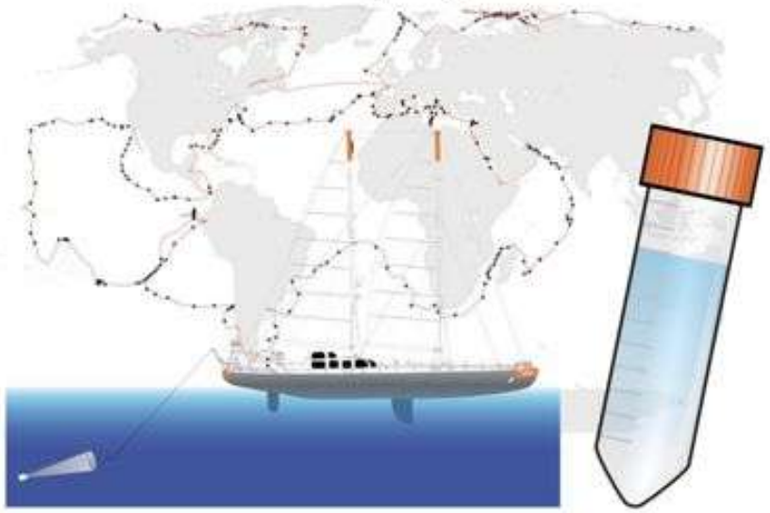
Picture is worth a thousand words…especially in the microbial world!

Sampling

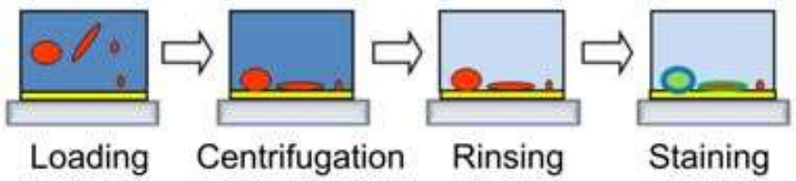
https://planktonchronicles.org/en/the-project/

