

Supplementary materials

MicroRNA delivery by graphene-based complexes into glioblastoma cells

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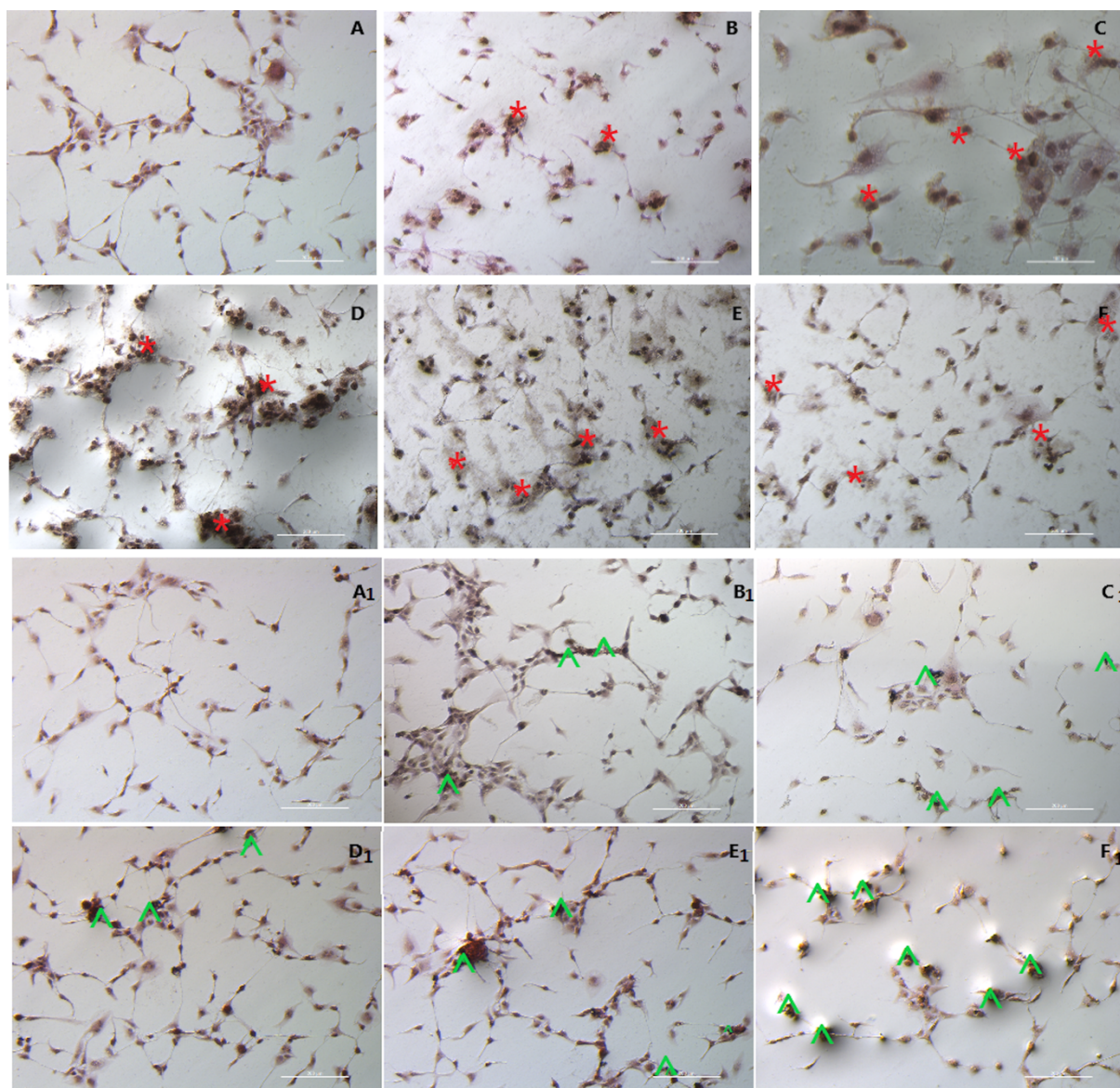


