

Probing Cell Redox State and Glutathione-Modulating Factors Using a Monochlorobimane-Based Microplate Assay

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Table S1. Reported GSH/GSSG ratio values in fibroblast cells.

Cells	Method	GSH/GSSG	Reference
HSF (skin biopsy)	Spectrophotometric detection with DTNB amplified by glutathione reductase (GSH quencher is 2-vinylpyridine)	~205	DOI:10.1016/j.biocel.2017.05.005
NIH/3T3	HPLC analysis after derivatization with iodoacetic acid and 1-fluoro-2,4-dinitrobenzene	10-19	DOI:10.1016/S0167-4889(99)00142-1
NIH/3T3	Spectrophotometric detection with DTNB amplified by glutathione reductase (GSH quencher is 2-vinylpyridine)	14.5	DOI:10.1002/(SICI)1097-4652(199806)175:3<359::AID-JCP14>3.0.CO;2-0
3T3-L1 cells	HPLC analysis after derivatization with iodoacetic acid and 1-fluoro-2,4-dinitrobenzene	~150 – 400	DOI:10.1002/jcp.22542
HSF (foreskin)	Glutathione-S-transferase based assay for GSH; HPLC analysis for GSSG (GSH quencher is N-ethylmaleimide).	124	DOI:10.1111/j.0906-6705.2004.00112.x
HSF (ATCC)	Spectrophotometric detection with DTNB amplified by glutathione reductase (GSH quencher is 2-vinylpyridine)	~41	DOI:10.3390/antiox8090382
BALB/c3T3	HPLC analysis after derivatization with N-ethylmaleimide and bathophenanthroline disulfonic acid	90	DOI:10.1016/j.canlet.2003.11.007

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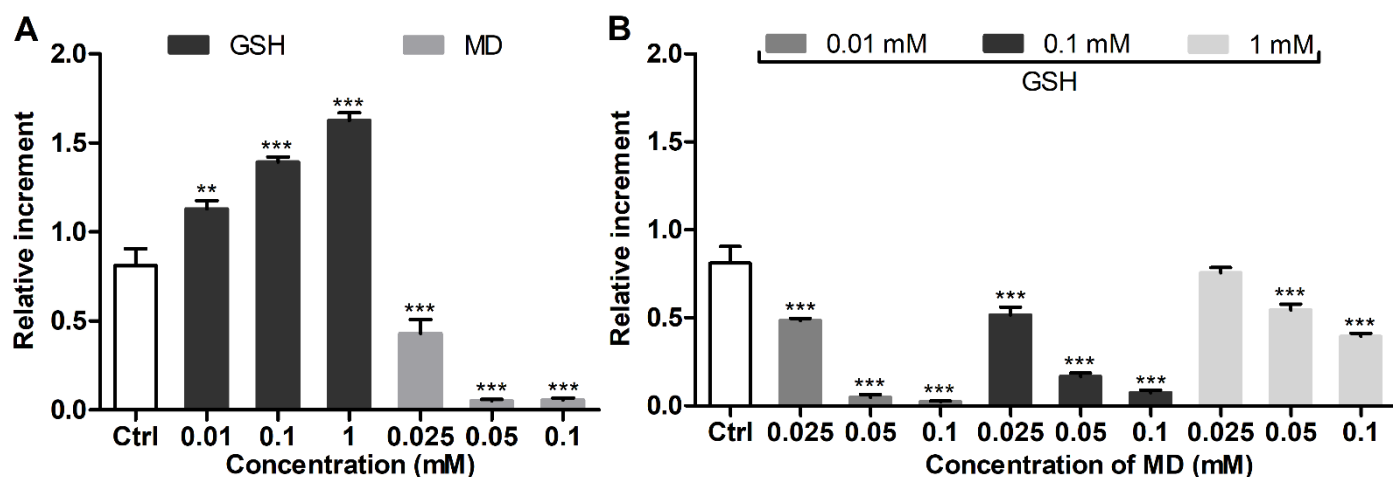


Figure S1. Effect of (A) supplemented GSH or menadione (MD) and (B) their mixture on MCB signal in 3T3 fibroblasts. The cells were treated with modulator(s) for 2 h and stained with MCB (in the presence of modulators). Mean \pm SEM ($n = 6$, * $p < 0.05$, *** $p < 0.001$ vs. Ctrl) are shown; Ctrl is the signal of MCB alone.

