

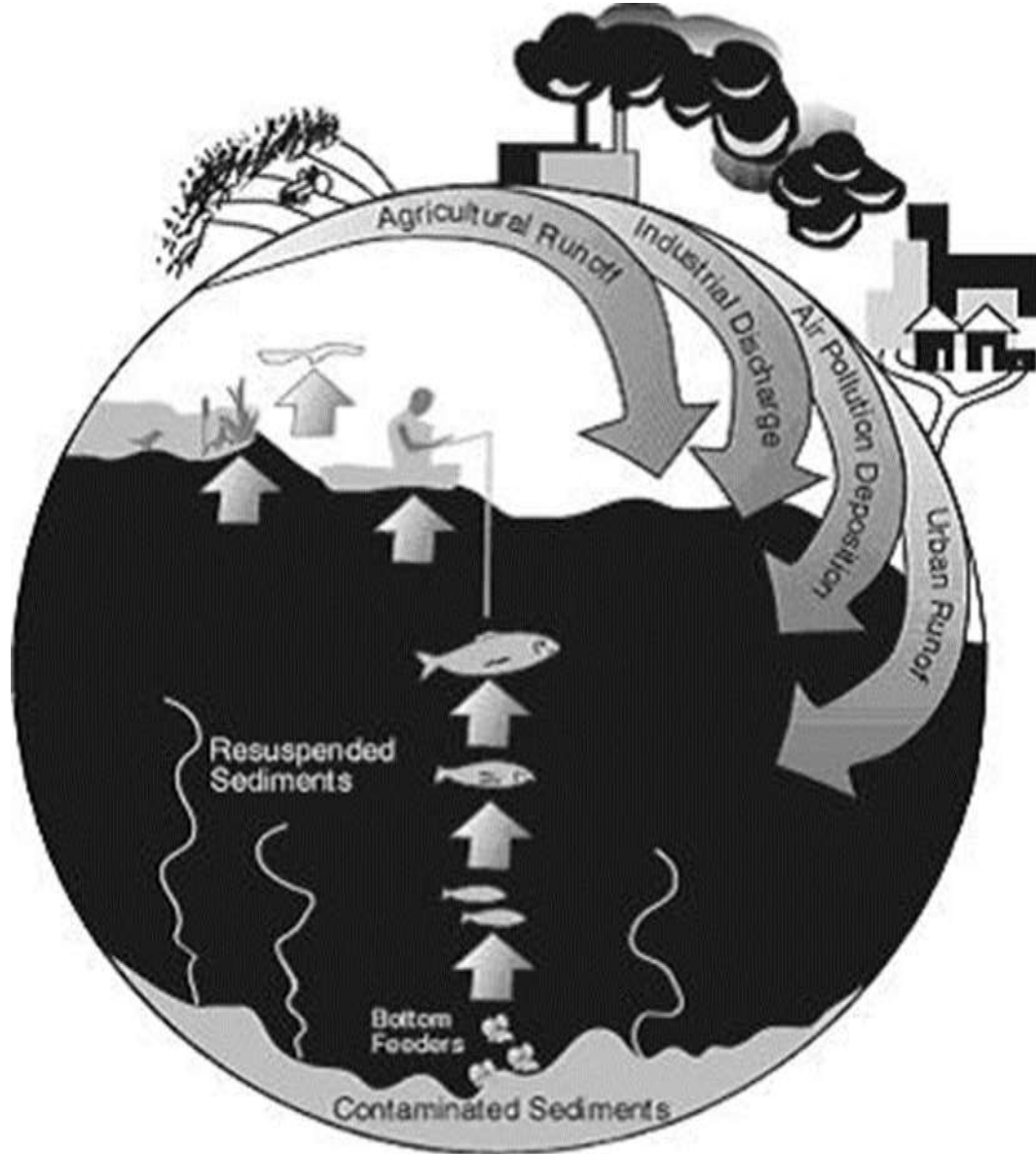
SUB-CHRONIC EFFECTS OF SLIGHT PAH- AND PCB- CONTAMINATED MESOCOSMS IN PARACENTROTUS LIVIDUS LMK: A MULTI-ENDPOINT APPROACH AND DE NOVO TRANSCRIPTOMIC

