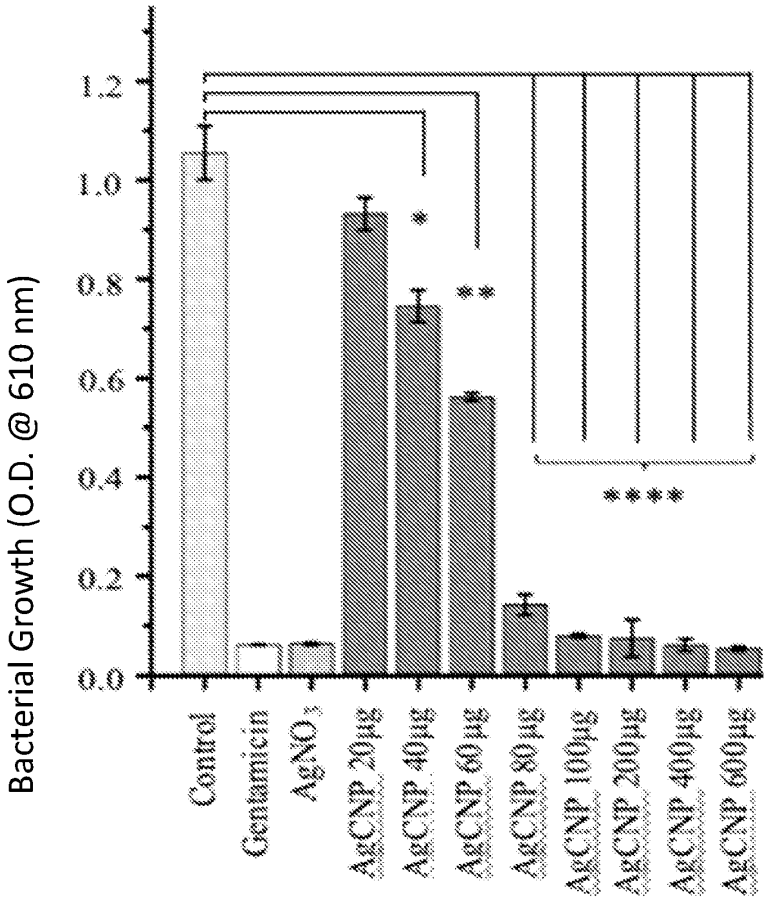

Bacterial Growth (O.D. @ 610 nm)
0.0
0.5
1.0
1.5
Control
20
40
60
80
100
200
300
400
600
IrAgCNP concentration
****

FIG. 4A

FIG. 4B


Bacterial Growth (O.D. @ 610 nm)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
*
**
****
Control
Gentamicin
AgNO3
AgCNP 20µg
AgCNP 40µg
AgCNP 60µg
AgCNP 80µg
AgCNP 100µg
AgCNP 200µg
AgCNP 400µg
AgCNP 600µg
AgCNP concentration