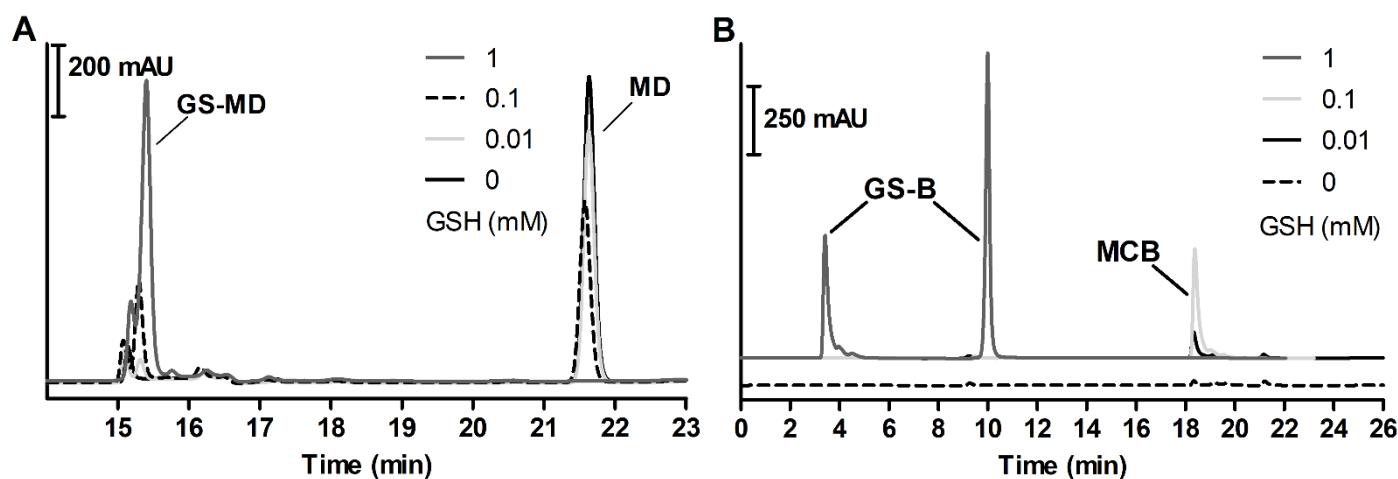


Figure S2. Reverse-phase HPLC chromatograms of (A) menadione (0.2 mM) and (B) MCB (0.01 mM) incubated with GSH (0.01–1 mM) in HBSS for 60 min. Water/acetonitrile mobile phase, flow rate 0.5 mL/min; (A) UV detection ($\lambda = 220$ nm), (B) fluorescence detection ($\lambda_{em} = 482$ nm). Adducts of GSH with menadione (GS-MD) and MCB (GS-B) were assigned.

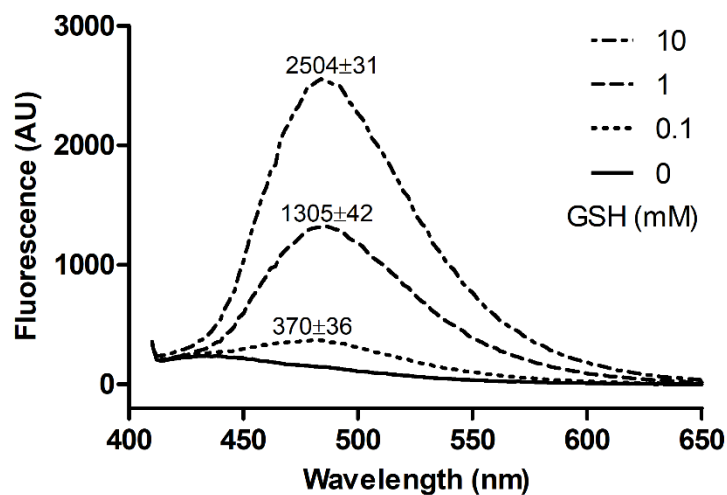


Figure S3. Fluorescence emission spectra of 5 μ M MCB in HBSS in the presence of GSH. Mean fluorescence intensities are indicated for each GSH concentration (0.1, 1, 10 mM).

