

Article

Genotoxicity Set Up in *Artemia franciscana* Nauplii and Adults Exposed to Phenanthrene, Naphthalene, Fluoranthene, and Benzo(k)fluoranthene

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Supplementary materials

Table S1. Seawater solubility of naphthalene, phenanthrene, fluoranthene and benzo-k-fluoranthene at 25 °C and 35 g salts/kg.

Compounds	Solubility	References
Naphthalene	2.2 g/ 100g	[1]
Phenanthrene	7.1 g/ 100g	[1]
Fluoranthene	2.6 g/ 100g	[2]
Benzo-k-fluoranthene	< 1 g/ L	[3]

Table S2. Tukey's test used to indicate the significance level between PAHs different concentrations and control (0 mg/L) on nauplii after 24 h and 48 h of exposure: * < 0.05, ** p < 0.01, *** p < 0.001, **** p < 0.0001. n.s. = not significant.

	24h	p-value	48h	p-value
NAP	0 vs. 0.015	>0.9999	0 vs. 0.015	>0.9999
	0 vs. 0.032	>0.9999	0 vs. 0.032	0.6632
	0 vs. 0.078	>0.9999	0 vs. 0.078	0.6632
	0 vs. 0.11	>0.9999	0 vs. 0.11	0.0048
	0 vs. 0.26	>0.9999	0 vs. 0.26	0.0048
	0 vs. 0.41	>0.9999	0 vs. 0.41	<0.0001
	0 vs. 0.76	>0.9999	0 vs. 0.76	<0.0001
	0 vs. 1.45	0.6632	0 vs. 1.45	<0.0001
	0 vs. 4.23	<0.0001	0 vs. 4.23	<0.0001
	0 vs. 10.1	<0.0001	0 vs. 10.1	<0.0001
	0.015 vs. 0.032	>0.9999	0.015 vs. 0.032	>0.9999
	0.015 vs. 0.078	>0.9999	0.015 vs. 0.078	>0.9999
	0.015 vs. 0.11	>0.9999	0.015 vs. 0.11	0.6632
	0.015 vs. 0.26	>0.9999	0.015 vs. 0.26	0.6632
	0.015 vs. 0.41	>0.9999	0.015 vs. 0.41	<0.0001
	0.015 vs. 0.76	>0.9999	0.015 vs. 0.76	<0.0001
	0.015 vs. 1.45	0.6632	0.015 vs. 1.45	<0.0001
	0.015 vs. 4.23	<0.0001	0.015 vs. 4.23	<0.0001
	0.015 vs. 10.1	<0.0001	0.015 vs. 10.1	<0.0001
	0.032 vs. 0.078	>0.9999	0.032 vs. 0.078	>0.9999
	0.032 vs. 0.11	>0.9999	0.032 vs. 0.11	>0.9999
	0.032 vs. 0.26	>0.9999	0.032 vs. 0.26	>0.9999
	0.032 vs. 0.41	>0.9999	0.032 vs. 0.41	<0.0001
	0.032 vs. 0.76	>0.9999	0.032 vs. 0.76	<0.0001
	0.032 vs. 1.45	0.6632	0.032 vs. 1.45	<0.0001

PHE	0.032 vs. 4.23	<0.0001	0.032 vs. 4.23	<0.0001
	0.032 vs. 10.1	<0.0001	0.032 vs. 10.1	<0.0001
	0.078 vs. 0.11	>0.9999	0.078 vs. 0.11	>0.9999
	0.078 vs. 0.26	>0.9999	0.078 vs. 0.26	>0.9999
	0.078 vs. 0.41	>0.9999	0.078 vs. 0.41	<0.0001
	0.078 vs. 0.76	>0.9999	0.078 vs. 0.76	<0.0001
	0.078 vs. 1.45	0.9935	0.078 vs. 1.45	<0.0001
	0.078 vs. 4.23	<0.0001	0.078 vs. 4.23	<0.0001
	0.078 vs. 10.1	<0.0001	0.078 vs. 10.1	<0.0001
	0.11 vs. 0.26	>0.9999	0.11 vs. 0.26	>0.9999
	0.11 vs. 0.41	>0.9999	0.11 vs. 0.41	0.0048
	0.11 vs. 0.76	>0.9999	0.11 vs. 0.76	0.0007
	0.11 vs. 1.45	>0.9999	0.11 vs. 1.45	<0.0001
	0.11 vs. 4.23	0.0048	0.11 vs. 4.23	<0.0001
	0.11 vs. 10.1	<0.0001	0.11 vs. 10.1	<0.0001
	0.26 vs. 0.41	>0.9999	0.26 vs. 0.41	0.0048
	0.26 vs. 0.76	>0.9999	0.26 vs. 0.76	0.0007
	0.26 vs. 1.45	>0.9999	0.26 vs. 1.45	<0.0001
	0.26 vs. 4.23	0.0048	0.26 vs. 4.23	<0.0001
	0.26 vs. 10.1	<0.0001	0.26 vs. 10.1	<0.0001
	0.41 vs. 0.76	>0.9999	0.41 vs. 0.76	>0.9999
	0.41 vs. 1.45	>0.9999	0.41 vs. 1.45	>0.9999
	0.41 vs. 4.23	0.0048	0.41 vs. 4.23	0.0048
	0.41 vs. 10.1	<0.0001	0.41 vs. 10.1	0.0048
	0.76 vs. 1.45	>0.9999	0.76 vs. 1.45	>0.9999
	0.76 vs. 4.23	0.0048	0.76 vs. 4.23	0.032
	0.76 vs. 10.1	<0.0001	0.76 vs. 10.1	0.032
	1.45 vs. 4.23	0.1816	1.45 vs. 4.23	0.6632
	1.45 vs. 10.1	0.0048	1.45 vs. 10.1	0.6632
	4.23 vs. 10.1	>0.9999	4.23 vs. 10.1	>0.9999
	0 vs. 0.21	>0.9999	0 vs. 0.21	>0.9999
	0 vs. 0.71	0.4495	0 vs. 0.71	0.1212
	0 vs. 1.15	0.0209	0 vs. 1.15	0.0027
	0 vs. 2.26	0.0209	0 vs. 2.26	<0.0001
	0 vs. 3.45	0.0003	0 vs. 3.45	<0.0001
	0 vs. 4.23	0.0003	0 vs. 4.23	<0.0001
	0 vs. 7.48	0.0003	0 vs. 7.48	<0.0001
	0 vs. 48.7	<0.0001	0 vs. 48.7	<0.0001
	0 vs. 98.6	<0.0001	0 vs. 98.6	<0.0001
	0 vs. 223.4	<0.0001	0 vs. 223.4	<0.0001
	0.21 vs. 0.71	0.4495	0.21 vs. 0.71	0.4495
	0.21 vs. 1.15	0.0209	0.21 vs. 1.15	0.0209
	0.21 vs. 2.26	0.0209	0.21 vs. 2.26	0.0003
	0.21 vs. 3.45	0.0003	0.21 vs. 3.45	<0.0001
	0.21 vs. 4.23	0.0003	0.21 vs. 4.23	<0.0001
	0.21 vs. 7.48	0.0003	0.21 vs. 7.48	<0.0001
	0.21 vs. 48.7	<0.0001	0.21 vs. 48.7	<0.0001
	0.21 vs. 98.6	<0.0001	0.21 vs. 98.6	<0.0001
	0.21 vs. 223.4	<0.0001	0.21 vs. 223.4	<0.0001
	0.71 vs. 1.15	0.9982	0.71 vs. 1.15	0.9982
	0.71 vs. 2.26	0.9982	0.71 vs. 2.26	0.4495

