Metabolic and toxicological networks

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Report Documentation Page

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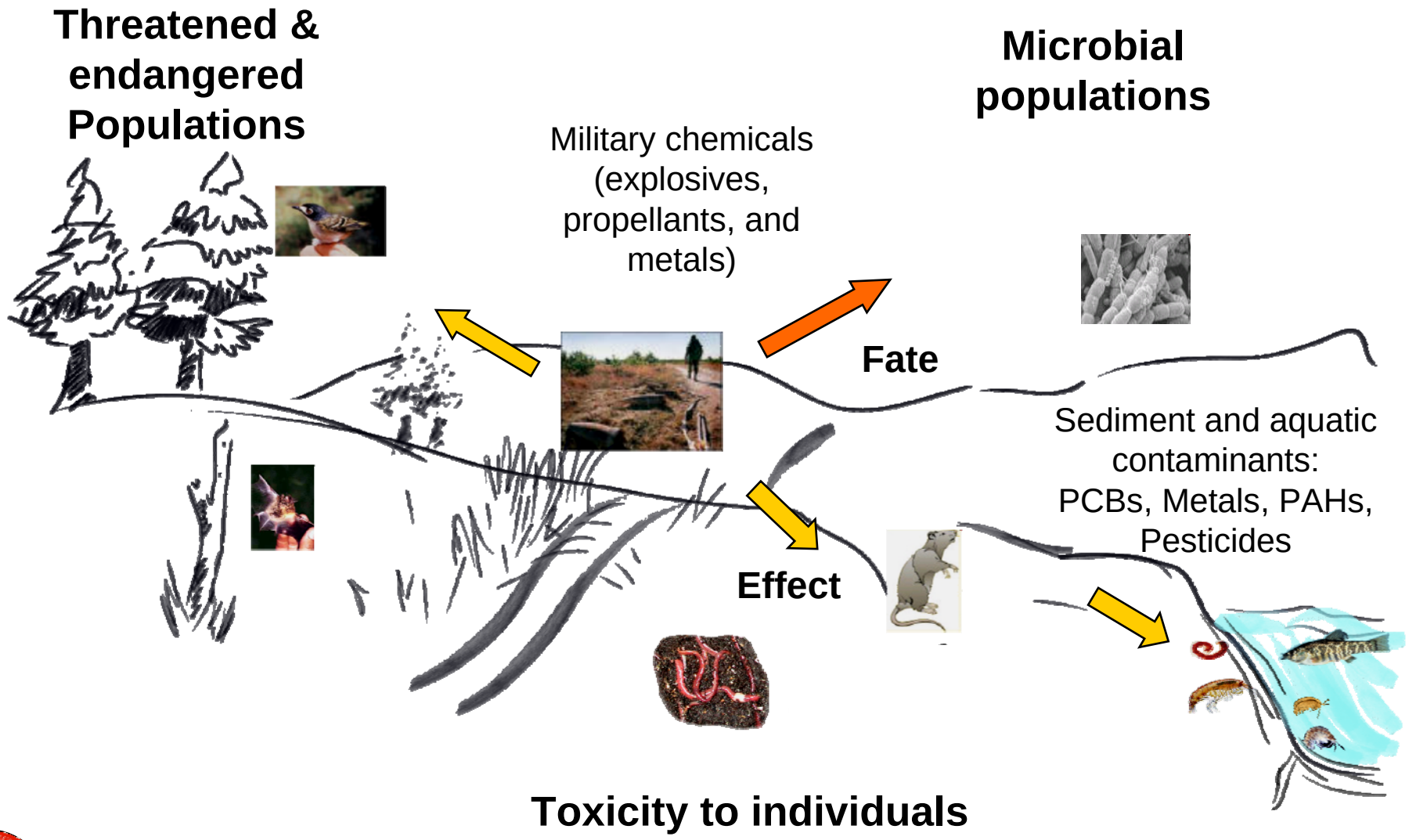
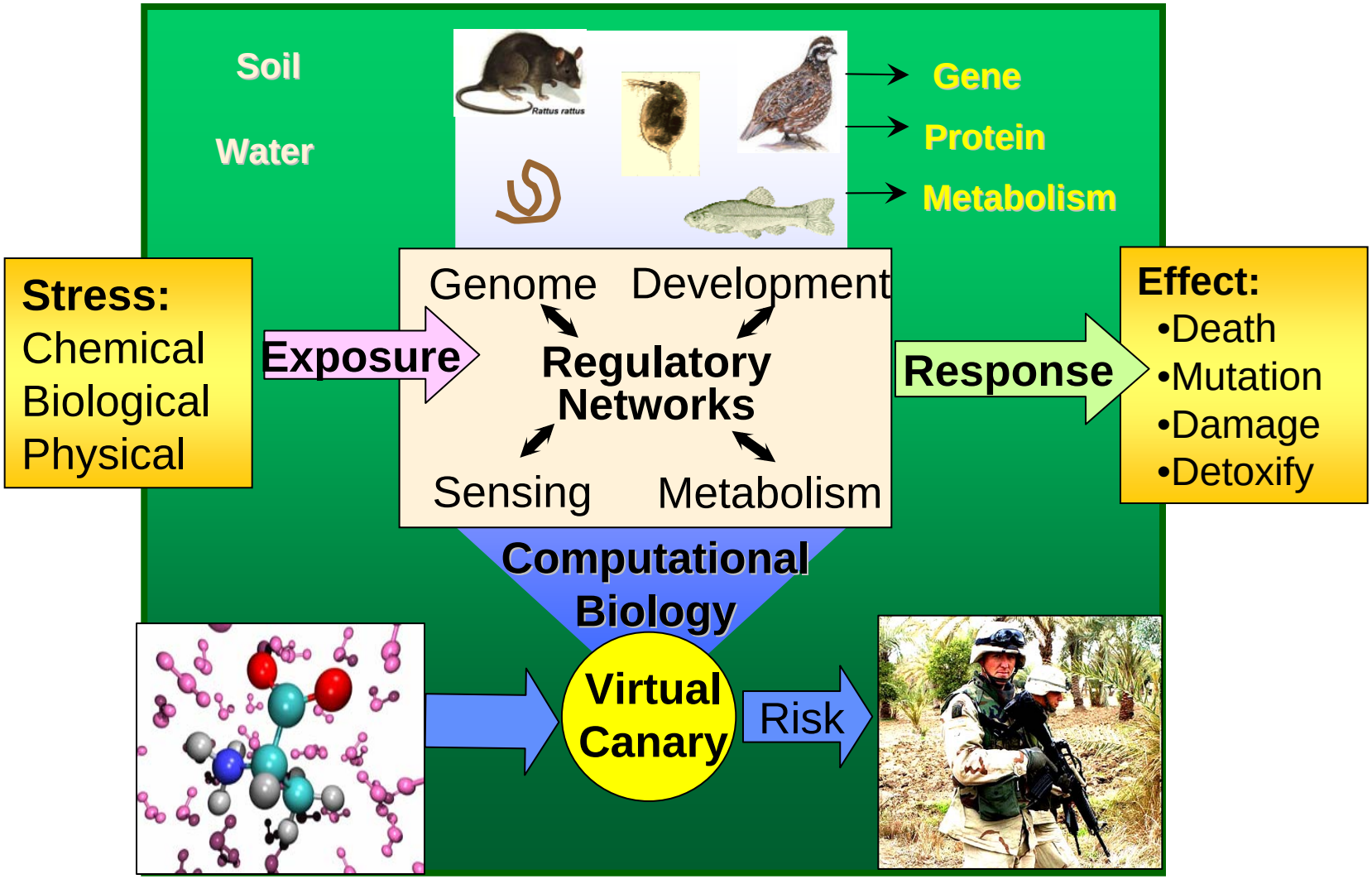
What is the Army impact on animals in the environment?

