Electronic Supplementary Material (ESI) for Analytical Methods.

Toll-Like Receptor 3 modified Au electrodes: an investigation into the interaction of TLR3 immobilized on Au surfaces with poly (I:C)

"Supplementary Information"

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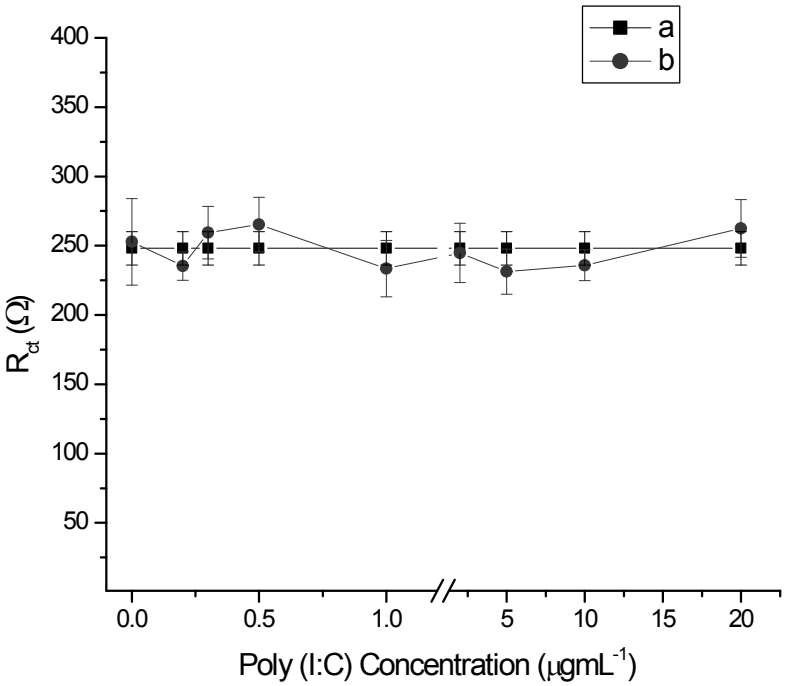
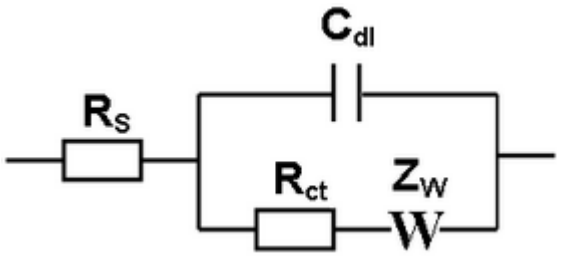


Fig. S1 Investigation of the electrochemical behaviour of the Lip-NHS modified Au electrode with poly (I:C). (a) Shows the R_{ct} value obtained for incubation in the absence of poly (I:C) and has been provided for comparison and (b) show the R_{ct} values for incubation at different concentrations of poly (I:C)



Scheme S1. The equivalent circuit used for fitting the EIS data to obtain the R_{ct} values.