	0.71 vs. 3.45	0.4495	0.71 vs. 3.45	0.1212
	0.71 vs. 4.23	0.4495	0.71 vs. 4.23	<0.0001
	0.71 vs. 7.48	0.4495	0.71 vs. 7.48	<0.0001
	0.71 vs. 48.7	<0.0001	0.71 vs. 48.7	<0.0001
	0.71 vs. 98.6	<0.0001	0.71 vs. 98.6	<0.0001
	0.71 vs. 223.4	<0.0001	0.71 vs. 223.4	<0.0001
	1.15 vs. 2.26	>0.9999	1.15 vs. 2.26	0.9982
	1.15 vs. 3.45	0.9982	1.15 vs. 3.45	0.8806
	1.15 vs. 4.23	0.9982	1.15 vs. 4.23	0.0003
	1.15 vs. 7.48	0.9982	1.15 vs. 7.48	<0.0001
	1.15 vs. 48.7	0.0027	1.15 vs. 48.7	<0.0001
	1.15 vs. 98.6	<0.0001	1.15 vs. 98.6	<0.0001
	1.15 vs. 223.4	<0.0001	1.15 vs. 223.4	<0.0001
	2.26 vs. 3.45	0.9982	2.26 vs. 3.45	>0.9999
	2.26 vs. 4.23	0.9982	2.26 vs. 4.23	0.0209
	2.26 vs. 7.48	0.9982	2.26 vs. 7.48	0.0003
	2.26 vs. 48.7	0.0027	2.26 vs. 48.7	<0.0001
	2.26 vs. 98.6	<0.0001	2.26 vs. 98.6	<0.0001
	2.26 vs. 223.4	<0.0001	2.26 vs. 223.4	<0.0001
	3.45 vs. 4.23	>0.9999	3.45 vs. 4.23	0.1212
	3.45 vs. 7.48	>0.9999	3.45 vs. 7.48	0.0027
	3.45 vs. 48.7	0.1212	3.45 vs. 48.7	<0.0001
	3.45 vs. 98.6	0.0027	3.45 vs. 98.6	<0.0001
	3.45 vs. 223.4	0.0027	3.45 vs. 223.4	<0.0001
	4.23 vs. 7.48	>0.9999	4.23 vs. 7.48	0.9982
	4.23 vs. 48.7	0.1212	4.23 vs. 48.7	0.4495
	4.23 vs. 98.6	0.0027	4.23 vs. 98.6	0.0209
	4.23 vs. 223.4	0.0027	4.23 vs. 223.4	<0.0001
	7.48 vs. 48.7	0.1212	7.48 vs. 48.7	0.9982
	7.48 vs. 98.6	0.0027	7.48 vs. 98.6	0.4495
	7.48 vs. 223.4	0.0027	7.48 vs. 223.4	0.0003
	48.7 vs. 98.6	0.9982	48.7 vs. 98.6	0.9982
	48.7 vs. 223.4	0.9982	48.7 vs. 223.4	0.0209
	98.6 vs. 223.4	>0.9999	98.6 vs. 223.4	0.4495
FLT	0 vs. 0.29	>0.9999	0 vs. 0.29	0.0006
	0 vs. 0.81	>0.9999	0 vs. 0.81	<0.0001
	0 vs. 2.14	>0.9999	0 vs. 2.14	<0.0001
	0 vs. 4.41	>0.9999	0 vs. 4.41	<0.0001
	0 vs. 9.91	0.0093	0 vs. 9.91	<0.0001
	0 vs. 20.4	0.0093	0 vs. 20.4	<0.0001
	0 vs. 45.6	0.0093	0 vs. 45.6	<0.0001
	0 vs. 91.6	0.0093	0 vs. 91.6	<0.0001
	0 vs. 179	<0.0001	0 vs. 179	<0.0001
	0 vs. 325	<0.0001	0 vs. 325	<0.0001
	0.29 vs. 0.81	>0.9999	0.29 vs. 0.81	0.0006
	0.29 vs. 2.14	>0.9999	0.29 vs. 2.14	<0.0001
	0.29 vs. 4.41	>0.9999	0.29 vs. 4.41	<0.0001
	0.29 vs. 9.91	0.0093	0.29 vs. 9.91	<0.0001
	0.29 vs. 20.4	0.0093	0.29 vs. 20.4	<0.0001
	0.29 vs. 45.6	0.0093	0.29 vs. 45.6	<0.0001
	0.29 vs. 91.6	0.0093	0.29 vs. 91.6	<0.0001

