

Moss

There are approximately 14,000 species of mosses.

Habitat: Mosses (and the bryophytes in general) are mostly found in moist habitats like; bogs, moist woods and along streams. They grow on soil, bare rock, trees, in caves and on roofs.

Body Traits: Mosses have no vascular tissue to move materials around inside them, so rarely reach more than 1.5 inches tall. They have no true roots, stems or leaves, but are anchored by root-like hairs called rhizoids. They also have small leaf-like structures that are attached spirally around the stem and often are only one cell layer thick.

Reproduction:

Asexual reproduction can occur by fragmentation. This means a bit of severed stem can grow into a new plant. This occurs because of gemmae. Gemmae are structures, smaller than the petiole at the end of this stem, that grow on the upper side of the plant body on a stalk. They break off in the wind and start a new plant.

Sexual reproduction:

Plants have two alternating generations of life cycles. There is a sporophyte generation, which is a diploid generation ($2n$), which makes the haploid spores through meiosis. Then there is the gametophyte generation, which is the haploid generation (n), which makes the gametes that unite to form a diploid zygote.

In moss the dominant generation is the leafy haploid (n) form called the gametophyte. The gametophytes are either male or female. The male gametophyte produces sperm from structures called the antheridia. This male gametophyte is haploid (n) and is produced by mitosis.

The female gametophyte produces an egg from structures called the archegonia. This female gametophyte is also haploid (n) and produced by mitosis. Both the male antheridia and the female archegonia are located on short stems. The sex organs, located at the apical end of stem or branches, are protected by a leafy structure called paraphyses.

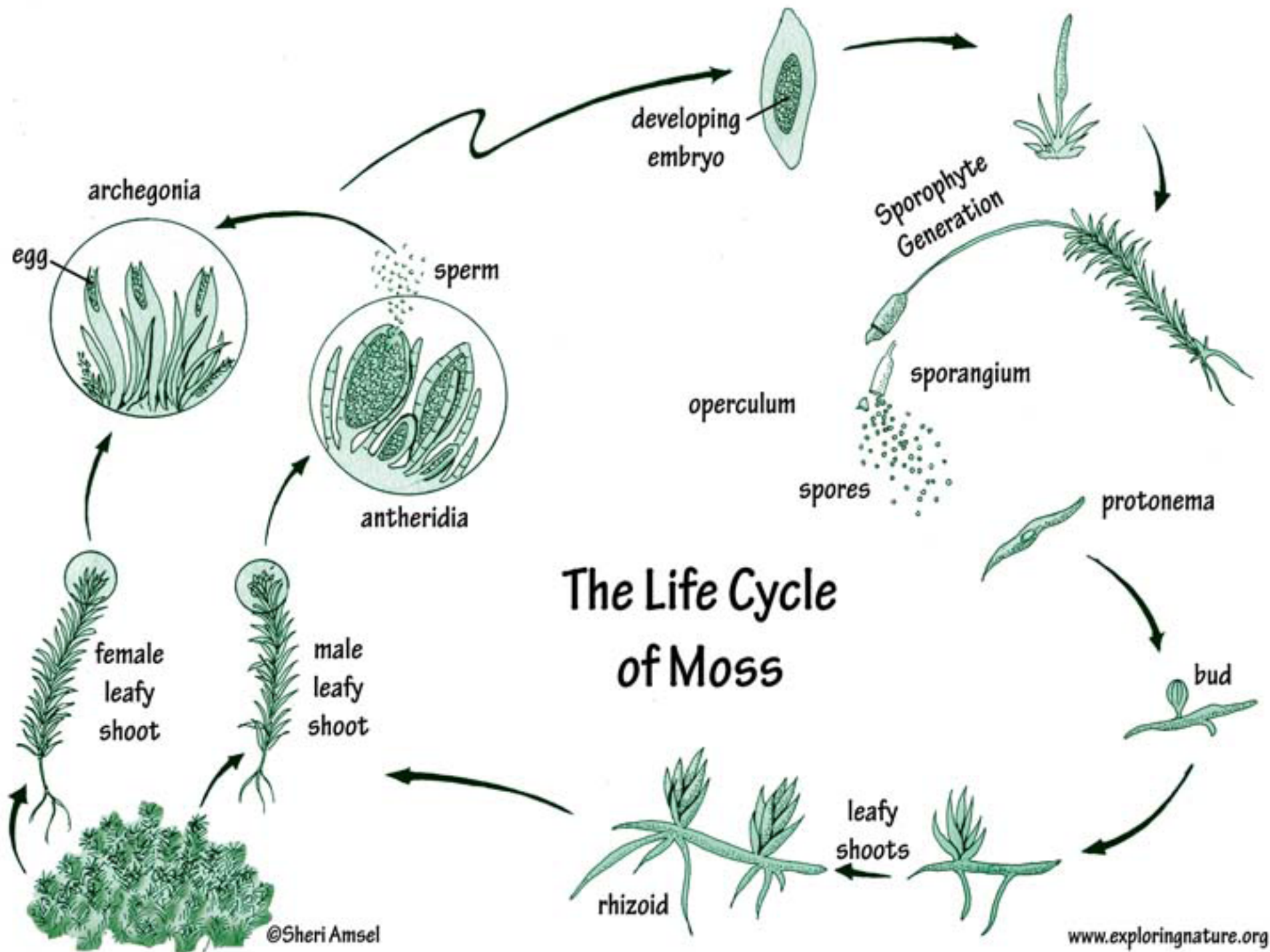
Sexual reproduction needs water, which is why mosses prefer a moist habitat. The spermatozooids have a thread-like flagella that allows them to travel in water to the egg cells. The sperm cell then fertilizes the egg by fusing with it and creating a diploid ($2n$) zygote.