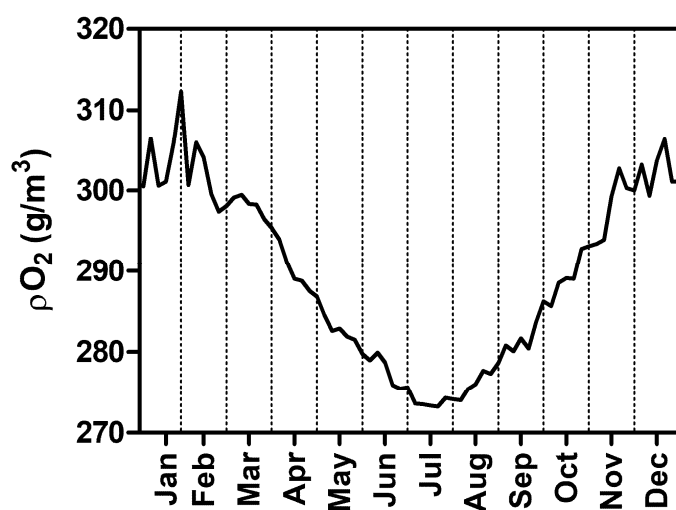


Figure S4. Annual dynamics of partial density of oxygen in Kazan with a typical humid continental climate (average data for 5 recent years in the city). The data were obtained from All-Russia Research Institute of Hydrometeorological Information per request of the authors.