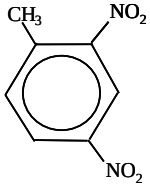


Goal: Predict bad effects

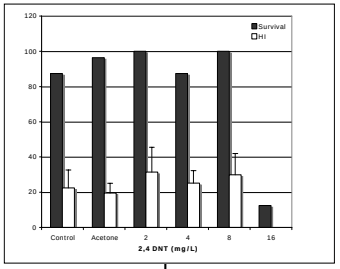


Rapid/Accurate Assessment and Prediction of Risk

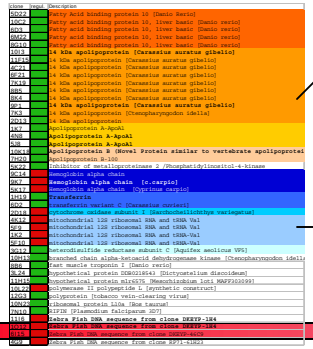
Toxicological networks



Fathead minnow exposed to 2,4-dinitrotoluene

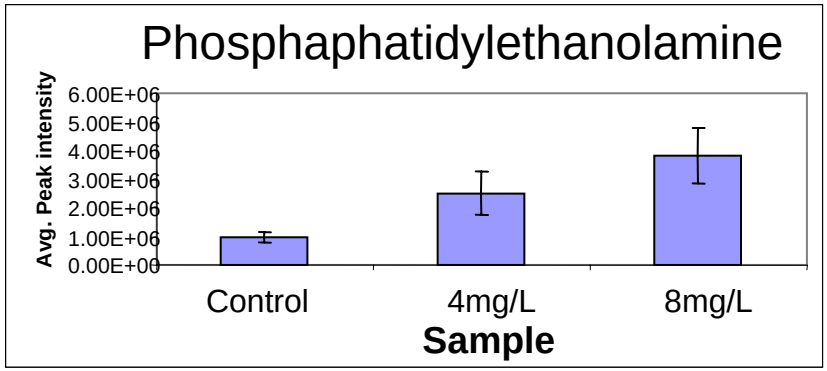


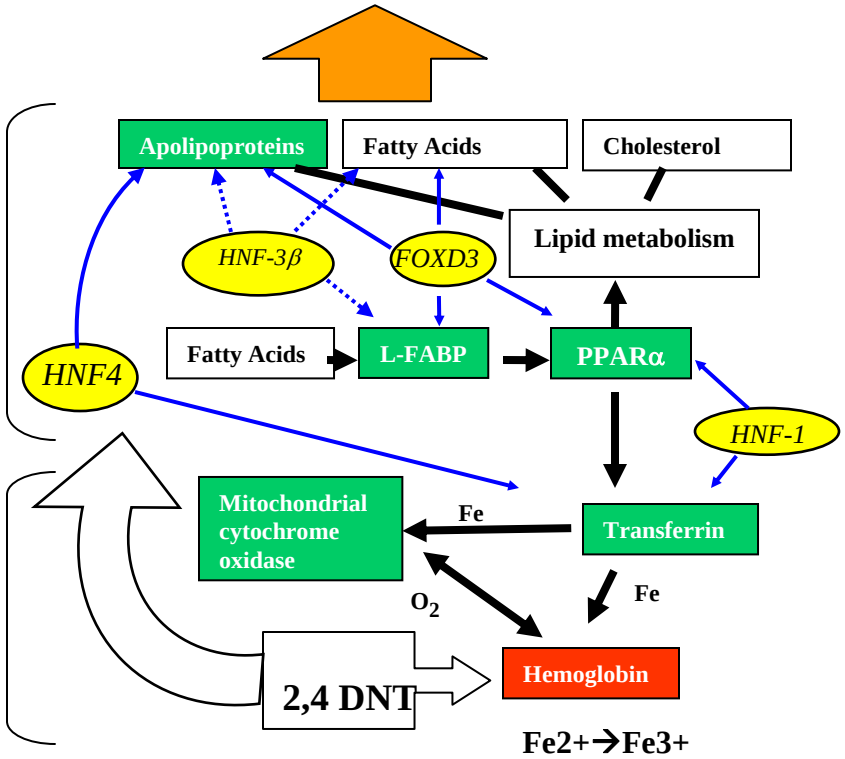