Albarano L.^{1,2}, Zupo V.², Caramiello D.², Toscanesi M., Trifuoggi M.^{3,4}, Guida M.^{1,2,3}, Libralato G.^{1,2}, Costantini M.²

1 Department of Biology, University of Naples Federico II, Complesso Universitario di Monte Sant'Angelo, Via Cinthia 21, 80126, Naples, Italy- email

2 Department of Marine Biotechnology, Stazione Zoologica Anton Dohrn, Villa Comunale, 80121 Napoli- email

3 Centro Servizi Metrologici e Tecnologici Avanzati (CeSMA), Complesso Universitario di Monte Sant'Angelo, Via Cinthia 21, 80126, Naples, Italy - email



- Natural (such as bioturbation and sea storm) or artificial (such as dredging) perturbative events can release the accumulated contamination causing acute concerns to water column populations and the re-allocation of contaminants within the same aquatic environment

Experimental design

W



W+SED



W+SED+PAHs (192 µg/L)



W+SED+PCBs (0.15 µg/L)



➤ **Bioaccumulation**

➤ **Theca**

➤ **Gonad**

➤ **Gut**

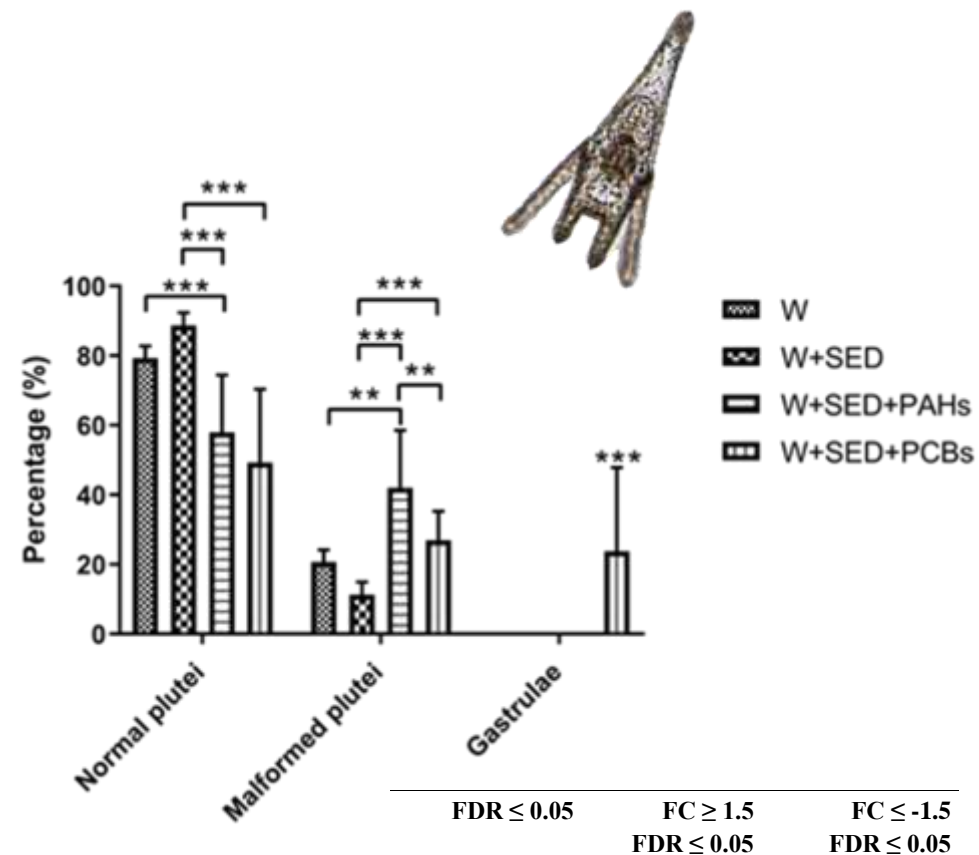
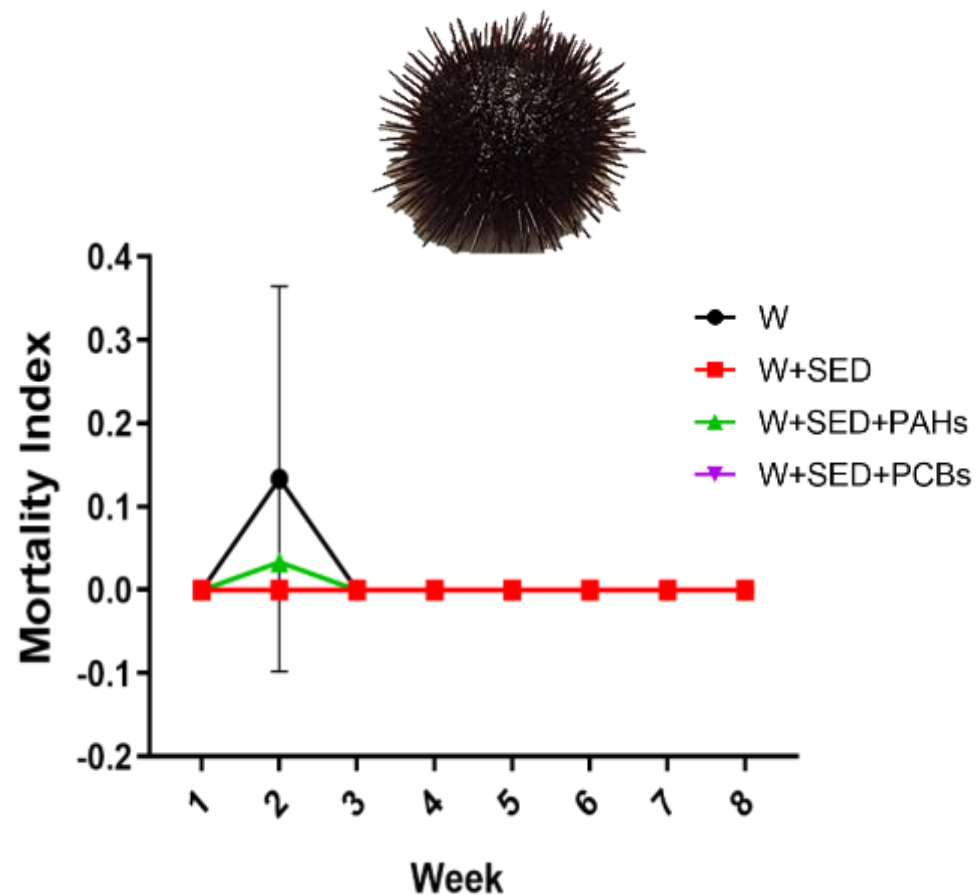