	0.29 vs. 179	<0.0001	0.29 vs. 179	<0.0001
	0.29 vs. 325	<0.0001	0.29 vs. 325	<0.0001
	0.81 vs. 2.14	>0.9999	0.81 vs. 2.14	<0.0001
	0.81 vs. 4.41	>0.9999	0.81 vs. 4.41	<0.0001
	0.81 vs. 9.91	0.0093	0.81 vs. 9.91	<0.0001
	0.81 vs. 20.4	0.0093	0.81 vs. 20.4	<0.0001
	0.81 vs. 45.6	0.0093	0.81 vs. 45.6	<0.0001
	0.81 vs. 91.6	0.0093	0.81 vs. 91.6	<0.0001
	0.81 vs. 179	<0.0001	0.81 vs. 179	<0.0001
	0.81 vs. 325	<0.0001	0.81 vs. 325	<0.0001
	2.14 vs. 4.41	>0.9999	2.14 vs. 4.41	>0.9999
	2.14 vs. 9.91	0.0093	2.14 vs. 9.91	0.522
	2.14 vs. 20.4	0.0093	2.14 vs. 20.4	0.0989
	2.14 vs. 45.6	0.0093	2.14 vs. 45.6	0.0006
	2.14 vs. 91.6	0.0093	2.14 vs. 91.6	0.0006
	2.14 vs. 179	<0.0001	2.14 vs. 179	0.0006
	2.14 vs. 325	<0.0001	2.14 vs. 325	0.0006
	4.41 vs. 9.91	0.0989	4.41 vs. 9.91	0.522
	4.41 vs. 20.4	0.0989	4.41 vs. 20.4	0.0989
	4.41 vs. 45.6	0.0989	4.41 vs. 45.6	0.0006
	4.41 vs. 91.6	0.0989	4.41 vs. 91.6	0.0006
	4.41 vs. 179	<0.0001	4.41 vs. 179	0.0006
	4.41 vs. 325	<0.0001	4.41 vs. 325	0.0006
	9.91 vs. 20.4	>0.9999	9.91 vs. 20.4	>0.9999
	9.91 vs. 45.6	>0.9999	9.91 vs. 45.6	0.522
	9.91 vs. 91.6	>0.9999	9.91 vs. 91.6	0.522
	9.91 vs. 179	0.0093	9.91 vs. 179	0.522
	9.91 vs. 325	<0.0001	9.91 vs. 325	0.522
	20.4 vs. 45.6	>0.9999	20.4 vs. 45.6	0.969
	20.4 vs. 91.6	>0.9999	20.4 vs. 91.6	0.969
	20.4 vs. 179	0.0093	20.4 vs. 179	0.969
	20.4 vs. 325	<0.0001	20.4 vs. 325	0.969
	45.6 vs. 91.6	>0.9999	45.6 vs. 91.6	>0.9999
	45.6 vs. 179	0.0093	45.6 vs. 179	>0.9999
	45.6 vs. 325	<0.0001	45.6 vs. 325	>0.9999
	91.6 vs. 179	0.0093	91.6 vs. 179	>0.9999
	91.6 vs. 325	<0.0001	91.6 vs. 325	>0.9999
	179 vs. 325	<0.0001	179 vs. 325	>0.9999
BkF	0 vs. 0.016	>0.9999	0 vs. 0.016	0.8478
	0 vs. 0.41	>0.9999	0 vs. 0.41	0.0604
	0 vs. 0.78	>0.9999	0 vs. 0.78	0.0604
	0 vs. 0.98	>0.9999	0 vs. 0.98	0.0604
	0 vs. 2.4	>0.9999	0 vs. 2.4	0.0005
	0 vs. 5.3	>0.9999	0 vs. 5.3	0.0005
	0 vs. 10.4	>0.9999	0 vs. 10.4	0.0005
	0 vs. 19.5	>0.9999	0 vs. 19.5	0.0005
	0 vs. 41.7	>0.9999	0 vs. 41.7	0.0005
	0 vs. 84.6	>0.9999	0 vs. 84.6	0.0005
	0.016 vs. 0.41	>0.9999	0.016 vs. 0.41	0.8478
	0.016 vs. 0.78	>0.9999	0.016 vs. 0.78	0.8478
	0.016 vs. 0.98	>0.9999	0.016 vs. 0.98	0.8478