Assess effects on Liver gene expression



Lipid Metabolism

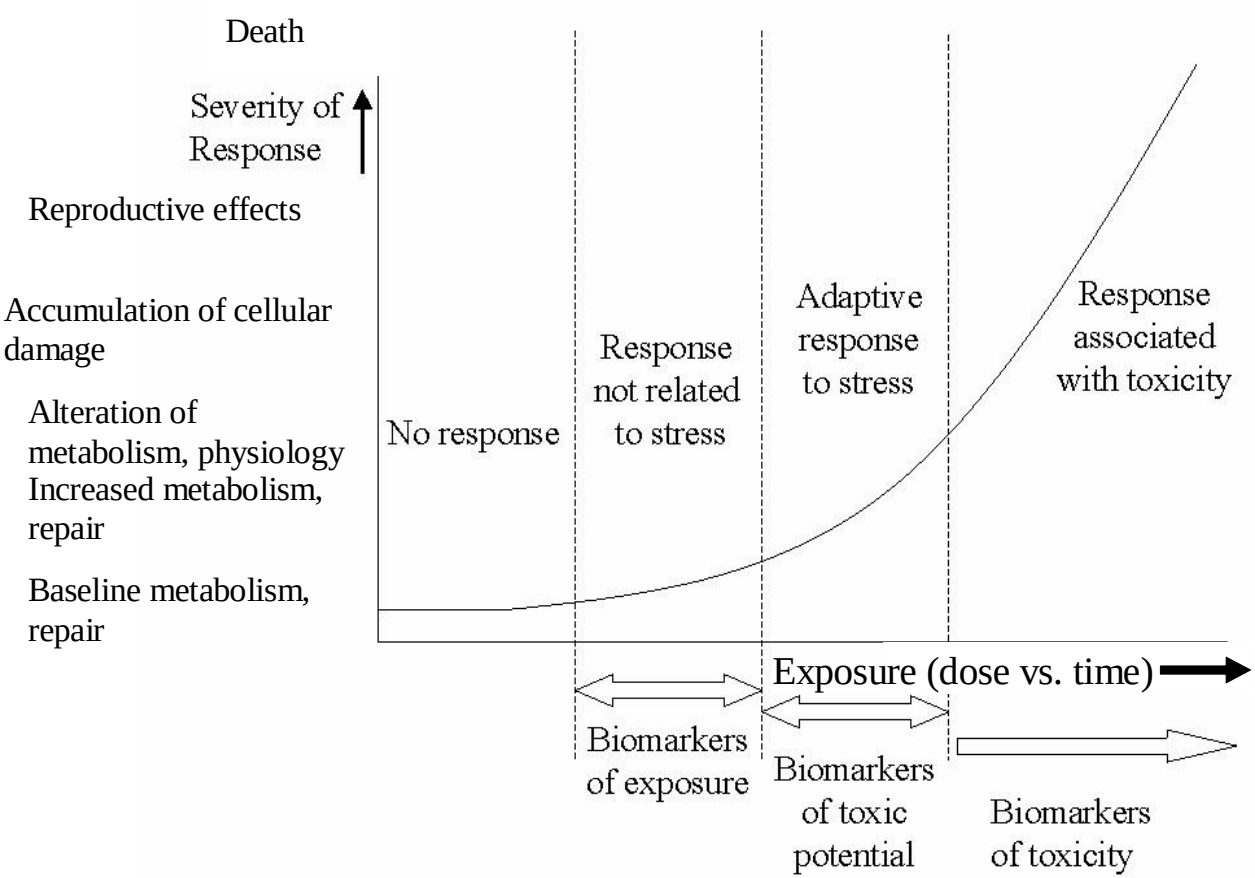
Respiration



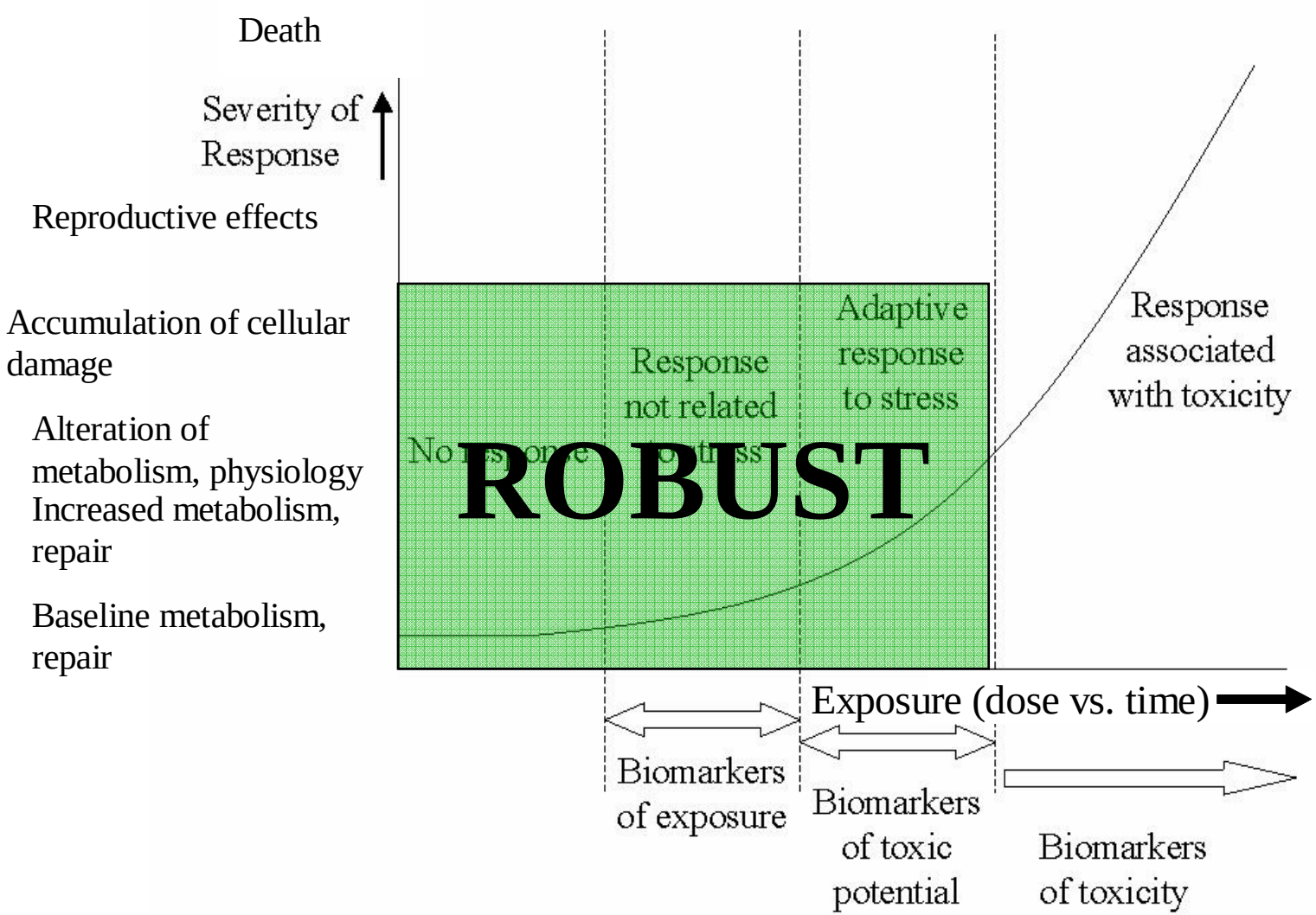


