

# **nanoBEE: Current EU-US Collaboration on the Environmental Behavior, Bioavailability, and Effects of Manufactured Nanomaterials**

The Challenges of Collaborating and  
Communicating Across the Pond:  
talking across and crosstalking

# **nanoBEE: Consortium for Manufactured Nanomaterial Bioavailability & Environmental Exposure**

## **The Players:**

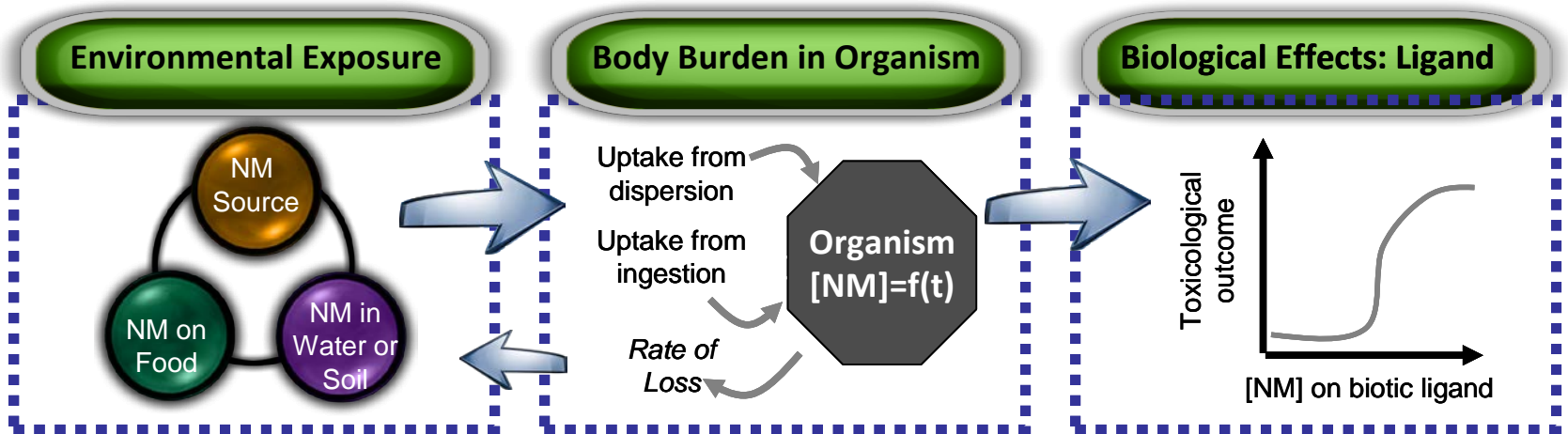
### **United Kingdom**

- University of Birmingham
- Napier University
- University of Exeter
- London Natural History Museum

