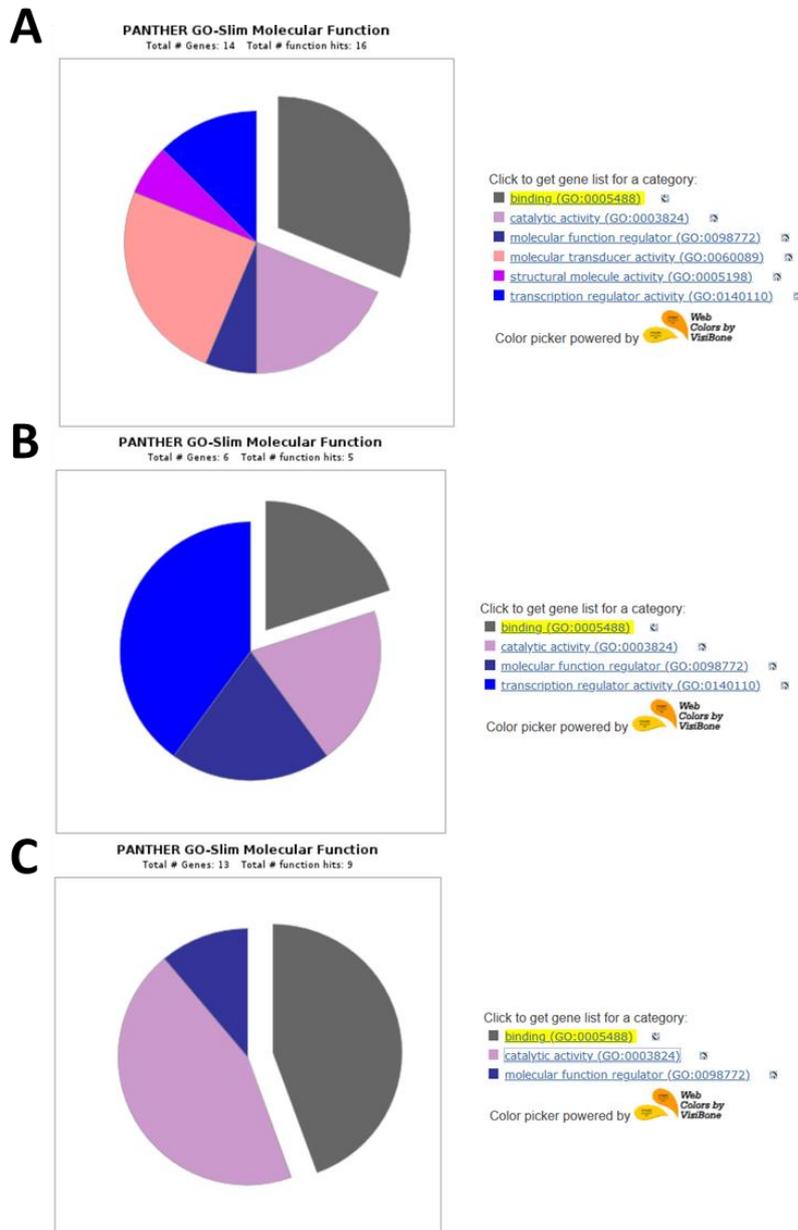


## Supplementary files

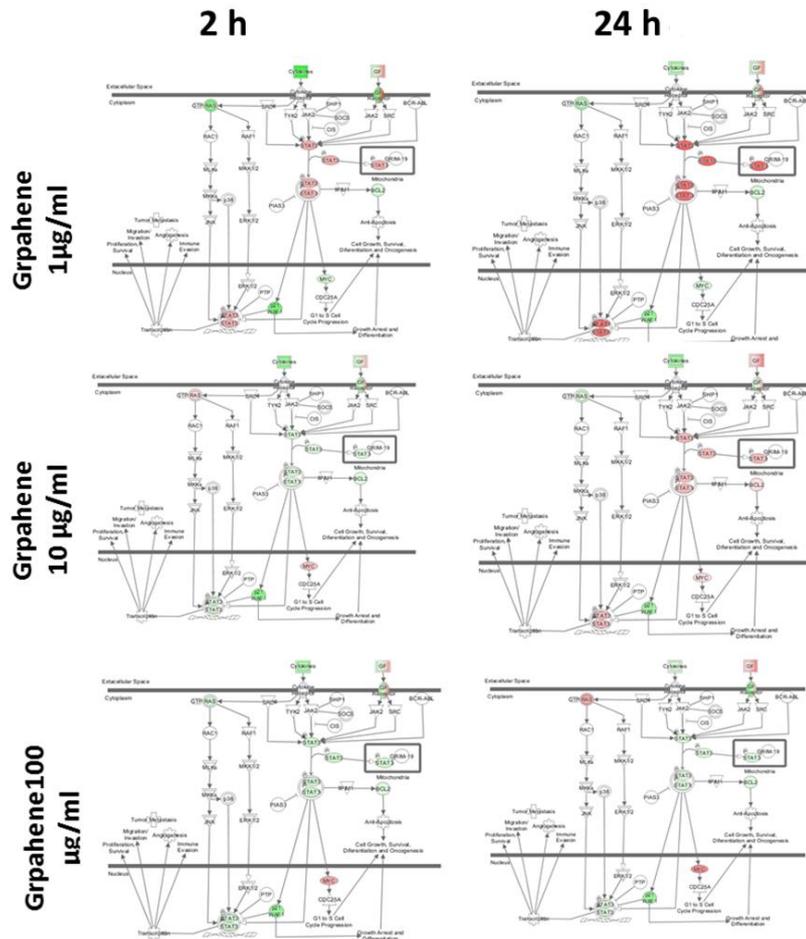
**Table S1.** List of gene symbols and their corresponding gene names. This list includes only the genes that have shown significant differences in the analysis of gene expression data.

