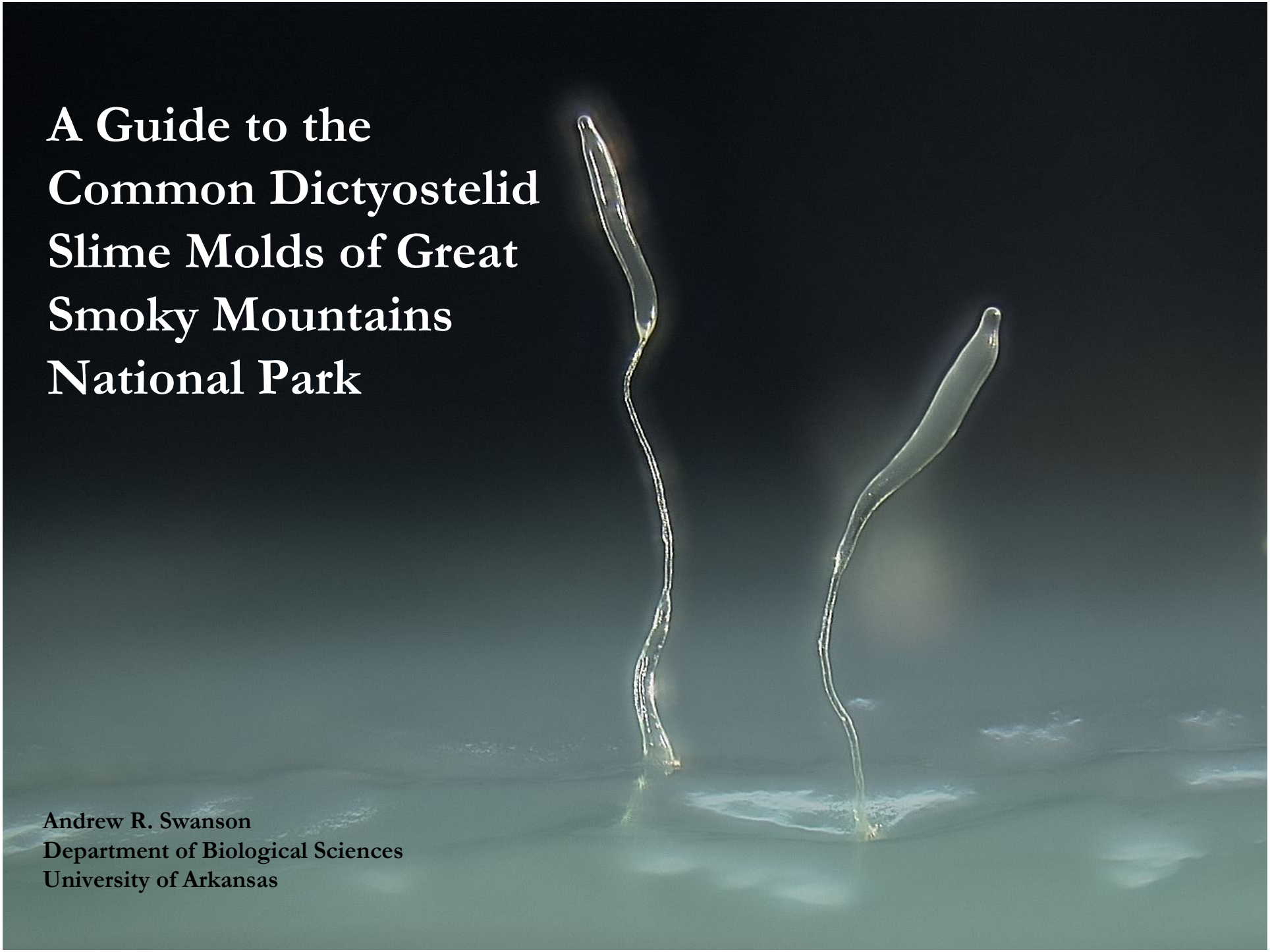
A Guide to the Common Dictyostelid Slime Molds of Great Smoky Mountains National Park



