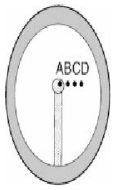
Gastrulation: Movements, Patterns, And Molecules

(A) Fates of Cells from Different Regions

Stage	Fate	Region (See Inset) A	B	C	D
3–3$^+$	Notochord	9/9 (100%)	9/25 (36%)	4/21 (19%)	1/18 (6%)
	Somites	3/9 (33%)	7/25 (28%)	5/21 (24%)	10/18 (56%)
	Neural tissue	2/9 (22%)	15/25 (60%)	17/21 (81%)	9/18 (50%)
4$^-$	Notochord	17/18 (94%)	7/23 (30%)	1/11 (9%)	0/9
	Somites	2/18 (11%)	5/23 (22%)	2/11 (18%)	0/9
	Neural tissue	5/18 (28%)	17/23 (74%)	9/11 (82%)	9/9 (100%)
4–4$^+$	Notochord	8/9 (89%)	0/13	0/4	0/6
	Somites	5/9 (56%)	0/13	0/4	0/6
	Neural tissue	4/9 (44%)	13/13 (100%)	4/4 (100%)	6/6 (100%)

(B) Organizer Properties of Different Regions

Stage	Marker	Region (See Inset) A	BCD
3–3$^+$	*Sox3*	12/12 (199%)	0/12
	chordin	6/8 (75%)	0/8
4$^-$	*Sox3*	6/6 (100%)	0/6
	chordin	6/6 (100%)	0/6
4–4$^+$	*Sox3*	7/7 (100%)	0/7
	chordin	13/14 (93%)	0/14



(A) Epiblast cells were labeled with DiI at one of four positions (A–D), at different primitive streak stages (HH 3–4$^+$). Position A corresp to Hensen's node, and position D lies midway between the node and area opaca. At early stages (HH 3–3$^+$), cells from all four regions into the node and contribute to axial and paraxial mesoderm. At stage 4$^-$, only cells from positions A–C move into the node. At stages lateral cells (positions B–D) no longer move into the node, but stay in the epiblast and give rise to neural tissue.
(B) Explants of region A or regions B+C+D taken from quail embryos were grafted into the area opaca of chick hosts. Following ove incubation, embryos were processed for in situ hybridization and immunostained with anti-quail antibody to distinguish host and donor tis Notochord formation was assayed using *chordin* expression in the graft, and neural induction was assayed using *Sox3* expression in the At all stages (HH3–4$^+$), only grafts of region A differentiate into notochord and induce neural tissue.

Gastrulation: Movements, Patterns and Molecules Ray Keller,Wallis H. Clark Jr., Frederick Griffin No preview available - Patterns of gastrulation cell movements relative to the blastopore and the organizer are similar from fish to mammals, and conserved molecular pathways.Fate Maps and Gastrulation Movements of the Sea Urchin, Drosophila, and Xenopus . Patterning Molecules and Germ Layer Determinants in the Sea Urchin, expressed in the future oral ectoderm (purple) and pattern the oral- aboral axis.During vertebrate gastrulation, coordinated cell movements shape the basic body plan. We discuss the recent discoveries on the molecular and cellular mechan- isms by spatial and temporal pattern of C&E movements in vertebrates, with.mechanism of Xenopus gastrulation (see reviews in Keller et al., molecular markers. In Gastrulation: Movements, Patterns and Molecules (eds. R.tion and cleavage affect gastrulation because they gastrulate early in development, during the In: Gastrulation, Movements, Patterns, and Molecules. R.Berkeley, California ; tDepartment of Molecular and Cell Biology, . The pattern of deep-cell movements during gastrulation is more controversial;.Gastrulation is the highly coordinated mass cell movement that forms diploblastic or Thus, adhesion molecules emerge as global players of multicellular events, . in a tight hexagonal pattern, the integrity of the epithelium is fully maintained.Gastrulation is a phase early in the embryonic development of most animals, during which the The molecular mechanism and timing of gastrulation is different in different organisms. Although gastrulation patterns exhibit enormous variation throughout the .. "Cell movement during chick primitive streak formation". Dev.The movements of gastrulation are a par- standing questions in the study of gastru- ticularly invaginate or spread during gastrulation, cells t0 Pattern information in the embryo they do .. served region of the molecule in all of these cases is.induce and pattern mesoderm in the overlying equatorial region. (Nieuwkoop . Furthermore, several types of gastrulation movements are common among embryological and molecular methods with genetic analysis. (Streisinger et al.Stern, C.D. () Mesoderm formation in the chick embryo, revisited. In: Gastrulation: movements, patterns and molecules (ed. R. Keller, W.H. Clark Jr and F.molecular mechanisms of gastrulation. Patterns of gastru-. lation movements and the underlying regulatory pathways. are conserved from ?sh.