

**SUMMARY: Main genes involved in patterning axes and germ layers in *Xenopus***

Gene	Maternal/ zygotic	Type of protein	Where expressed	Function of protein
<b>Specification of germ layers and dorso-ventral axis</b>				
<i>vegt</i>	M	Transcription factor	Vegetal region	Endoderm specification; activates expression of mesoderm inducers
<i>ectoderm</i> ( <i>thim33</i> )	M	Ubiquitin ligase	Animal hemisphere	Ectoderm specification; inhibits mesoderm formation
<i>vg1</i>	M	TGF- $\beta$ family	Vegetal region; RNA enriched dorsally after fertilization	Mesoderm induction
<i>wnt11</i>	M	Wnt family	Vegetal region; RNA translocated to dorsal side after fertilization	Specification of dorsal structures and organizer formation
<i>dishevelled</i>	M	Wnt pathway signaling protein	Protein associated with vesicles that move to dorsal side of embryo after fertilization	Specification of dorsal structures and organizer formation
$\beta$ - <i>catenin</i> ( <i>ctnnb1</i> )	M	Acts in Wnt pathway; regulates gene expression	Protein enriched in dorsal nuclei in response to Wnt signaling	Specification of dorsal structures and organizer formation
<i>gsk3b</i>	M	Protein kinase	Protein depleted on dorsal side	Suppression of dorsalizing signals
<i>axin</i>	M	Binds $\beta$ -catenin	RNA throughout zygote; more protein dorsally than ventrally	Suppression of dorsalizing signals
<i>dickkopf1</i> ( <i>dkk1</i> )	M	Secreted protein	Ventral region	Limits Wnt signaling to dorsal region
<i>Foxl1e</i> ( <i>foxi1</i> )	Z	Transcription factor	Animal half	Maintains cells as ectoderm
<i>derrière</i>	Z	TGF- $\beta$ family	Vegetal hemisphere and marginal region	Posterior mesoderm induction
<i>nodal related-1,2,4,5,6</i>	Z	TGF- $\beta$ family	Vegetal hemisphere and marginal region; higher dorsally	Mesoderm induction
<i>fgf</i> (several types)	Z	Secreted signals	Vegetal hemisphere and marginal region	Posterior mesoderm development
<b>Mesoderm patterning</b>				
<i>brachyury</i>	Z	Transcription factor	Throughout prospective mesoderm	Posterior mesoderm formation
<i>wnt8</i>	Z	Wnt family	Ventral and lateral regions of prospective mesoderm	Mesoderm ventralization
<i>bmp4</i>	Z	TGF- $\beta$ family	Throughout late blastula; then excluded from organizer	Mesoderm ventralization
<i>activin</i>	Z	TGF- $\beta$ family	Throughout late blastula/early gastrula	Mesoderm induction and patterning
<b>Organizer function</b>				
<i>siamois</i>	Z	Transcription factor	Nieuwkoop center	Induction of organizer
<i>noggin</i>	Z	Secreted signal	Spemann organizer	Mesoderm dorsalization by antagonizing BMP-4
<i>chordin</i>	Z	Secreted signal	Spemann organizer	Mesoderm dorsalization by antagonizing BMP-4
<i>frzb</i>	Z	Secreted signal	Spemann organizer	Mesoderm dorsalization by antagonizing Wnt-8
<i>cerberus-like</i>	Z	Secreted signal	Spemann organizer	Promotes head development by inhibiting Wnt, Nodal-related, and BMP signaling
<i>follistatin</i>	Z	Secreted protein	Spemann organizer	BMP antagonist
<i>gooseoid</i>	Z	Transcription factor	Spemann organizer	Organizer function
<i>lim1</i>	Z	Transcription factor	Spemann organizer	Gastrulation and head formation
<i>otx2</i>	Z	Transcription factor	Spemann organizer	Formation of anterior structures
<i>not</i>	Z	Transcription factor	Spemann organizer	Notochord specification

**Fig. S4.1**