

BIOL 1030 – TOPIC 10 LECTURE NOTES

Topic 10: Introduction to Animals; Porifera and Radiata (Chs. 32, 33)

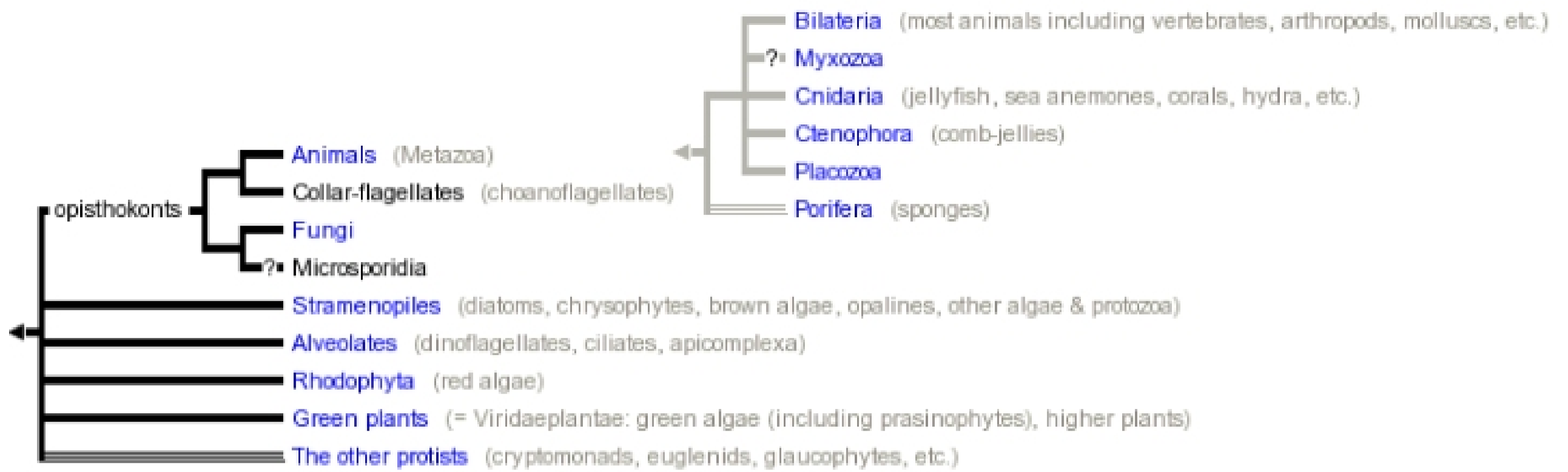
- I. What defines Kingdom Animalia?
 - A. multicellular heterotrophs
 - B. no cell walls
 - C. monophyletic group (evolved from ancestral protist like modern choanoflagellates)

- II. What characteristics are associated with animals?
 - A. more than 1 million animal species have been described
 - B. diversity in form – invertebrates (no backbone; 99% of animals) and vertebrates
 - C. sexual reproduction (few exceptions)
 1. no alternation of generations (mostly **gametic meiosis** – haploid cells do not undergo mitosis)
 2. egg nonmotile, usually much larger than sperm
 3. sperm typically flagellated
 - D. most have active movement
 - E. cells move within organism during development (and throughout life)
 - F. typically complex embryonic development for most animals:
 1. zygote → **morula** (solid ball of cells)
 2. morula → **blastula** (ball becomes hollow)
 3. blastula → **gastrula** (ball folds in to form a hollow sac with one opening, the **blastopore**)
 4. interior of gastrula eventually forms gut (tube in many)
 5. blastopore becomes mouth or anus

- III. How are animals classified?
 - A. traditional taxonomic grouping based physical characteristics such as body cavities is on the way out (explored below)
 - B. a firm consensus on a new animal classification scheme has not been reached; we will explore some of this on the Tree of Life website in class...