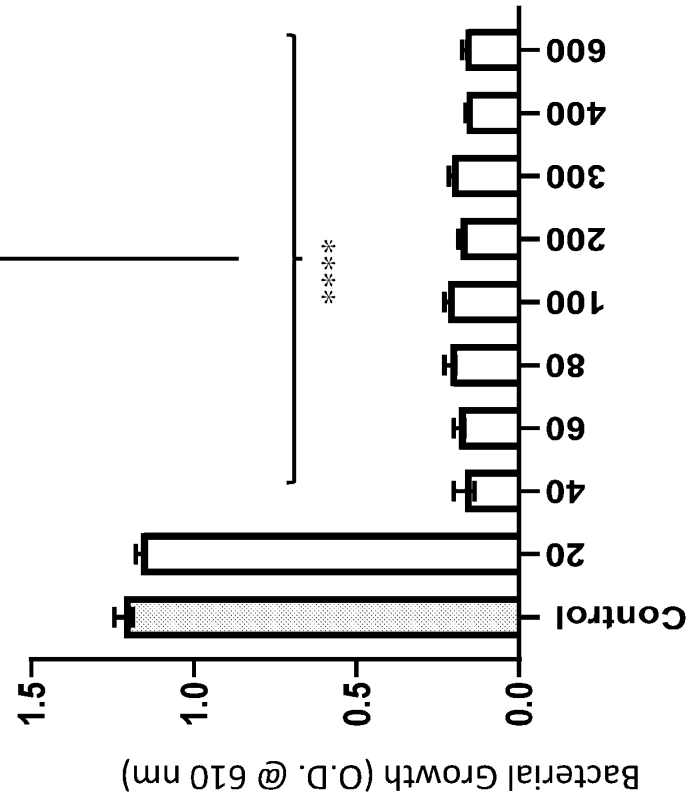
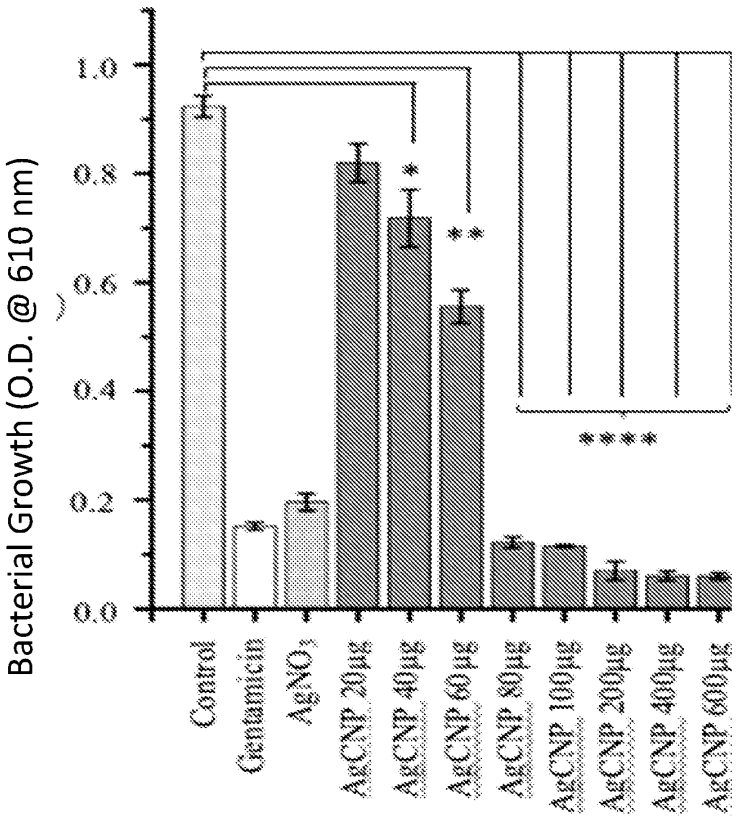

Bacterial Growth (O.D. @ 610 nm)
0.0
0.5
1.0
1.5
Control
20
40
60
80
100
200
300
400
600
****

FIG. 4C

FIG. 4D


Bacterial Growth (O.D. @ 610 nm)
1.0
0.8
0.6
0.4
0.2
0.0
*
**
****
Control
Gentamicin
AgNO3
AgCNP 20µg
AgCNP 40µg
AgCNP 60µg
AgCNP 80µg
AgCNP 100µg
AgCNP 200µg
AgCNP 400µg
AgCNP 600µg

