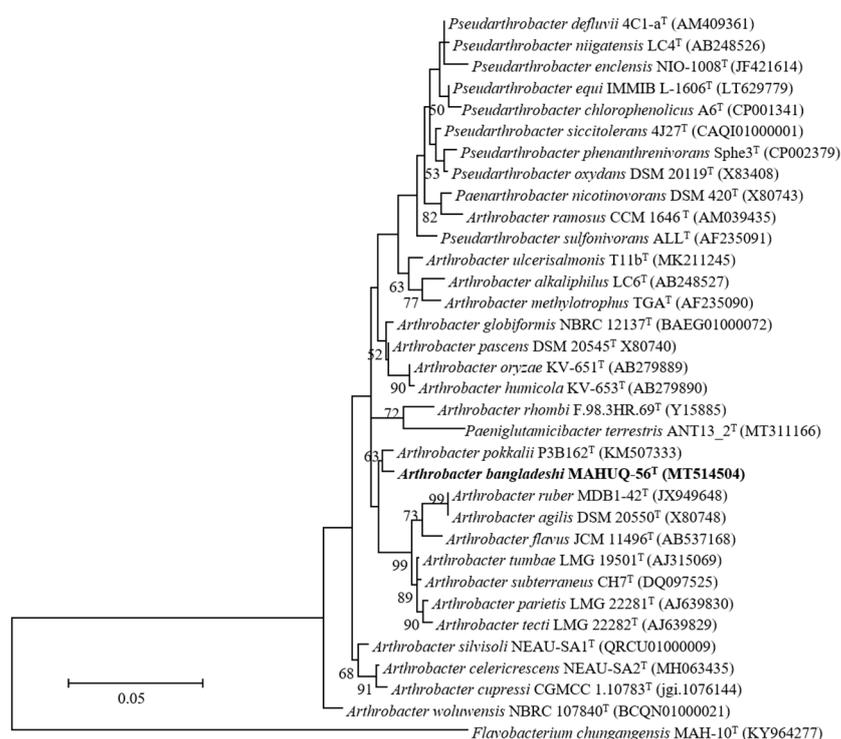
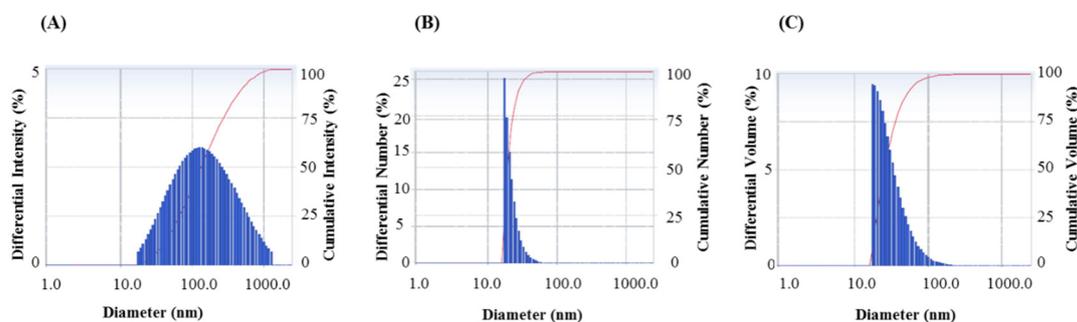


# Supplementary Materials: Characterization and Genome Analysis of *Arthrobacter bangladeshi* sp. nov., Applied for the Green Synthesis of Silver Nanoparticles and Their Antibacterial Efficacy against Drug-Resistant Human Pathogens

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**Figure S1.** The maximum-likelihood (ML) tree based on 16S rRNA gene sequence analysis showing phylogenetic relationships of strain MAHUQ-56 and the related type strains. Values less than 50% were not shown. Scale bar, 0.05 substitutions per nucleotide position.



**Figure S2.** Particles size distribution of biosynthesized AgNPs according to intensity (A), number (B) and volume (C).

**Table S1.** dDDH and ANI values between proposed novel strain MAHUQ-56<sup>T</sup> and the closest type strains.

| Query genome  | Reference genome   | Formula 1 |                |          |                      | Formula 2 (Recommended) |                |          |                      | Formula 3 |                |          |                      | ANI (%)           |
|---|--|-----------|----------------|----------|----------------------|-------------------------|----------------|----------|----------------------|-----------|----------------|----------|----------------------|-------------------|
|   |  | DDH       | Model C.I.     | Distance | Prob. DDH $\geq$ 70% | DDH                     | Model C.I.     | Distance | Prob. DDH $\geq$ 70% | DDH       | Model C.I.     | Distance | Prob. DDH $\geq$ 70% |                   |
| <i>Arthrobacter bangladeshi</i> MAHUQ-56 <sup>T</sup> (JAIFZQ000000000) | <i>Arthrobacter pokkali</i> GZK-1 (GCA_006715285.1)            | 51.9      | [48.4 - 55.3%] | 0.2932   | 16.42                | 27.5                    | [25.1–30.0%]   | 0.1568   | 0.03                 | 44.3      | [41.3 - 47.4%] | 0.4040   | 0.56                 | 84.06<br>Gc=65.86 |
|   | <i>Arthrobacter phenanthrenivorans</i> Sphe3 (GCA_000189535.1) | 39.3      | [35.9 - 42.8%] | 0.3994   | 1.43                 | 24.5                    | [22.2 – 27.0%] | 0.1778   | 0.01                 | 34.4      | [31.4 - 37.5%] | 0.5062   | 0.02                 | 81.53<br>GC=65.37 |
|   | <i>Arthrobacter enclensis</i> NIO-1008 (GCA_001457025.1)       | 40.8      | [37.5 - 44.3%] | 0.3843   | 2.05                 | 24.8                    | [22.5 - 27.3%] | 0.1758   | 0.01                 | 35.5      | [32.6 - 38.6%] | 0.4926   | 0.03                 | 82.02<br>GC=67.09 |

**Table S2.** dDDH and ANI values between proposed novel strain MAHUQ-56<sup>T</sup> and the closest type strains.

| Bacteria used for synthesis of AgNPs   | Size of AgNPs | Average hydrodynamic diameter | Polydispersity index | Absorbance peaks found by FTIR analysis  | Reference            |
|--|---------------|-------------------------------|----------------------|--|----------------------|
| <i>Arthrobacter bangladeshi</i>        | 12-50 nm      | 122.5 nm                      | 0.286                | 3438.60, 2921.32, 2848.50, 2352.20, 2330.50 and 1645.20 cm <sup>-1</sup>                                     | In the current study |
| <i>Cedecea</i> sp.                     | 10–40 nm      | 115.9 nm                      | 0.39                 | 3241.87, 2915.24, 2848.56, 2113.44, 1999.70, 1922.51, 1621.15, 1514.19, 1444.29 and 1007.59 cm <sup>-1</sup> | [43]                 |
| <i>Paenarthrobacter nicotinovorans</i> | 13–27 nm      | 44.2 nm                       | 0.443                | 3420.90, 2921.69, 2851.34, 2360.21, 2341.64, 1653.02, and 1033.62 cm <sup>-1</sup>                           | [45]                 |
| <i>Terrabacter humi</i>                | 6-24 nm       | Not available                 | Not available        | 3444.65, 2917.98, 2847.83, 2360.10, 2342.18, 1635.91, 1374.25 and 1175.36 cm <sup>-1</sup>                   | [46]                 |