Gene	
Symbol	Gene Name
<i>CXCL12</i>	chemokine (C-X-C motif) ligand 12
<i>PTEN</i>	phosphatase and tensin homolog
<i>IL6</i>	interleukin 6 (interferon, beta 2)
<i>PTGS2</i>	prostaglandin-endoperoxide synthase 2 (prostaglandin G/H synthase and cyclooxygenase)
<i>SPP1</i>	secreted phosphoprotein 1
<i>PCNA</i>	proliferating cell nuclear antigen
<i>AKT1</i>	v-akt murine thymoma viral oncogene homolog 1
<i>HIF1A</i>	hypoxia inducible factor 1, alpha subunit (basic helix-loop-helix transcription factor)
<i>COL1A2</i>	collagen, type I, alpha 2
<i>CRP</i>	C-reactive protein, pentraxin-related
<i>IFNG</i>	interferon, gamma
<i>IGF1</i>	insulin-like growth factor 1 (somatomedin C)
<i>KDR</i>	kinase insert domain receptor (a type III receptor tyrosine kinase)
<i>IGF1R</i>	insulin-like growth factor 1 receptor
<i>PPARG</i>	peroxisome proliferator-activated receptor gamma
<i>VIM</i>	vimentin
<i>KRAS</i>	v-Ki-ras2 Kirsten rat sarcoma viral oncogene homolog
<i>SP1</i>	Sp1 transcription factor
<i>BIRC5</i>	baculoviral IAP repeat containing 5
<i>NOTCH1</i>	notch 1
<i>CDKN2A</i>	cyclin-dependent kinase inhibitor 2A (melanoma, p16, inhibits CDK4)
<i>TYMS</i>	thymidylate synthetase
<i>GSTP1</i>	glutathione S-transferase pi 1
<i>EGFR</i>	epidermal growth factor receptor
<i>RRM2</i>	ribonucleotide reductase M2
<i>VDR</i>	vitamin D (1,25- dihydroxyvitamin D3) receptor
<i>TERT</i>	telomerase reverse transcriptase
<i>TGFB1</i>	transforming growth factor, beta 1
<i>FNI</i>	fibronectin 1