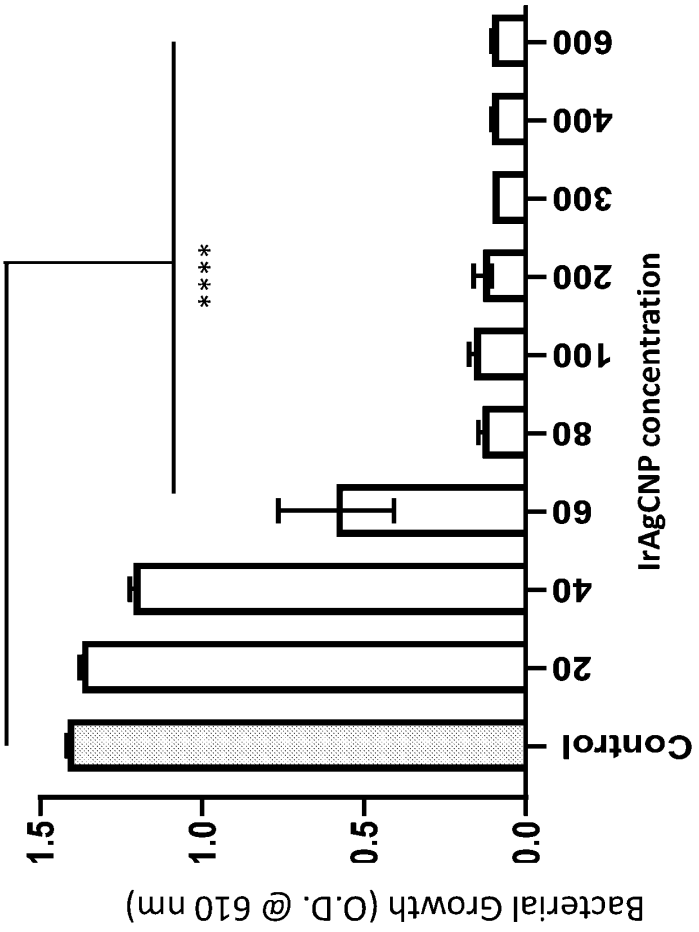
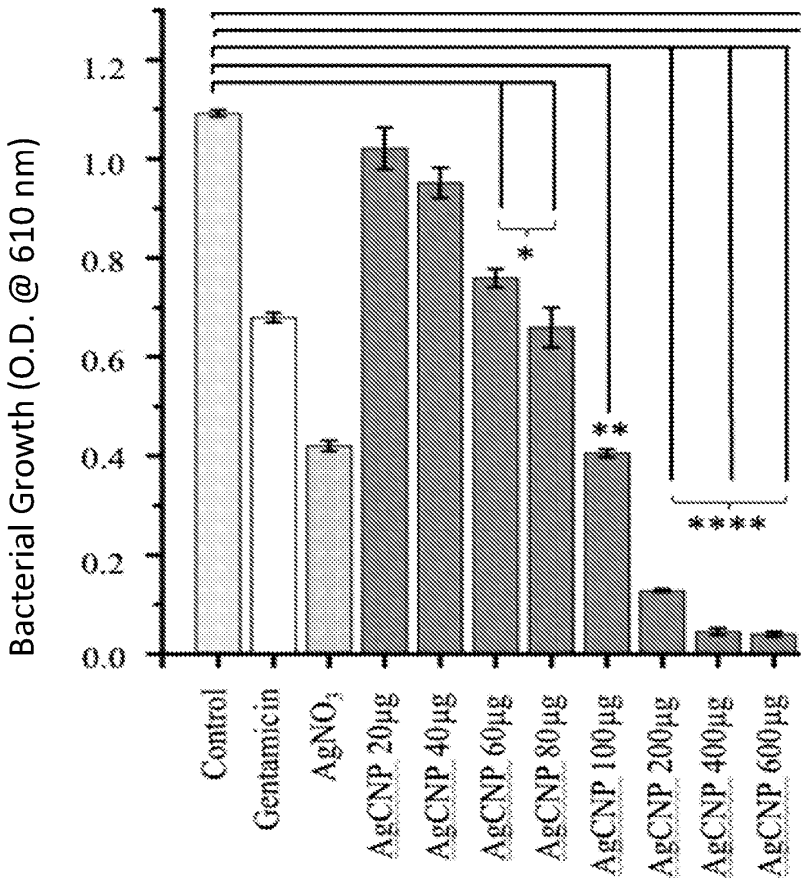

Bacterial Growth (O.D. @ 610 nm)
1.5
1.0
0.5
0.0
****
Control
20
40
60
80
100
200
300
400
600
IrAgCNP concentration

FIG. 4E

FIG. 4F


Bacterial Growth (O.D. @ 610 nm)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
*
**
****
Control
Gentamicin
AgNO3
AgCNP 20µg
AgCNP 40µg
AgCNP 60µg
AgCNP 80µg
AgCNP 100µg
AgCNP 200µg
AgCNP 400µg
AgCNP 600µg

