

of cells on the periphery; the embryoblast is an area of dense tissue concentrated around a central point. As the trophoblast grows, it soon surrounds the embryoblast. This stage is common to all higher mammals (Eutheria, formerly called placental mammals); the displacement of the embryoblast within the lumen of the trophoblast is called *entrophy*. During this stage, the blastocyst adheres to the inner mucosal surface of the maternal uterus, and only then does development begin to assume distinctively different forms for each group of mammals (see Fig. 18.26).

Initially, entrophy is abandoned in the carnivores: The embryoblast shifts to the periphery of the trophoblast and again reaches the surface of the blastocyst. Then it differentiates into two layers, the ectoderm (outer tissue layer) on the outside and the endoderm (inner tissue layer) on the inside. A third germ layer, the mesoderm (middle tissue layer), develops out of the ectoderm into the space between these two. Because the mesoderm does not remain a thin, flat, layer of epithelium, it is now known as the *mesenchyme*.⁴⁵ A region of the ectoderm, called the neur ectoderm, then invaginates and sinks into the back of the developing embryo, forming a channel that eventually closes into a tube and separates from the rest of the ectoderm. This is

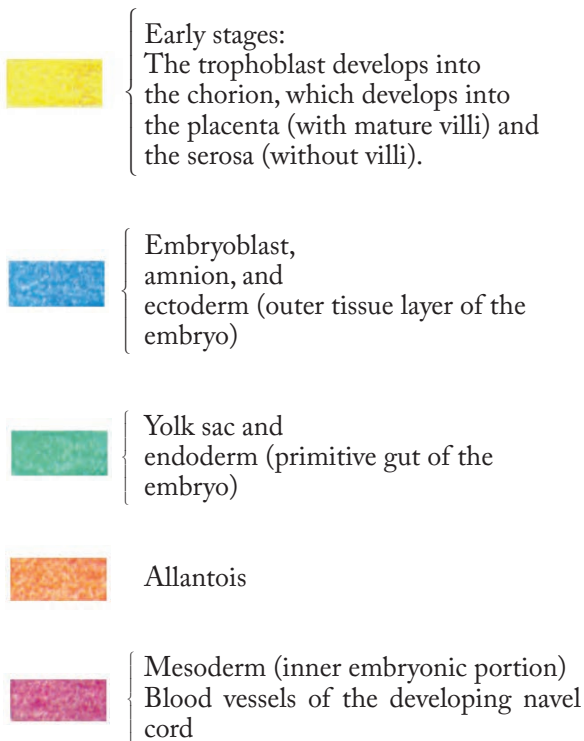


Figure 18.26. The embryonic development of rodents, carnivores, and ungulates.

The stages up to the formation of the blastocyst are the same in all eutherian mammals. Conspicuous features in rodents are the consolidation of the trophoblast (yellow), the doubling of the amnion (blue), and the invagination of the yolk sac (green). In carnivores, the amnion is a pleuramnion that develops through folding; the characteristic girdle placenta develops later. In ungulates, we can trace the development and degeneration of the first amnion (archamnion); the development of the second amnion (as pleuramnion) begins much later. In the reverse of the process in rodents, the yolk sac is completely incorporated into the developing abdominal cavity; ultimately, however, the allantois completely underlies the placenta, which surrounds the developing fetus. (Semi-schematic drawing by W. Schad, adapted from various sources, following Starck)