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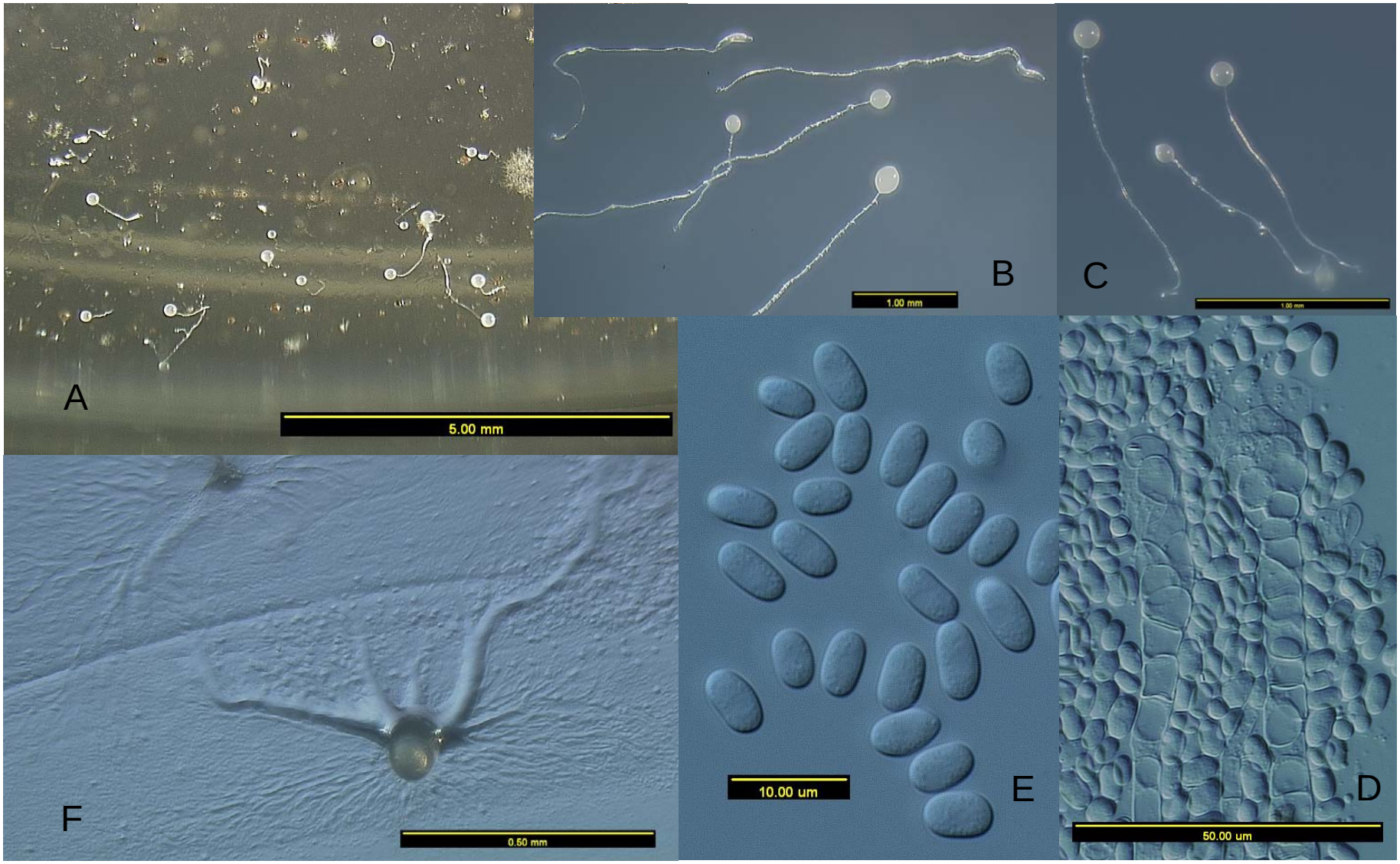
The following images depict the common Dictyostelid (cellular) slime molds found in surface soils and litters of Great Smoky Mountains National Park, USA. Each plate is composed of several photographs illustrating the key characteristics used for species identification.

Because Dictyostelids are too tiny to be observed in nature, they must be cultured onto solid media (agar plates) from diluted soil samples, and grown in the laboratory in association with a bacterial or fungal (yeast) food source. The photographs presented here were all taken under magnifications between 10x and 6300x using both dissecting and compound microscopes. Pay special attention to the scale bars for each image, as the photographs are not all presented at the same scale.

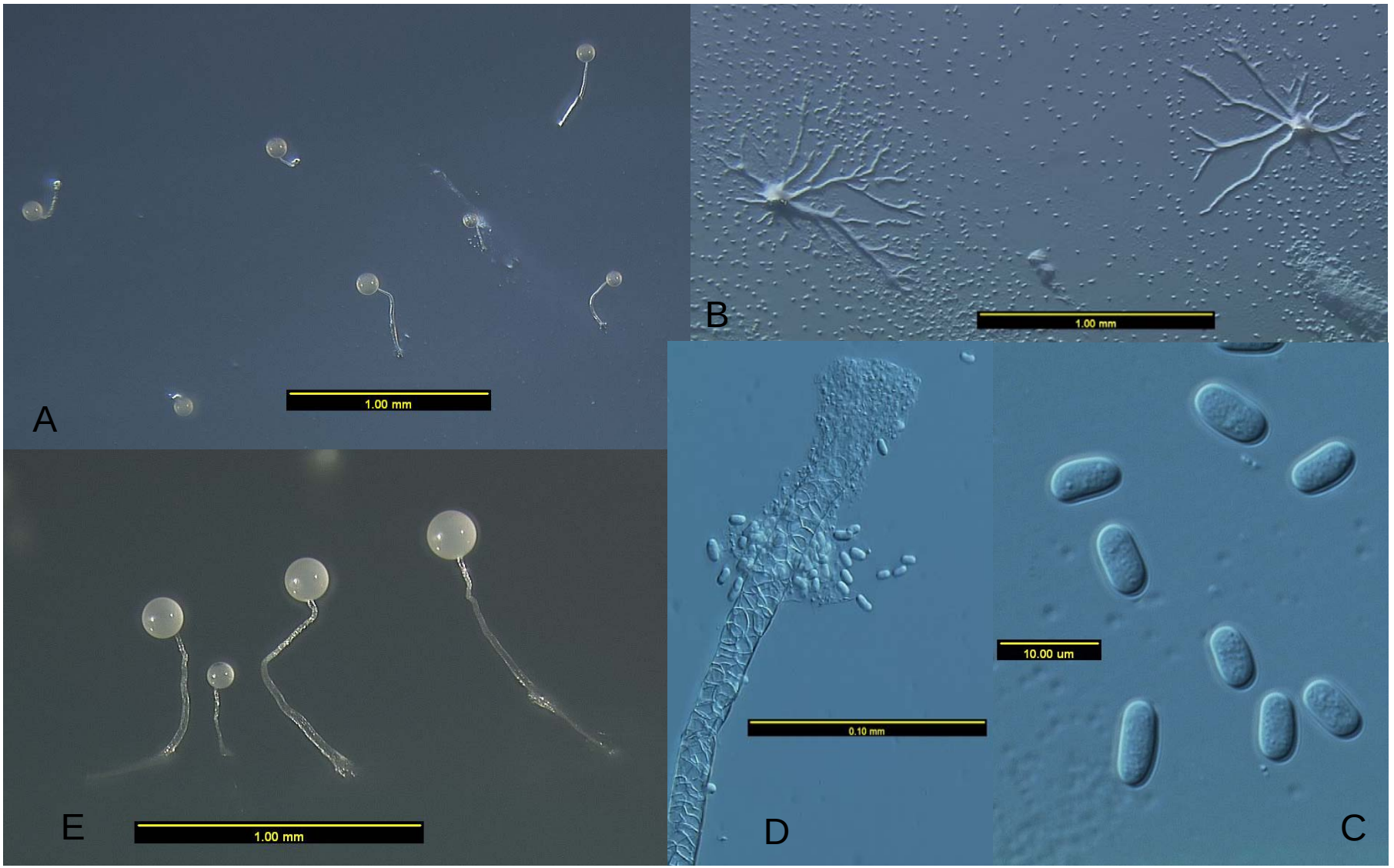
Let your discovery of Dictyostelids Begin!



