CAN ESTUARY SEDIMENT CONTAMINANTS INTERFERE WITH THE DNA REPAIR CAPACITY OF HEPG2 CELLS?

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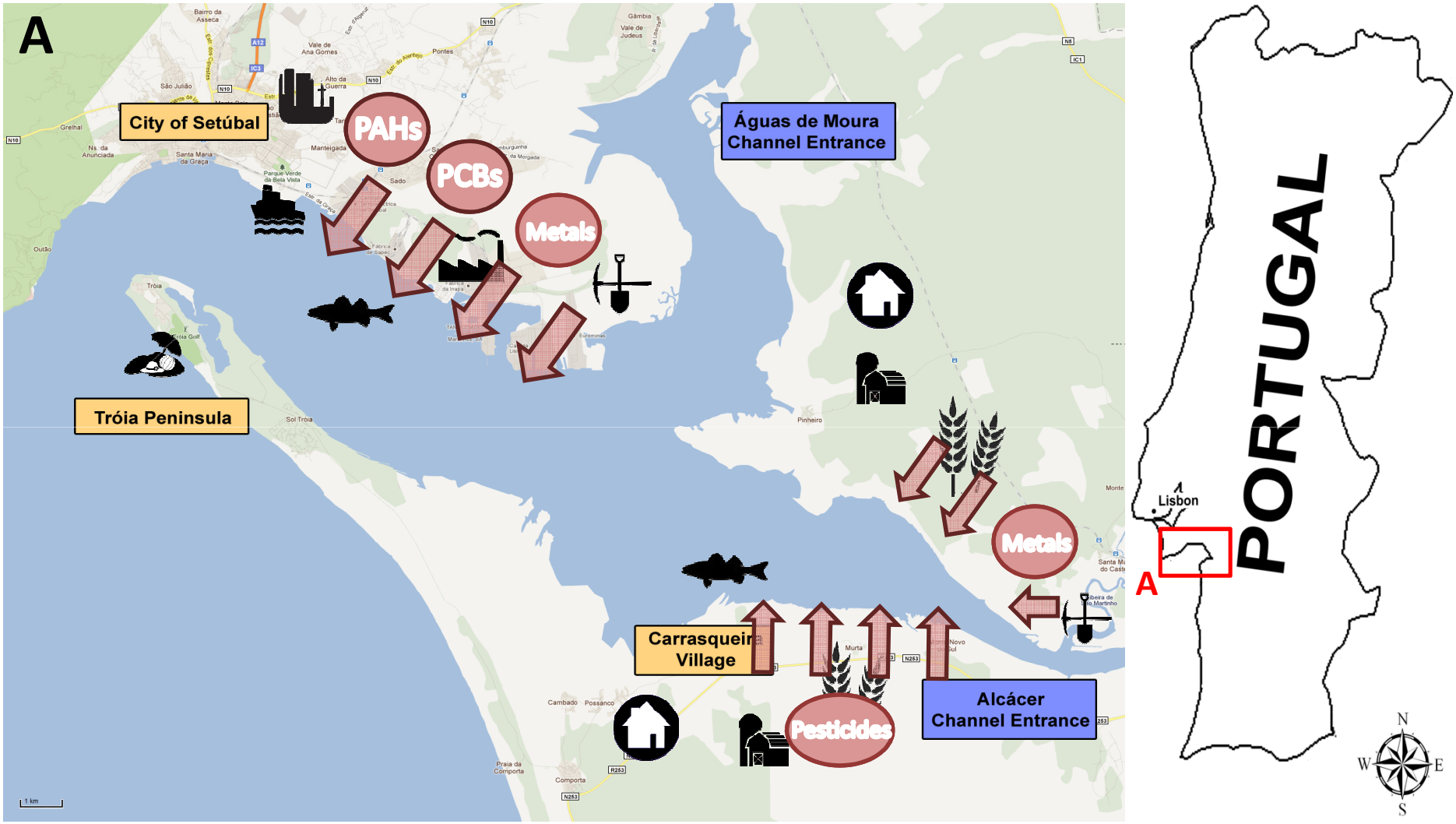
Study Area – Sado Estuary