Biological networks and fundamental network properties

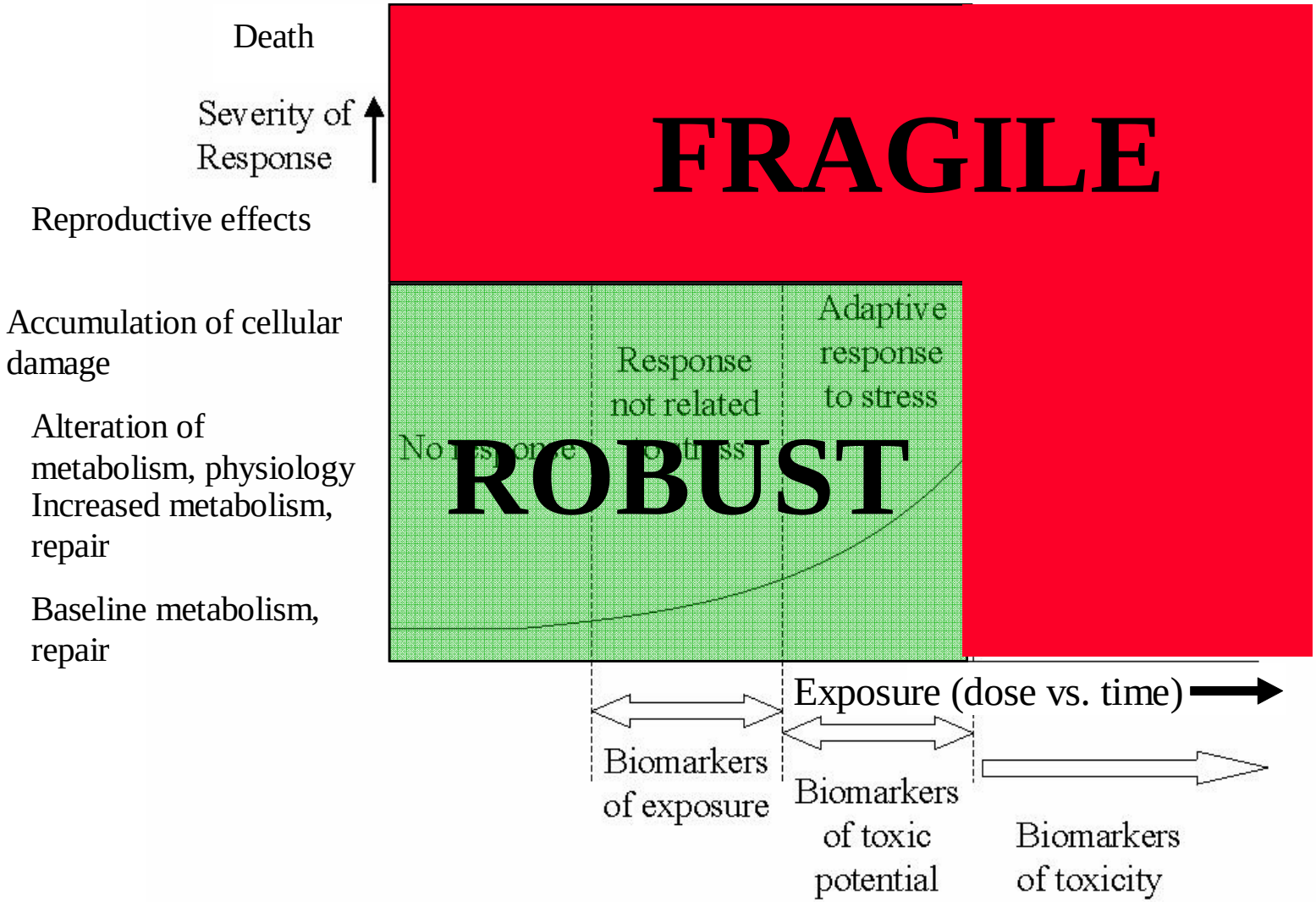
As in engineered systems, there is a trade off between Robustness and Fragility