Figure S1. Morphology of U87 glioblastoma cells. (A, A1) untreated cells (control group), cells treated with graphene oxide at concentration: 5 $\mu\text{g/ml}$ (B), 10 $\mu\text{g/ml}$ (C), 25 $\mu\text{g/ml}$ (D), 50 $\mu\text{g/ml}$ (E) and 100 $\mu\text{g/ml}$ (F) and reduced graphene oxide at concentration: 5 $\mu\text{g/ml}$ (B1), 10 $\mu\text{g/ml}$ (C1), 25 $\mu\text{g/ml}$ (D1), 50 $\mu\text{g/ml}$ (E1) and 100 $\mu\text{g/ml}$ (F1). Red *: GO at cell membrane. Green *: rGO at cell membrane. Light optical microscopy. Scale bars: 100 μm . (A–F). Abbreviations: GO: graphene oxide, rGO: reduced graphene oxide.

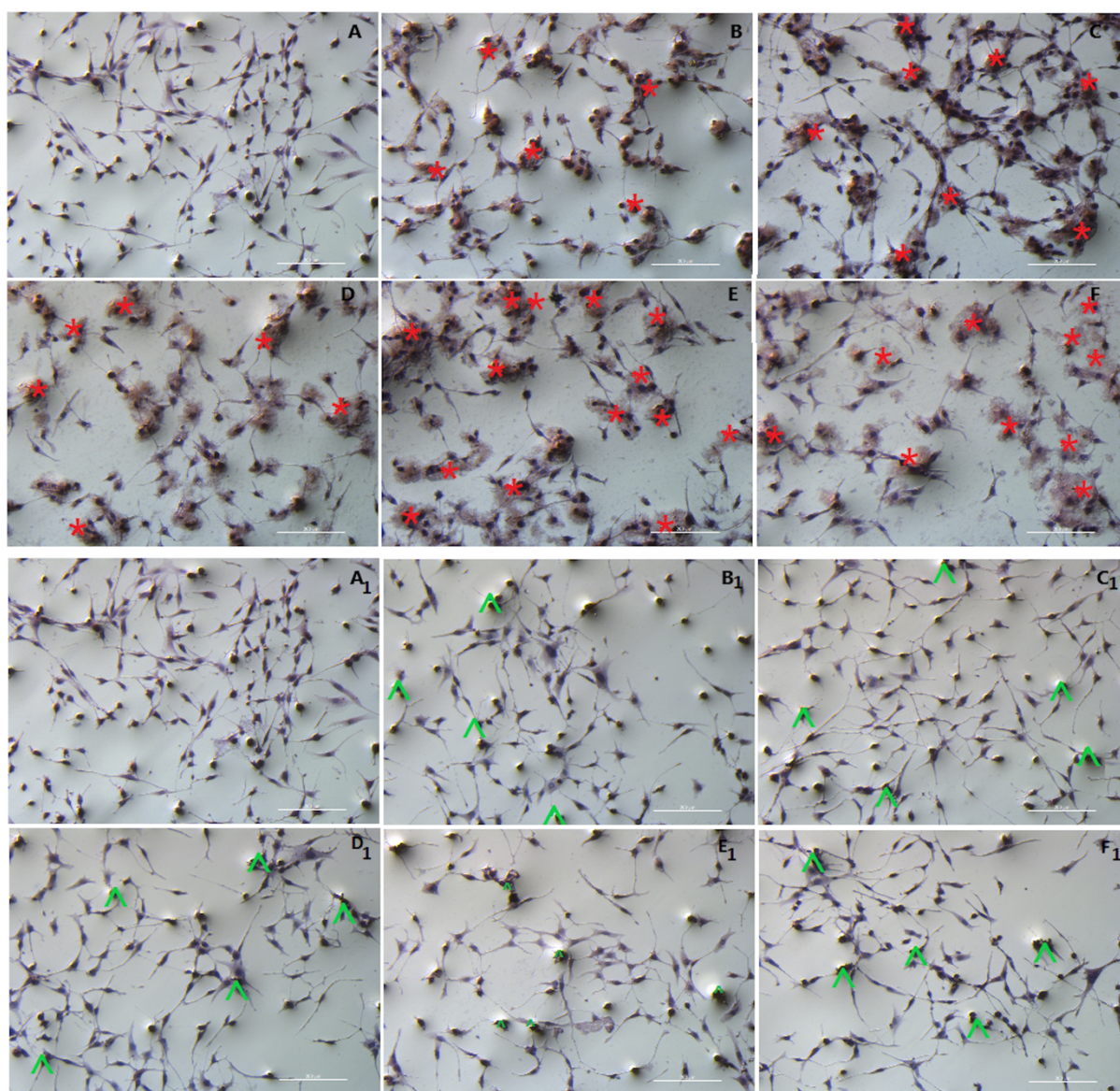


Figure S2. Morphology of U118 glioblastoma cells. (A, A1) untreated cells (control group), cells treated with graphene oxide at concentration: 5 $\mu\text{g/ml}$ (B), 10 $\mu\text{g/ml}$ (C), 25 $\mu\text{g/ml}$ (D), 50 $\mu\text{g/ml}$ (E) and 100 $\mu\text{g/ml}$ (F) and reduced graphene oxide at concentration: 5 $\mu\text{g/ml}$ (B1), 10 $\mu\text{g/ml}$ (C1), 25 $\mu\text{g/ml}$ (D1), 50 $\mu\text{g/ml}$ (E1) and 100 $\mu\text{g/ml}$ (F1). Red *: GO at cell membrane. Green *: rGO at cell membrane. Light optical microscopy. Scale bars: 100 μm . (A–F). Abbreviations: GO: graphene oxide, rGO: reduced graphene oxide.