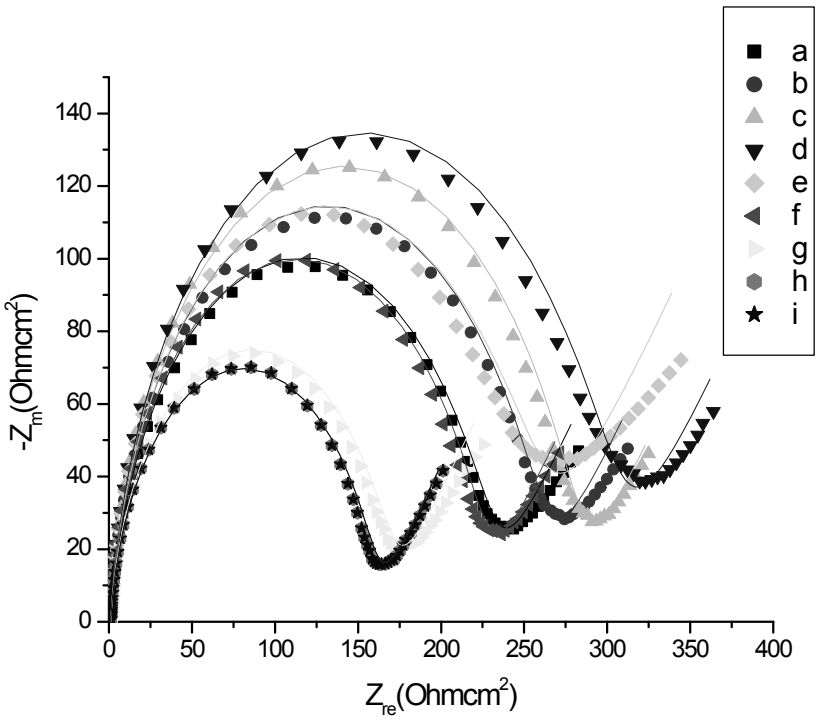


Fig. S2 Nyquist plots of TLR3-modified Au electrode before (a) and after 5 min incubation with 0.2 (b), 0.3 (c), 0.5 (d), 1 (e), 2 (f), 5 (g), 10 (h) and 20 (i) μg mL^{-1} of poly (I:C) in the presence of 5 mM $[Fe(CN)_6]^{3-/4-}$ in 1 M $NaClO_4$ pH 7.0. Data points show experimental results while solid lines represent the spectra calculated for the equivalent circuit shown in scheme 1.

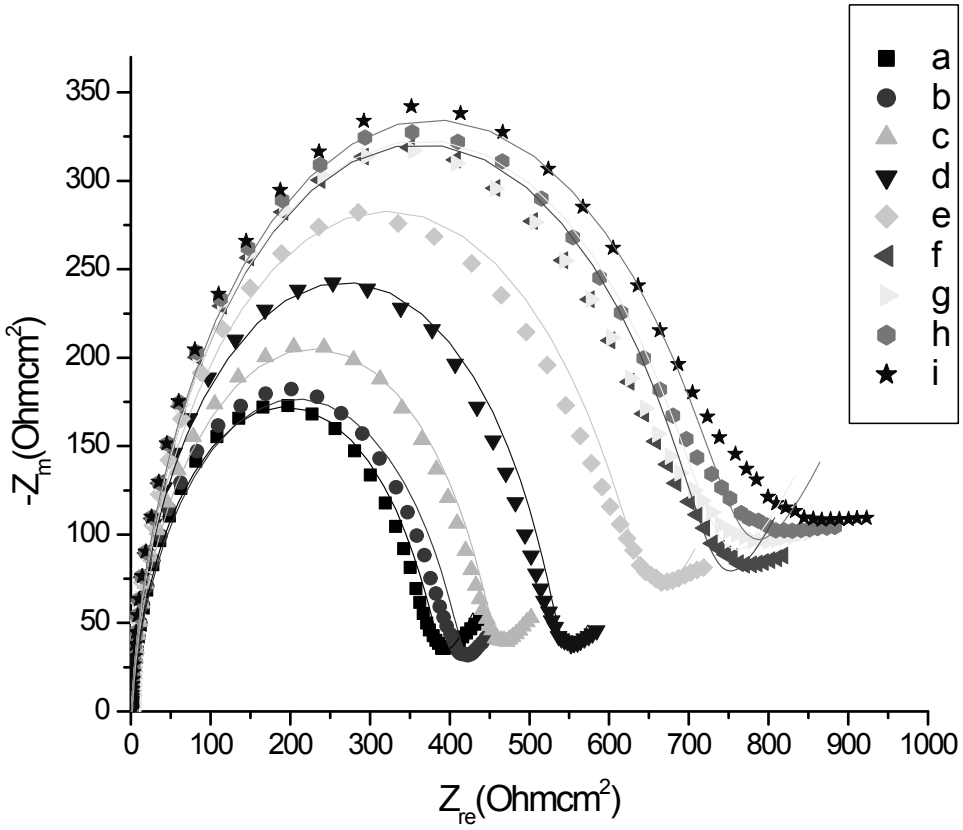


Fig. S3 Nyquist plots of TLR3-modified Au electrode before (a) and after 5 min incubation with 0.2 (b), 0.3 (c), 0.5 (d), 1 (e), 2 (f), 5 (g), 10 (h) and 20 (i) μg mL^{-1} of poly (I:C) in the presence of 5 mM $[Fe(CN)_6]^{3-/4-}$ in 100 mM Borate buffer pH 6.5. Data points show experimental results while solid lines represent the spectra calculated for the equivalent circuit shown in scheme 1.