0.016 vs. 2.4	>0.9999	0.016 vs. 2.4	0.0604
0.016 vs. 5.3	>0.9999	0.016 vs. 5.3	0.0604
0.016 vs. 10.4	>0.9999	0.016 vs. 10.4	0.0604
0.016 vs. 19.5	>0.9999	0.016 vs. 19.5	0.0604
0.016 vs. 41.7	>0.9999	0.016 vs. 41.7	0.0604
0.016 vs. 84.6	>0.9999	0.016 vs. 84.6	0.0604
0.41 vs. 0.78	>0.9999	0.41 vs. 0.78	>0.9999
0.41 vs. 0.98	>0.9999	0.41 vs. 0.98	>0.9999
0.41 vs. 2.4	>0.9999	0.41 vs. 2.4	0.8478
0.41 vs. 5.3	>0.9999	0.41 vs. 5.3	0.8478
0.41 vs. 10.4	>0.9999	0.41 vs. 10.4	0.8478
0.41 vs. 19.5	>0.9999	0.41 vs. 19.5	0.8478
0.41 vs. 41.7	>0.9999	0.41 vs. 41.7	0.8478
0.41 vs. 84.6	>0.9999	0.41 vs. 84.6	0.8478
0.78 vs. 0.98	>0.9999	0.78 vs. 0.98	>0.9999
0.78 vs. 2.4	>0.9999	0.78 vs. 2.4	0.8478
0.78 vs. 5.3	>0.9999	0.78 vs. 5.3	0.8478
0.78 vs. 10.4	>0.9999	0.78 vs. 10.4	0.8478
0.78 vs. 19.5	>0.9999	0.78 vs. 19.5	0.8478
0.78 vs. 41.7	>0.9999	0.78 vs. 41.7	0.8478
0.78 vs. 84.6	>0.9999	0.78 vs. 84.6	0.8478
0.98 vs. 2.4	>0.9999	0.98 vs. 2.4	0.8478
0.98 vs. 5.3	>0.9999	0.98 vs. 5.3	0.8478
0.98 vs. 10.4	>0.9999	0.98 vs. 10.4	0.8478
0.98 vs. 19.5	>0.9999	0.98 vs. 19.5	0.8478
0.98 vs. 41.7	>0.9999	0.98 vs. 41.7	0.8478
0.98 vs. 84.6	>0.9999	0.98 vs. 84.6	0.8478
2.4 vs. 5.3	>0.9999	2.4 vs. 5.3	>0.9999
2.4 vs. 10.4	>0.9999	2.4 vs. 10.4	>0.9999
2.4 vs. 19.5	>0.9999	2.4 vs. 19.5	>0.9999
2.4 vs. 41.7	>0.9999	2.4 vs. 41.7	>0.9999
2.4 vs. 84.6	>0.9999	2.4 vs. 84.6	>0.9999
5.3 vs. 10.4	>0.9999	5.3 vs. 10.4	>0.9999
5.3 vs. 19.5	>0.9999	5.3 vs. 19.5	>0.9999
5.3 vs. 41.7	>0.9999	5.3 vs. 41.7	>0.9999
5.3 vs. 84.6	>0.9999	5.3 vs. 84.6	>0.9999
10.4 vs. 19.5	>0.9999	10.4 vs. 19.5	>0.9999
10.4 vs. 41.7	>0.9999	10.4 vs. 41.7	>0.9999
10.4 vs. 84.6	>0.9999	10.4 vs. 84.6	>0.9999
19.5 vs. 41.7	>0.9999	19.5 vs. 41.7	>0.9999
19.5 vs. 84.6	>0.9999	19.5 vs. 84.6	>0.9999
41.7 vs. 84.6	>0.9999	41.7 vs. 84.6	>0.9999

Table S3. Tukey's test used to indicate the significance level between PAHs different concentrations and control (0 mg/L) on adults after 24 h and 48 h of exposure: * < 0.05, ** p < 0.01, *** p < 0.001, **** p < 0.0001. n.s. = not significant.

	24h	<i>p-value</i>	48h	<i>p-value</i>
NAP	0 vs. 0.015	>0.9999	0 vs. 0.015	>0.9999
	0 vs. 0.032	>0.9999	0 vs. 0.032	>0.9999
	0 vs. 0.078	>0.9999	0 vs. 0.078	>0.9999
	0 vs. 0.11	>0.9999	0 vs. 0.11	>0.9999
	0 vs. 0.26	>0.9999	0 vs. 0.26	>0.9999
	0 vs. 0.41	>0.9999	0 vs. 0.41	0.9171
	0 vs. 0.76	>0.9999	0 vs. 0.76	0.9171
	0 vs. 1.45	>0.9999	0 vs. 1.45	0.0025
	0 vs. 4.23	0.9171	0 vs. 4.23	<0.0001
	0 vs. 10.1	0.9171	0 vs. 10.1	<0.0001
	0.015 vs. 0.032	>0.9999	0.015 vs. 0.032	>0.9999
	0.015 vs. 0.078	>0.9999	0.015 vs. 0.078	>0.9999
	0.015 vs. 0.11	>0.9999	0.015 vs. 0.11	>0.9999
	0.015 vs. 0.26	>0.9999	0.015 vs. 0.26	>0.9999
	0.015 vs. 0.41	>0.9999	0.015 vs. 0.41	0.9171
	0.015 vs. 0.76	>0.9999	0.015 vs. 0.76	0.9171
	0.015 vs. 1.45	>0.9999	0.015 vs. 1.45	0.0025
	0.015 vs. 4.23	0.9171	0.015 vs. 4.23	<0.0001
	0.015 vs. 10.1	0.9171	0.015 vs. 10.1	<0.0001
	0.032 vs. 0.078	>0.9999	0.032 vs. 0.078	>0.9999
	0.032 vs. 0.11	>0.9999	0.032 vs. 0.11	>0.9999
	0.032 vs. 0.26	>0.9999	0.032 vs. 0.26	>0.9999
	0.032 vs. 0.41	>0.9999	0.032 vs. 0.41	0.9171
	0.032 vs. 0.76	>0.9999	0.032 vs. 0.76	0.9171
	0.032 vs. 1.45	>0.9999	0.032 vs. 1.45	0.0025
	0.032 vs. 4.23	0.9171	0.032 vs. 4.23	<0.0001
	0.032 vs. 10.1	0.9171	0.032 vs. 10.1	<0.0001
	0.078 vs. 0.11	>0.9999	0.078 vs. 0.11	>0.9999
	0.078 vs. 0.26	>0.9999	0.078 vs. 0.26	>0.9999
	0.078 vs. 0.41	>0.9999	0.078 vs. 0.41	0.9171
	0.078 vs. 0.76	>0.9999	0.078 vs. 0.76	0.9171
	0.078 vs. 1.45	>0.9999	0.078 vs. 1.45	0.0025
	0.078 vs. 4.23	0.9171	0.078 vs. 4.23	<0.0001
	0.078 vs. 10.1	0.9171	0.078 vs. 10.1	<0.0001
	0.11 vs. 0.26	>0.9999	0.11 vs. 0.26	>0.9999
	0.11 vs. 0.41	>0.9999	0.11 vs. 0.41	0.9171
	0.11 vs. 0.76	>0.9999	0.11 vs. 0.76	0.9171
	0.11 vs. 1.45	>0.9999	0.11 vs. 1.45	0.0025
	0.11 vs. 4.23	0.9171	0.11 vs. 4.23	<0.0001
	0.11 vs. 10.1	0.9171	0.11 vs. 10.1	<0.0001
	0.26 vs. 0.41	>0.9999	0.26 vs. 0.41	0.9171
	0.26 vs. 0.76	>0.9999	0.26 vs. 0.76	0.9171
	0.26 vs. 1.45	>0.9999	0.26 vs. 1.45	0.0025
	0.26 vs. 4.23	0.9171	0.26 vs. 4.23	<0.0001
	0.26 vs. 10.1	0.9171	0.26 vs. 10.1	<0.0001
	0.41 vs. 0.76	>0.9999	0.41 vs. 0.76	>0.9999
	0.41 vs. 1.45	>0.9999	0.41 vs. 1.45	0.1347