Dictyostelium mucoroides Brefeld

syn. *Dictyostelium brefeldianum* Hagiwara

A) Sorocarps growing on a hay infusion isolation plate. B) migrating sorogens & young sorocarps (note stalked migration). C) mature sorocarps. D) tips (note morphological range from clavate to more typical capitate). E) spores (note lack of distinct polar granules. F) aggregation.

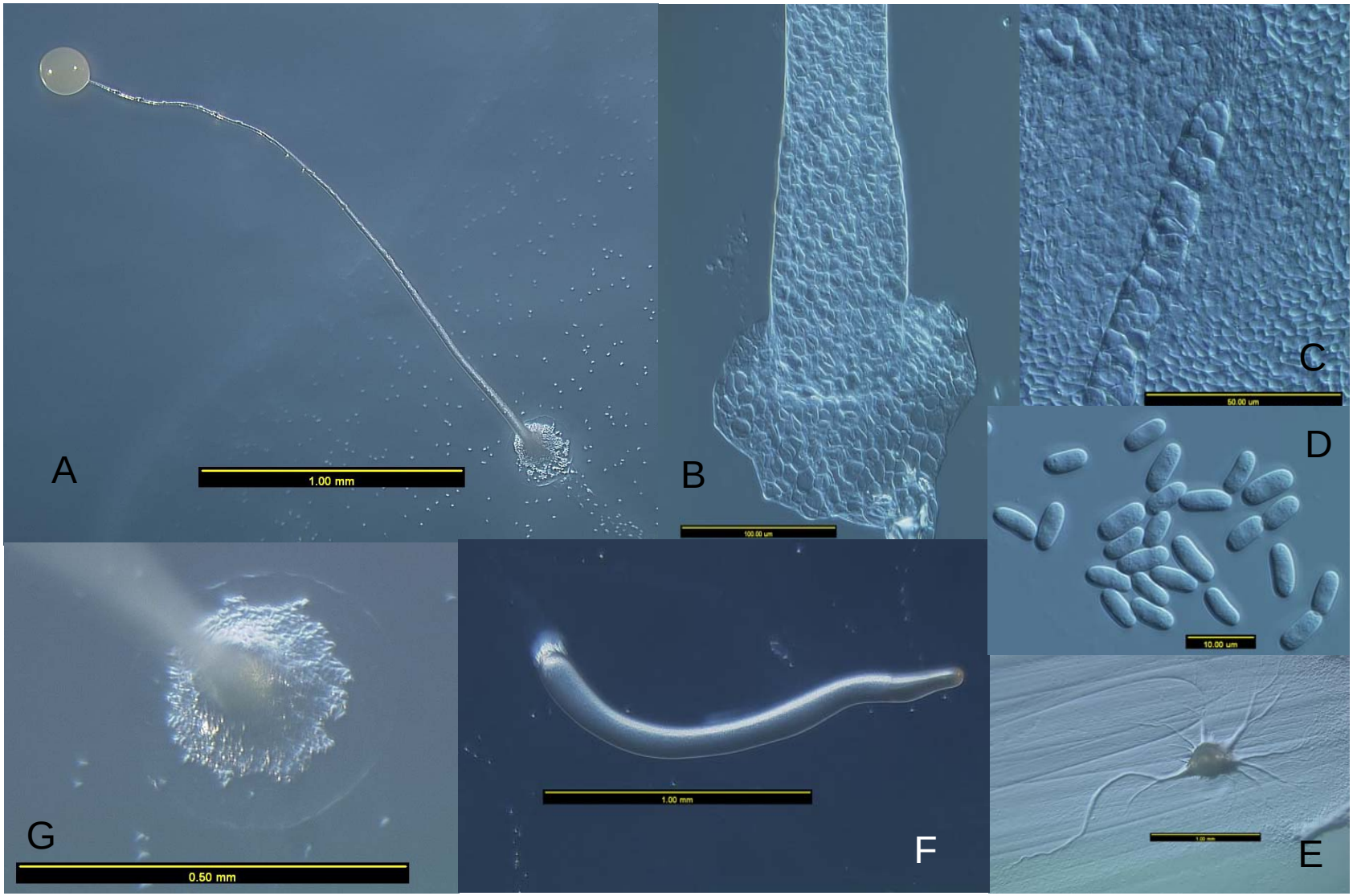


Dictyostelium sphaerocephalum (Oud) Sacc. et March.

syn. *Hyalostilbum sphaerocephalum* Oud.

