# Simple and effective graphene laser processing for neuron patterning application

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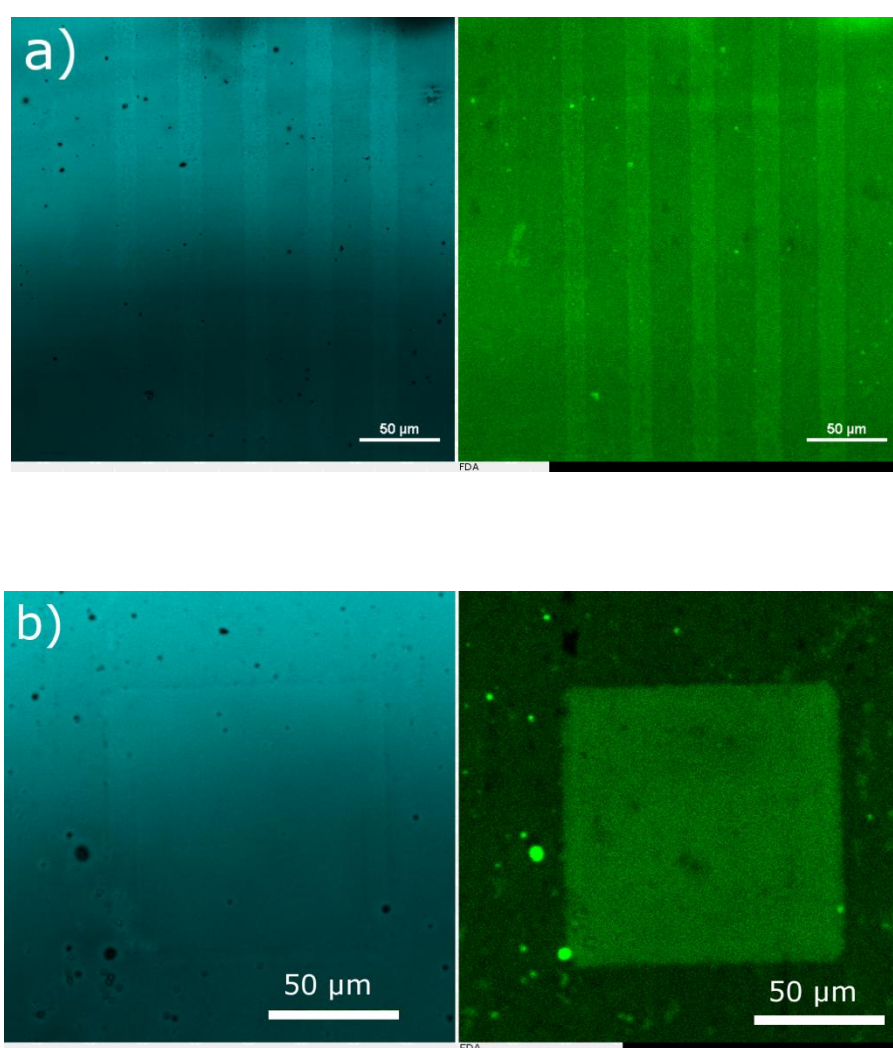
# Supplementary information



**Figure S1** │In (a) fluorescence and reflection images of exposed SLG on $SiO_2$/Si at increasing fluence. In (b) fluorescence and reflection image comparison of a 100 x 100 µm square exposed to a single laser pulse of 0.5 J/cm$^2$
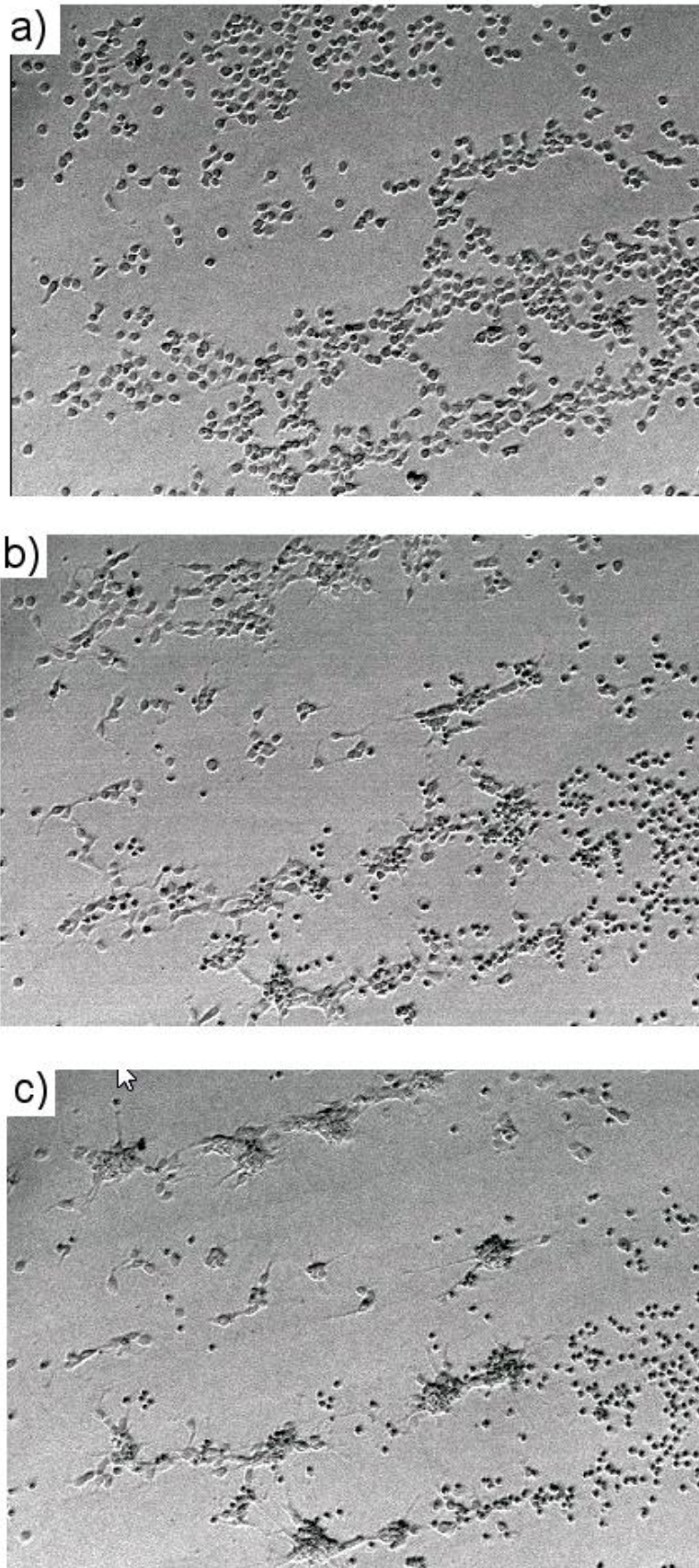