This is the first cell of the next generation, the sporophyte generation. The zygote undergoes mitosis and becomes a multi-cellular sporophyte. While growing it stays connected to the gametophyte, which nurtures it with nutrients and water. Eventually the gametophyte slips in half leaving a hood-like calyptra, which protects the growing sporophyte.

The sporophyte undergoes meiosis and all the spores divide and become haploid (n). Underneath the calyptra a capsule develops filled with thousands of haploid (n) spores. When the spores are mature, the lid of the capsule falls off leaving a row of teeth called the peristome keeping the spores inside. When the air is wet the peristome stays closed but will open when the air is dry to let the wind shake the spores out dispersing them.

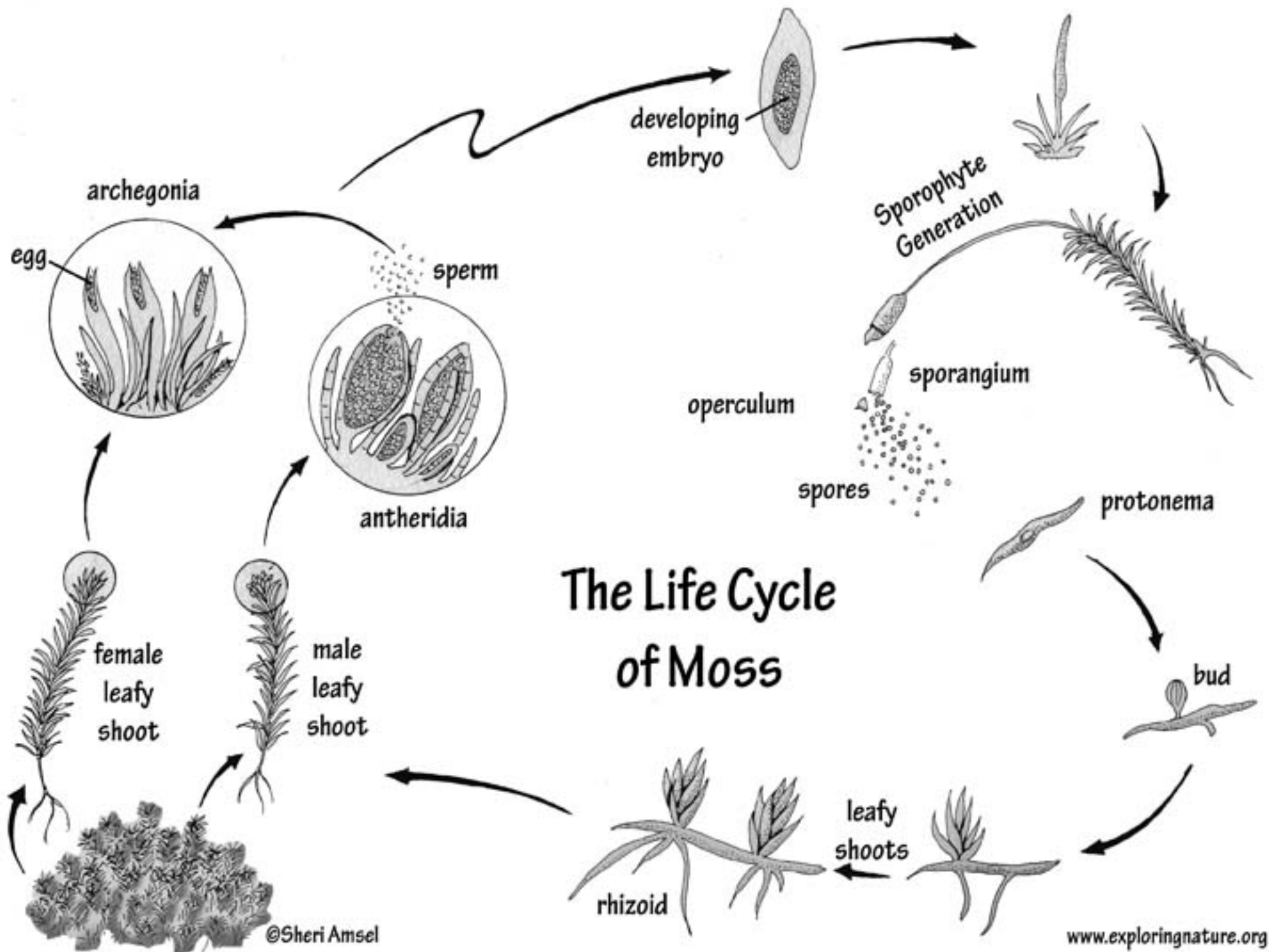
If the spores fall on a moist area they will germinate and grow into a green filament called the protonema. The protonema forms buds that grow into a leafy stem. The leafy stem is the beginning of the next haploid gametophyte generation. The gametophytes in this generation will mate and continue the alternation of generations.