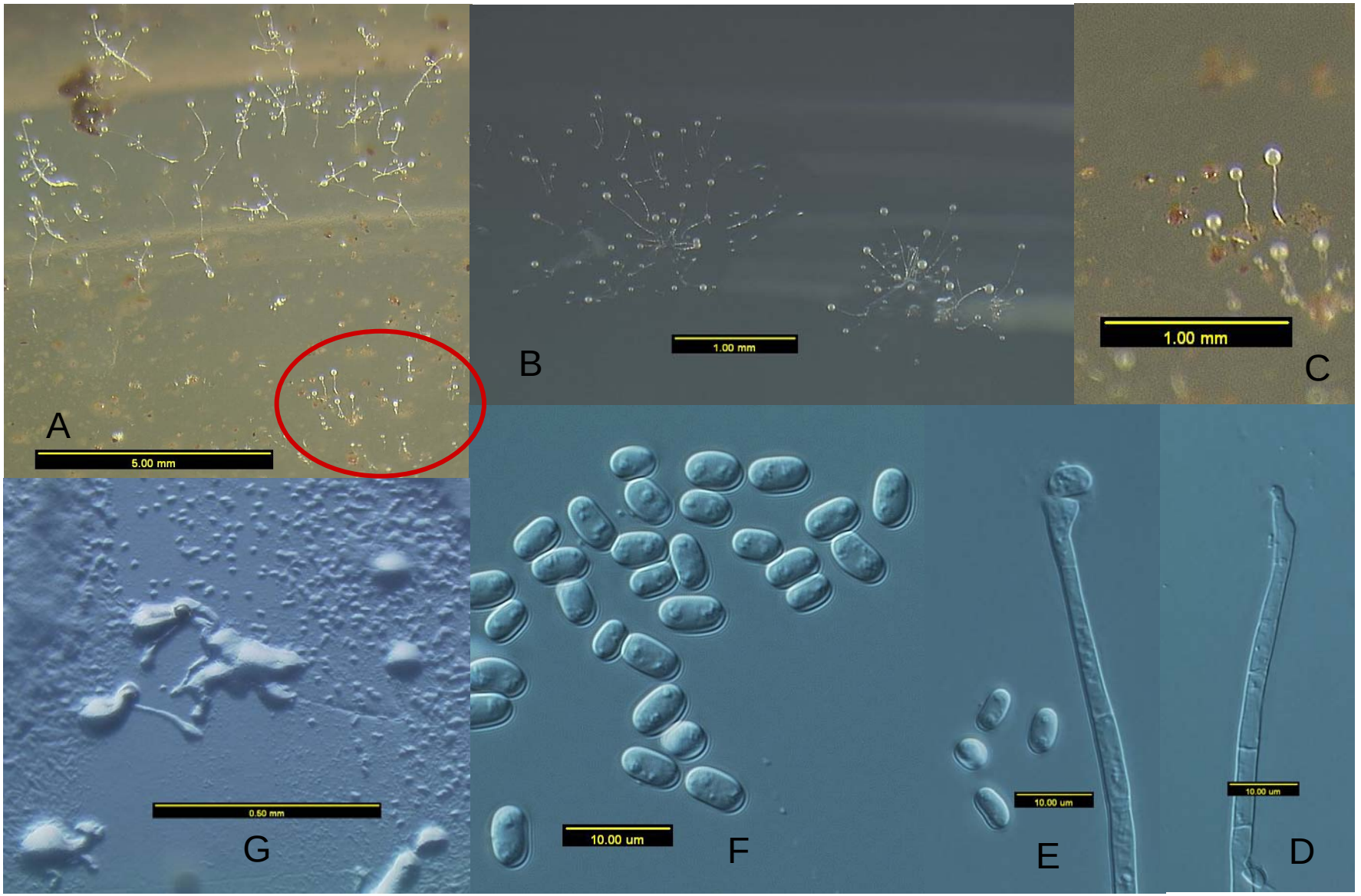
syn. *Dictyostelium mucoroides* Brefeld - sensu Hagiwara

A) Mature sorocarps (note 'L'-shaped form agar surface). B) aggregations. C) spores (note lack of prominent polar granules). D) tip (note adherent material at apex and collar). E) mature sorocarps.



