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Stage 16, posterior-dorsal view

18 hr 15 min pf @ 23°C

Stage 17, anterior view

18 hr 45 min pf @ 23°C

Stage 17, posterior-dorsal view

18 hr 45 min pf @ 23°C

Stage 18, anterior vie

19 hr 45 min pf @ 23

Stage 19, dorsal view

20 hr 45 min pf @ 23°C

Stage 19, anterior view

20 hr 45 min pf @ 23°C

Stage 20, dorsal view

21 hr 45 min pf @ 23°C

Stage 20, anterior vie

21 hr 45 min pf @ 23

Stage 21, dorsal view

22 hr 30 min pf @ 23°C

Stage 21, anterior view

22 hr 30 min pf @ 23°C

Stage 22, dorsal view

24 hr pf @ 23°C

Stage 22, lateral vie

24 hr pf @ 23°C

Stage 23, dorsal view

1 day, 45 minutes pf @ 23°C

Stage 23, lateral view

1 day, 45 minutes pf @ 23°C

Stage 24, dorsal view

1 day, 2 hr 15 min pf @ 23°C

Stage 24, lateral vie

1 day, 2 hr 15 min pf @

Stage 25, dorsal view

1 day, 3 hr 30 min pf @ 23°C

Stage 25, lateral view

1 day, 3 hr 30 min pf @ 23°C

Stage 26, dorsal view

1 day, 5 hr 30 min pf @ 23°C

Stage 26, lateral vie

1 day, 5 hr 30 min pf @

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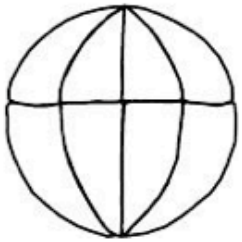
Search Genes For Search

Give Fe

Fate maps: forward

(a reverse map page is also available)

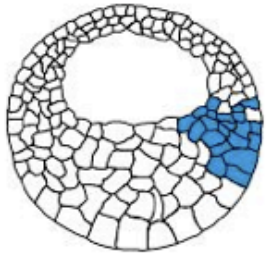
Move cursor over early blastomeres to see their future positions, click on blastomeres to read about their later fate.



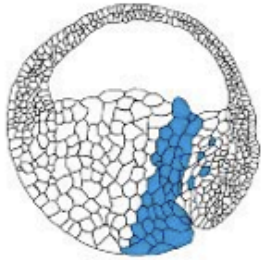
ventral----------dorsal

animal up, vegetal down

32-cell / stage 6



stage 8



stage 10.5

Fate mapping data and images ba
upon the work of Moody 1987a, 19
and Bauer et al. 1994.