**Figure S2** | Evolution of the neural network in time, in (a) movie frame snapped 1 hour after cell seeding. After 30 hours (b) neurons have moved preferentially on PDL-SLG surface. After 60 hours (c) they sprout and build a network of clumped cells.
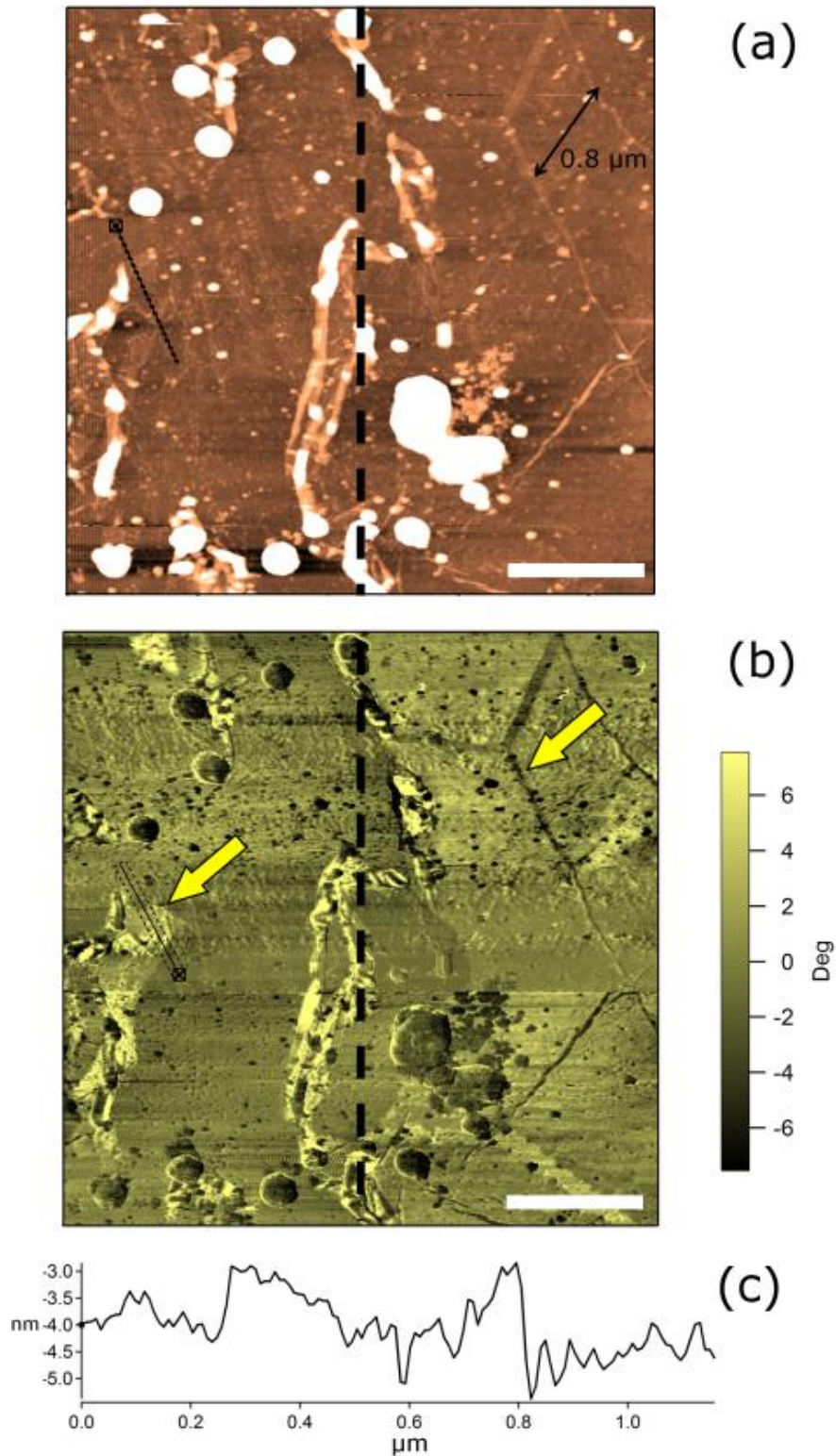
**Figure S3** │ AFM Height (a) and Phase (b) image of the edge area irradiated at 0.123 J/cm$^2$ , the dashed line divides the irradiated part from the pristine. The black arrow in (a) and the yellow arrow in (b) indicate the wrinkles present in CVD SLG. At the left side the area has