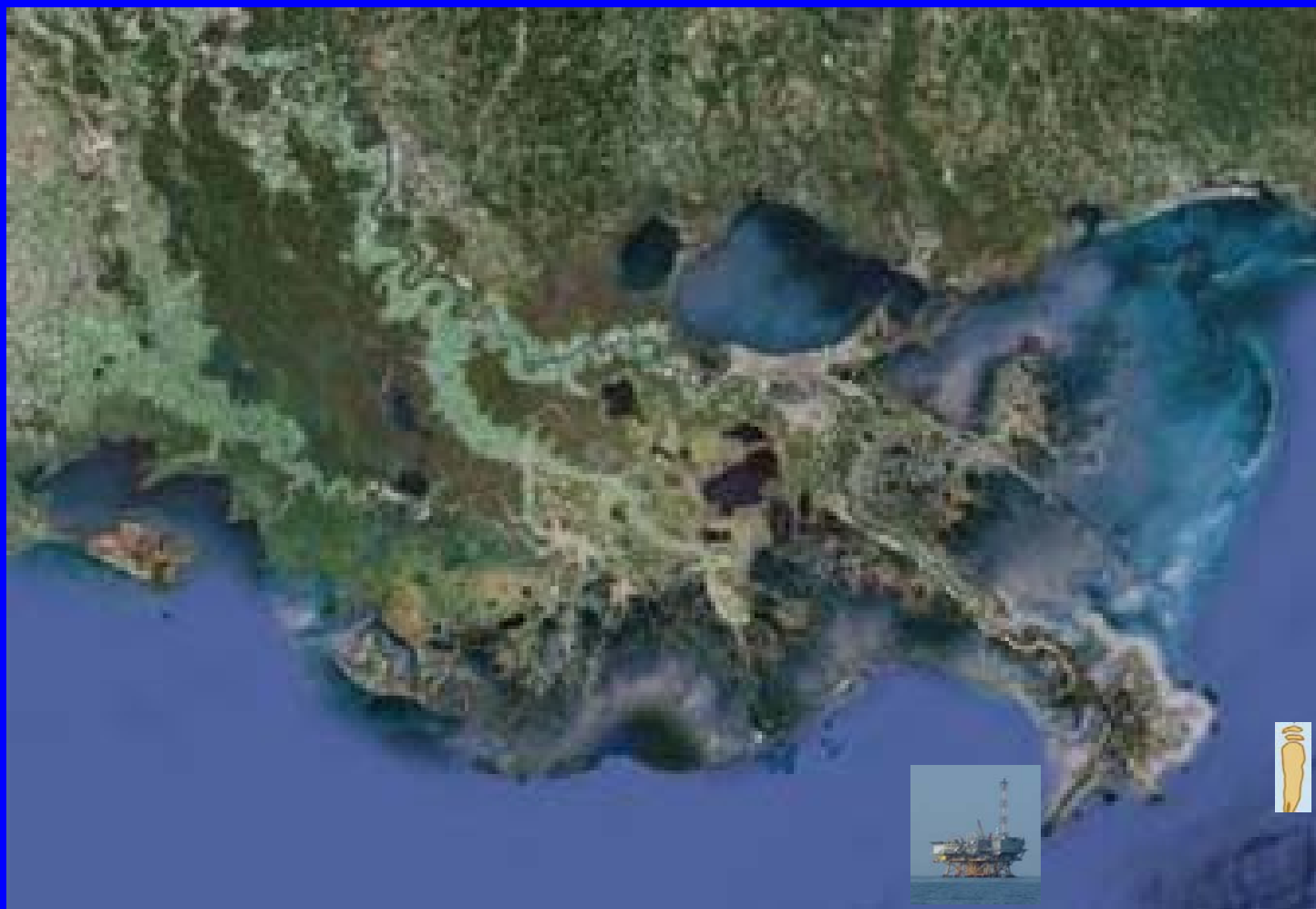


Assessing a Crustacean Biomarker for Organic Pollution in Salt Marshes

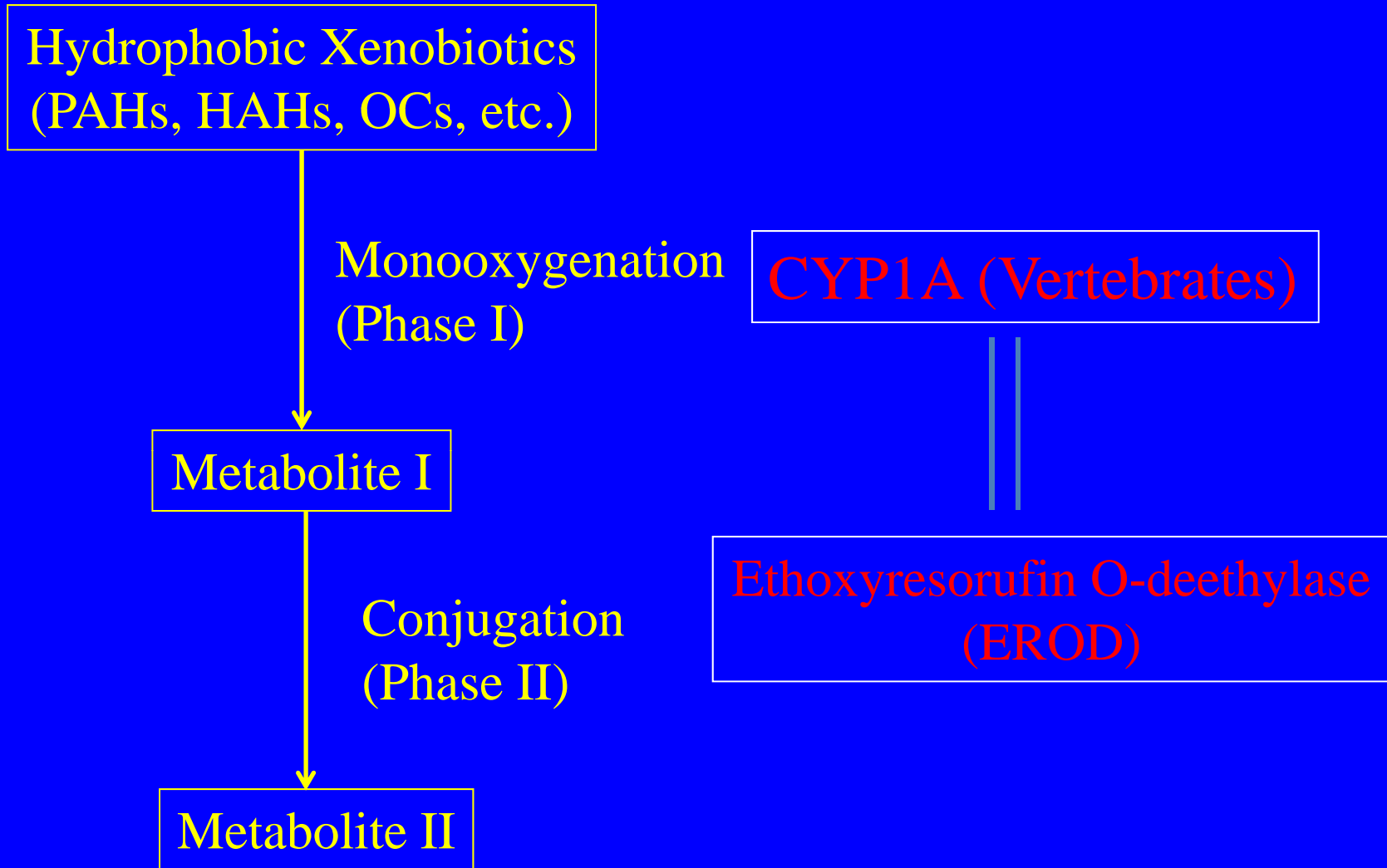
Enmin Zou

(Department of Biological Sciences, Nicholls State University)



Oil Rig Explosion
4/20/2010

Numerous studies have shown that organic pollutants, such as PAHs, HAHs and OCs, frequently turn up in biotic and abiotic samples from this region .



Xenobiotic-metabolizing enzymes are commonly used as biomarkers for organic pollution.