Technical notes

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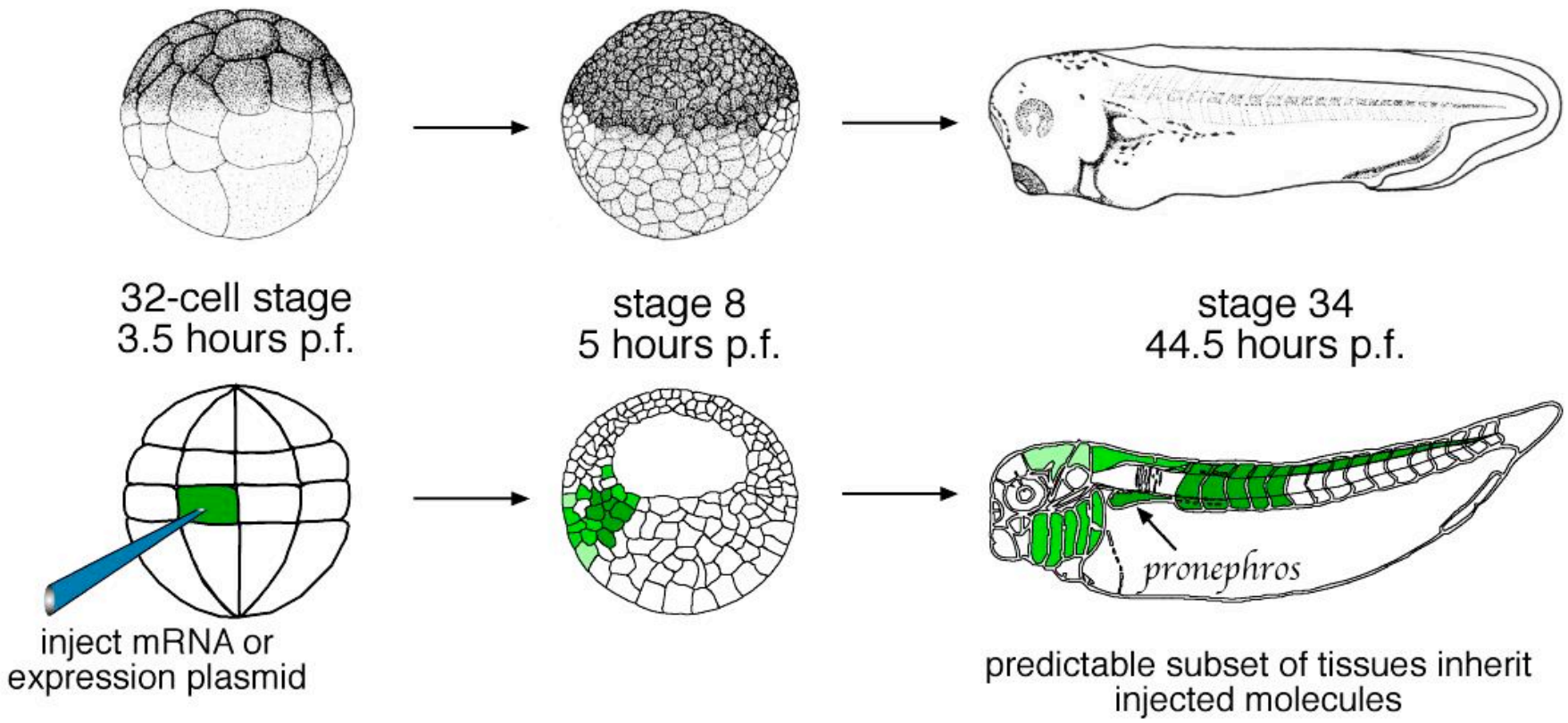