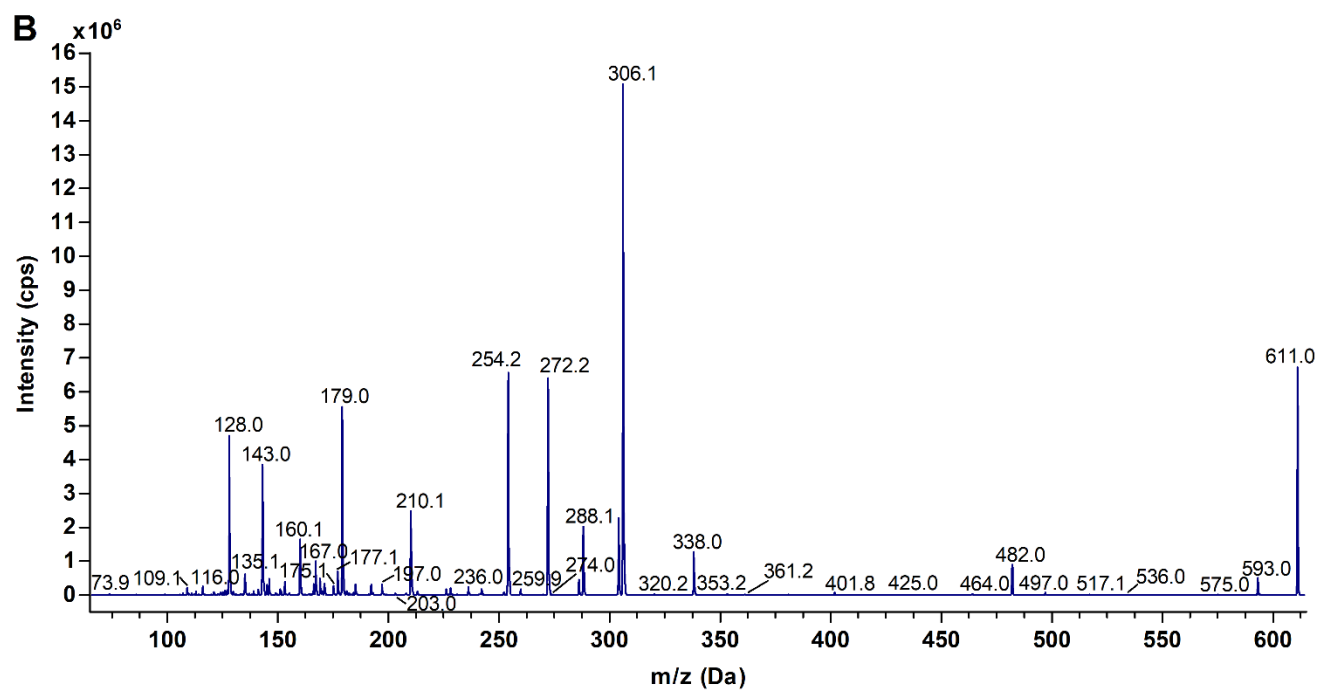
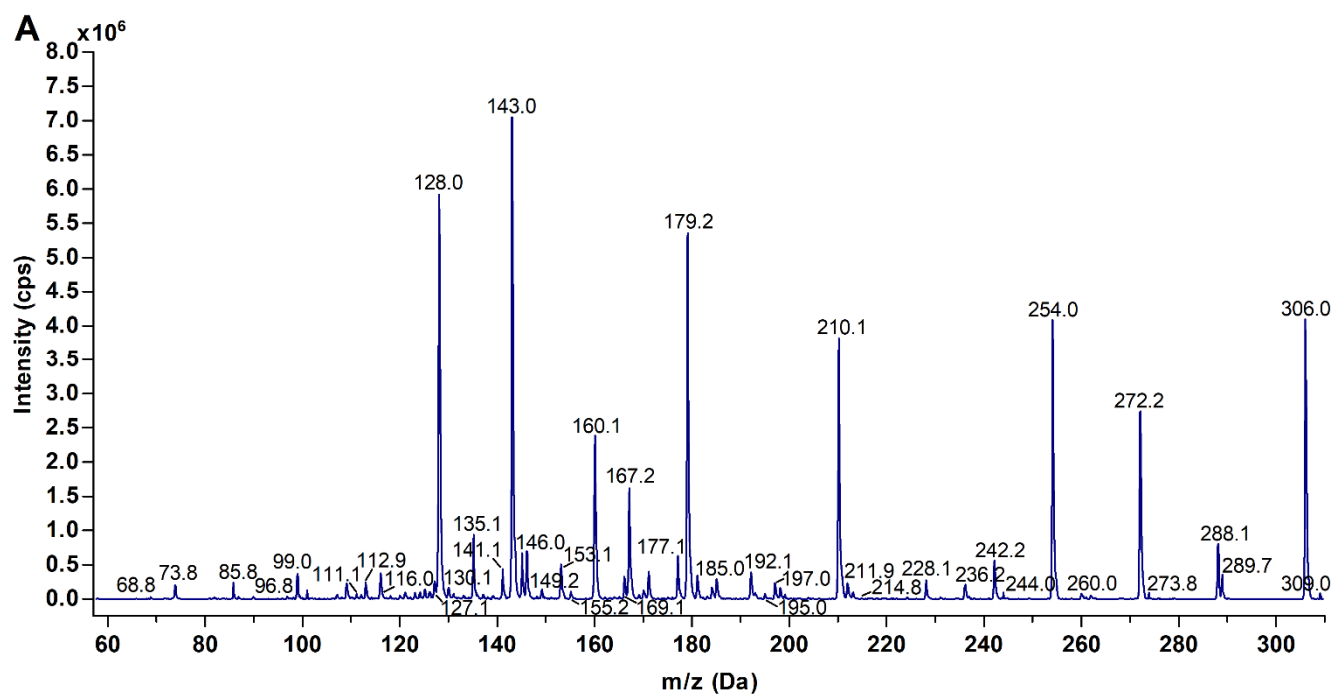


Figure S5. Negative ion spectra generated in flow injection analysis of (A) GSH and (B) GSSG.