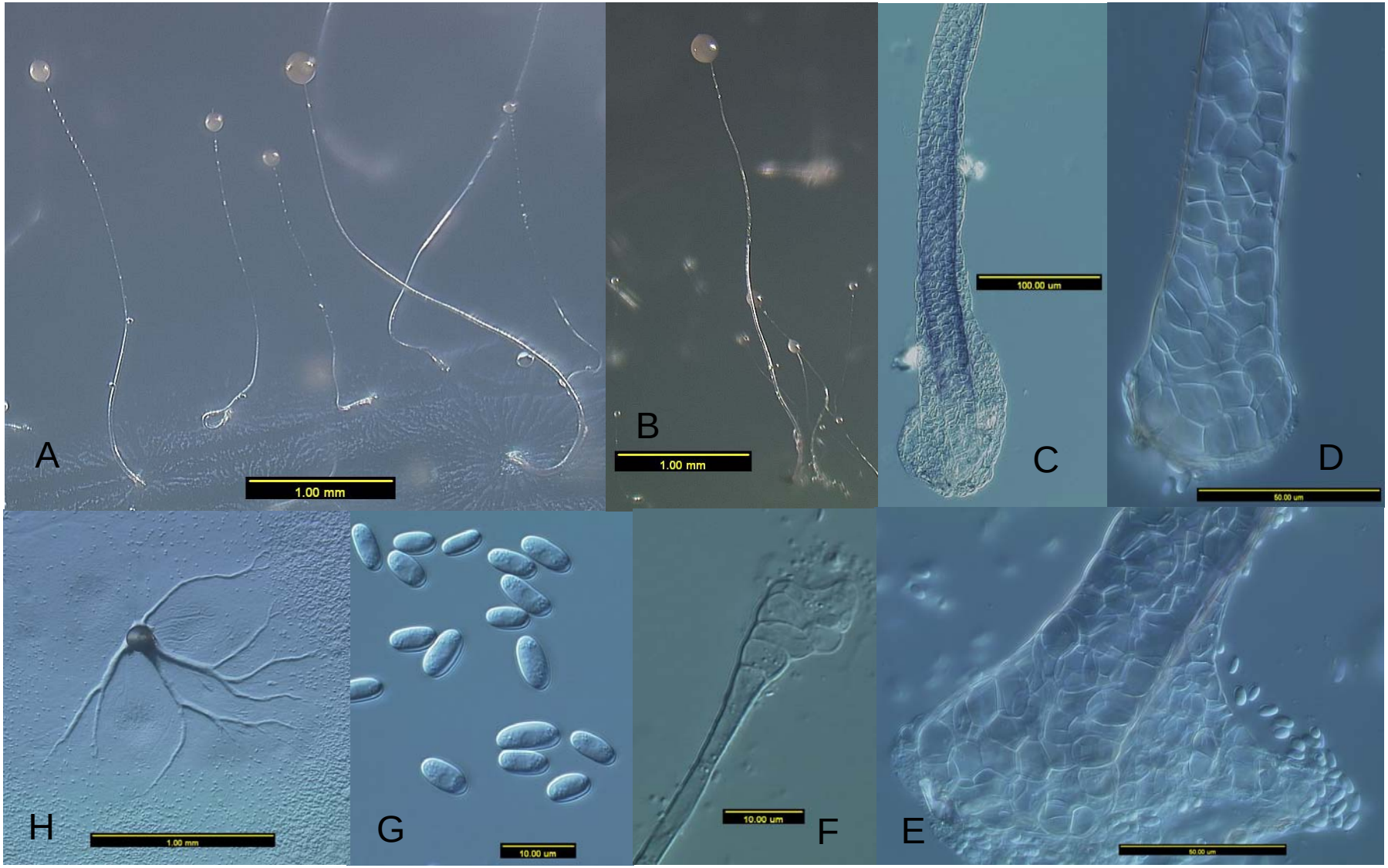
Dictyostelium discoideum Raper

A) mature sorocarp (note discoid base). B) base. C) tip (note closely adherent spore mass). D) spores (note lack of prominent polar granules). E) aggregation. F) migrating slug (note stalkless migration). G) detail, discoid base.



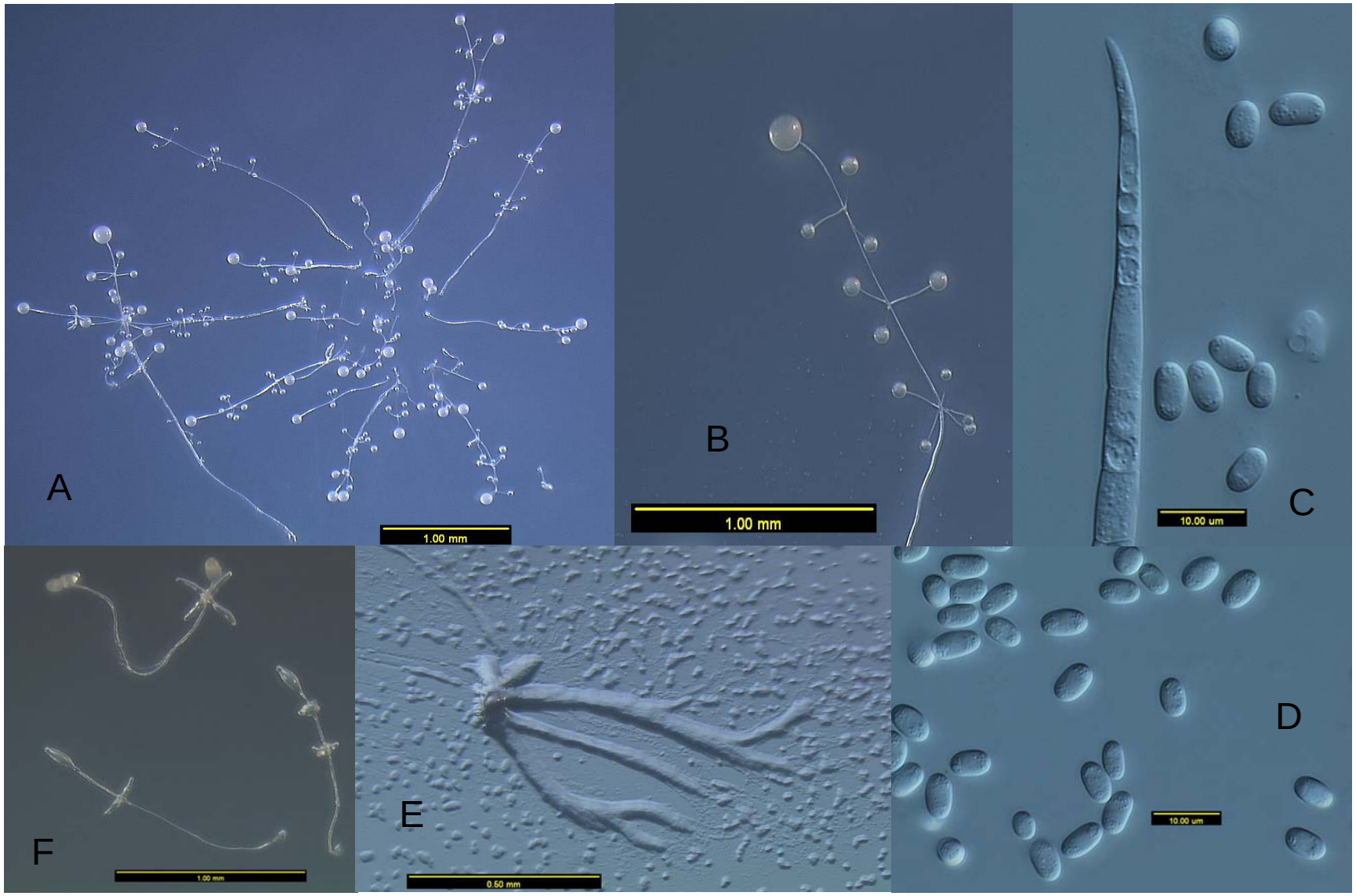
Dictyostelium minutum Raper

A) Colony (note size in comparison with *P. pallidum*). B. developing and mature sorocarps. C) mature sorocarps. D) tip and spores. E) tip. F) spores (note polar granules – often not as prominent as pictured). G) aggregations.



