Blastulation in a Frog

1. Origin:
   • first cleavage furrow

   Formation of the blastocoel in a frog egg. (A) First cleavage plane, showing a small cleft, which later develops into the blastocoel. (B) 8-cell embryo showing a small blastocoel (arrow) at the junction of the three cleavage planes.

2. Formally begins: 128 cell stage

3. Motive force: osmotic gradient—deposited solute

4. Cell/cell contacts:
   • cell adhesion molecule EP-cadherin (C-cadherin)
     *from maternal mRNA
     *experiment—block translation with antisense oligonucleotide complementary to EP-cadherin mRNA—no blastocoel

   Depletion of EP-cadherin mRNA in the *Xenopus* oocyte, resulting in the loss of adhesion between blastomeres and the obliteration of the blastocoel. Antisense oligonucleotides complementary to the EP-cadherin message were injected into the one-cell embryo, preventing the expression of EP-cadherin. (A) The blastocoel is obliterated in EP-cadherin depleted embryos, but (B) not in controls. (From Heasman et al., 1994; photographs courtesy of J. Heasman.)