a

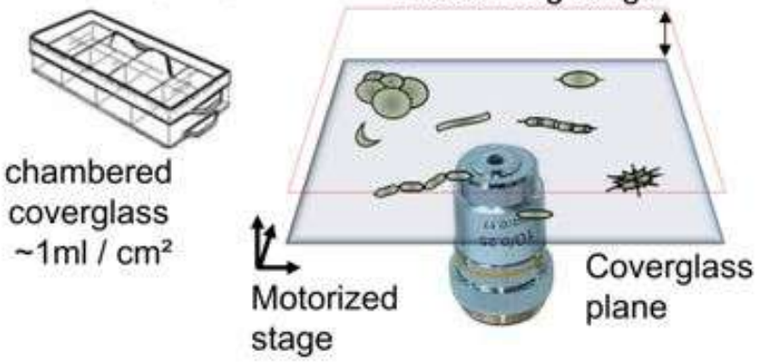
1. Plankton sampling



2. Sample preparation



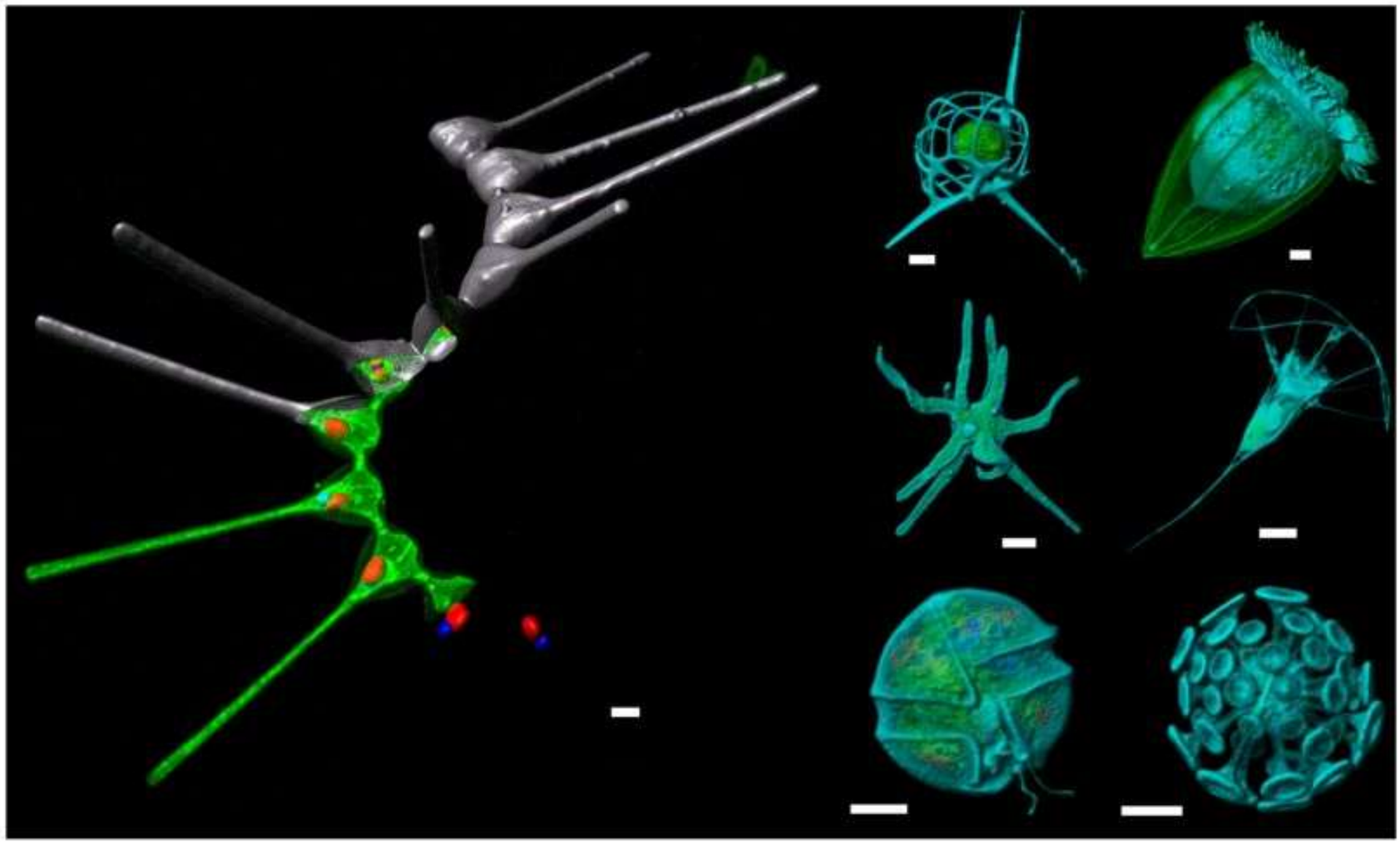
3. Imaging



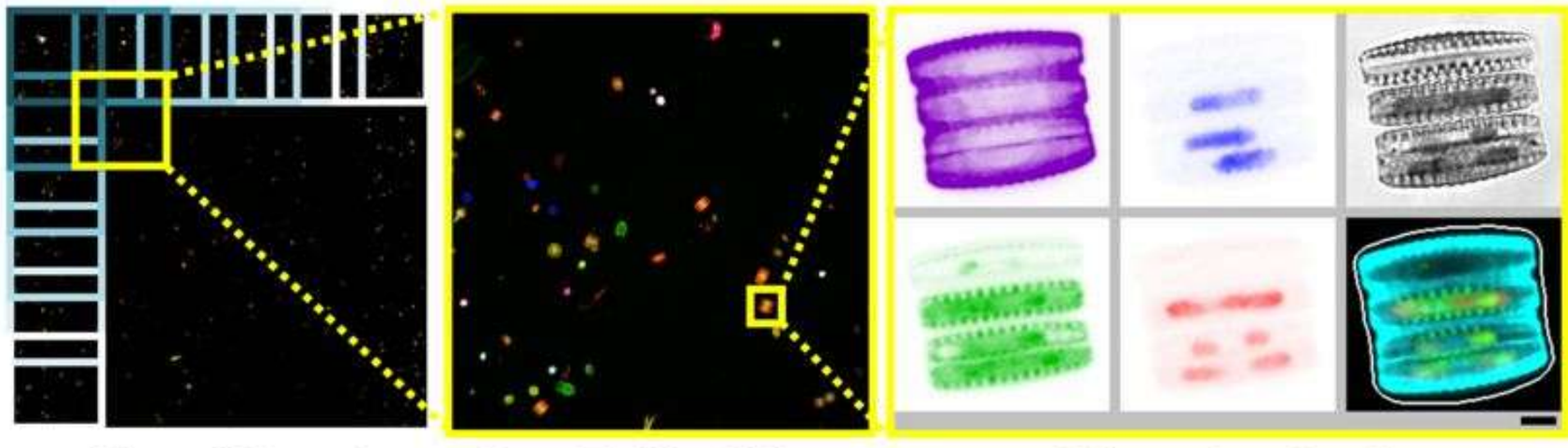