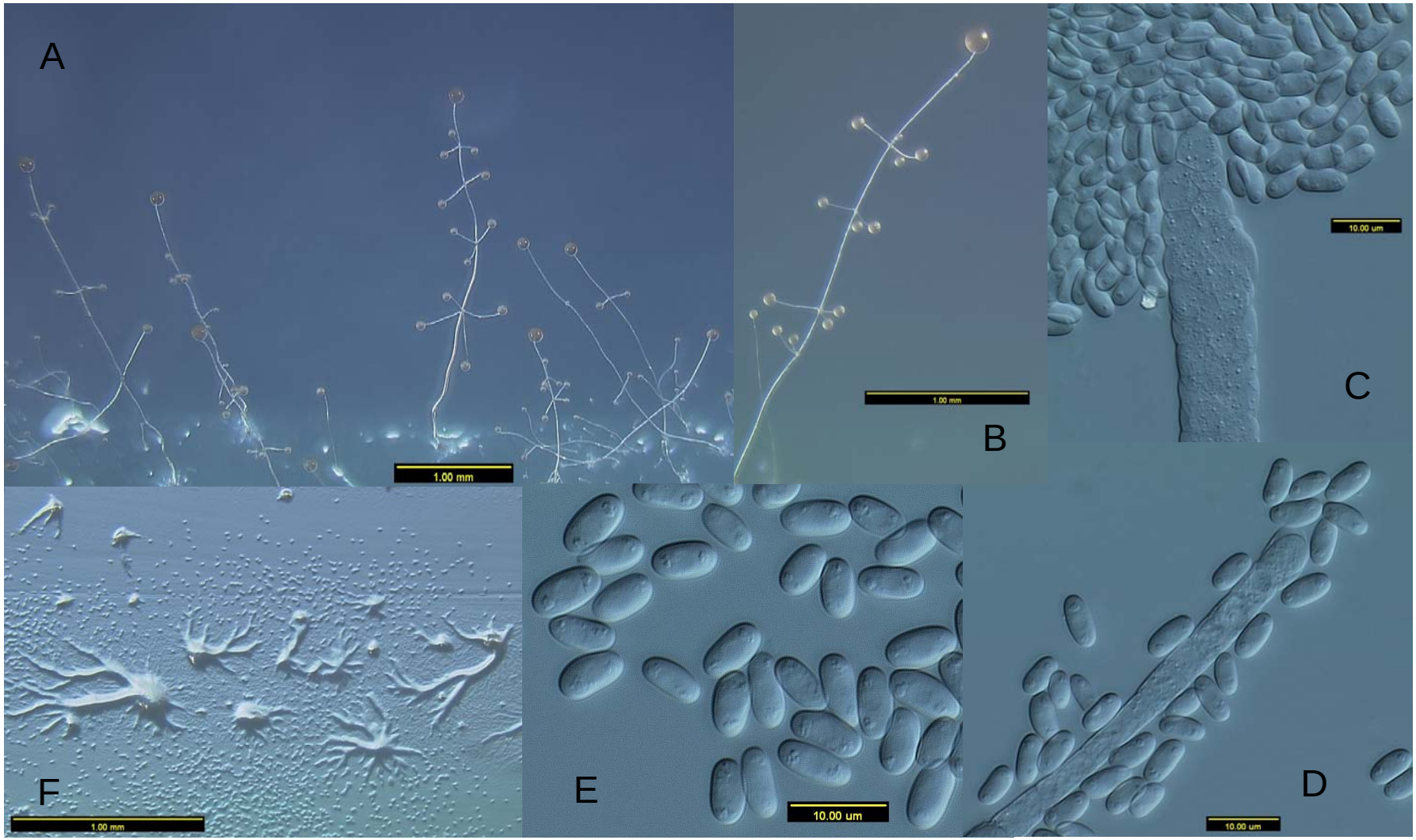
Dictyostelium purpureum Olive

A) mature sorocarps. B) mature sorocarp (note pigmented stalk and sori). C) lower stalk (note purple pigmentation). D) rounded base. E) base with supporter. F) stalk tip. G) spores (note lack of prominent polar granules) . H) aggregation.