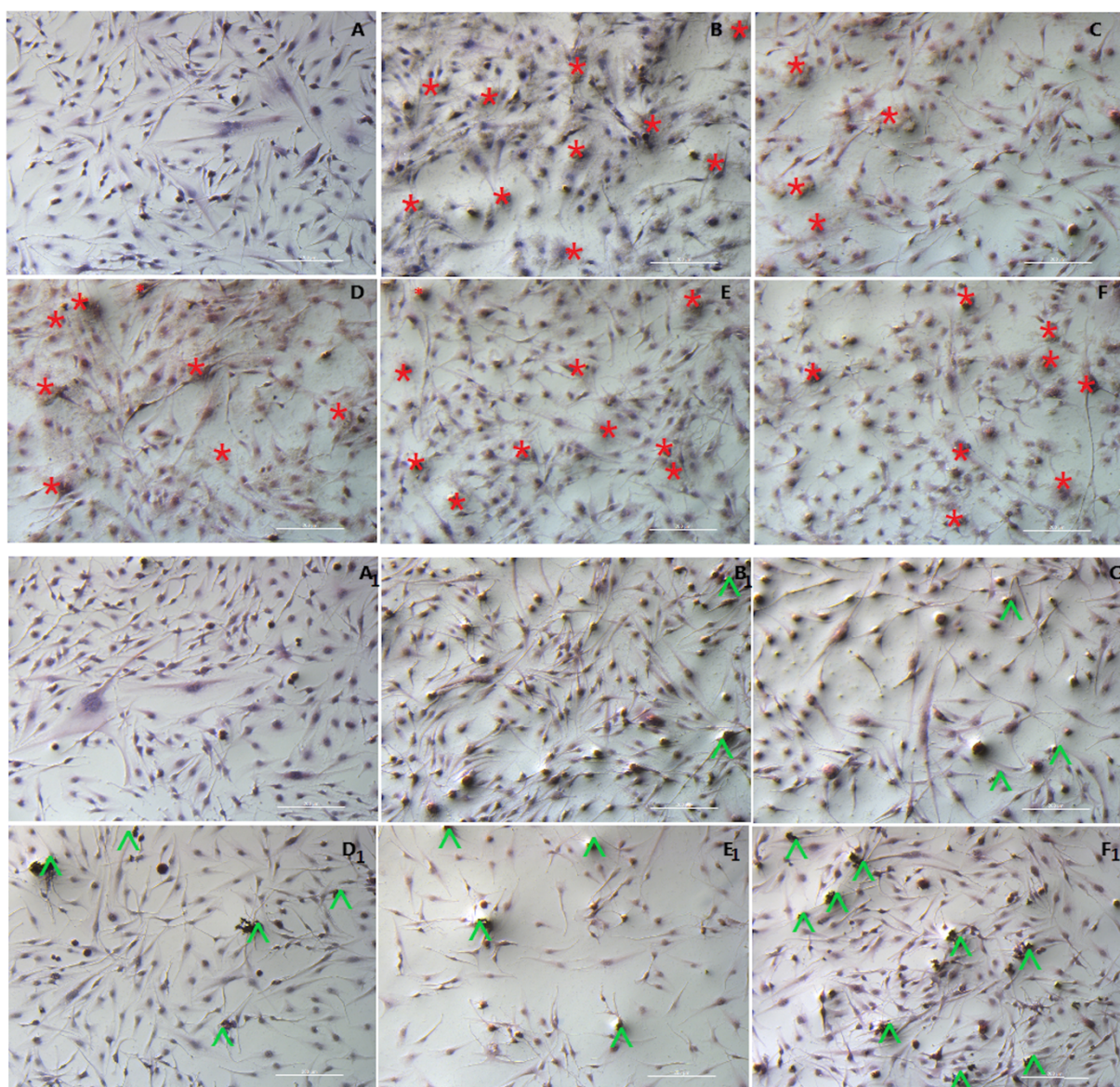


Figure S3. Morphology of U251 glioblastoma cells. (A, A1) untreated cells (control group), cells treated with graphene oxide at concentration: 5 $\mu\text{g/ml}$ (B), 10 $\mu\text{g/ml}$ (C), 25 $\mu\text{g/ml}$ (D), 50 $\mu\text{g/ml}$ (E) and 100 $\mu\text{g/ml}$ (F) and reduced graphene oxide at concentration: 5 $\mu\text{g/ml}$ (B1), 10 $\mu\text{g/ml}$ (C1), 25 $\mu\text{g/ml}$ (D1), 50 $\mu\text{g/ml}$ (E1) and 100 $\mu\text{g/ml}$ (F1). Red *: GO at cell membrane. Green *: rGO at cell membrane. Light optical microscopy. Scale bars: 100 μm . (A–F). Abbreviations: GO: graphene oxide, rGO: reduced graphene oxide.