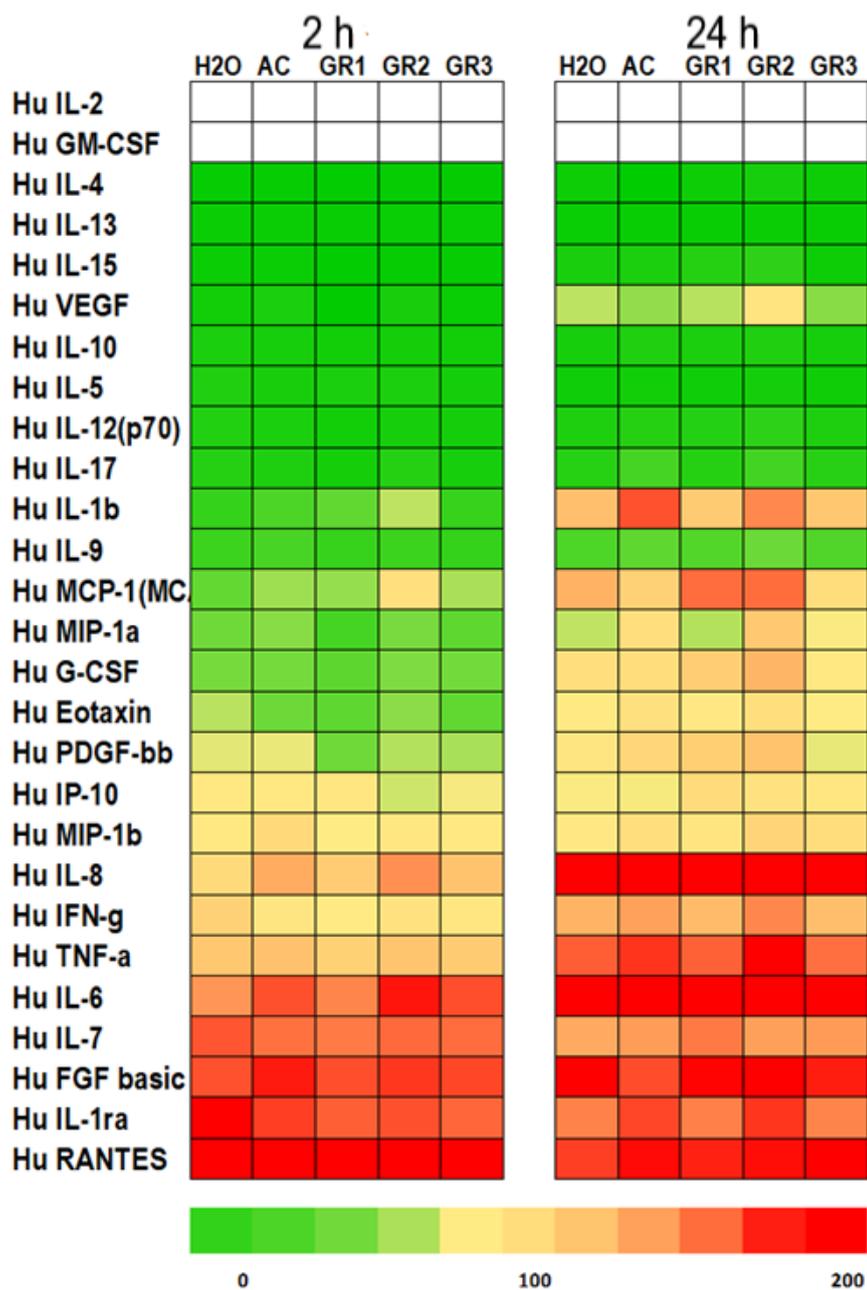


**Figure S1.** Molecular function categories of genes significantly affected by graphene. (A) genes that were significantly altered during the first 2 hrs of exposure to graphene and then returned to control levels. (B) genes that exhibited significantly altered levels at 2 hrs and remained constant until 24 hrs. (C) genes that were altered at 24 hrs and did not show any changes during the first 2 hrs of sampling.

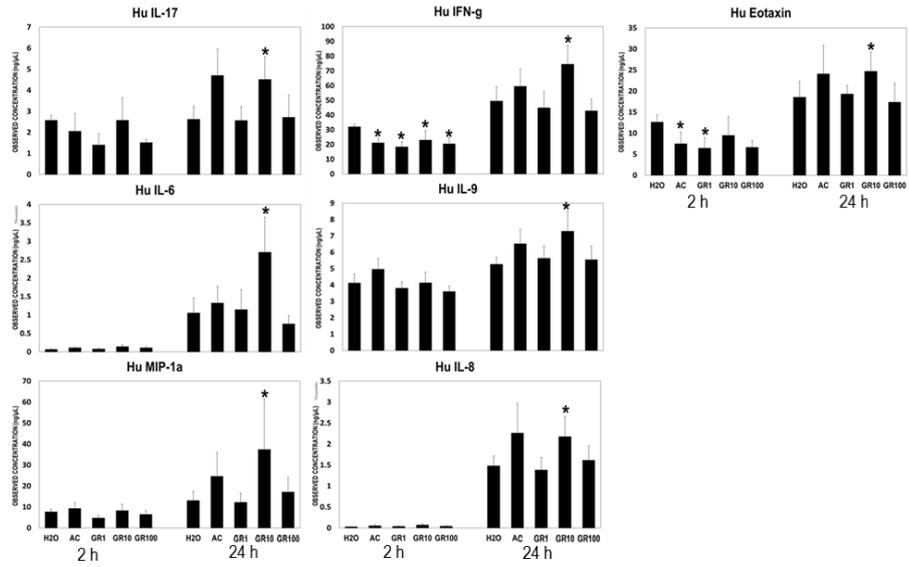
## Stat3 pathway



**Figure S2.** STAT3 pathway analysis after exposure to graphene at three different concentration at the 2 and 24 hrs time points.



**Figure S3.** Heatmap of 27-plex Bioplex data analysis. Tissue was exposed to graphene at 1 (GR1), 10 (GR2) and 100 (GR3)  $\mu\text{g}/\text{mL}$  and to activated carbon (AC) at 100  $\mu\text{g}/\text{mL}$ . Sampling was conducted at 2 and 24 hrs. Colors toward green show proteins with low levels and colors toward red show proteins at higher levels.



**Figure S4.** Observed concentrations of proteins that showed significant levels change in comparison to control (water only). Tissue was exposed to graphene at 1 (GR1), 10 (GR2) and 100 (GR3)  $\mu\text{g}/\text{mL}$  and to activated carbon (AC) at 100  $\mu\text{g}/\text{mL}$ . Sampling was conducted at 2 and 24 hrs. (\*) treatment that showed significant difference in comparison to corresponding control ( $p < 0.05$ )