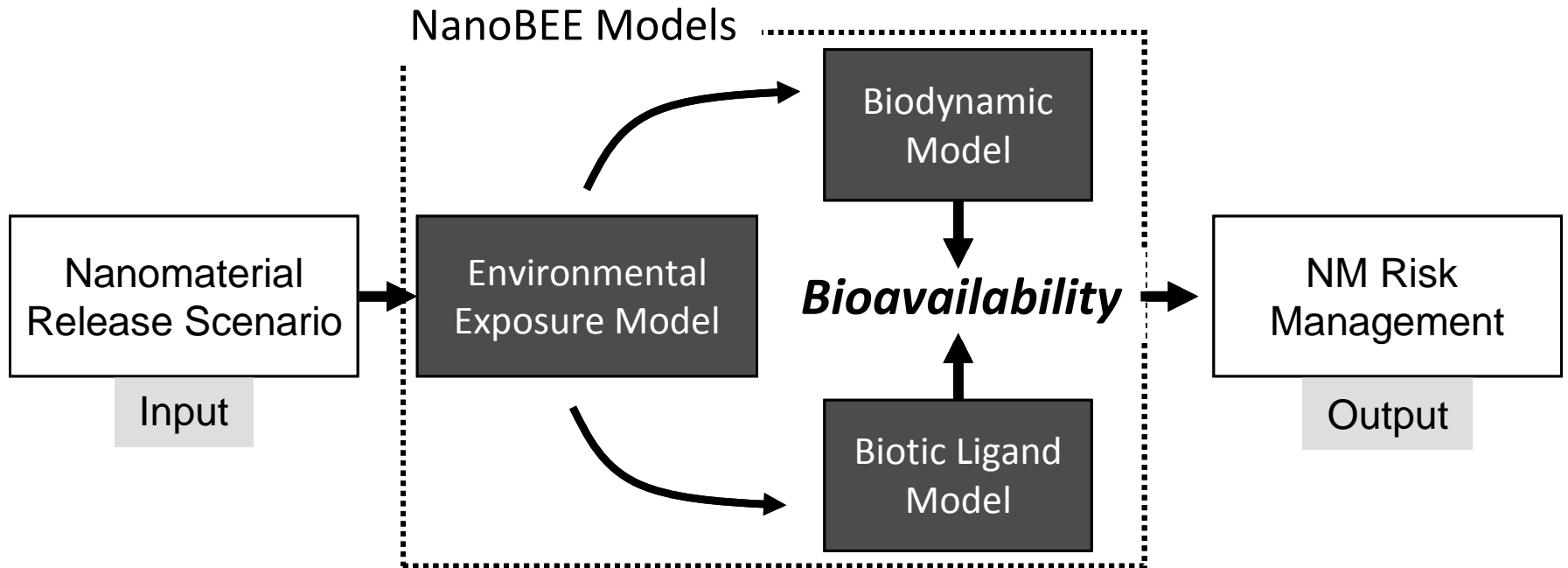
### **United States of America**

- Rice University
- Clemson University
- University of California, Davis
- Hydroqual

# nanoBEE: The Science

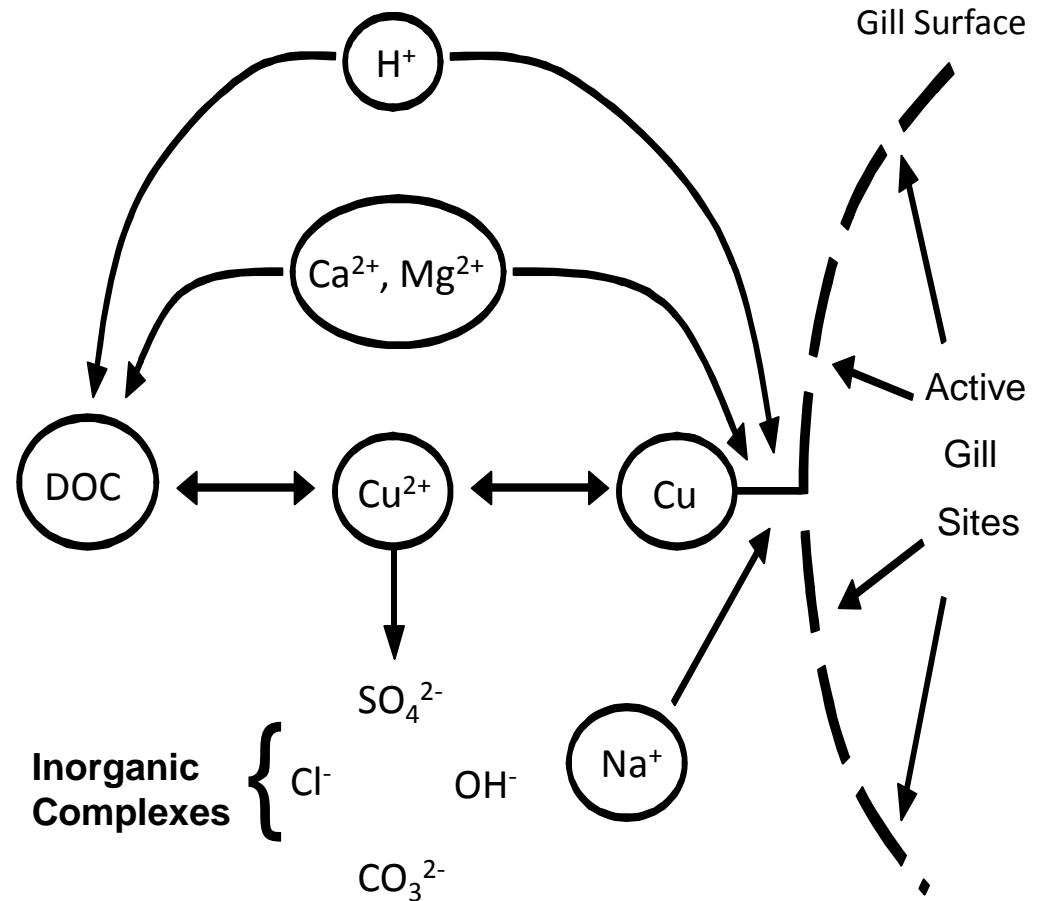


# nanoBEE: **The Goal**



# BIOTIC LIGAND MODEL (BLM)

- The BLM uses a chemical speciation model to predict the concentration of bioavailable species of metal (here for example Cu) given a particular set of water quality parameters. Then it compares that concentration to known toxicity data to predict toxicity.
- This research program will investigate if a similar approach could be used for nanomaterials.