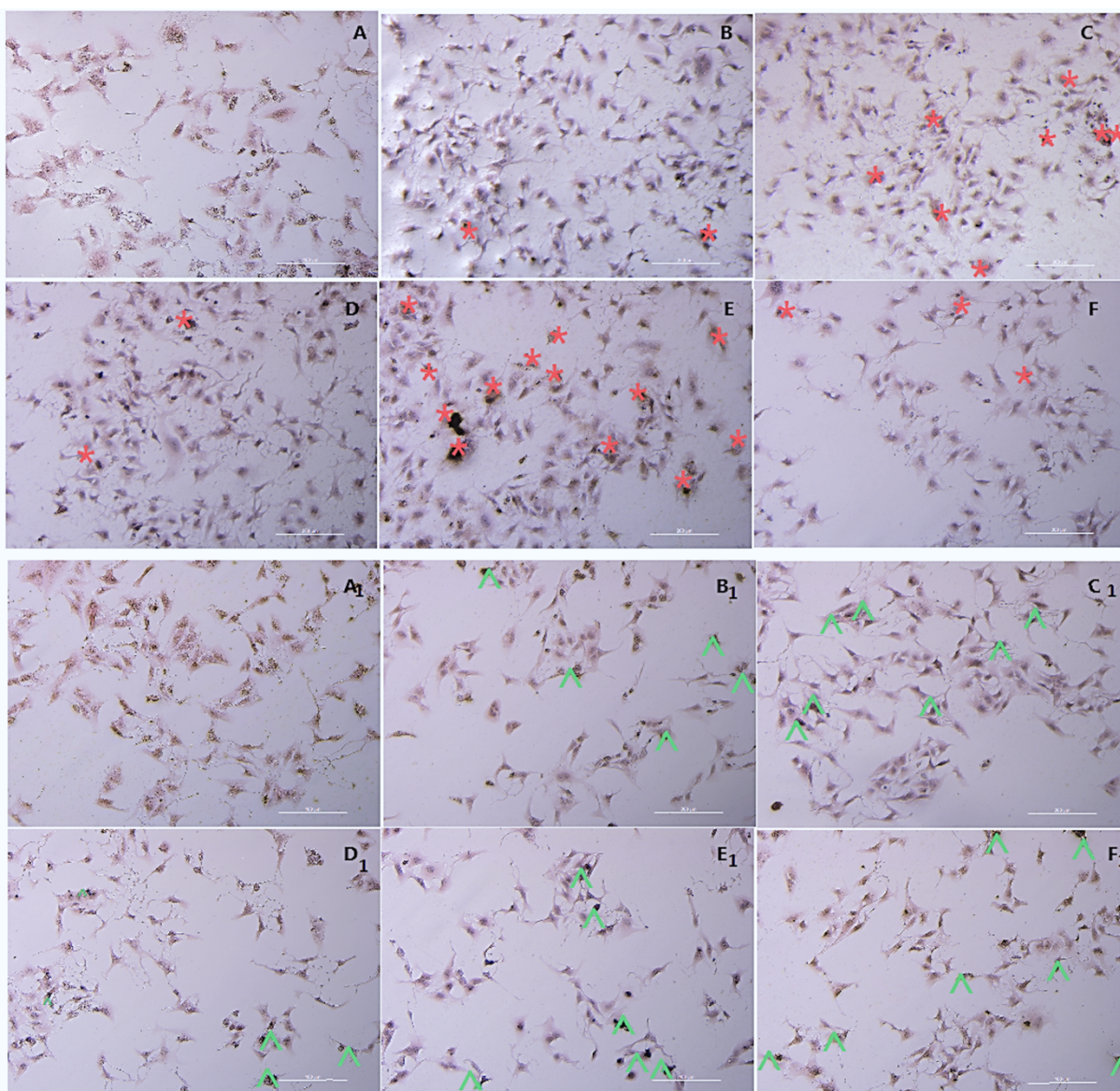


Figure S4. Morphology of T98 glioblastoma cells. (A, A1) untreated cells (control group), cells treated with graphene oxide at concentration: 5 $\mu\text{g/ml}$ (B), 10 $\mu\text{g/ml}$ (C), 25 $\mu\text{g/ml}$ (D), 50 $\mu\text{g/ml}$ (E) and 100 $\mu\text{g/ml}$ (F) and reduced graphene oxide at concentration: 5 $\mu\text{g/ml}$ (B1), 10 $\mu\text{g/ml}$ (C1), 25 $\mu\text{g/ml}$ (D1), 50 $\mu\text{g/ml}$ (E1) and 100 $\mu\text{g/ml}$ (F1). Red *: GO at cell membrane. Green *: rGO at cell membrane. Light optical microscopy. Scale bars: 100 μm . (A–F). Abbreviations: GO: graphene oxide, rGO: reduced graphene oxide.

