Electronic Supplementary Material (ESI) for Environmental Science: Nano.

Supplementary Information

The Gut Barrier and the Fate of Engineered Nanomaterials: A View from Comparative Physiology

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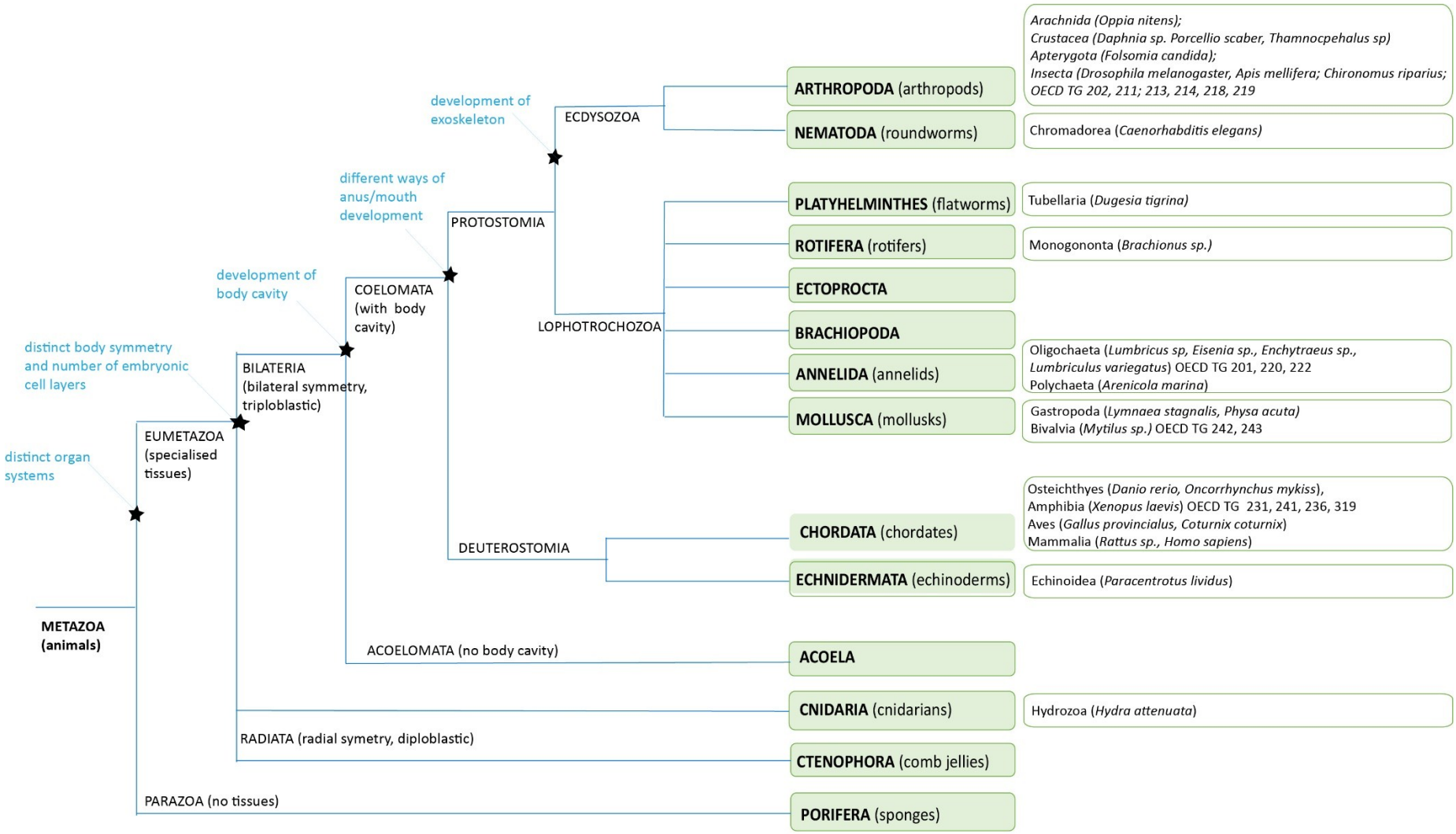
development of exoskeleton
ECDYSOZOA
ARTHROPODA (arthropods)
Arachnida (Oppia nitens);
Crustacea (Daphnia sp. Porcellio scaber, Thamnocpehalus sp)
Apterygota (Folsomia candida);
Insecta (Drosophila melanogaster, Apis mellifera; Chironomus riparius;
OECD TG 202, 211; 213, 214, 218, 219
NEMATODA (roundworms)
Chromadorea (Caenorhabditis elegans)
different ways of anus/mouth development
PROTOSTOMIA
development of body cavity
COELOMATA (with body cavity)
LOPHOTROCHOZOA
PLATYHELMINTHES (flatworms)
Tubellaria (Dugesia tigrina)
ROTIFERA (rotifers)
Monogononta (Brachionus sp.)
ECTOPROCTA
BRACHIOPODA
distinct body symmetry and number of embryonic cell layers
BILATERIA (bilateral symmetry, triploblastic)
ANNELIDA (annelids)
Oligochaeta (Lumbricus sp, Eisenia sp., Enchytraeus sp., Lumbriculus variegatus) OECD TG 201, 220, 222
Polychaeta (Arenicola marina)
MOLLUSCA (mollusks)
Gastropoda (Lymnaea stagnalis, Physa acuta)
Bivalvia (Mytilus sp.) OECD TG 242, 243
distinct organ systems
EUMETAZOA (specialised tissues)
CHORDATA (chordates)
Osteichthyes (Danio rerio, Oncorrhynchus mykiss),
Amphibia (Xenopus laevis) OECD TG 231, 241, 236, 319
Aves (Gallus provincialus, Coturnix coturnix)
Mammalia (Rattus sp., Homo sapiens)
DEUTEROSTOMIA
ECHNIDERMATA (echinoderms)
Echinoidea (Paracentrotus lividus)
METAZOA (animals)
ACOELOMATA (no body cavity)
ACOELA
CNIDARIA (cnidarians)
Hydrozoa (Hydra attenuata)
RADIATA (radial symetry, diploblastic)
CTENOPHORA (comb jellies)
PARAZOA (no tissues)
PORIFERA (sponges)

Supplementary Figure S1. Phylogenetic tree of the animals and test models commonly used in nanomaterial fate studies (scheme adapted from Sadava *et al*.[1]). Black stars represent traits leading to certain anatomical distinction. OECD technical guidance (TGs) were derived from Crane et al.[2] Note, diploblastic: two embryonic cell layers; triploblastic: three embryonic cell layers; coelom is the body cavity.

References

1. D. E. Sadava, Hillis, D.M., Heller, H.C., Berenbaum, M., *Life: The Science of Biology*, Sinauer Associates, Sunderland, MA, 10 edn.
2. M. Crane, R. D. Handy, J. Garrod and R. Owen, Ecotoxicity test methods and environmental hazard assessment for engineered nanoparticles, *Ecotoxicology*, 2008, **17**, 421-437.