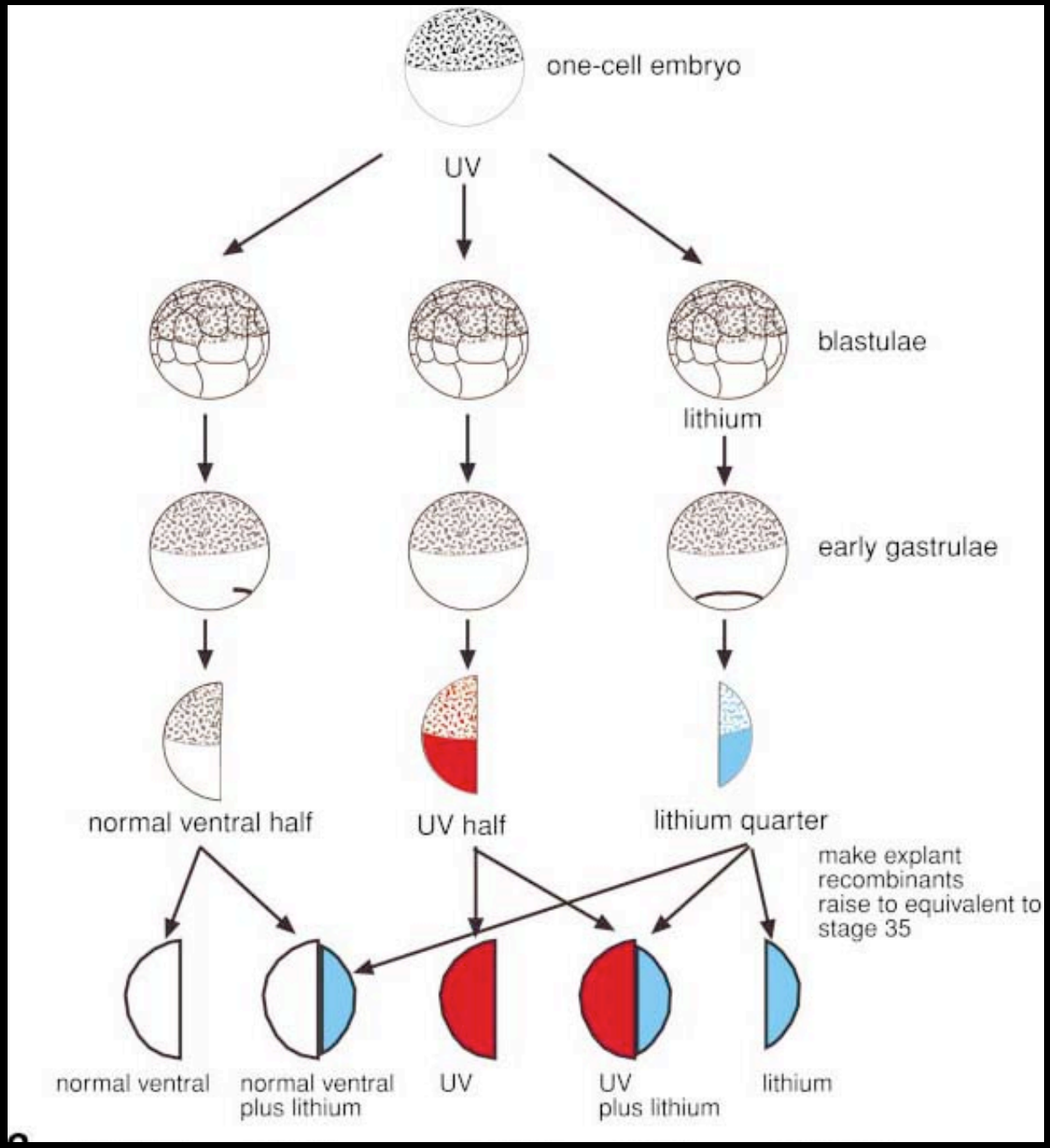
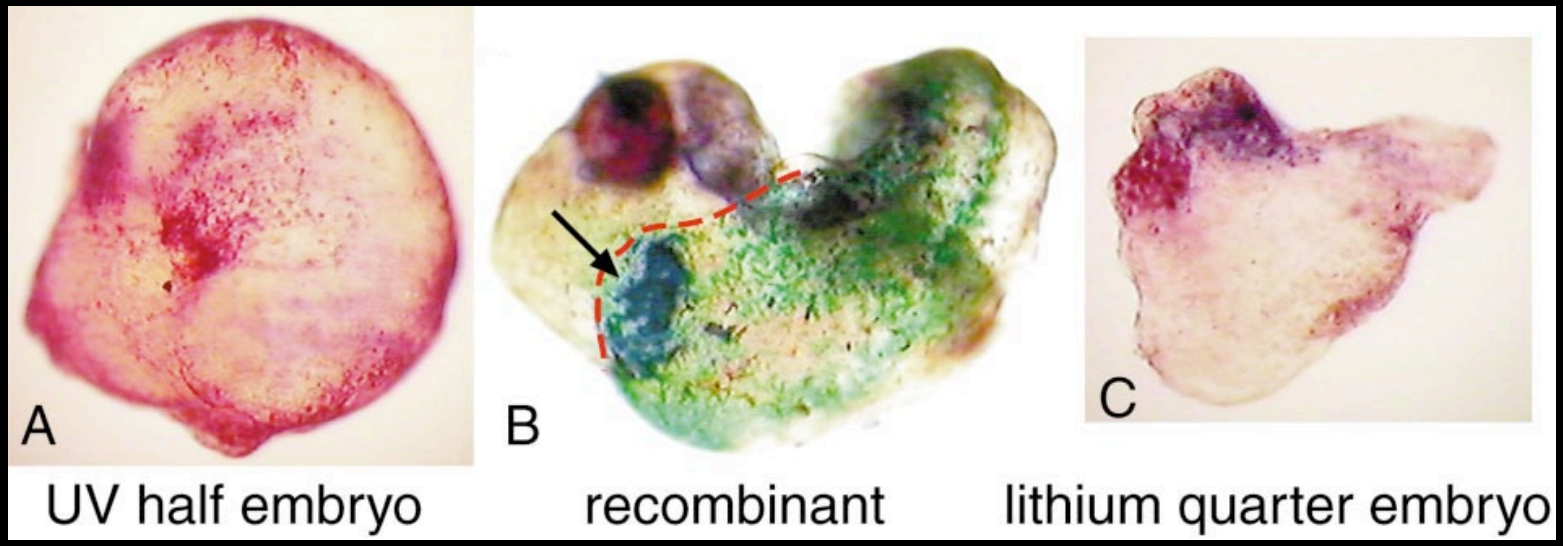
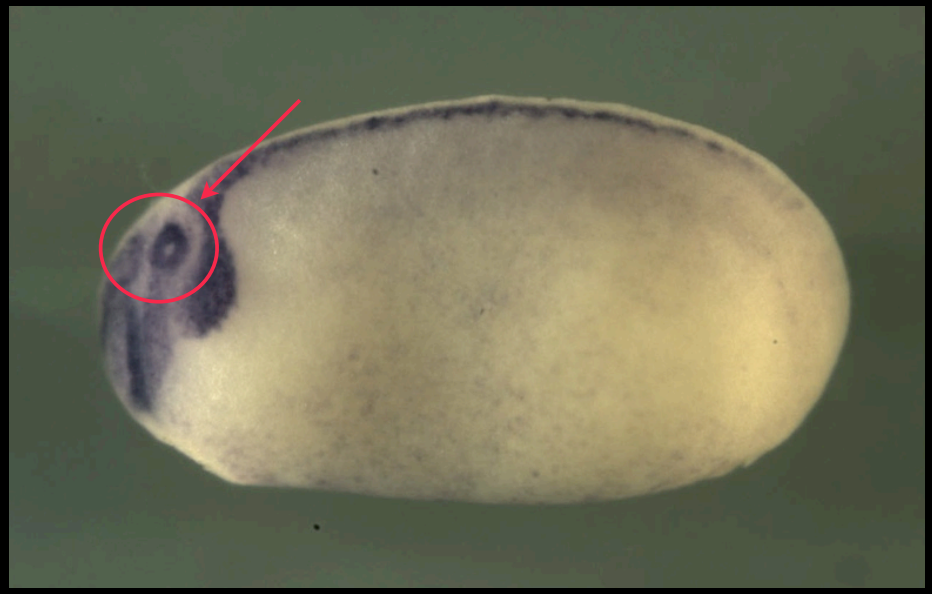