PHE	0.41 vs. 4.23	0.9171	0.41 vs. 4.23	<0.0001
	0.41 vs. 10.1	0.9171	0.41 vs. 10.1	<0.0001
	0.76 vs. 1.45	>0.9999	0.76 vs. 1.45	0.1347
	0.76 vs. 4.23	0.9171	0.76 vs. 4.23	<0.0001
	0.76 vs. 10.1	0.9171	0.76 vs. 10.1	<0.0001
	1.45 vs. 4.23	0.9171	1.45 vs. 4.23	0.1399
	1.45 vs. 10.1	0.9171	1.45 vs. 10.1	0.0027
	4.23 vs. 10.1	>0.9999	4.23 vs. 10.1	0.9199
	0 vs. 0.21	>0.9999	0 vs. 0.21	>0.9999
	0 vs. 0.71	>0.9999	0 vs. 0.71	<0.0001
	0 vs. 1.15	>0.9999	0 vs. 1.15	<0.0001
	0 vs. 2.26	>0.9999	0 vs. 2.26	<0.0001
	0 vs. 3.45	>0.9999	0 vs. 3.45	<0.0001
	0 vs. 4.23	>0.9999	0 vs. 4.23	<0.0001
	0 vs. 7.48	>0.9999	0 vs. 7.48	<0.0001
	0 vs. 48.7	>0.9999	0 vs. 48.7	<0.0001
	0 vs. 98.6	>0.9999	0 vs. 98.6	<0.0001
	0 vs. 223.4	>0.9999	0 vs. 223.4	<0.0001
	0.21 vs. 0.71	>0.9999	0.21 vs. 0.71	<0.0001
	0.21 vs. 1.15	>0.9999	0.21 vs. 1.15	<0.0001
	0.21 vs. 2.26	>0.9999	0.21 vs. 2.26	<0.0001
	0.21 vs. 3.45	>0.9999	0.21 vs. 3.45	<0.0001
	0.21 vs. 4.23	>0.9999	0.21 vs. 4.23	<0.0001
	0.21 vs. 7.48	>0.9999	0.21 vs. 7.48	<0.0001
	0.21 vs. 48.7	>0.9999	0.21 vs. 48.7	<0.0001
	0.21 vs. 98.6	>0.9999	0.21 vs. 98.6	<0.0001
	0.21 vs. 223.4	>0.9999	0.21 vs. 223.4	<0.0001
	0.71 vs. 1.15	>0.9999	0.71 vs. 1.15	0.9998
	0.71 vs. 2.26	>0.9999	0.71 vs. 2.26	0.9998
	0.71 vs. 3.45	>0.9999	0.71 vs. 3.45	0.9998
	0.71 vs. 4.23	>0.9999	0.71 vs. 4.23	0.9431
	0.71 vs. 7.48	>0.9999	0.71 vs. 7.48	0.0231
	0.71 vs. 48.7	>0.9999	0.71 vs. 48.7	<0.0001
	0.71 vs. 98.6	>0.9999	0.71 vs. 98.6	<0.0001
	0.71 vs. 223.4	>0.9999	0.71 vs. 223.4	<0.0001
	1.15 vs. 2.26	>0.9999	1.15 vs. 2.26	>0.9999
	1.15 vs. 3.45	>0.9999	1.15 vs. 3.45	>0.9999
	1.15 vs. 4.23	>0.9999	1.15 vs. 4.23	0.9997
	1.15 vs. 7.48	>0.9999	1.15 vs. 7.48	0.1266
	1.15 vs. 48.7	>0.9999	1.15 vs. 48.7	0.0002
	1.15 vs. 98.6	>0.9999	1.15 vs. 98.6	<0.0001
	1.15 vs. 223.4	>0.9999	1.15 vs. 223.4	<0.0001
	2.26 vs. 3.45	>0.9999	2.26 vs. 3.45	>0.9999
	2.26 vs. 4.23	>0.9999	2.26 vs. 4.23	0.9997
	2.26 vs. 7.48	>0.9999	2.26 vs. 7.48	0.1266
	2.26 vs. 48.7	>0.9999	2.26 vs. 48.7	0.0002
	2.26 vs. 98.6	>0.9999	2.26 vs. 98.6	<0.0001
	2.26 vs. 223.4	>0.9999	2.26 vs. 223.4	<0.0001
	3.45 vs. 4.23	>0.9999	3.45 vs. 4.23	0.9997
	3.45 vs. 7.48	>0.9999	3.45 vs. 7.48	0.1266
	3.45 vs. 48.7	>0.9999	3.45 vs. 48.7	0.0002