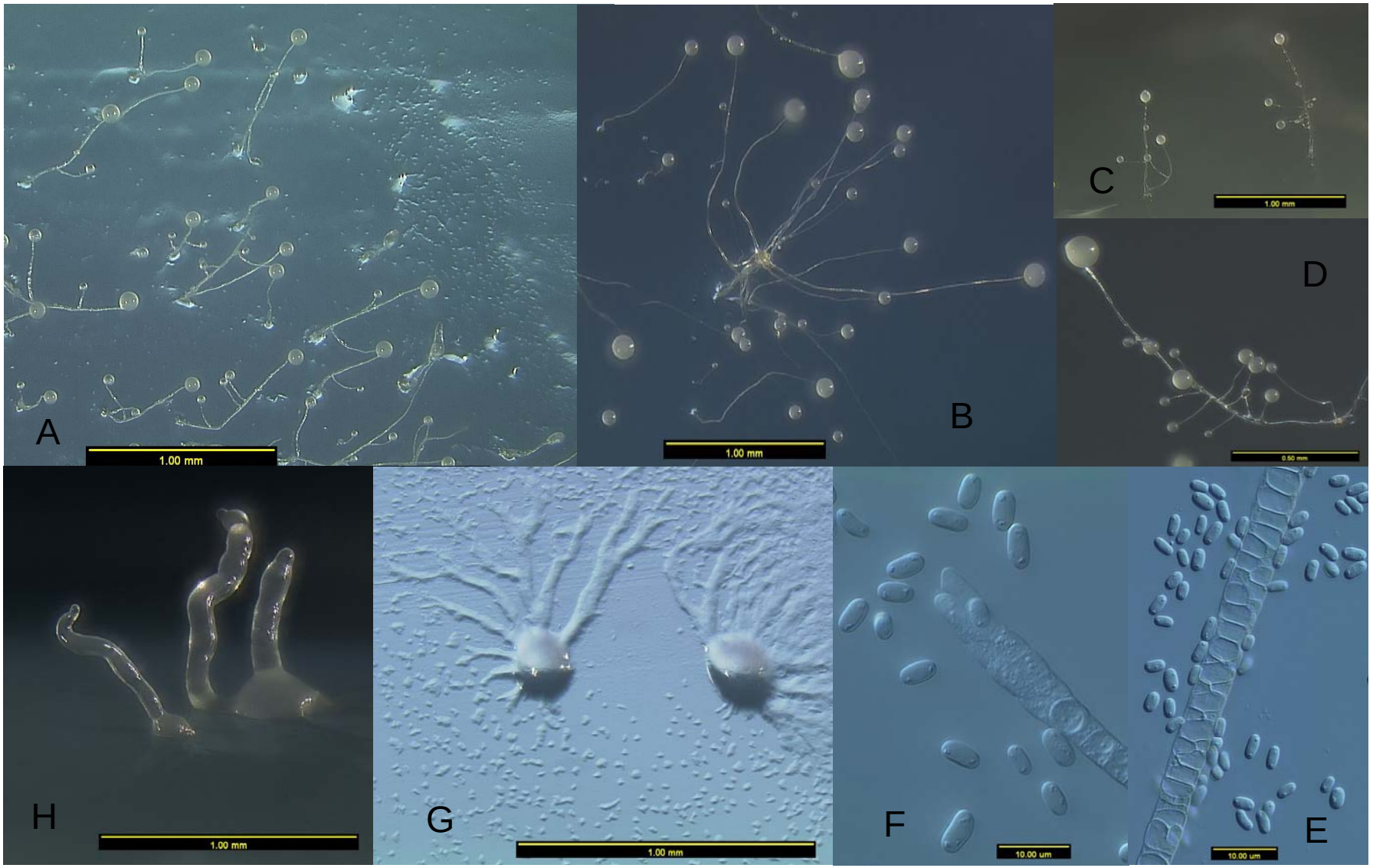
Polysphondylium pallidum Olive

A) mature sorocarps. B) mature sorocarp (note whorls). C) branch tip. D) spores (note characteristic unconsolidated polar granules). E) aggregation. F) developing sorocarps.



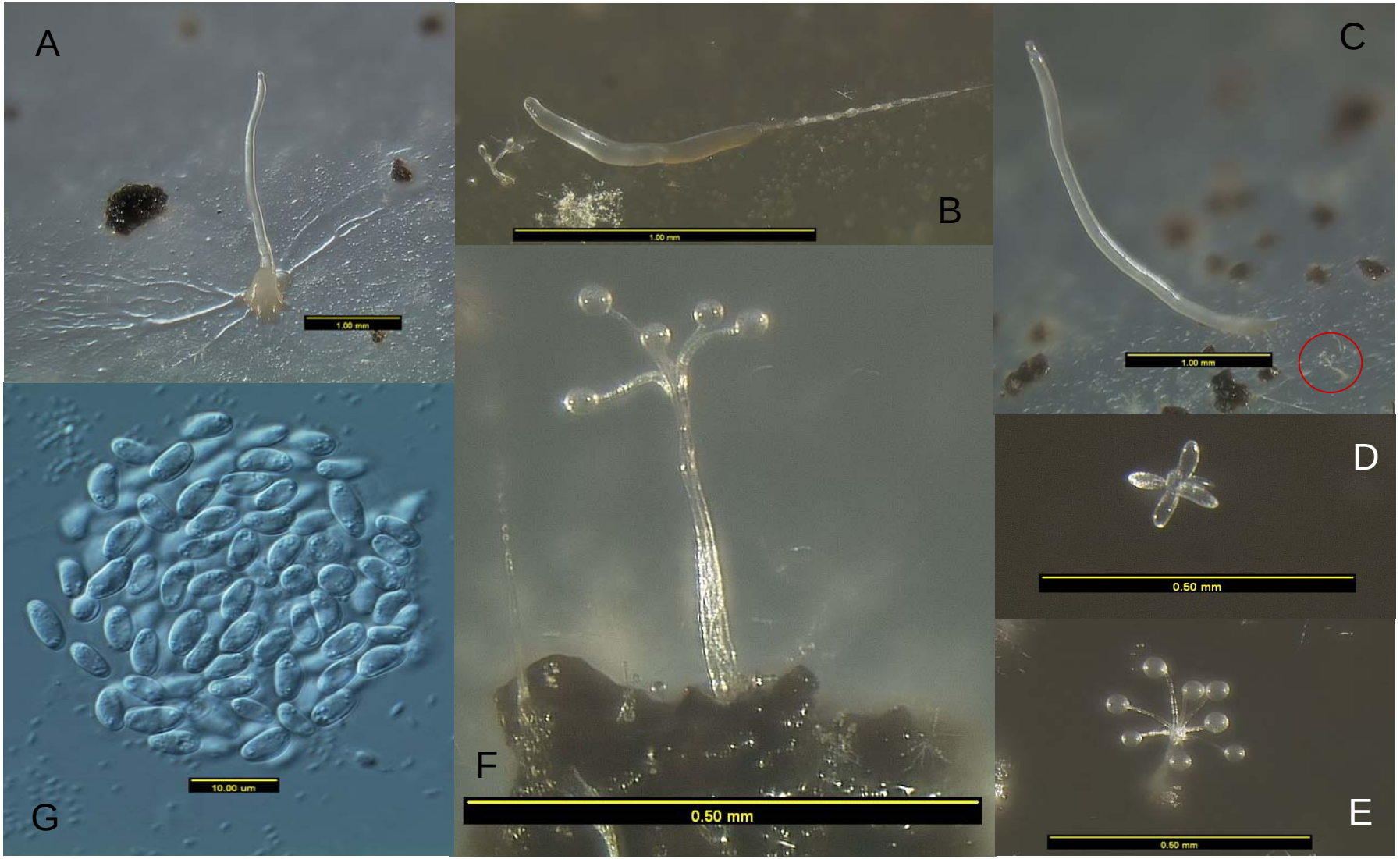
Polysphondylium violaceum Brefeld

A) mature sorocarps (note violet pigmentation). B) mature sorocarp. C) tip. D) branch tip & spores E) spores (note prominent polar granules). F) aggregations.