➤ **Embryotoxicity**

➤ **Genotoxicity**

➤ *de novo* **Transcriptome**

Results



	Theca + spines [µg/Kg]			Gonads [µg/Kg]			Gut [µg/Kg]	
	W+SED+PAHs	W	W+SED	W+SED+PAHs	W	W+SED	W+SED+PAHs	W/W+SED
Total PAHs	12.4	<0.4	<0.4	16.3	<0.4	<0.4	<2	<2
SD	3.72			4.89				

Genes	FDR ≤ 0.05	FC ≥ 1.5 FDR ≤ 0.05	FC ≤ -1.5 FDR ≤ 0.05
Treated1 vs Control	1898	933	965
Treated2_ vs Control	2396	1079	1317
Treated2 vs Treated1	1356	755	601
Isoforms			
Treated1 vs Control	5591	2200	3388
Treated2_ vs Control	7703	3715	3985
Treated2 vs Treated1	4762	2911	1850

Conclusions

- ✓ **Setting up «closed system» (microcosm) to study possible toxigenic effects of polluted sediment on marine invertebrates**
- ✓ **PAHs and PCBs did not affect survival of sea urchins**
- ✓ **PAHs and PCBs induced an increase of malformed and/or delayed embryos, compared to negative control (sediment without contaminants and sea water without sediment)**
- ✓ **PAHs bioaccumulation have been shown in theca+spines and gonads**
- ✓ **PAHs and PCBs induced variation on the expression level of several genes (involved in stress response, skeletogenesis, detoxification and development/differentiation) analyzed by *RNA sequencing* and *Real Time qPCR*.**