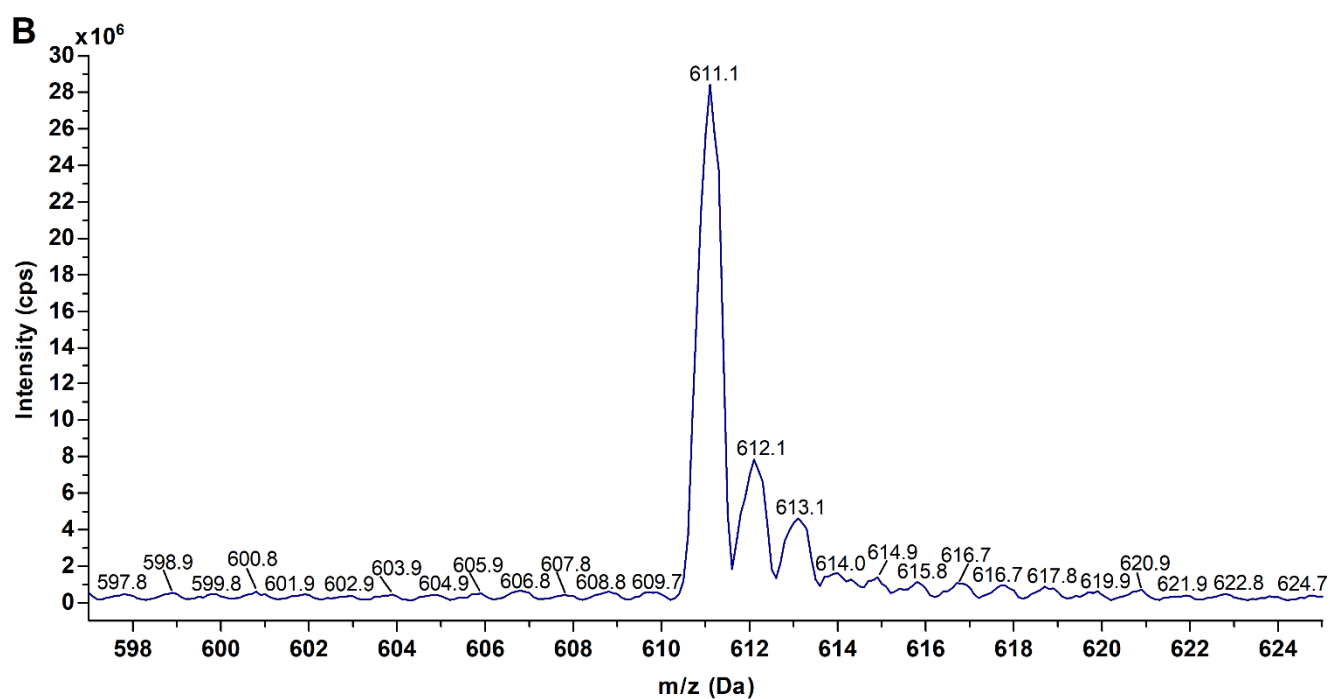
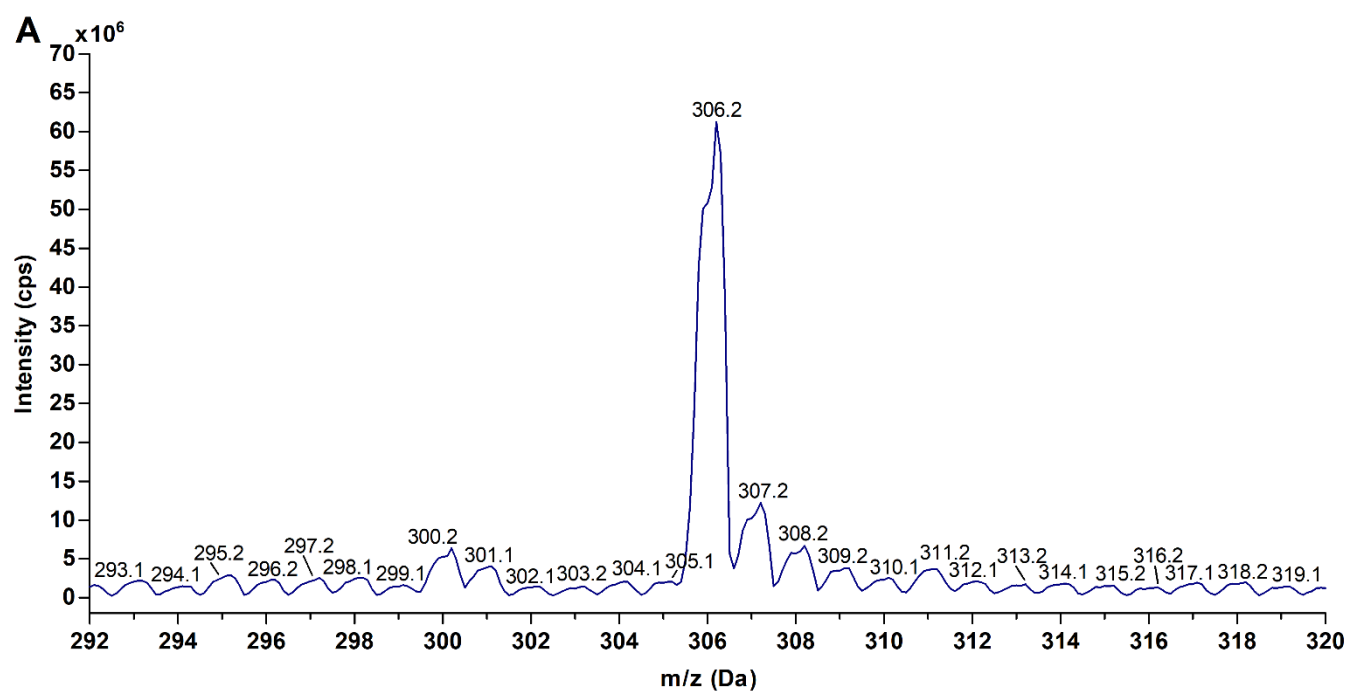