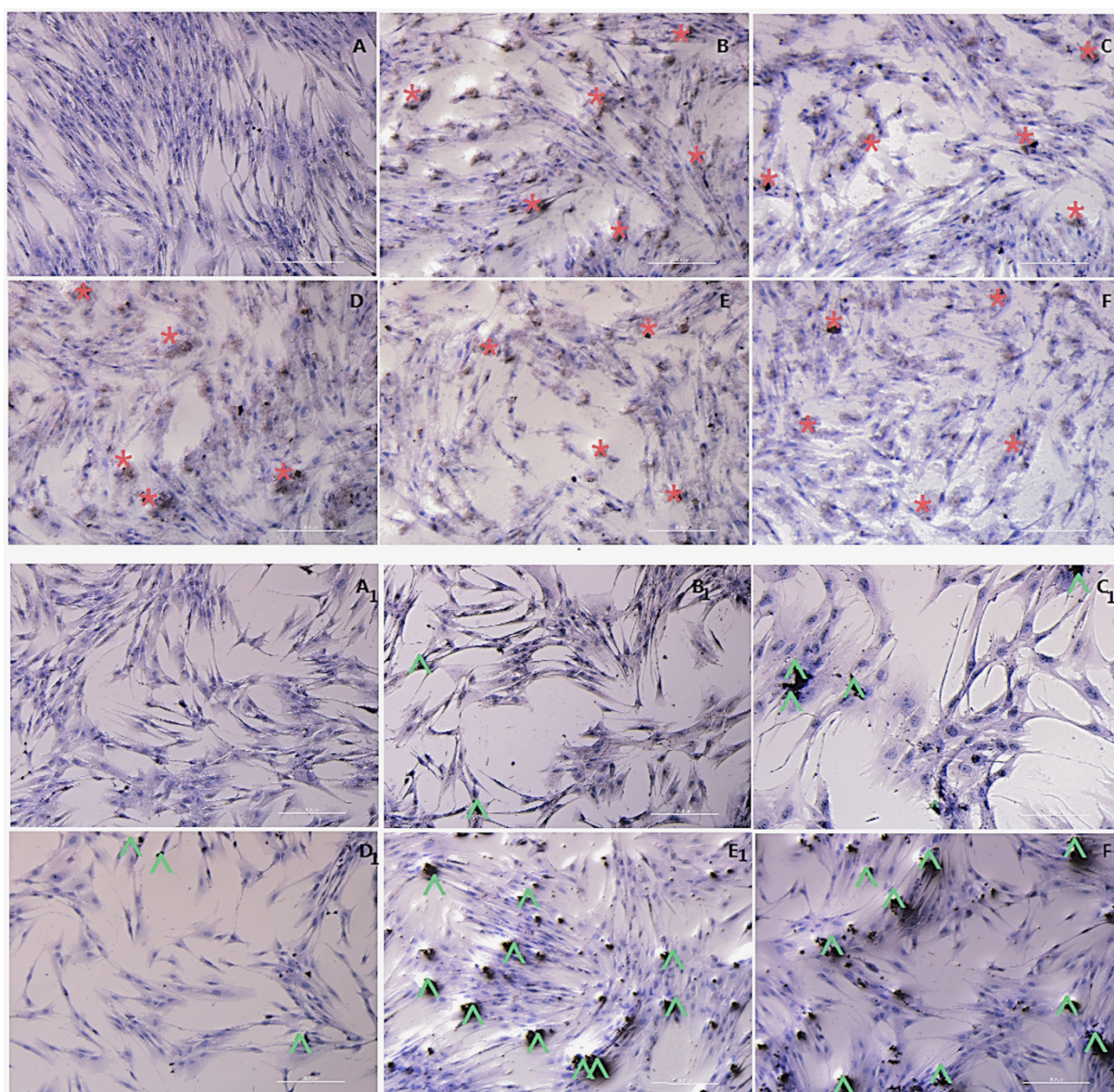


Figure S5. Morphology of HFFF-2 human fibroblast cell line . (A, A1) untreated cells (control group), cells treated with graphene oxide at concentration: 5 µg/ml (B), 10 µg/ml (C), 25 µg/ml (D), 50 µg/ml (E) and 100 µg/ml (F) and reduced graphene oxide at concentration: 5 µg/ml (B1), 10 µg/ml (C1), 25 µg/ml (D1), 50 µg/ml (E1) and 100 µg/ml (F1). Red *: GO at cell membrane. Green *: rGO at cell membrane. Light optical microscopy. Scale bars: 100 µm. (A–F). Abbreviations: GO: graphene oxide, rGO: reduced graphene oxide.