4. Image processing

5. Automated identification

b

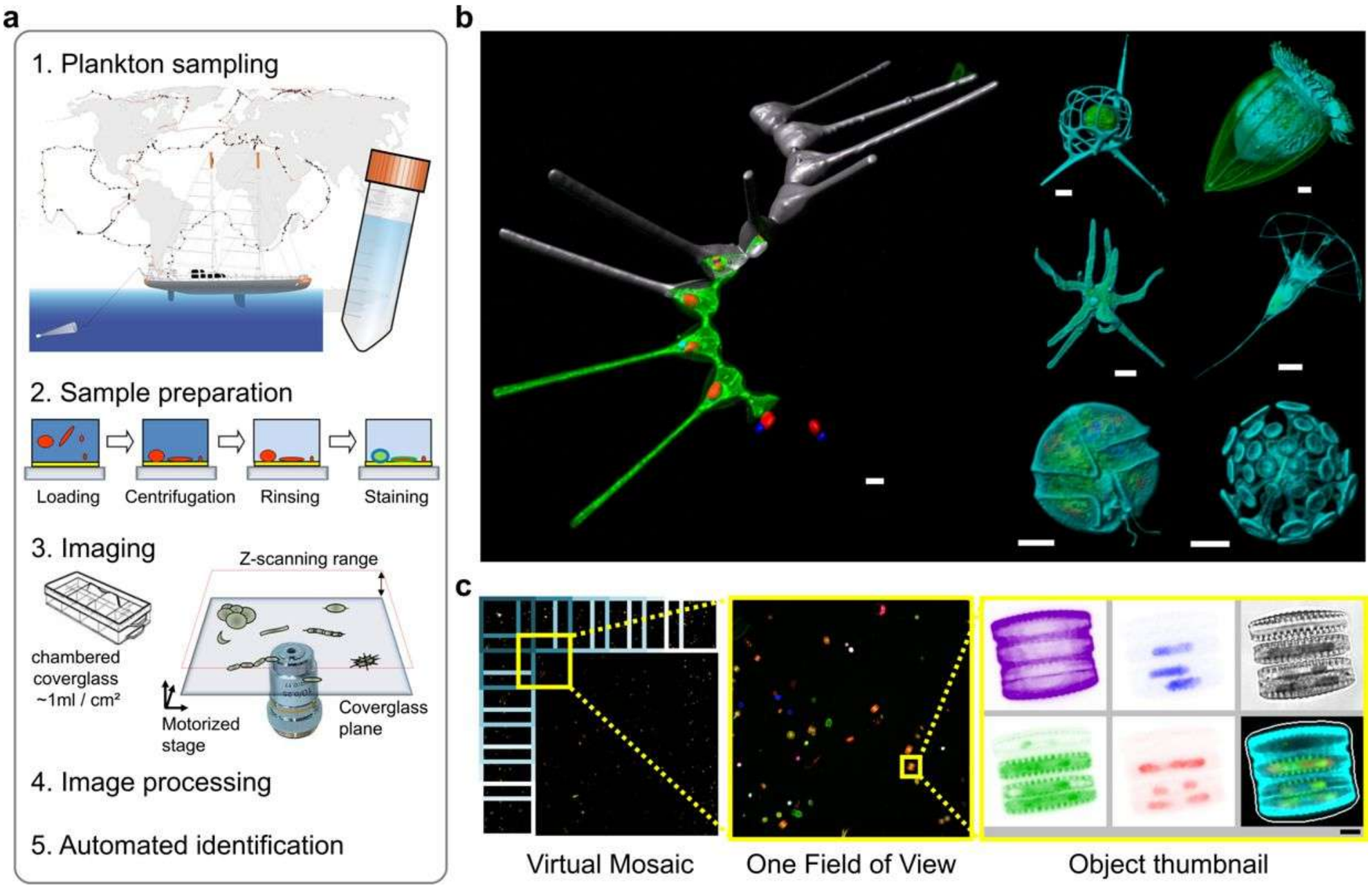


c



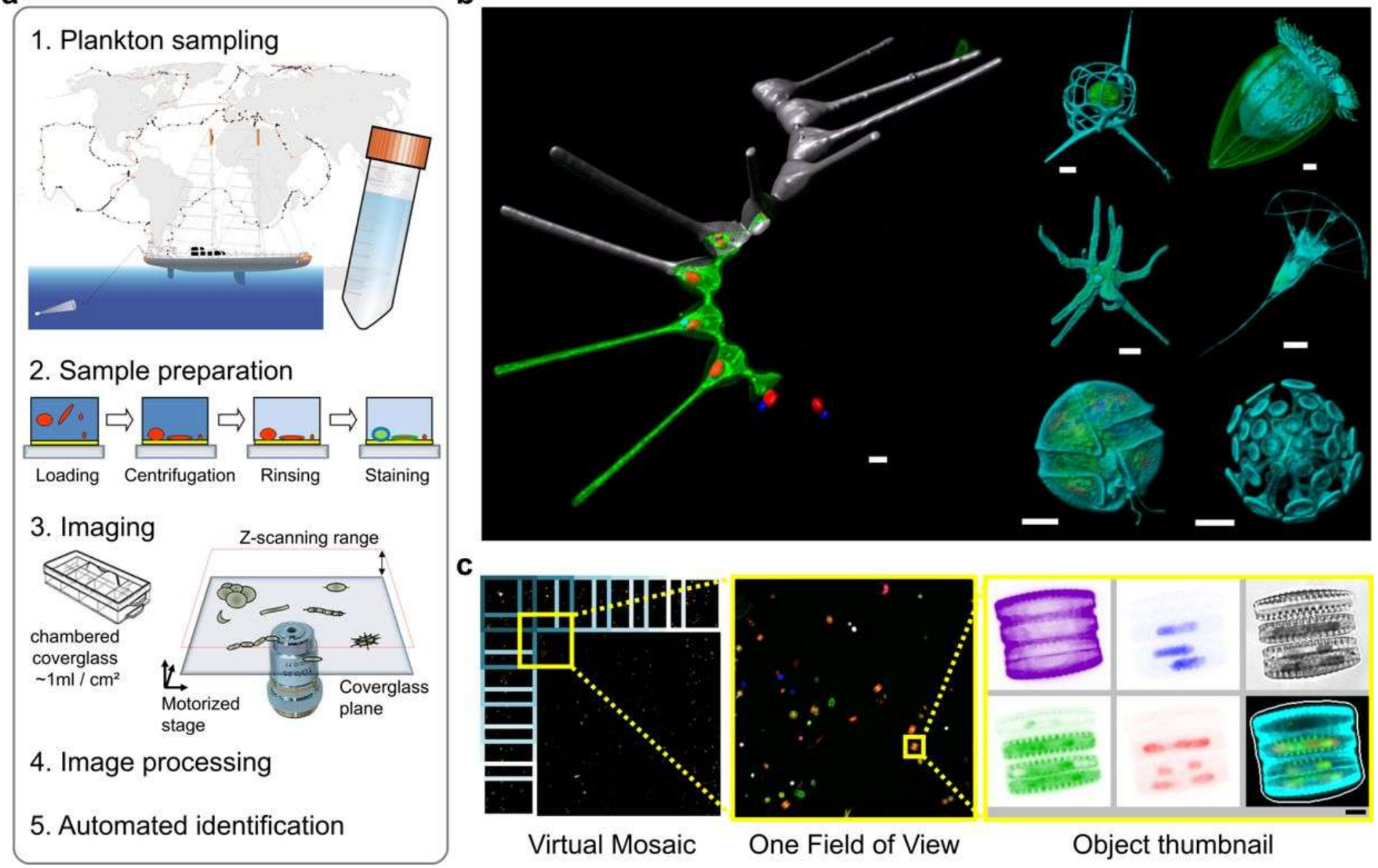
Colin et al., 2021