FLT	3.45 vs. 98.6	>0.9999	3.45 vs. 98.6	<0.0001
	3.45 vs. 223.4	>0.9999	3.45 vs. 223.4	<0.0001
	4.23 vs. 7.48	>0.9999	4.23 vs. 7.48	0.4558
	4.23 vs. 48.7	>0.9999	4.23 vs. 48.7	0.0017
	4.23 vs. 98.6	>0.9999	4.23 vs. 98.6	<0.0001
	4.23 vs. 223.4	>0.9999	4.23 vs. 223.4	<0.0001
	7.48 vs. 48.7	>0.9999	7.48 vs. 48.7	0.4558
	7.48 vs. 98.6	>0.9999	7.48 vs. 98.6	0.0017
	7.48 vs. 223.4	>0.9999	7.48 vs. 223.4	<0.0001
	48.7 vs. 98.6	>0.9999	48.7 vs. 98.6	0.4558
	48.7 vs. 223.4	>0.9999	48.7 vs. 223.4	<0.0001
	98.6 vs. 223.4	>0.9999	98.6 vs. 223.4	<0.0001
	0 vs. 0.29	0.3681	0 vs. 0.29	<0.0001
	0 vs. 0.81	0.3681	0 vs. 0.81	<0.0001
	0 vs. 2.14	0.3681	0 vs. 2.14	<0.0001
	0 vs. 4.41	0.3681	0 vs. 4.41	<0.0001
	0 vs. 9.91	<0.0001	0 vs. 9.91	<0.0001
	0 vs. 20.4	<0.0001	0 vs. 20.4	<0.0001
	0 vs. 45.6	<0.0001	0 vs. 45.6	<0.0001
	0 vs. 91.6	<0.0001	0 vs. 91.6	<0.0001
	0 vs. 179	<0.0001	0 vs. 179	<0.0001
	0 vs. 325	<0.0001	0 vs. 325	<0.0001
	0.29 vs. 0.81	>0.9999	0.29 vs. 0.81	>0.9999
	0.29 vs. 2.14	>0.9999	0.29 vs. 2.14	0.0006
	0.29 vs. 4.41	>0.9999	0.29 vs. 4.41	<0.0001
	0.29 vs. 9.91	<0.0001	0.29 vs. 9.91	<0.0001
	0.29 vs. 20.4	<0.0001	0.29 vs. 20.4	<0.0001
	0.29 vs. 45.6	<0.0001	0.29 vs. 45.6	<0.0001
	0.29 vs. 91.6	<0.0001	0.29 vs. 91.6	<0.0001
	0.29 vs. 179	<0.0001	0.29 vs. 179	<0.0001
	0.29 vs. 325	<0.0001	0.29 vs. 325	<0.0001
	0.81 vs. 2.14	>0.9999	0.81 vs. 2.14	0.0006
	0.81 vs. 4.41	>0.9999	0.81 vs. 4.41	<0.0001
	0.81 vs. 9.91	<0.0001	0.81 vs. 9.91	<0.0001
	0.81 vs. 20.4	<0.0001	0.81 vs. 20.4	<0.0001
	0.81 vs. 45.6	<0.0001	0.81 vs. 45.6	<0.0001
	0.81 vs. 91.6	<0.0001	0.81 vs. 91.6	<0.0001
	0.81 vs. 179	<0.0001	0.81 vs. 179	<0.0001
	0.81 vs. 325	<0.0001	0.81 vs. 325	<0.0001
	2.14 vs. 4.41	>0.9999	2.14 vs. 4.41	0.8354
	2.14 vs. 9.91	<0.0001	2.14 vs. 9.91	0.096
	2.14 vs. 20.4	<0.0001	2.14 vs. 20.4	0.0035
	2.14 vs. 45.6	<0.0001	2.14 vs. 45.6	0.0035
	2.14 vs. 91.6	<0.0001	2.14 vs. 91.6	0.0035
	2.14 vs. 179	<0.0001	2.14 vs. 179	0.0035
	2.14 vs. 325	<0.0001	2.14 vs. 325	0.0035
	4.41 vs. 9.91	<0.0001	4.41 vs. 9.91	>0.9999
	4.41 vs. 20.4	<0.0001	4.41 vs. 20.4	0.8354
	4.41 vs. 45.6	<0.0001	4.41 vs. 45.6	0.8354
	4.41 vs. 91.6	<0.0001	4.41 vs. 91.6	0.8354
	4.41 vs. 179	<0.0001	4.41 vs. 179	0.8354