The moss most regularly harvested by man is Sphagnum moss, used by horticulturists in planters for its water absorption qualities. Eventually when it compacts into peat it is harvested as well. It was also used during WWI as dressings because the acidic nature of the moss prevented bacterial growth in wounds.



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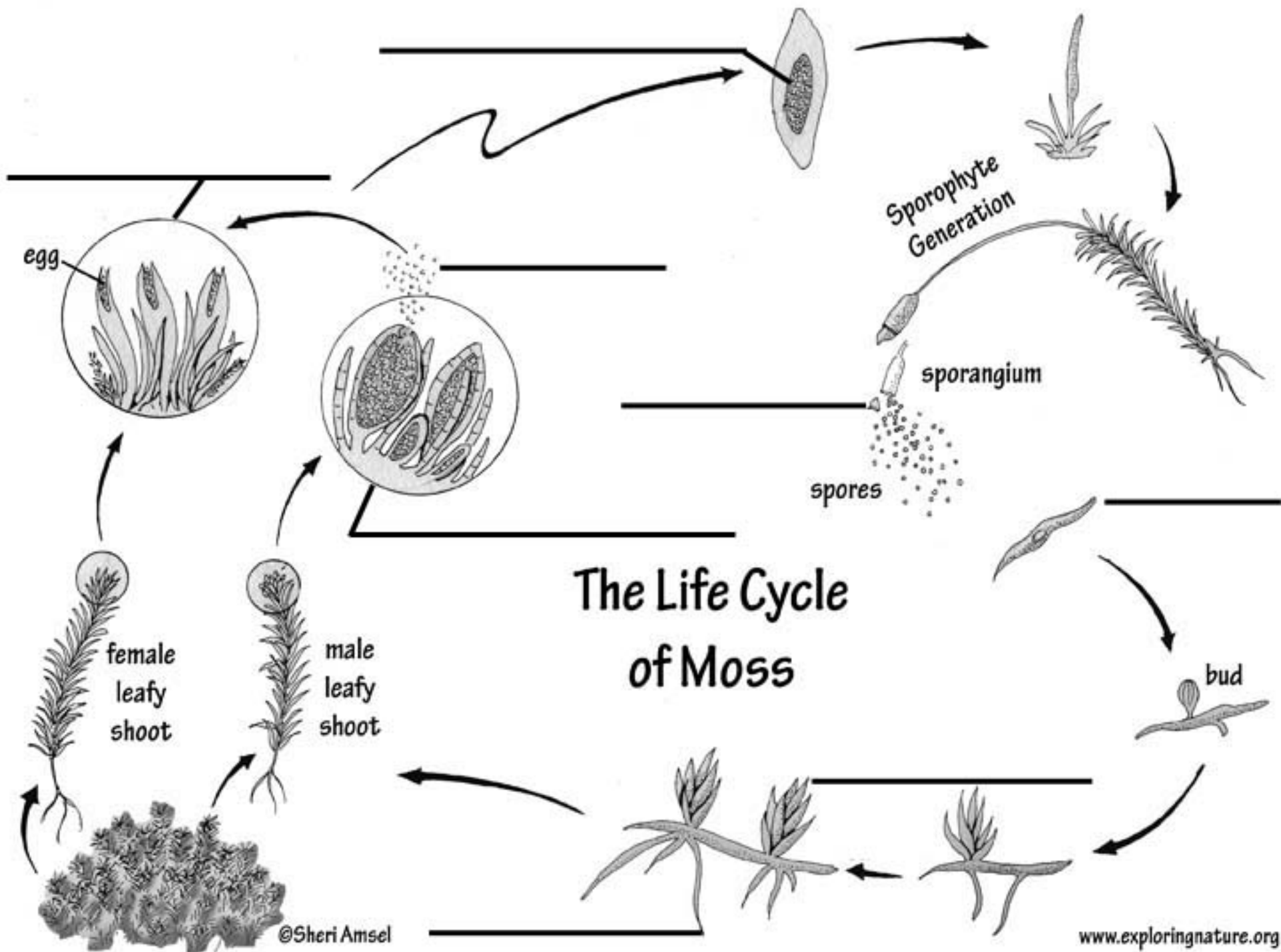
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The Life Cycle of Moss

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