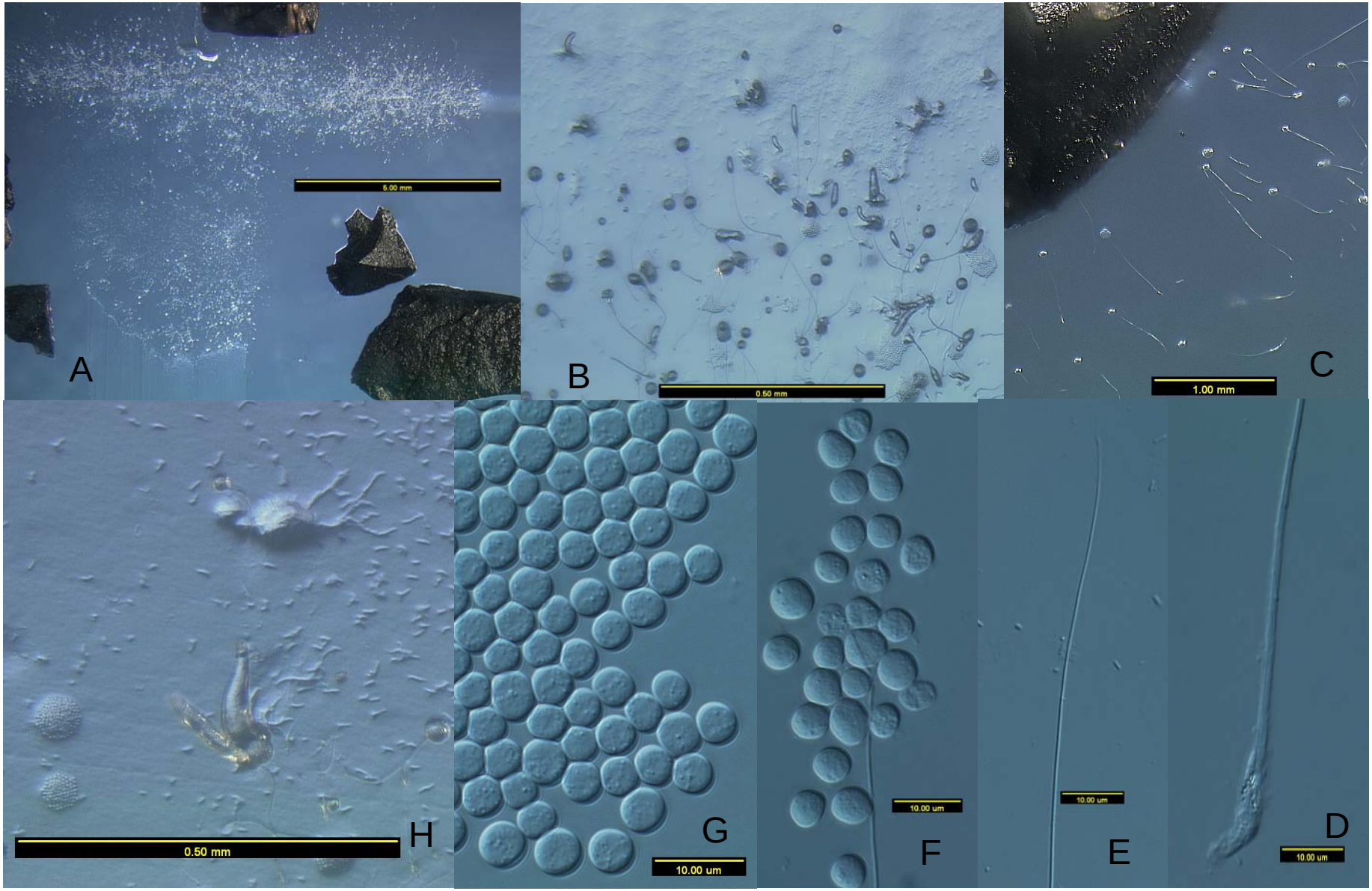
Dictyostelium aureo-stipes Cavender, Raper et Norberg

A) developing sorocarps. B) mature sorocarps (note yellow pigmentation at branch confluence). C) matue sorocarps. D) mature sorocarp (note irregular crowded branches). E) stalk and spores (note yellow pigmentation at stalk edges). F) tip and spores (note obtuse tip and consolidated polar spore granules). G) aggregations. H) rising sorogens.



Dictyostelium polycephalum Raper

A) Aggregation and developing slug. B) migrating slug and developing sorocarp. C) rising slug (note size of nearby sorocarp). D) developing sorocarp. E) mature sorocarp F) mature sorocarp. G) spores (note unconsolidated polar granules).



Acytostelium subglobosum Cavender

A) numerous developing and mature sorocarps. B) sorogens, sorocarps, and spore masses. C) mature sorocarps (note development toward activated charcoal). D) base. E) tip. F) tip & spores. G) spores. H) aggregation, sorogens & spore masses.

***Dictyostelium discoideum* in the wild (on deer scat)**

(photo courtesy of Thomas Platt, Rice University)