- In crustaceans, CYP1A enzymes have yet to be discovered. Nonetheless, EROD activity has been reported in several species
- Crustacean EROD activity is correlated to bioaccumulation of organic pollutants and inducible by PAHs.
- Suggestions have been made to use crustacean EROD activity as a biomarker for organic pollution.

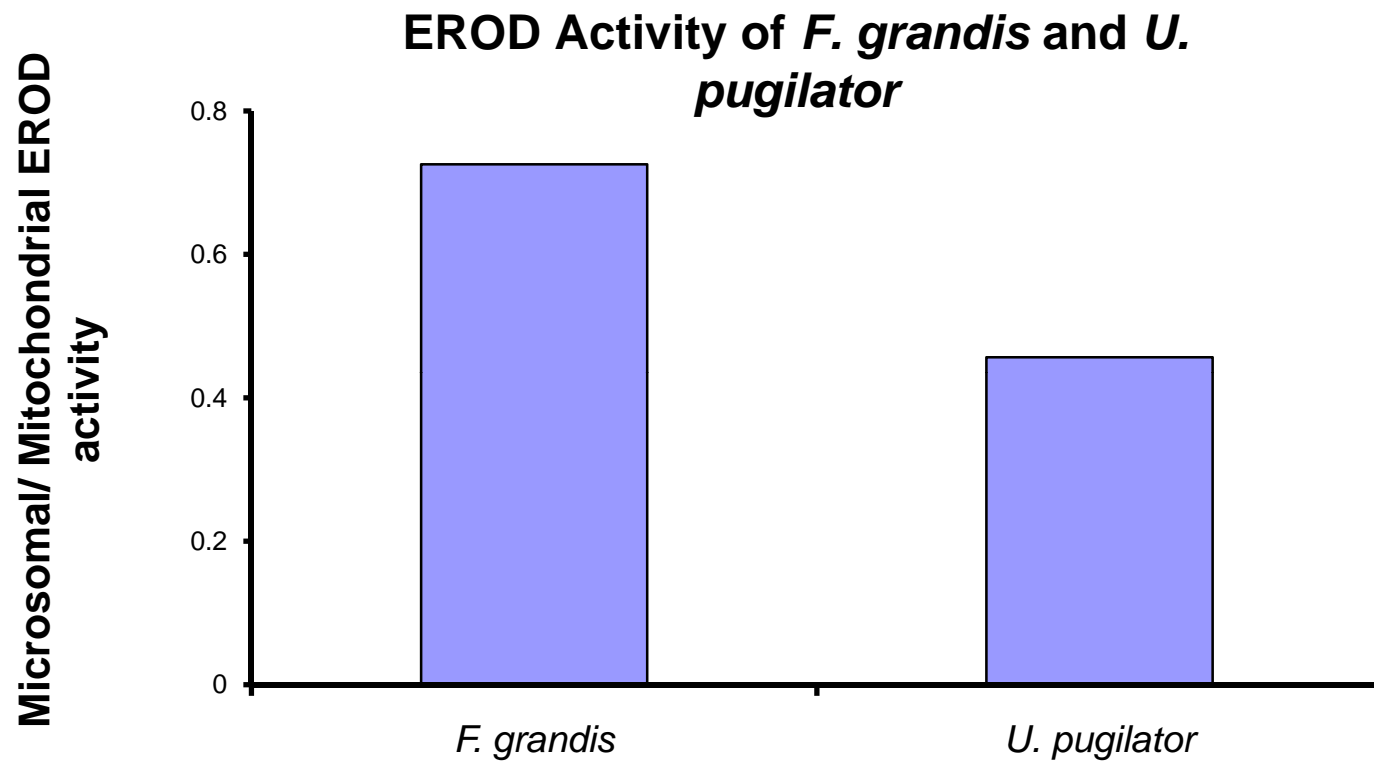
Fundamental Questions

1. What subcellular fraction should be used for EROD measurement? Microsomes and/or mitochondria?
2. Does crustacean EROD activity change during the molting cycle?