Compiled from the Tree of Life (<http://tolweb.org/tree/>):

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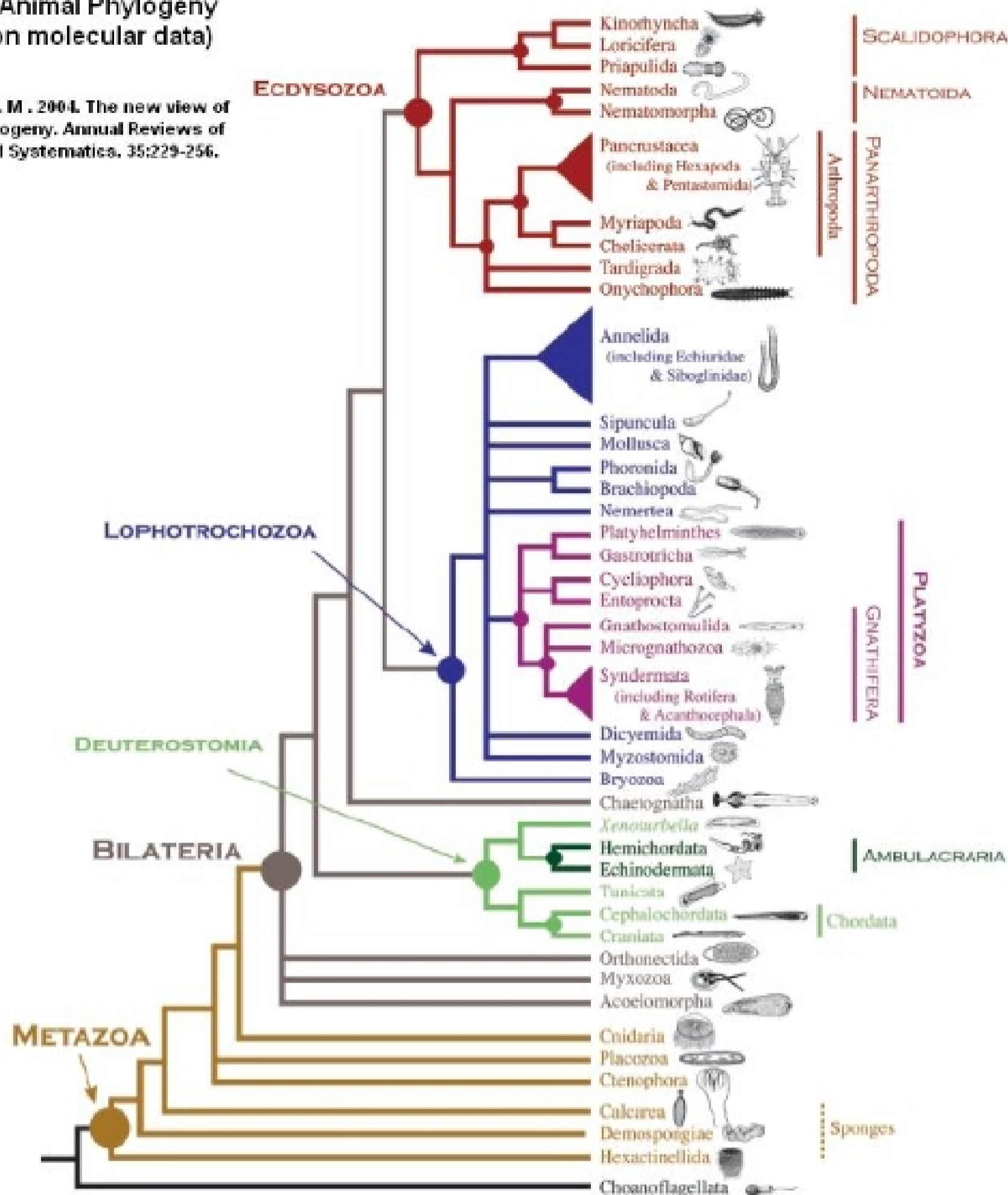
...along with a recent publication from Auburn University faculty member Ken Halanych:

<http://gump.auburn.edu/halanych/lab/Pub.pdfs/Halanych2004.pdf>

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Modern Animal Phylogeny (based on molecular data)

From:
Halanych, K. M. 2004. The new view of
animal phylogeny. Annual Reviews of
Ecology and Systematics, 35:229-256.



C. even so, the traditional taxonomy is so firmly entrenched that it is worth knowing and will be referenced in this course along with some of the newer classification schemes

D. two subkingdoms: **Parazoa** and **Eumetazoa**

Parazoa : no tissues or organs, asymmetrical

Eumetazoa : definite shape and symmetry

IV. Subkingdom Parazoa – Phylum Porifera - the sponges

A. actually appears to be a grade

1. note Halanych figure above
2. somewhat controversial – grades aren't supposed to be phyla!
3. taxon retained largely due to tradition

B. asymmetrical