Colin et al., 2021

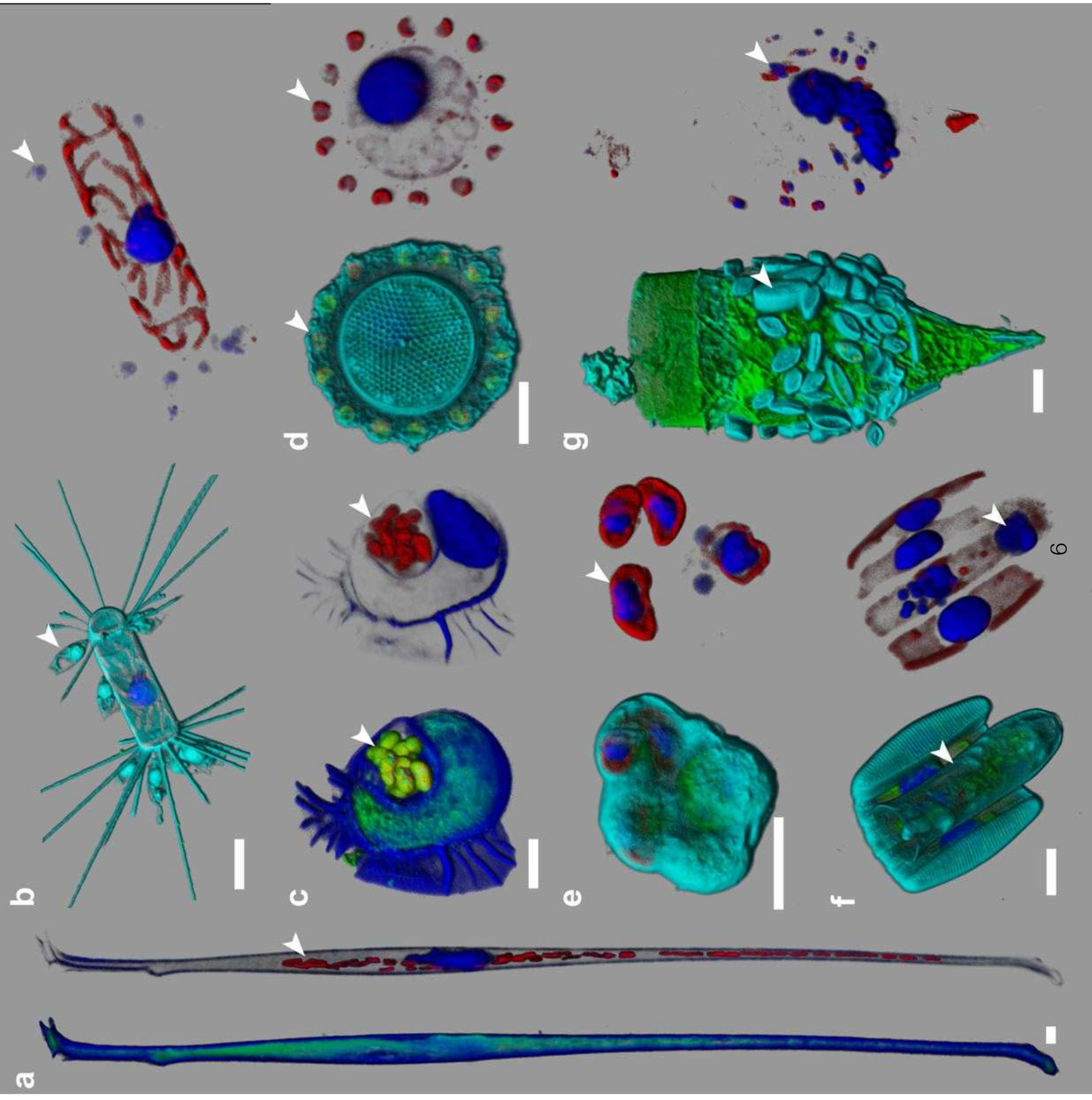


Left panel: a chain of **diatoms** (*Asterionellopsis* sp., Heterokonta); right panel, top left to bottom right: **radiolarian** (Rhizaria), **ciliate** (Alveolata), **amoeba** (Amoebozoa), **choanoflagellate** (Opisthokonta), **dinoflagellate** (Alveolata), **coccolithophore** (Haptophyta)