Toxicity Due to Fragility



Toxicity / Fragility



Toxicity / Fragility

Death

Prediction of toxicity

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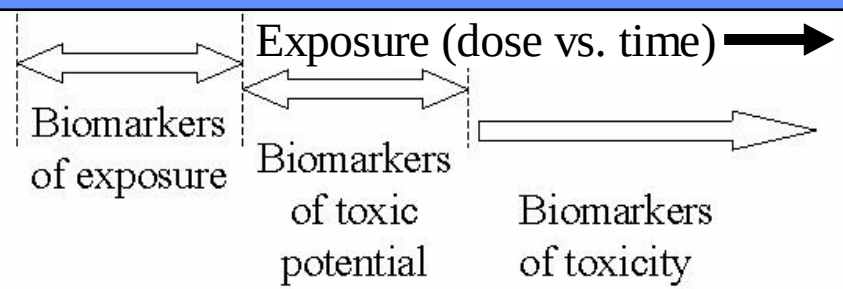
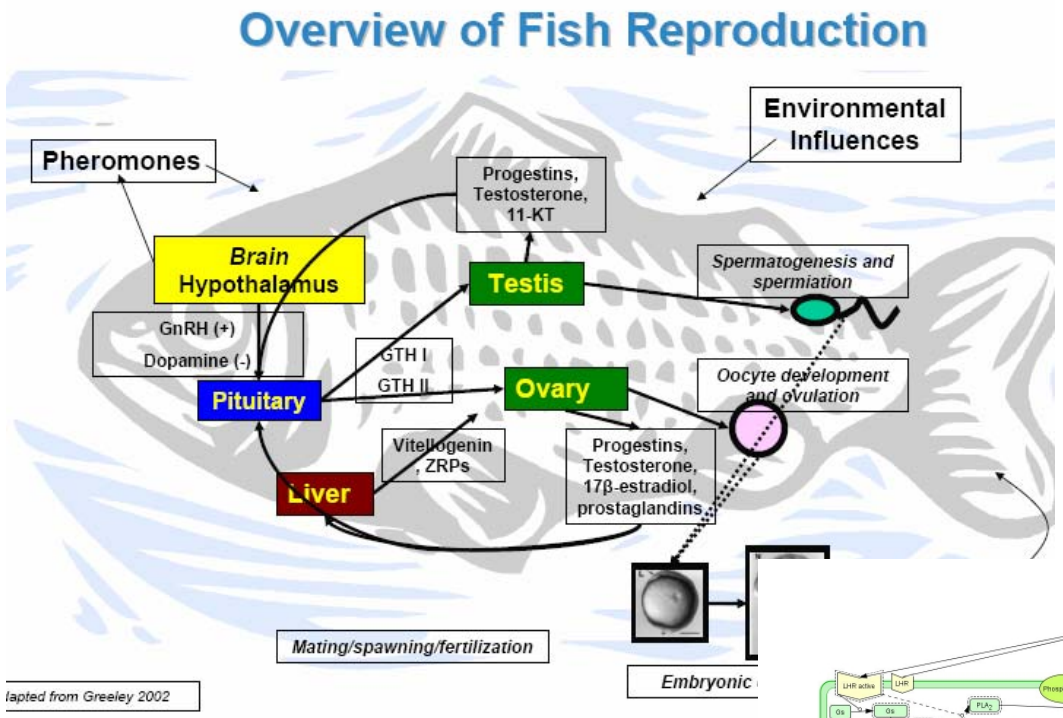
Prediction of network failure

