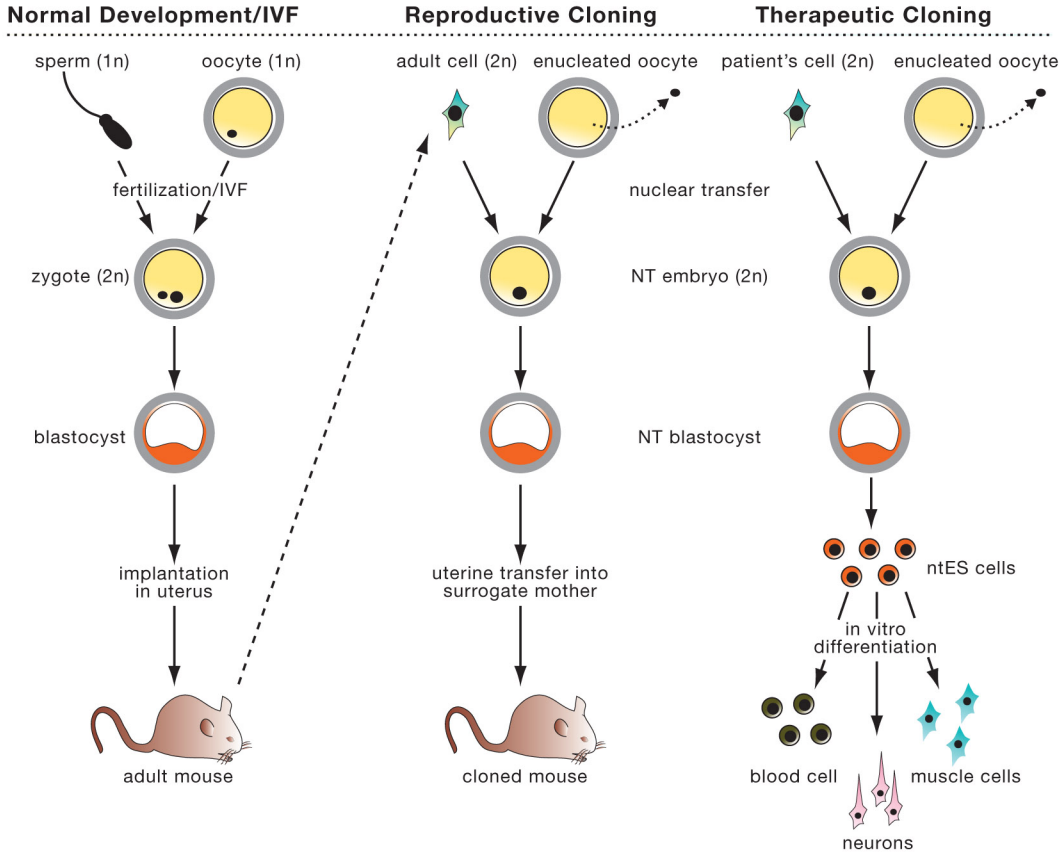

Figure 9. Comparison of Normal Development with "Reproductive Cloning" and "Therapeutic Cloning"

During normal development (*left*), a haploid (1n) sperm cell fertilizes a haploid oocyte to form a diploid (2n) zygote that undergoes cleavage to become a blastocyst embryo. Blastocysts implant in the uterus and ultimately give rise to a newborn animal. During "reproductive cloning" (*center*), the diploid nucleus of an adult donor cell is introduced into an enucleated oocyte recipient which, after artificial activation, divides into a cloned blastocyst. Upon transfer into surrogate mothers, a few of the cloned blastocysts will give rise to a newborn clone. In contrast, the derivation of ntES cells by nuclear transfer (*right*) requires the explantation of cloned blastocysts in culture to derive an ES cell line that can be differentiated in vitro into potentially any cell type of the body for research or therapeutic purposes. (Reprinted, with permission, from Hochedlinger and Jaenisch 2003 [© Massachusetts Medical Society].)