32-cell stage
3.5 hours p.f.
stage 8
5 hours p.f.
stage 34
44.5 hours p.f.
inject mRNA or
expression plasmid
pronephros
predictable subset of tissues inherit
injected molecules

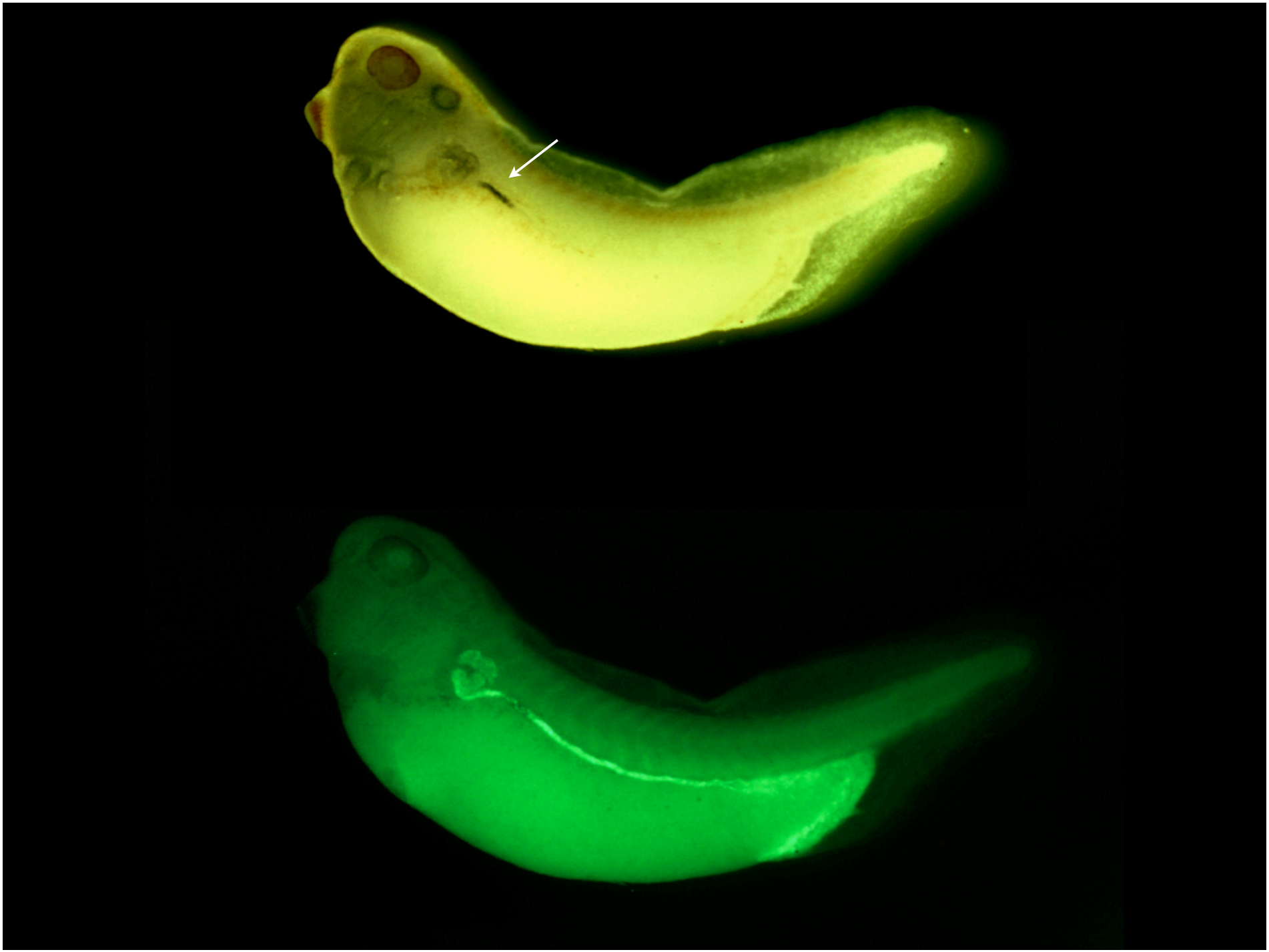

one-cell embryo
UV
blastulae
lithium
early gastrulae
normal ventral half
UV half
lithium quarter
make explant
recombinants
raise to equivalent to
stage 35
normal ventral
normal ventral
plus lithium
UV
UV
plus lithium
lithium