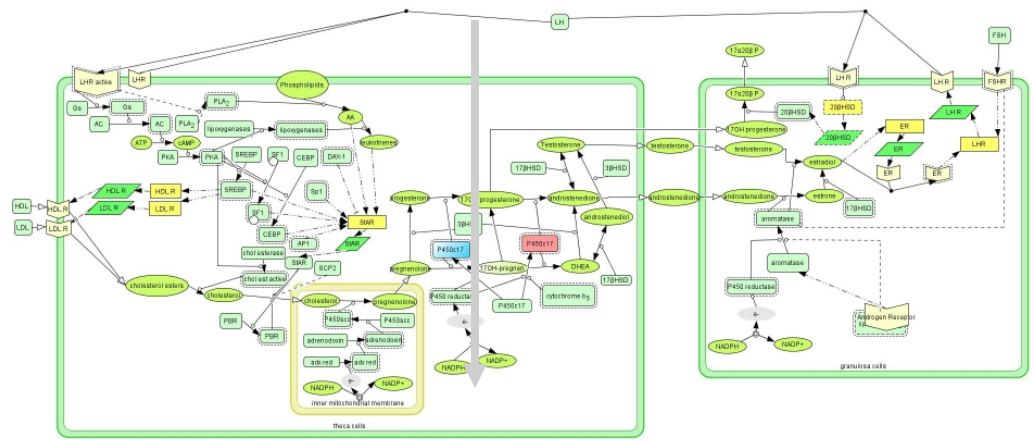


Endocrine pathway in fish as model



Production of testosterone & estradiol from cholesterol

Steroidogenesis



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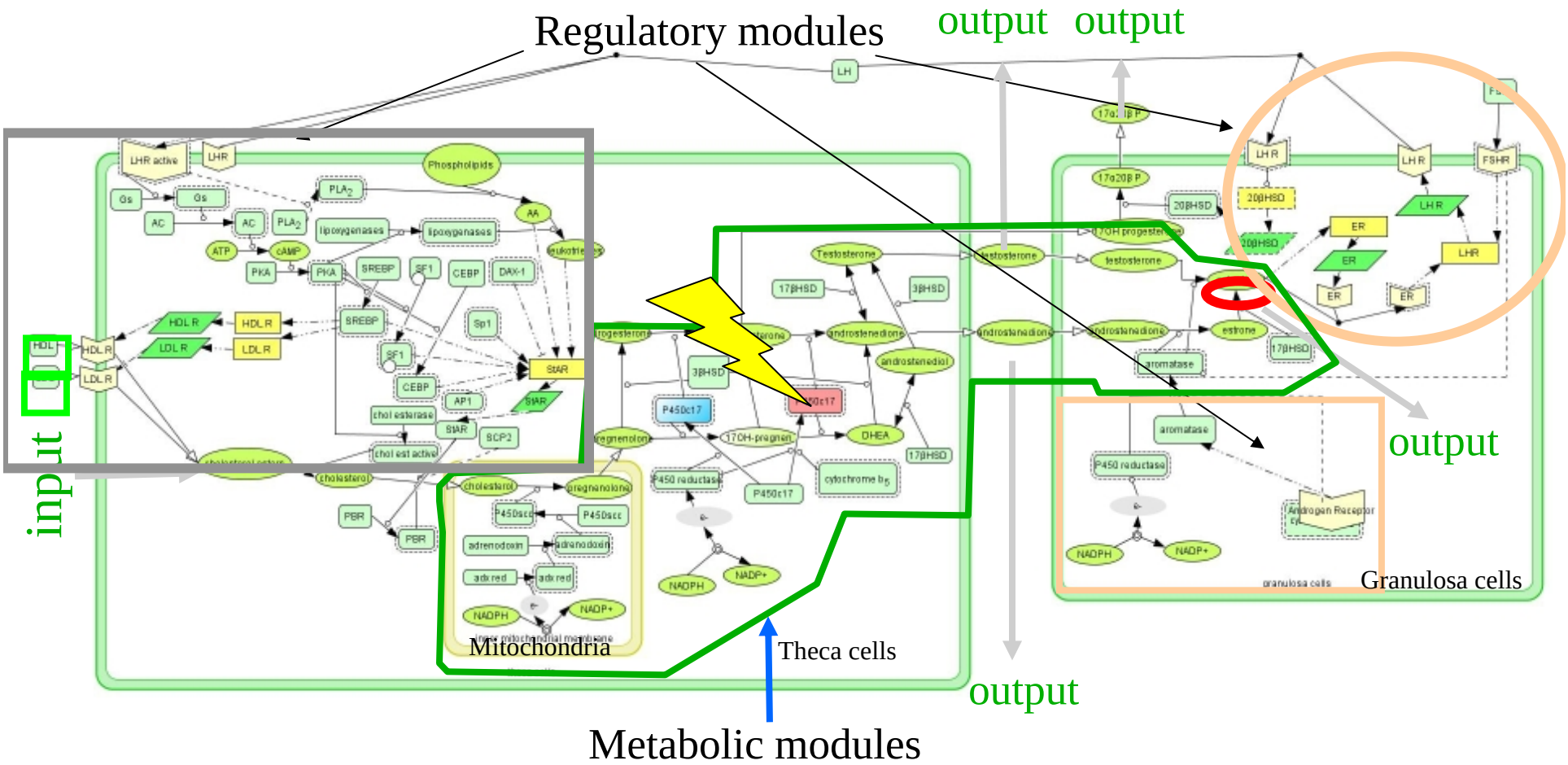

Network issues

- **What is relationship of architecture to function?**
  - **Robustness and Fragility**
- **How are different levels of control integrated?**
- **Can we predict when network will fail once architecture is defined?**