Figure S6. Product ion spectra obtained from (A) GSH and (B) GSSG parent ions.

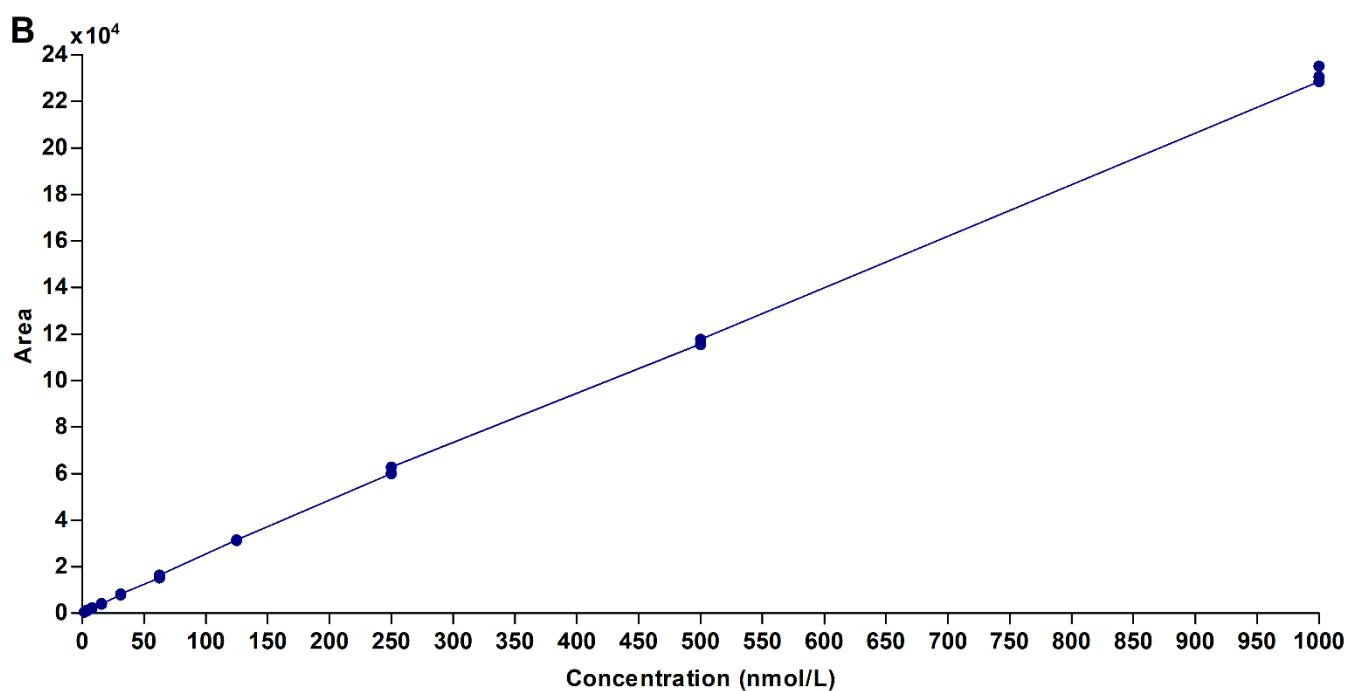