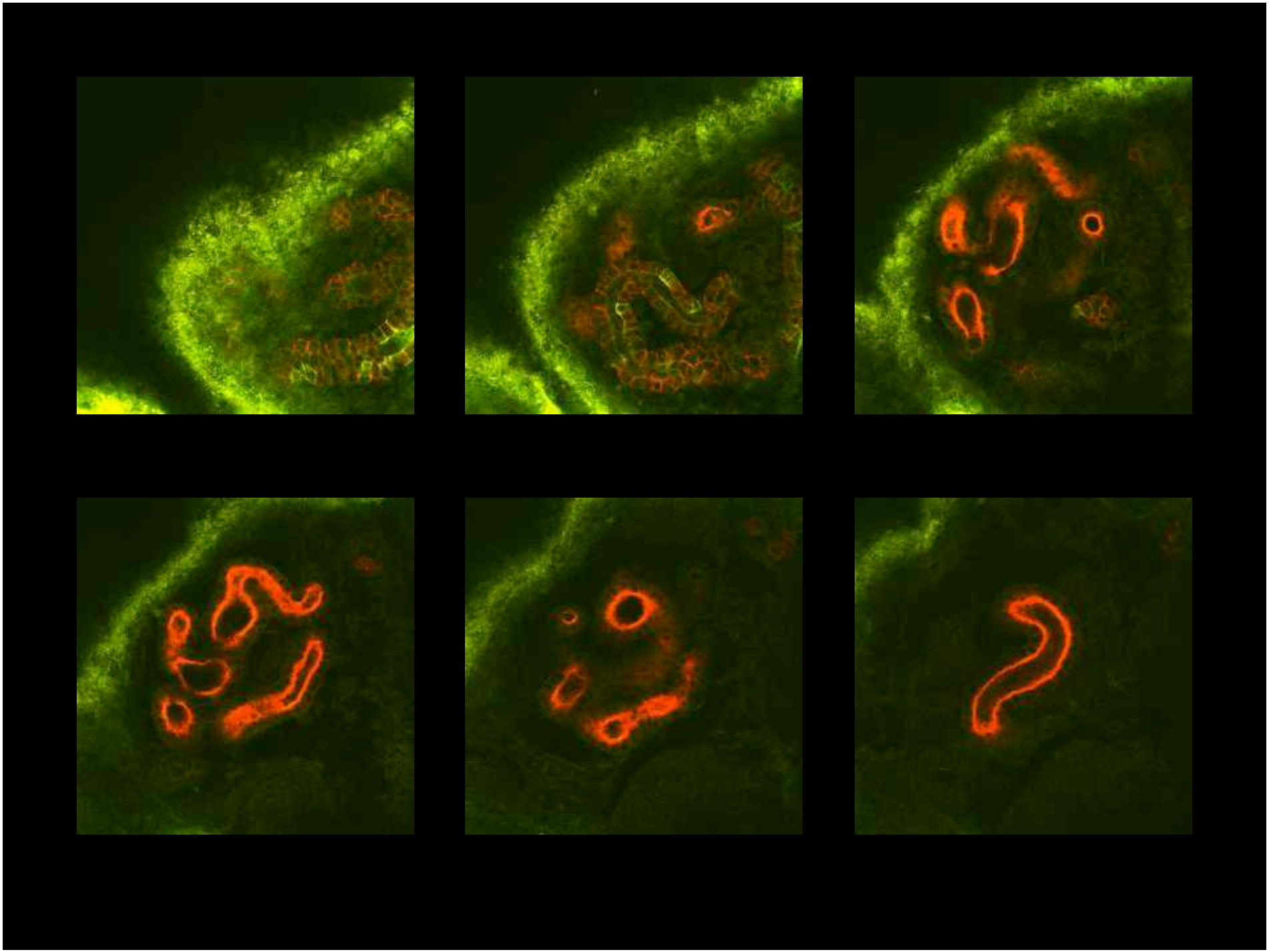

A
B
C
UV half embryo
recombinant
lithium quarter embryo