Colin et al., 2021

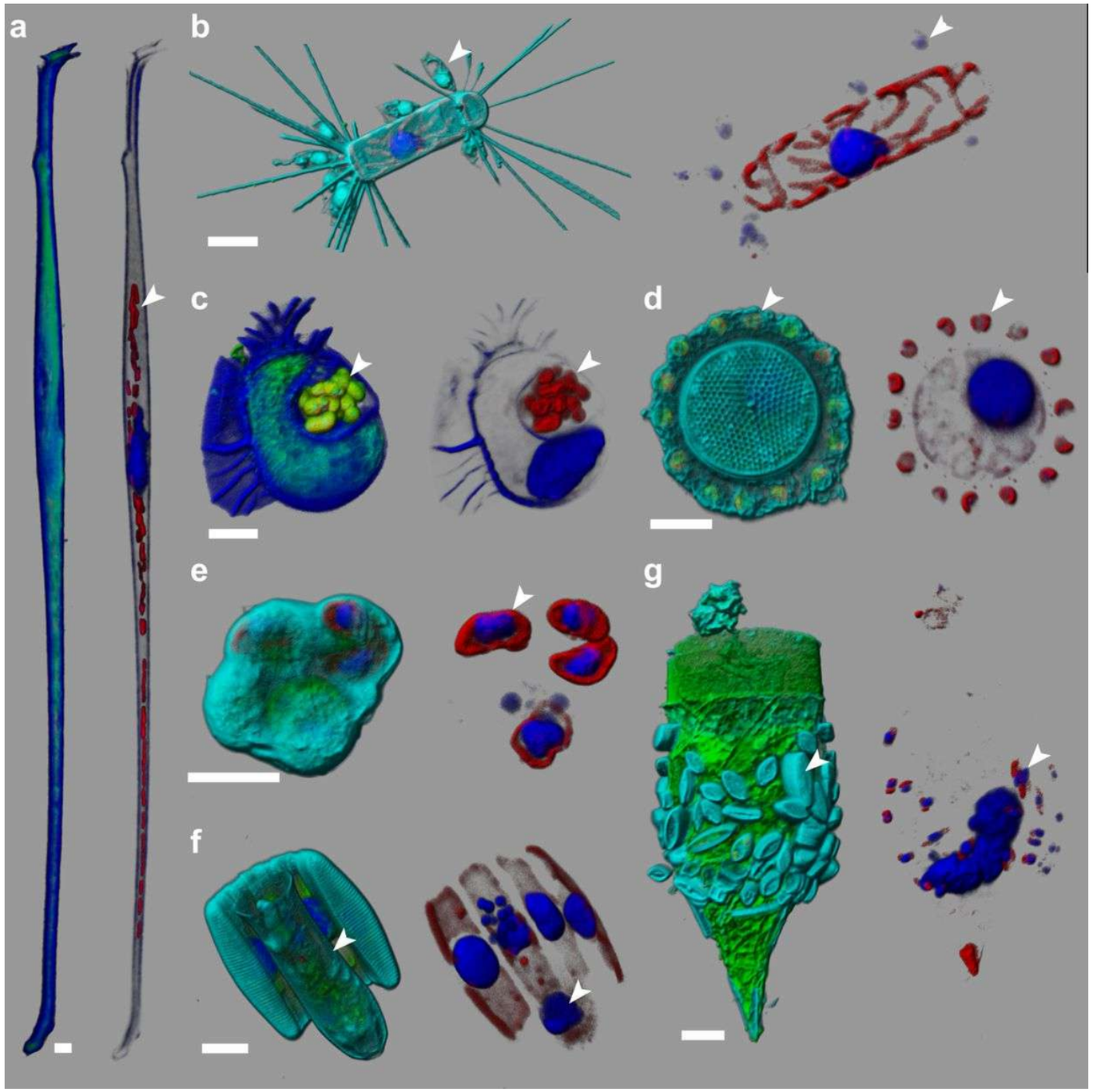


Key cellular features are labelled with various dyes: DNA/nuclei (blue, Hoechst33342); (intra)cellular membranes (green, DiOC6(3)); cell covers and extensions (cyan, PLL-AF546, a home-made conjugation between α-poly-L-lysine (PLL) and Alexa Fluor 546 (AF546)); chloroplasts (red, chlorophyll autofluorescence).



Colin et al., 2021

Colin et al., 2021



Four fluorescent channels were recorded: (i) Green: cellular membranes (DiOC6(3)) indicate the core cell bodies; it also stains loricas of tintinnid ciliates (g); (ii) Blue: DNA (Hoechst) identifies nuclei; it also stains the cell-wall of thecate dinoflagellate (**a, c**); (iii) Red: chlorophyll autofluorescence resolves chloroplasts; (iv) Cyan: PLL-A546 is a generic counterstain for visualizing eukaryotic cells' surface