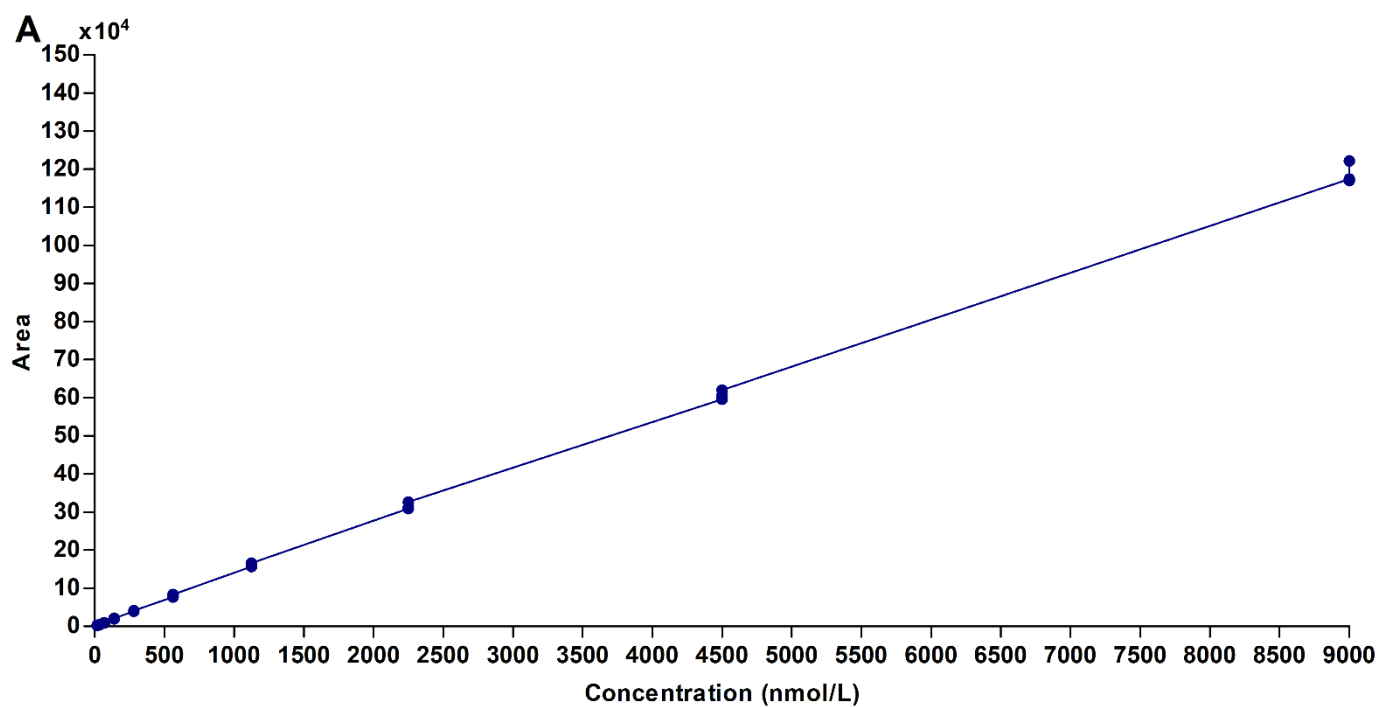


Figure S7. Calibration graphs for (A) GSH and (B) GSSG standards.