been strongly affected by the laser pulse, homogeneous coverage is lost with some folding (left yellow arrow). All scale bars are 1 µm. In (c) the height profile of folded area, each graphene layer is approx. 1 nm thick.
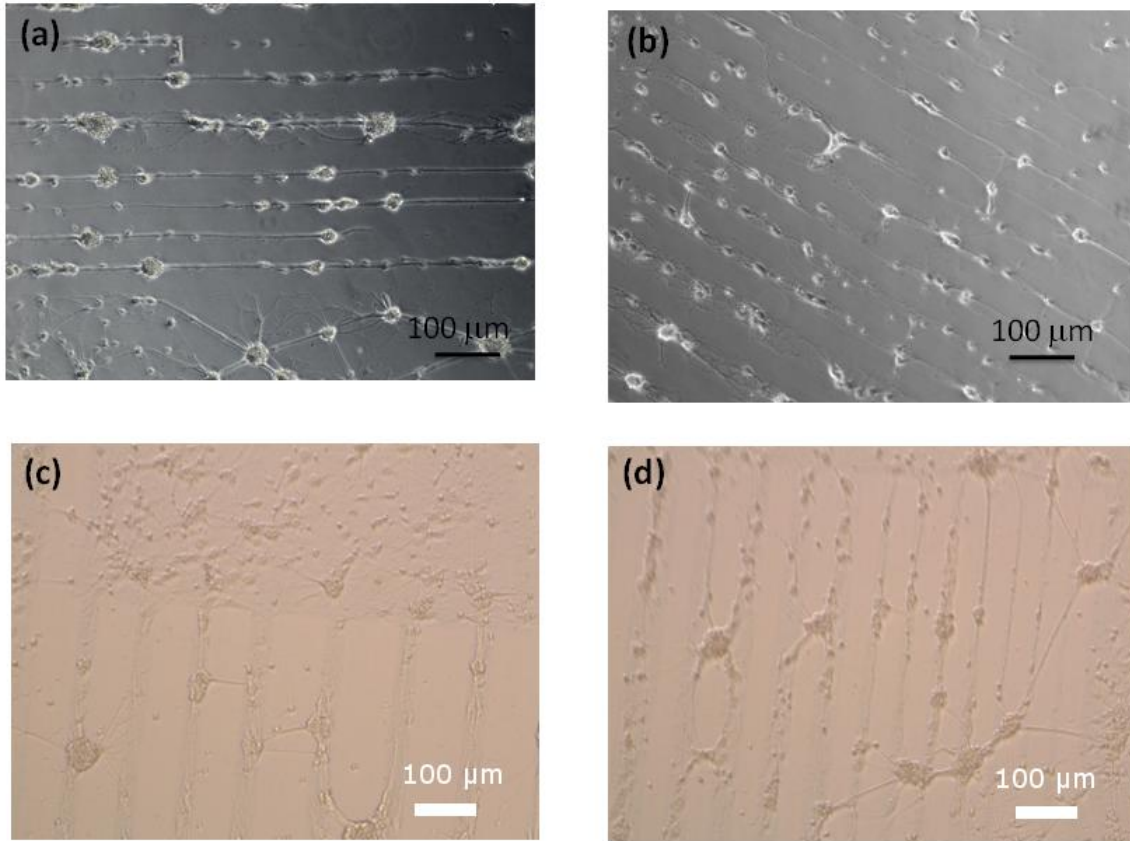
**Figure S4** │ Optical images of patterned neuronal networks at DIV 7 on glass/SLG substrates (a, b). Reflection optical images of similar networks developed on the second substrate employed, i.e., SLG/SiO$_2$/Si (c, d). For both substrates coating of PDL was applied.