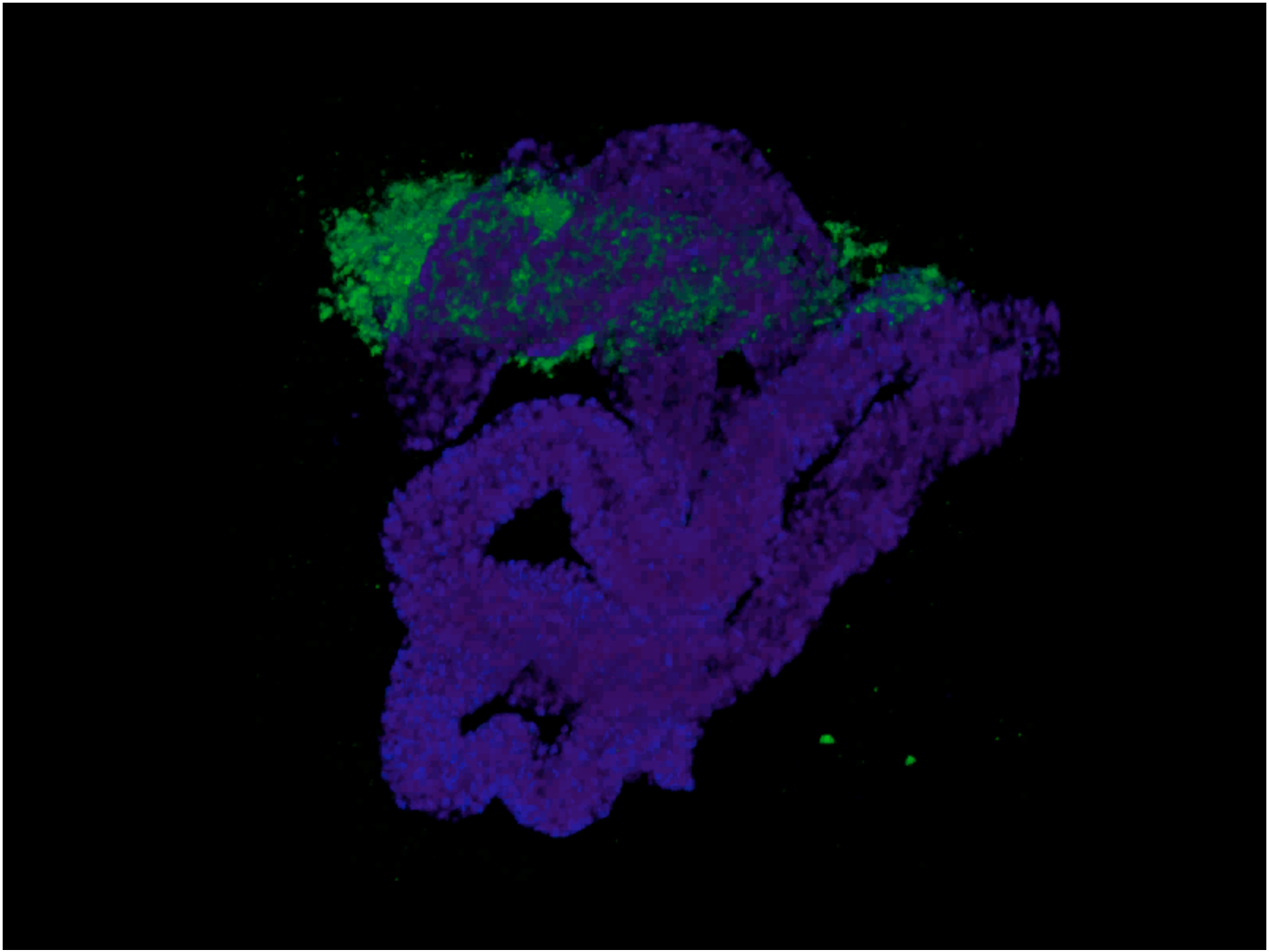
gene A

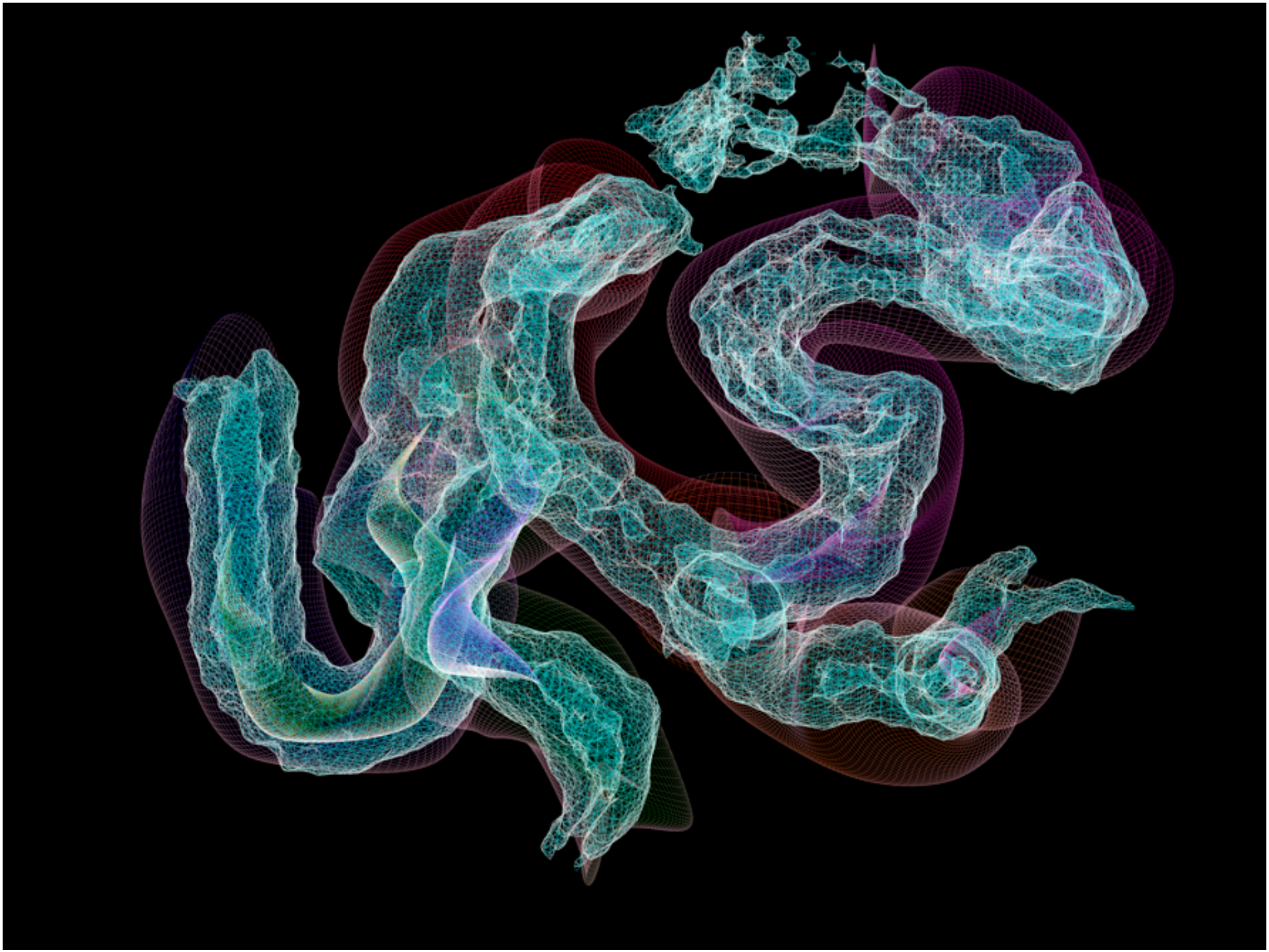
gene B