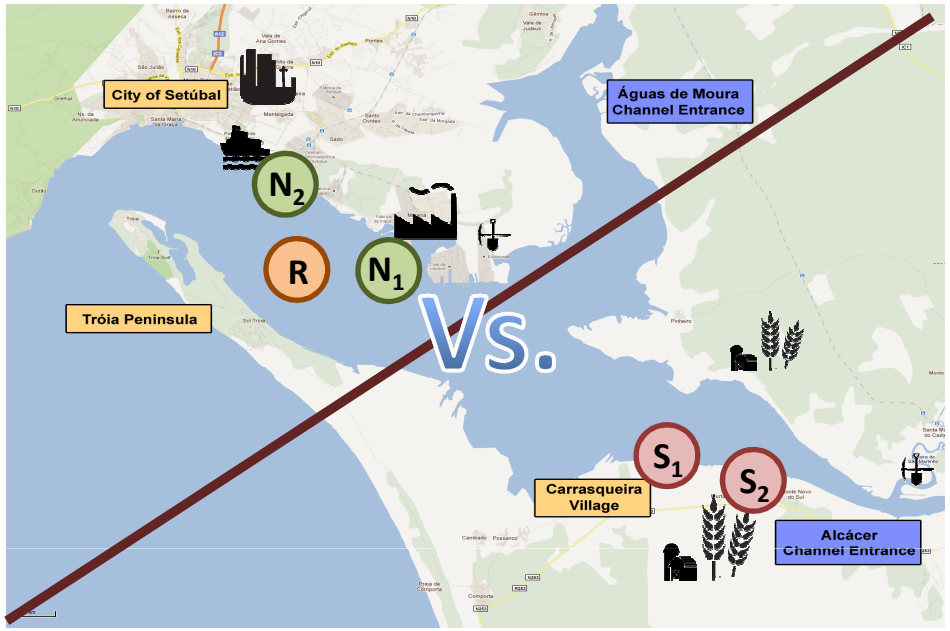


An estuary is a semi-enclosed maritime area with limited self renewal capability which makes it particularly capable of retaining contaminants from different sources.

Background

- Recent studies characterized the cytotoxic and genotoxic effects of 5 sediment sample extracts in a human cell line (HepG2), through the neutral red assays and the comet and micronucleus assays, respectively.

- Reference sample (R), was mainly uncontaminated and failed to induce cyto- and genotoxicity.



Northern Area

- Industrial and urban area
- Moderate levels of PAHs and metals
- Higher cytotoxicity
- Higher DNA strand breakage
- Higher micronuclei induction

Southern Area

- Agricultural area
- Mostly contaminated by moderate levels of metals
- Lower cytotoxicity
- Higher oxidative DNA damage
- Lower micronuclei induction