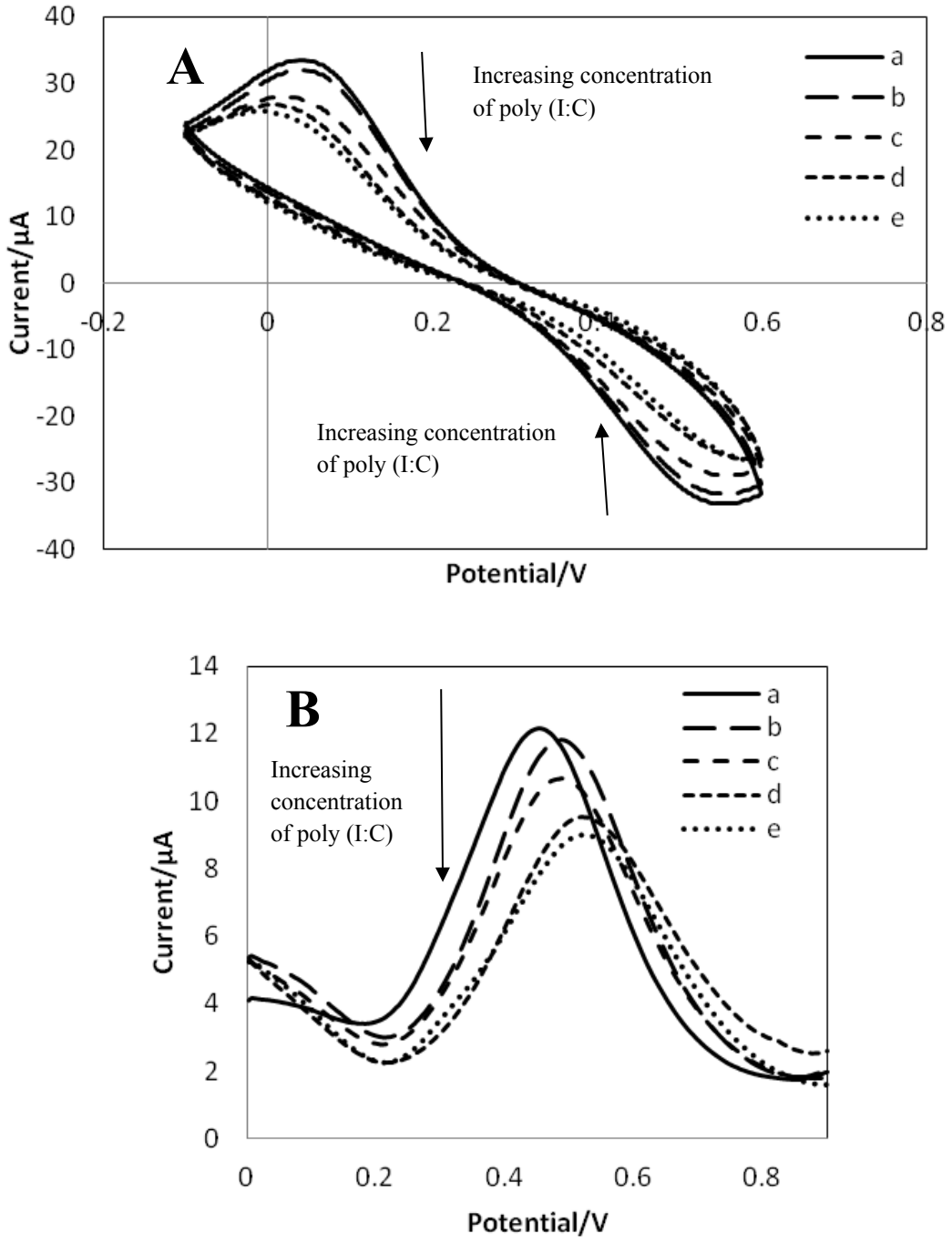


Fig. S4 A) CVs and B)SWVs obtained for incubation of TLR3-modified Au electrode before (a) and after 5 min incubation with 0.2 (b), 0.3 (c), 0.5 (d) and (e) 1 µg mL^{-1} of poly (I:C) in the presence of 5 mM $[Fe(CN)_6]^{3-/4-}$ in 100 mM Borate buffer pH 6.5.

Table S1. Equivalent circuit element values for TLR3-modified electrodes after incubation in poly (I:C) solutions at different concentrations at pH 6.5 and pH 7.0. Values in parentheses represent the standard deviation for at least 5 electrode measurements.

Equivalent circuit elements										
	pH 6.5					**pH 7.0**				
Poly (I:C) Concentration (μgml^{-1})	**R_s** ($Ohmcm^2$)	**C_{dl}** (μFcm^{-2})	**R_{ct}** ($Ohmcm^2$)	**n**	**Z_w** ($Ohmcm^2$)	**R_s** ($Ohmcm^2$)	**C_{dl}** (μFcm^{-2})	**R_{ct}** ($Ohmcm^2$)	**n**	**Z_w** ($Ohmcm^2$)
0.0	2.6 (0.4)	2.2×10^{-2} (0.003)	351 (18)	0.8 (0.01)	1.5×10^{-2} (0.007)	1.0 (0.2)	2.6×10^{-2} (0.005)	225 (2)	0.8 (0.2)	1.5×10^{-2} (0.002)