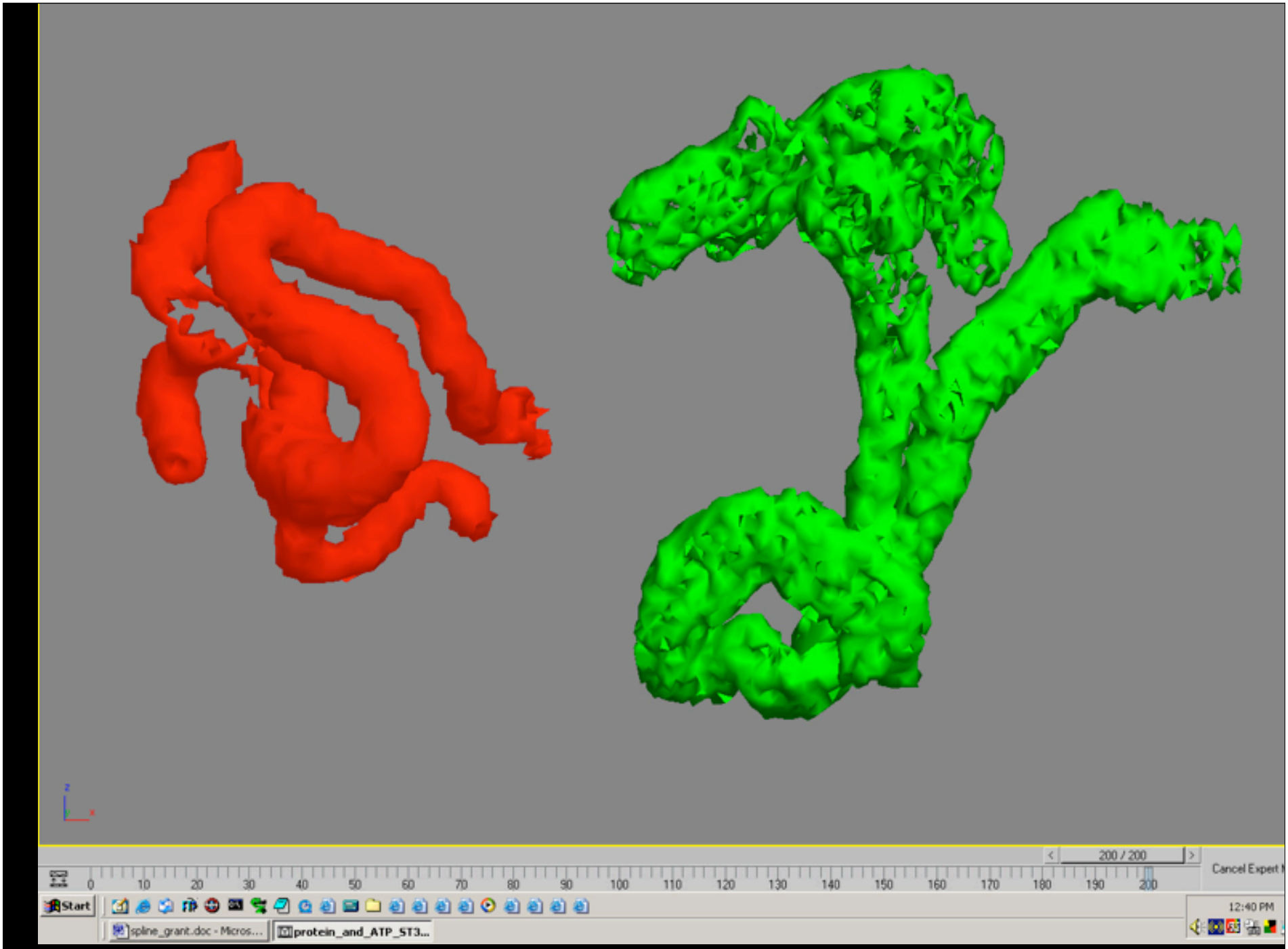








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