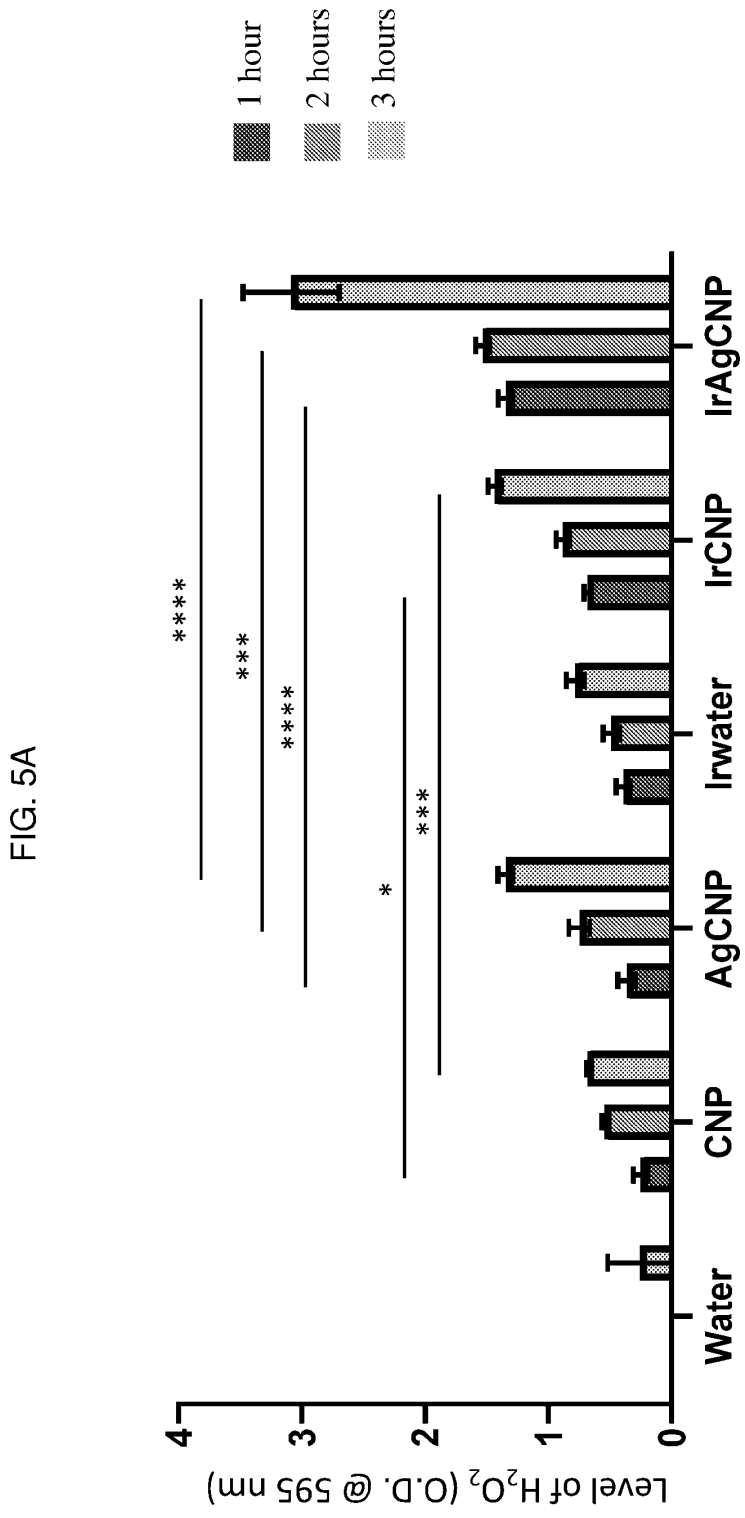

1 hour
2 hours
3 hours
Level of H_2O_2 (O.D. @ 595 nm)
0
1
2
3
4
Water
CNP
AgCNP
lrwater
lrCNP
lrAgCNP
*
***
****
***
****