0.2	2.5 (0.2)	2.8×10^{-2} (0.005)	421 (30)	0.8 (0.01)	1.5×10^{-2} (0.005)	1.0 (0.1)	2.5×10^{-2} (0.003)	255 (9)	0.8 (0.1)	1.5×10^{-2} (0.005)
0.3	2.4 (0.1)	2.1×10^{-2} (0.009)	446 (30)	0.8 (0.03)	1.6×10^{-2} (0.003)	1.0 (0.4)	2.6×10^{-2} (0.006)	276 (4)	0.8 (0.1)	1.7×10^{-2} (0.003)
0.5	2.6 (0.8)	1.7×10^{-2} (0.004)	529 (33)	0.8 (0.01)	1.8×10^{-2} (0.005)	1.1 (0.5)	2.6×10^{-2} (0.005)	298 (5)	0.8 (0.3)	1.6×10^{-2} (0.002)
1.0	2.7 (0.2)	2.4×10^{-2} (0.003)	660 (27)	0.8 (0.03)	1.4×10^{-2} (0.008)	1.1 (0.4)	2.6×10^{-2} (0.004)	258 (14)	0.8 (0.1)	1.5×10^{-2} (0.005)
2.0	2.6 (0.5)	1.9×10^{-2} (0.007)	710 (31)	0.8 (0.01)	1.5×10^{-2} (0.006)	1.1 (0.2)	2.8×10^{-2} (0.008)	169 (7)	0.8 (0.1)	1.5×10^{-2} (0.003)
5.0	2.6 (0.3)	1.9×10^{-2} (0.004)	721 (39)	0.8 (0.02)	1.7×10^{-2} (0.005)	1.1 (0.6)	2.5×10^{-2} (0.005)	165 (8)	0.8 (0.1)	1.5×10^{-2} (0.006)
10	2.6 (0.9)	1.9×10^{-2} (0.006)	746 (32)	0.8 (0.01)	1.5×10^{-2} (0.007)	1.0 (0.3)	2.5×10^{-2} (0.004)	158 (4)	0.8 (0.2)	1.6×10^{-2} (0.006)
20	2.7 (0.4)	1.9×10^{-2} (0.007)	760 (30)	0.8 (0.01)	1.6×10^{-2} (0.004)	1.1 (0.5)	2.3×10^{-2} (0.007)	156 (6)	0.8 (0.1)	1.5×10^{-2} (0.005)