BkF	4.41 vs. 325	<0.0001	4.41 vs. 325	0.8354
	9.91 vs. 20.4	>0.9999	9.91 vs. 20.4	>0.9999
	9.91 vs. 45.6	>0.9999	9.91 vs. 45.6	>0.9999
	9.91 vs. 91.6	0.3681	9.91 vs. 91.6	>0.9999
	9.91 vs. 179	0.0441	9.91 vs. 179	>0.9999
	9.91 vs. 325	<0.0001	9.91 vs. 325	>0.9999
	20.4 vs. 45.6	>0.9999	20.4 vs. 45.6	>0.9999
	20.4 vs. 91.6	0.3681	20.4 vs. 91.6	>0.9999
	20.4 vs. 179	0.0441	20.4 vs. 179	>0.9999
	20.4 vs. 325	<0.0001	20.4 vs. 325	>0.9999
	45.6 vs. 91.6	0.3681	45.6 vs. 91.6	>0.9999
	45.6 vs. 179	0.0441	45.6 vs. 179	>0.9999
	45.6 vs. 325	<0.0001	45.6 vs. 325	>0.9999
	91.6 vs. 179	>0.9999	91.6 vs. 179	>0.9999
	91.6 vs. 325	0.0083	91.6 vs. 325	>0.9999
	179 vs. 325	0.096	179 vs. 325	>0.9999
	0 vs. 0.016	>0.9999	0 vs. 0.016	>0.9999
	0 vs. 0.41	>0.9999	0 vs. 0.41	>0.9999
	0 vs. 0.78	>0.9999	0 vs. 0.78	0.9176
	0 vs. 0.98	>0.9999	0 vs. 0.98	0.1357
	0 vs. 2.4	>0.9999	0 vs. 2.4	0.0026
	0 vs. 5.3	>0.9999	0 vs. 5.3	0.0026
	0 vs. 10.4	>0.9999	0 vs. 10.4	0.0026
	0 vs. 19.5	>0.9999	0 vs. 19.5	0.0026
	0 vs. 41.7	0.1357	0 vs. 41.7	<0.0001
	0 vs. 84.6	0.1357	0 vs. 84.6	<0.0001
	0.016 vs. 0.41	>0.9999	0.016 vs. 0.41	>0.9999
	0.016 vs. 0.78	>0.9999	0.016 vs. 0.78	0.9176
	0.016 vs. 0.98	>0.9999	0.016 vs. 0.98	0.1357
	0.016 vs. 2.4	>0.9999	0.016 vs. 2.4	0.0026
	0.016 vs. 5.3	>0.9999	0.016 vs. 5.3	0.0026
	0.016 vs. 10.4	>0.9999	0.016 vs. 10.4	0.0026
	0.016 vs. 19.5	>0.9999	0.016 vs. 19.5	0.0026
	0.016 vs. 41.7	0.1357	0.016 vs. 41.7	<0.0001
	0.016 vs. 84.6	0.1357	0.016 vs. 84.6	<0.0001
	0.41 vs. 0.78	>0.9999	0.41 vs. 0.78	0.9176
	0.41 vs. 0.98	>0.9999	0.41 vs. 0.98	0.1357
	0.41 vs. 2.4	>0.9999	0.41 vs. 2.4	0.0026
	0.41 vs. 5.3	>0.9999	0.41 vs. 5.3	0.0026
	0.41 vs. 10.4	>0.9999	0.41 vs. 10.4	0.0026
	0.41 vs. 19.5	>0.9999	0.41 vs. 19.5	0.0026
	0.41 vs. 41.7	0.1357	0.41 vs. 41.7	<0.0001
	0.41 vs. 84.6	0.1357	0.41 vs. 84.6	<0.0001
	0.78 vs. 0.98	>0.9999	0.78 vs. 0.98	0.9176
	0.78 vs. 2.4	>0.9999	0.78 vs. 2.4	0.1357
	0.78 vs. 5.3	>0.9999	0.78 vs. 5.3	0.1357
	0.78 vs. 10.4	>0.9999	0.78 vs. 10.4	0.1357
	0.78 vs. 19.5	>0.9999	0.78 vs. 19.5	0.1357
	0.78 vs. 41.7	0.1357	0.78 vs. 41.7	<0.0001
	0.78 vs. 84.6	0.1357	0.78 vs. 84.6	<0.0001
	0.98 vs. 2.4	>0.9999	0.98 vs. 2.4	0.9176

0.98 vs. 5.3	>0.9999	0.98 vs. 5.3	0.9176
0.98 vs. 10.4	>0.9999	0.98 vs. 10.4	0.9176
0.98 vs. 19.5	>0.9999	0.98 vs. 19.5	0.9176
0.98 vs. 41.7	0.1357	0.98 vs. 41.7	0.0026
0.98 vs. 84.6	0.1357	0.98 vs. 84.6	<0.0001
2.4 vs. 5.3	>0.9999	2.4 vs. 5.3	>0.9999
2.4 vs. 10.4	>0.9999	2.4 vs. 10.4	>0.9999
2.4 vs. 19.5	>0.9999	2.4 vs. 19.5	>0.9999
2.4 vs. 41.7	0.1357	2.4 vs. 41.7	0.1357
2.4 vs. 84.6	0.1357	2.4 vs. 84.6	0.0026
5.3 vs. 10.4	>0.9999	5.3 vs. 10.4	>0.9999
5.3 vs. 19.5	>0.9999	5.3 vs. 19.5	>0.9999
5.3 vs. 41.7	0.1357	5.3 vs. 41.7	0.1357
5.3 vs. 84.6	0.1357	5.3 vs. 84.6	0.0026
10.4 vs. 19.5	>0.9999	10.4 vs. 19.5	>0.9999
10.4 vs. 41.7	0.1357	10.4 vs. 41.7	0.1357
10.4 vs. 84.6	0.1357	10.4 vs. 84.6	0.0026
19.5 vs. 41.7	0.1357	19.5 vs. 41.7	0.1357
19.5 vs. 84.6	0.1357	19.5 vs. 84.6	0.0026
41.7 vs. 84.6	>0.9999	41.7 vs. 84.6	0.9176

Table S4. LC50 and 95% confidence intervals (IC) calculated after 24 h and 48 h of naphthalene (NAP), phenanthrene (PHE), fluoranthene (FLT) and benzo(k)fluoranthene (BkF) exposure on both nauplii and adults. The data were expressed in mg/L. n.a.= not available

	Nauplii				Adults			
	24 h		48 h		24 h		48 h	
	LC50	IC	LC50	IC	LC50	IC	LC50	IC
NAP	1.73	1.52-46.28	0.40	0.21-90.38	0.11	0.02-12.06	44.31	5.81-268.12
PHE	4.44	3.66-56.76	3.07	1.32-81.01	n.a.	n.a.	1.68	1.35-234.09
FLT	1.30	0.45-107.5	0.09	0.01-99.1	32.03	0.10-120.08	0.77	0.10-103.67
BkF	n.a.	n.a.	n.a.	n.a.	28.67	0.5-36.67	6.12	0.05-48.72

Table S5. Data of expression levels in adults exposed to NAP, PHE, FLT and BkF, were reported as a fold difference (in red up-expressed genes; in green down-expressed genes) from control (represented by adults of crustaceans reared in SW without contaminants) for 48 h. Fold differences greater than ± 1.5 were considered significant.