Objective

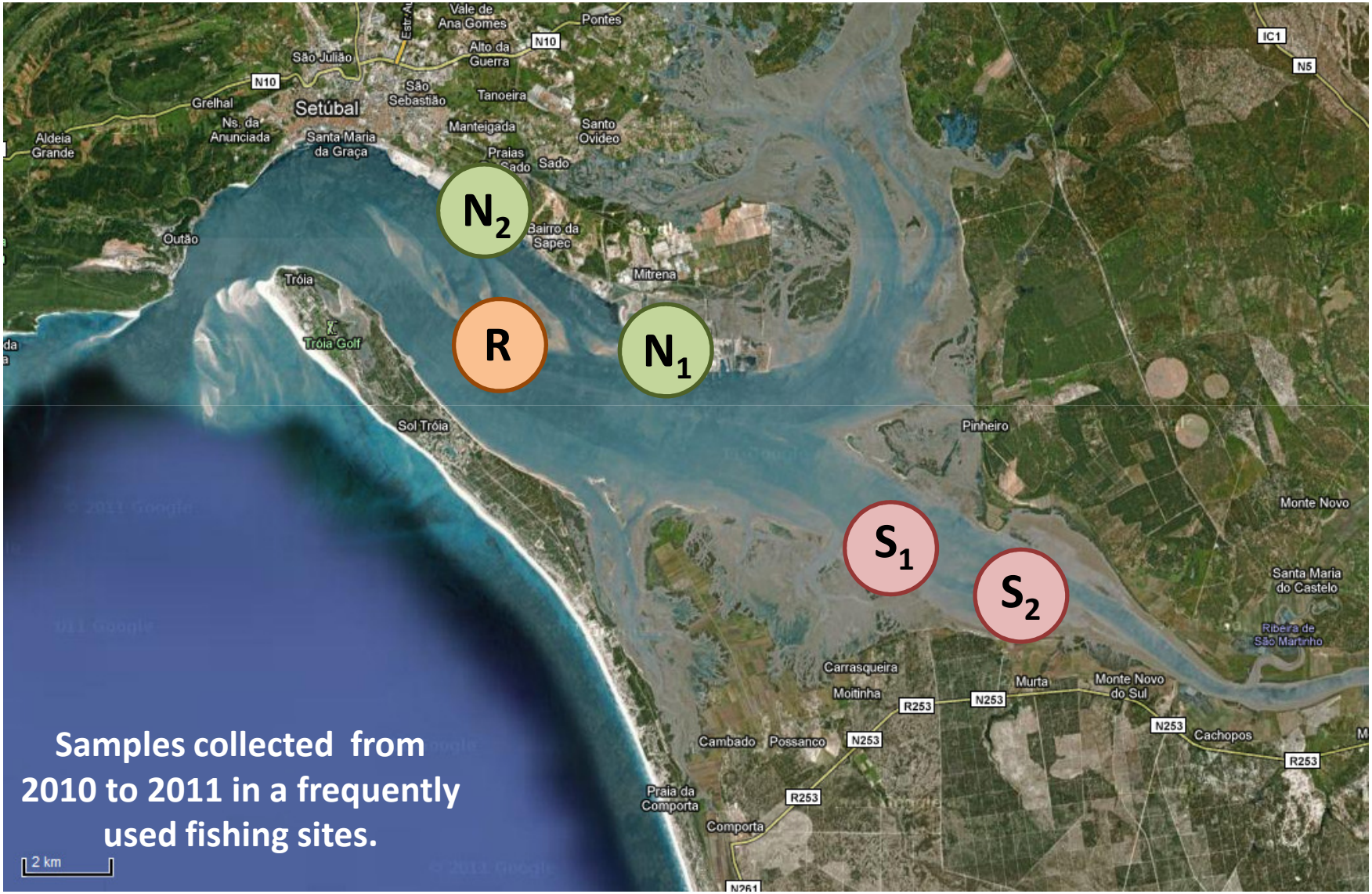
Main Objective

Assess the potential ecological and human health risk of a contaminated estuarine environment

