Model #1 Ovum with Sperm before the nuclei fuse during conjugation (within zona pellucida, not shown)

Model #2 2-cell Stage of Cleavage (within zona pellucida, not shown) – Each cell is a blastomere.

Model #3 4-cell Stage of Cleavage (within zona pellucida, not shown) – Each cell is a blastomere.

Model #4 8-cell Stage of Cleavage (within zona pellucida, not shown) – Each cell is a blastomere.

Model #5 Morula (incomplete zona pellucida, not shown) – Each cell is a blastomere. Embryo reaches uterine cavity within 7 days after ovulation.

Model #6 Blastocyst (Chorionic Vesicle) Stage – Yellow indicates the Inner Cell Mass, Lavendar indicates the Trophoblast, Liquid fills the Blastocyst Cavity (Blastocoel)

Model #7 Blastocyst Stage – The Inner Cell Mass divides into the Ectoderm (yellow) and the Endoderm (red-orange)

Model #8 Implantation of the Blastocyst – Trophoblast cells propagate and form blood lacunae so that the embryo can get nutrients from mother’s tissues and blood. Together the endoderm and ectoderm form the embryonic plate. The amniotic cavity forms above the ectoderm.

Model #9 Chorionic villi grow from the Trophoblast and into the Uterine Mucous Membrane. Mesenchyme (branching network of star-shaped cells) arises between the Trophoblast and Embryo. The Embryo consists of the amniotic cavity (ectoderm vesicle – yellow) and the vitelline sac (endoderm vesicle – red-orange).

Model #10 By the 20th after ovulation, the mesenchyme partially decomposes forming the chorionic cavity. The body stalk (primordium of the umbilical cord) extends from the Trophoblast to the Embryonic primordium. The allantois (a protrusion of the vitelline sac) grows into the peduncle.

Model #11 The body stalk becomes the abdominal peduncle as blood vessels grow within it and the vitelline sac.

Model #12 By the 2nd month the amniotic cavity supplants the chorionic cavity. The umbilical cord has formed from vitelline sac and abdominal peduncle. The chorionic villi grow more where the placenta will form.