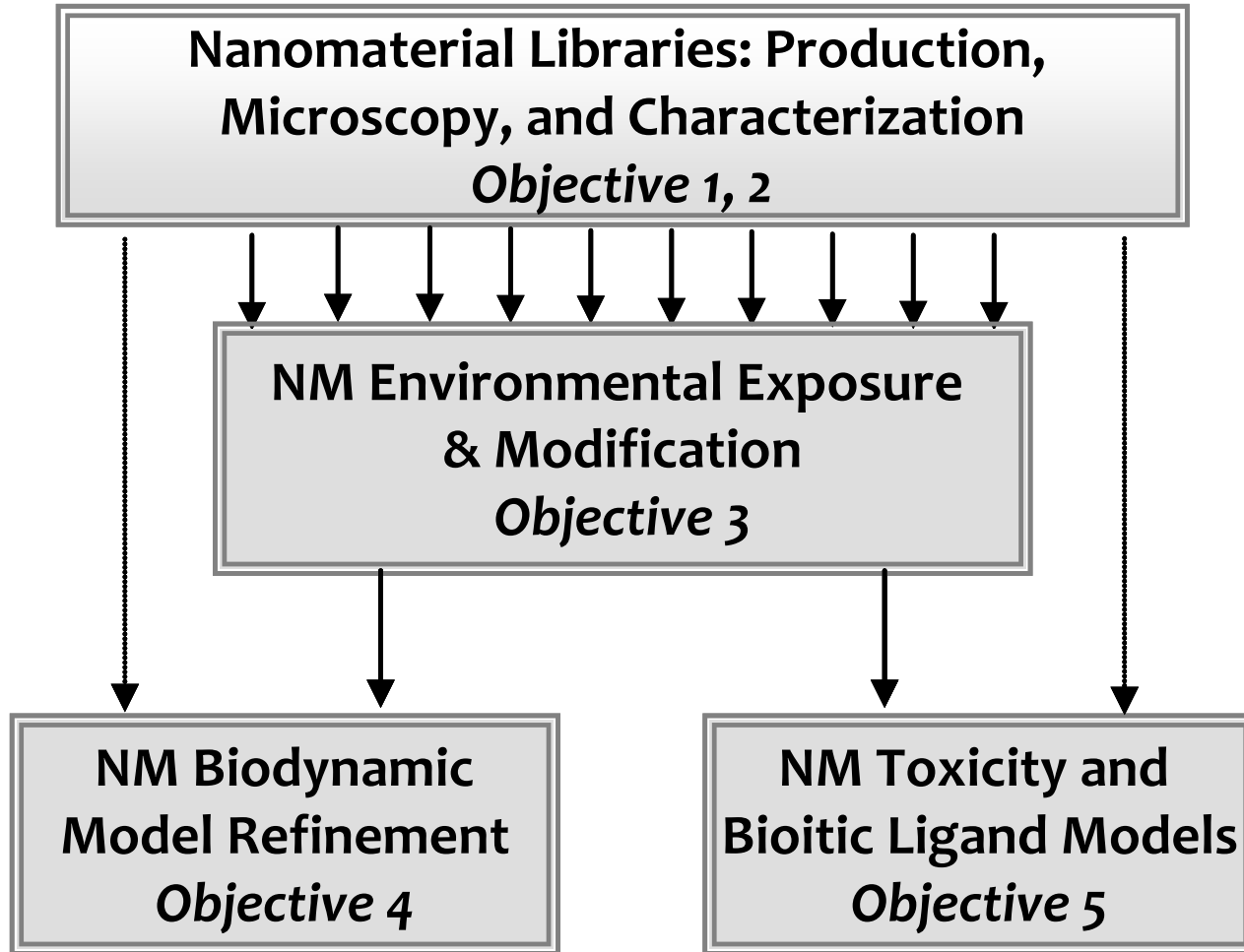


(Modified from DiToro, 2000)

# nanoBEE: The Objectives

1. generate controlled and well characterized NMs libraries for environmental assessment
2. prove that soft landed gold clusters provide suitable fiducial markers to enable angstrom resolution in aquatic tomography of NMs in environmental media
3. demonstrate that NM environmental modification processes can be classified by the extent of aggregation, dissolution and surface modification and to experimentally and computationally describe the partition of these modified NMs between environmental compartments
4. develop modified biodynamic models for NM bioavailability that reflect both water and food exposures
5. validate biotic ligand models for NM effects on aquatic organisms.