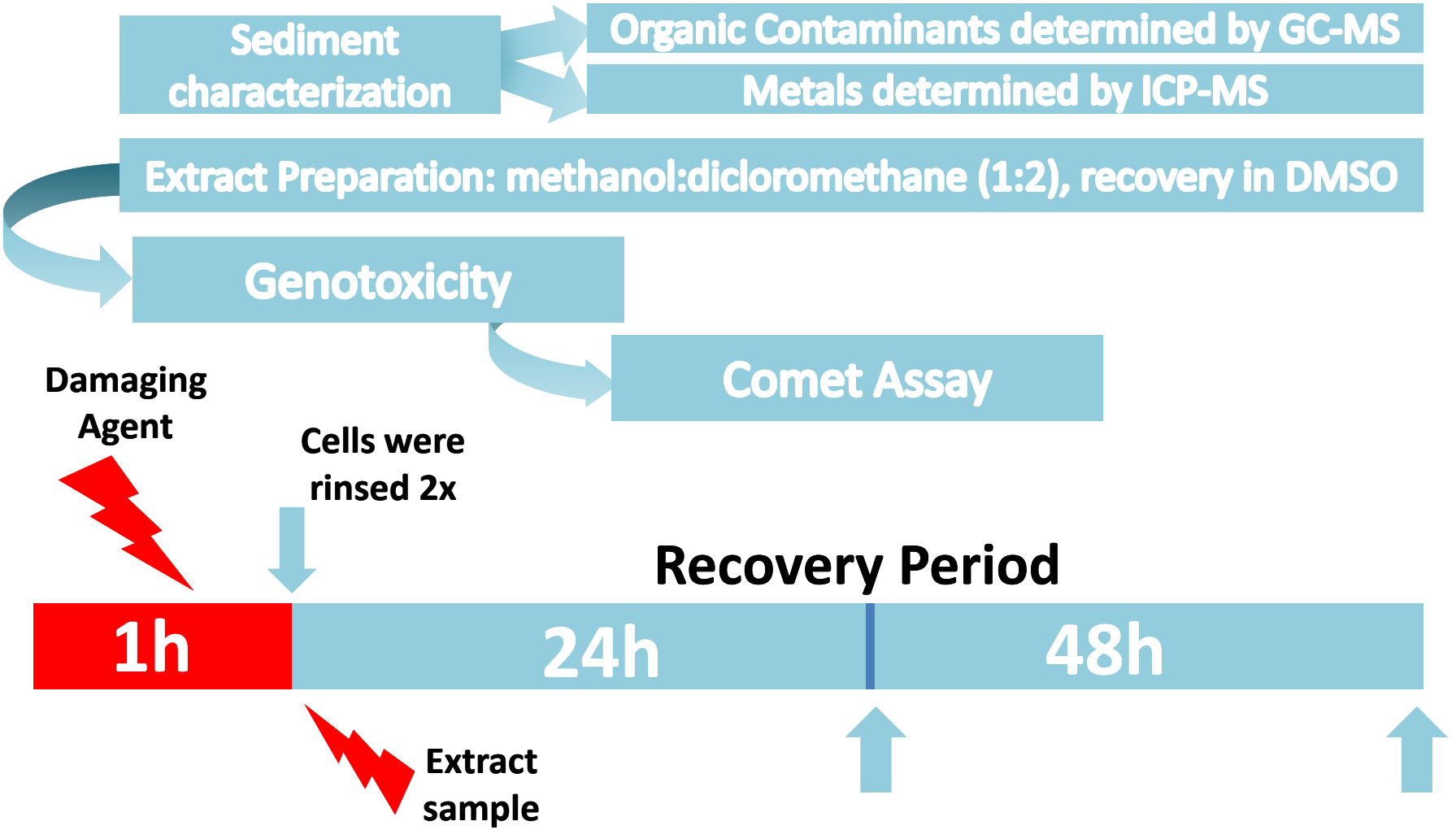
Particular Objective

Determine whether the contaminants present in sediment extracts are able to interfere with the DNA repair mechanisms of HepG2 cells

Northern Area – Sample N_1



Methods



HepG2 cells were exposed for 1h to 5 different concentrations of ethyl methanesulfonate (EMS) , and then allowed to recover under the presence of 1 non-genotoxic concentration of sediment extract.

Results

Conclusions

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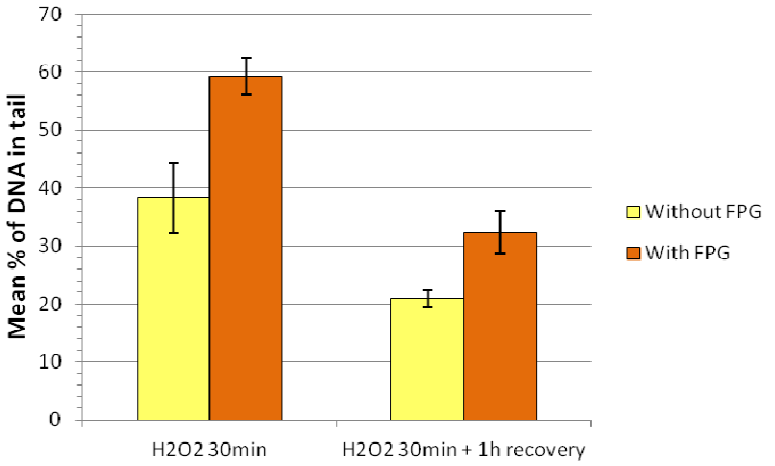
Possibly…

Some issues for your consideration

- **Used damaging agent (EMS)**
- **Time of exposure to damaging agent (1h)**
- **After 30min of H_2O_2 exposure + 1h recovery ≈50% reduction of damage**
- **What about oxidative DNA dam**
- **The importance of high-through**



Acknowledgements

Maria João Silva
João Lavinha
Henriqueta Louro
Joana Sacadura

Sandra Caeiro
Maria Helena Costa
Pedro Costa
Sara Carreira
Jorge Lobo

Fundação para a Ciência e a Tecnologia
MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR

Work supported by the Foundation for Science and Technology (ref. PTDC/SAU-ESA/100107/2008)

Thank you for you attention!