Objectives:

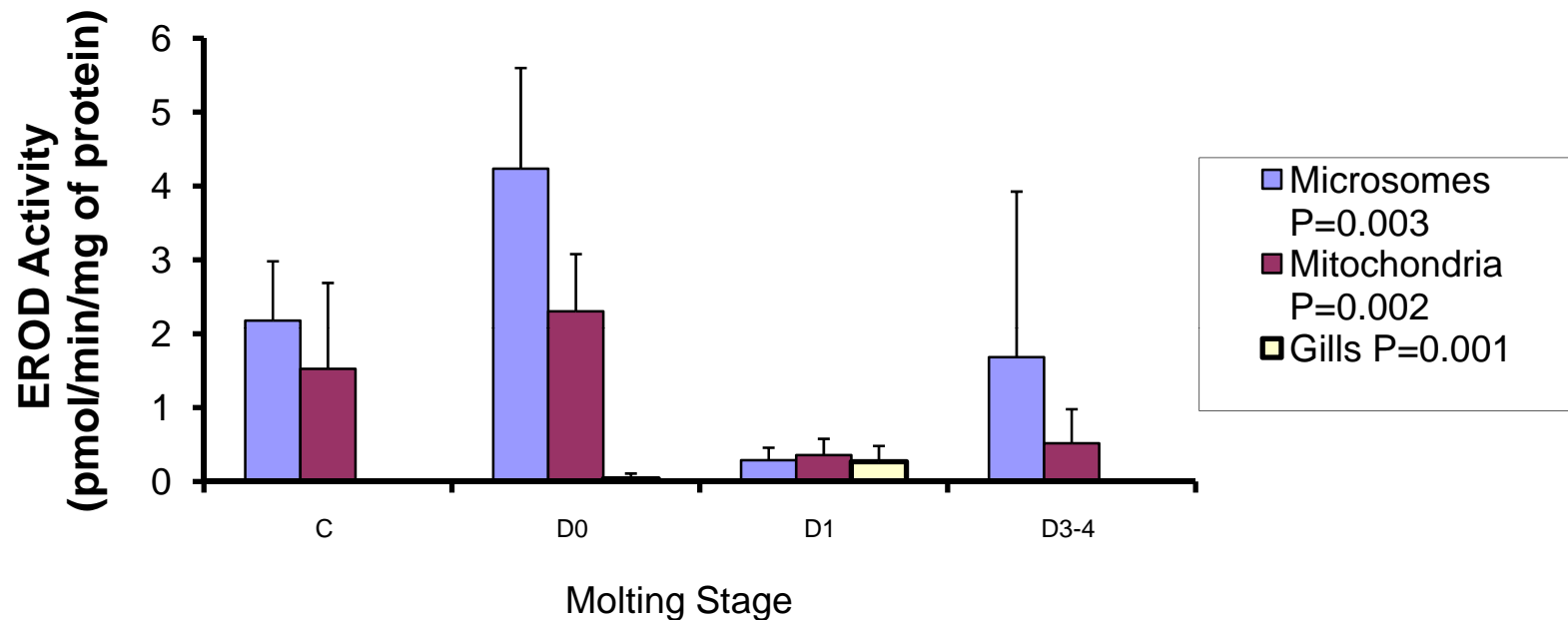
1. To determine EROD activity in both microsomal and nonmicrosomal (mitochondrial) fractions using the fiddler crab, *Uca pugilator*, as the model crustacean.
2. To assess EROD activity during the molting cycle of *Uca pugilator*.





In the fiddler crab, mitochondrial EROD activity accounts for much of the total EROD activity.

EROD Activity in Molting Stages of *U. pugilator*



Preliminary results suggest that EROD activity in both microsomal and nonmicrosomal fractions varies during the molting cycle of *Uca pugilator*.

Implications of the preliminary data

1. Nonmicrosomal (mitochondrial) EROD activity can not be ignored.
2. In application, the indiscriminate use of crustaceans without distinguishing molt stages of specimens is called into question.

Ongoing Work

1. Collection of softshell (Stage AB) crabs
2. Induction of EROD activity by the molting hormone 20-hydroxyecdysone

Acknowledgements

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Siva Nunna



Question?