FIG. 5A

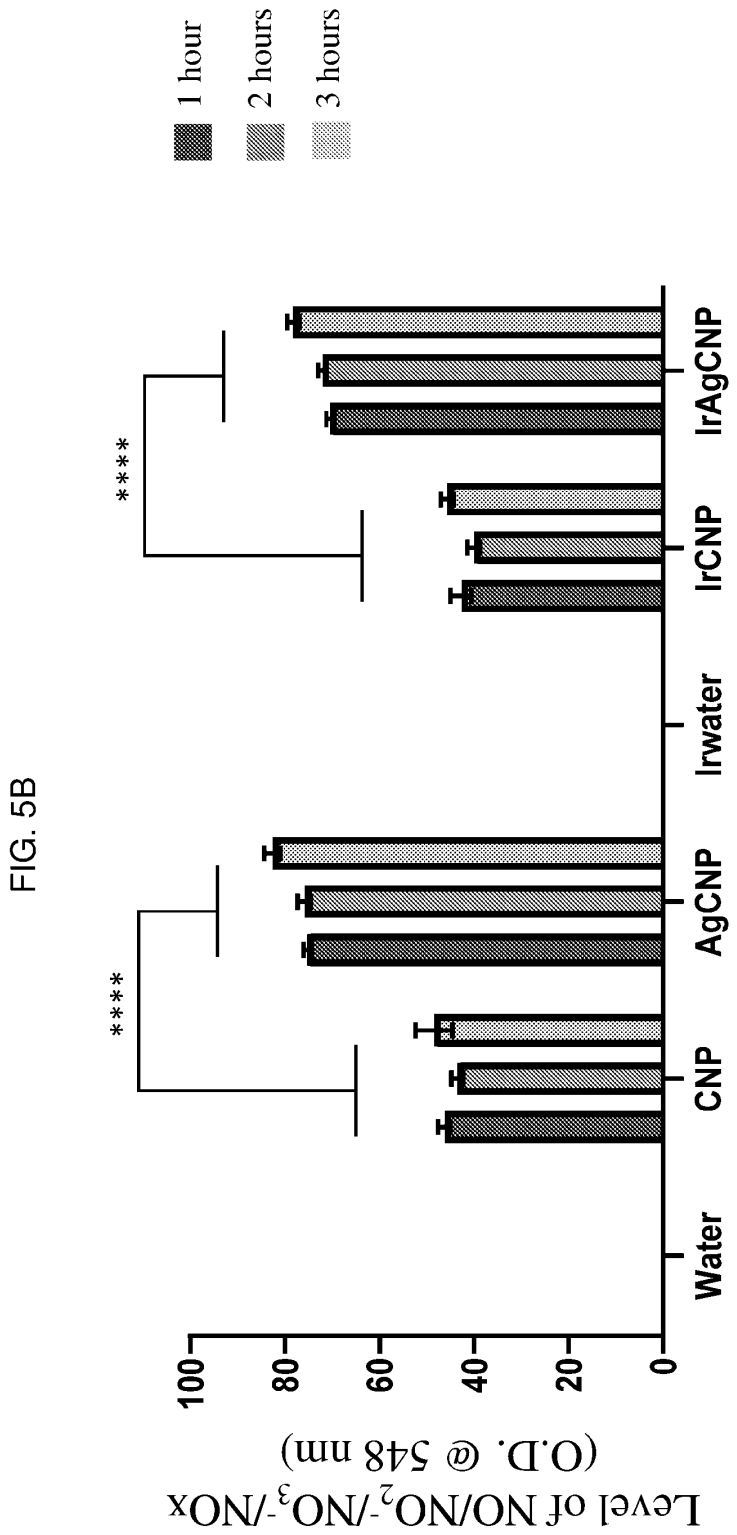

1 hour
2 hours
3 hours
Level of NO/NO2-/NO3-/NOx
(O.D. @ 548 nm)
0
20
40
60
80
100
Water
CNP
AgCNP
lrwater
lrCNP
lrAgCNP
****
****

FIG. 5B