		Naphthalene	Phenanthrene	Fluoranthene	Benzo-k-fluoranthene
Stress	<i>hsp26</i>	-2.16	5.20	1.96	2.56
	<i>hsp60</i>	3.02	4.03	3.48	4.09
	<i>hsp70</i>	0.31	3.35	-1.51	-1.37
	<i>COXI</i>	6.92	8.87	0.17	-1.77
	<i>COXIII</i>	7.77	12.65	0.79	1.65

Table S6. Data of expression levels in adults exposed to NAP, PHE, FLT and BkF, were reported as a fold difference (in red up-expressed genes; in green down-expressed genes) from control (represented by adults of crustaceans reared in SW without contaminants) for 48 h. Fold differences greater than ± 1.5 were considered significant.

		NAP	PHE	FLT	BkF
<i>Stress</i>	<i>hsp26</i>	-1.81	2.70	0.95	1.23
	<i>hsp60</i>	0.42	3.32	4.92	6.52
	<i>hsp70</i>	0.67	0.40	0.69	1.93
	<i>COXI</i>	-0.82	-3.92	0.90	2.61
	<i>COXIII</i>	-0.83	-3.59	-0.59	2.03
<i>Development/differentiation</i>	<i>HAD-like</i>	-4.4845	6.8765	3.05	7.02
	<i>tcp</i>	2.7405	7.4955	-2.53	2.85
	<i>UCP2</i>	6.8885	12.3165	2.04	2.16
	<i>CDC48</i>	3.582	8.558	-7.26	3.94

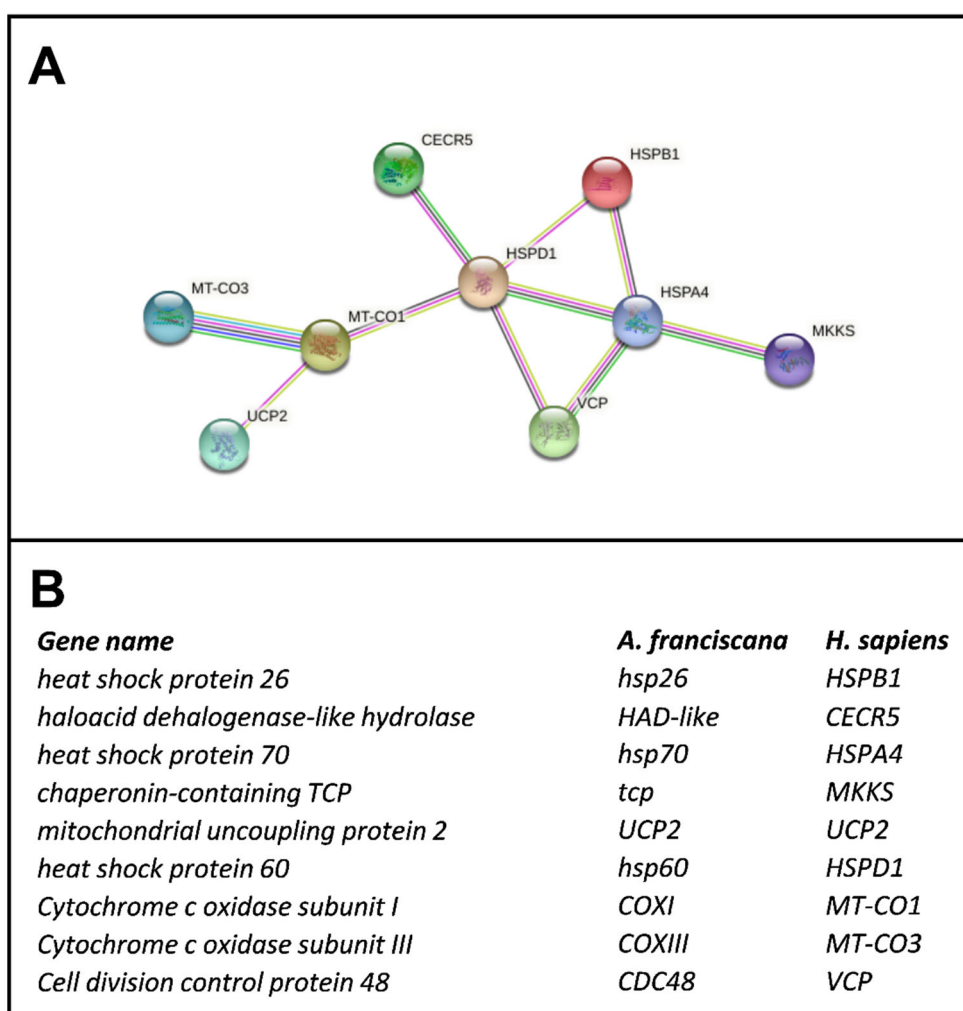


Figure S1. (A) Interactomic analysis by STRING (<https://string-db.org/>). The network graphically displays the relationship between genes. The biological relationships between genes are indicated by different colours. Known interactions: reported by database = light blue and determined experimentally = pink. Expected interactions: gene proximity = green; gene fusion = red; genes with similar pattern = light blue. (B) Human gene names and the corresponding *A. franciscana* orthologous genes.

References

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