

Supplementary file 1: Output of GLS model analysis for the three biomarkers

Glycogen

Generalized least squares fit by REML
Model: gylco ~ sex * expo * micro * acantho
Data: dat
AIC BIC logLik
993.2456 1075.965 -464.6228

Coefficients:

	Value	Std.Error	t-value	p-value
(Intercept)	103.36645	8.91557	11.593931	0.0000
sexM	-18.84168	12.29646	-1.532285	0.1287
expoy	-23.62171	10.78586	-2.190063	0.0309
microY	-18.78795	10.90239	-1.723288	0.0880
acanthoY	-14.67749	12.19726	-1.203342	0.2317
sexM:expoy	51.97868	19.30738	2.692167	0.0083
sexM:microY	35.74096	16.78268	2.129634	0.0357
expoy:microY	47.70546	17.46446	2.731574	0.0075
sexM:acanthoY	-0.18987	16.11392	-0.011783	0.9906
expoy:acanthoY	19.01391	14.82334	1.282701	0.2026
microY:acanthoY	23.16799	27.60219	0.839353	0.4033
sexM:expoy:microY	-82.02478	28.95110	-2.833218	0.0056
sexM:expoy:acanthoY	-35.47733	23.80081	-1.490594	0.1393
sexM:microY:acanthoY	-1.69905	33.75448	-0.050335	0.9600
expoy:microY:acanthoY	-26.13366	31.33908	-0.833900	0.4064
sexM:expoy:microY:acanthoY	34.42319	43.77138	0.786431	0.4335

Standardized residuals:

Min	Q1	Med	Q3	Max
-1.908573640	-0.785069399	-0.006772025	0.657909605	2.405262368

Residual standard error: 23.95254
Degrees of freedom: 114 total; 98 residual

Lipids

> summary(lm.lip2)
Generalized least squares fit by REML
Model: lipid ~ expo * micro * acantho * sex
Data: dat
AIC BIC logLik
951.1571 1033.876 -443.5786

Coefficients:

	Value	Std.Error	t-value	p-value
(Intercept)	63.58453	6.01333	10.573927	0.0000
expoy	-1.18338	7.51349	-0.157500	0.8752
microY	43.78499	11.76413	3.721906	0.0003
acanthoY	-16.30843	8.62651	-1.890501	0.0616
sexM	-11.27344	9.75168	-1.156052	0.2505
expoy:microY	-52.36746	28.61114	-1.830317	0.0702
expoy:acanthoY	-0.92009	10.79655	-0.085221	0.9323
microY:acanthoY	-60.39784	25.45776	-2.372473	0.0196
expoy:sexM	-13.59747	11.02799	-1.232995	0.2205
microY:sexM	-16.43530	18.04145	-0.910975	0.3645
acanthoY:sexM	2.93684	12.78824	0.229652	0.8188
expoy:microY:acanthoY	83.65573	36.74694	2.276536	0.0250
expoy:microY:sexM	57.33865	34.76548	1.649298	0.1023
expoy:acanthoY:sexM	19.85508	15.01409	1.322430	0.1891
microY:acanthoY:sexM	58.95679	30.26519	1.948007	0.0543
expoy:microY:acanthoY:sexM	-100.82167	43.85624	-2.298913	0.0236

Standardized residuals:

Min	Q1	Med	Q3	Max
-1.6080933	-0.6869587	-0.1507333	0.7022971	2.4488657

hsp70

Generalized least squares fit by REML
Model: hsp ~ sex * expoy * microY * acanthoY
Data: dat
AIC BIC logLik
417.3562 498.3994 -176.6781

Coefficients:

	Value	Std.Error	t-value	p-value
(Intercept)	3.236709	0.361425	8.955398	0.0000
sexM	0.777097	0.798981	0.972610	0.3333
expoy	0.482949	0.534040	0.904332	0.3682
microY	-0.686953	0.521958	-1.316107	0.1914
acanthoY	1.033026	0.573762	1.800441	0.0750
sexM:expoy	-0.157588	1.186726	-0.132792	0.8946
sexM:microY	-0.895088	0.982715	-0.910832	0.3647
expoy:microY	3.860698	1.507044	2.561768	0.0120
sexM:acanthoY	-2.058475	1.030372	-1.997797	0.0487
expoy:acanthoY	-1.213994	0.746596	-1.626039	0.1073
microY:acanthoY	0.935808	2.129076	0.439537	0.6613
sexM:expoy:microY	-0.571790	2.069833	-0.276249	0.7830
sexM:expoy:acanthoY	1.647666	1.501877	1.097072	0.2754
sexM:microY:acanthoY	-0.260797	2.362173	-0.110405	0.9123
expoy:microY:acanthoY	-3.831775	2.674886	-1.432500	0.1554
sexM:expoy:microY:acanthoY	2.262589	3.254903	0.695132	0.4887

Standardized residuals:

Min	Q1	Med	Q3	Max
-1.79856503	-0.70711560	-0.03308062	0.79016412	1.81137055

Residual standard error: 2.015426
Degrees of freedom: 109 total; 93 residual