# nanoBEE: **The Tools**



# nanoBEE: The People

1. Chemists
2. Engineers
3. Biologists
4. Toxicologists
5. Materials Scientists
6. Modelers
7. Physicists



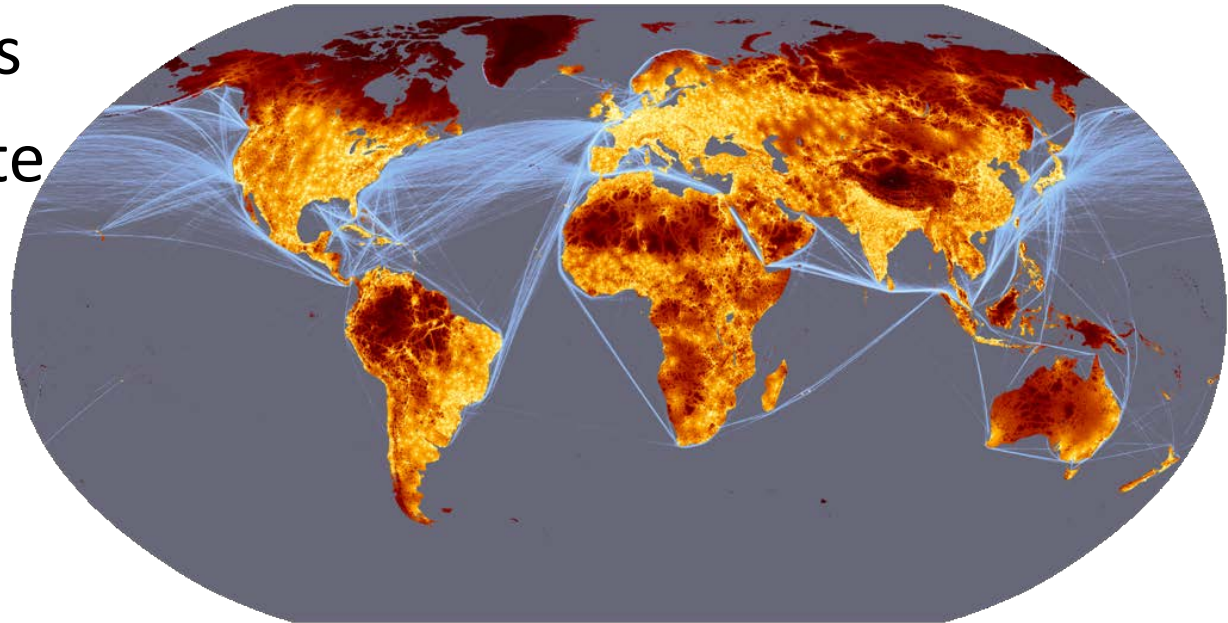
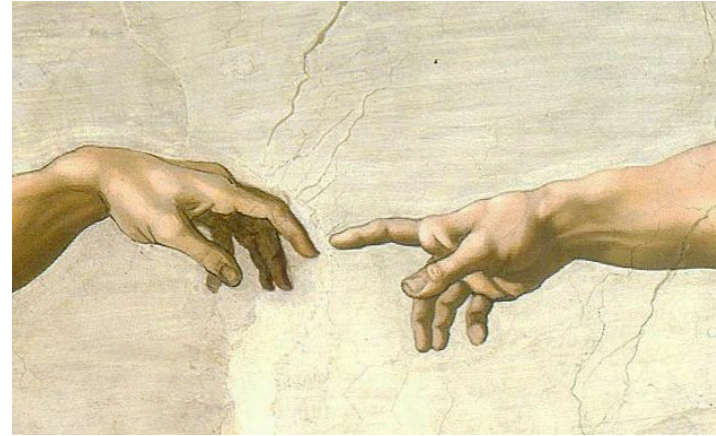
# nanoBEE: The **The Challenges**

- Interdisciplinary Research
  - Talking across and among disciplines



# nanoBEE: The **The Challenges**

- Geographic Logistics
  - Getting together
  - Working together
  - Sharing samples
  - Sharing graduate students



# nanoBEE: The **The Challenges**

- Communication
  - Sharing ideas
  - Sharing data
  - Discussing results
  - Brainstorming
- Logistics
- Logistics
- Logistics

