Flower parts of lily: sepals (3), petals (3), anthers (6) each with 4 pollen chambers, and, as indicated by the lobed stigma, ovary with compound pistil (3 carpels)
Lily flower bud thin c.s.: sepal (3), petal (3), stamen (6), pollen chamber, ovary

Angiosperm Life Cycle
Anther chamber close-up in early stages of development showing diploid (2n) microsporocytes which undergo meiosis to form four genetically distinct haploid nuclei (1n).
Mature pollen from the lily: exine and one aperture for pollen tube to emerge (monocot)
Style and stigma (longitudinal section) with germinating pollen grains

Angiosperm Life Cycle
Ovary and ovule close-ups showing two stages of meiosis, which will result in four genetically distinct haploid nuclei called megaspores. Three nuclei will degenerate. The remaining megaspore will divide by mitosis three times to form 8 genetically identical haploid nuclei contained in an “embryo sac”.

Angiosperm Life Cycle

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Megasporocyte (diploid)

Meiosis telephase I

Meiosis telephase II (four megaspores – all genetically unique)

One functional megaspore (n) remains, three other degenerate

Megaspore divides by mitosis

Nuclei divide again by mitosis

Mitosis takes place once more resulting in 8 nuclei that move to different parts of the embryo sac cell (and may later become cells themselves): the two central cell nuclei will be fertilized by one sperm and fuse to form 3N endosperm nuclei (double fertilization); the egg cell will be fertilized to become the zygote and later the embryo

Embryo sac development in *Clematis* (typical of most dicots)

Angiosperm Life Cycle
Dicot flower model with simple pistil just prior to double fertilization where the two central cell (or polar) nuclei will be fertilized by one sperm and fuse to form 3N endosperm nuclei, the egg cell will be fertilized to become the zygote and later the embryo.

FYI: the two synergids on either side of egg will degenerate as will the three antipodals at the other end of the embryo sac.
Dicot flower model with compound pistil
Immature lily capsule c.s. showing seed development

(Note in such thin sections some seeds will lack the tiny embryos.)

Angiosperm Life Cycle
Seeds (mature ovules) inside mature capsules of lily. The seed coat derived from the integuments. The pericarp is the ripened ovary wall.
Self test
What are the arrows pointing at?
Is the ploidy haploid, diploid, or triploid (1n, 2n or 3n)?
What is the ploidy of the daughter cells resulting from meiosis?