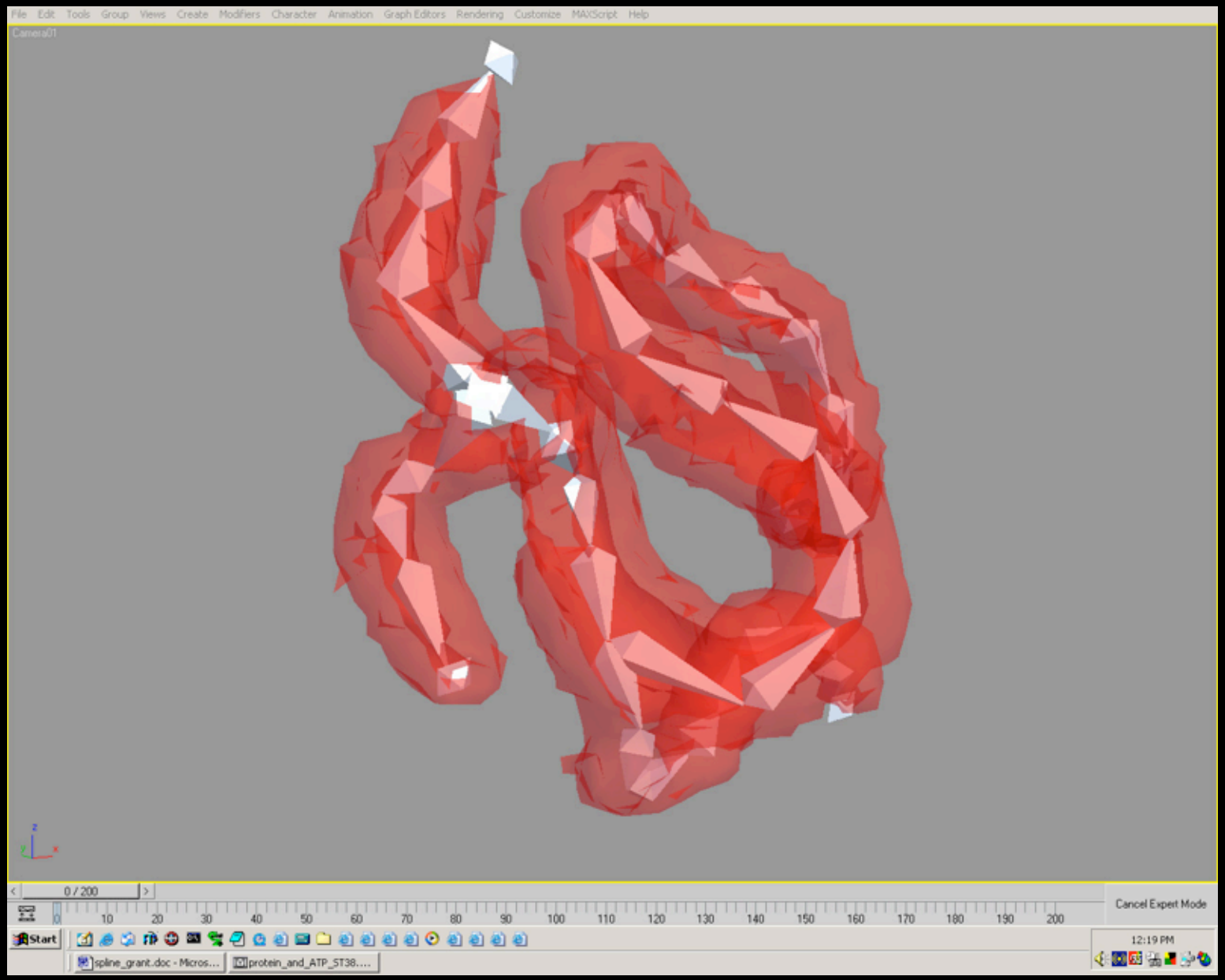
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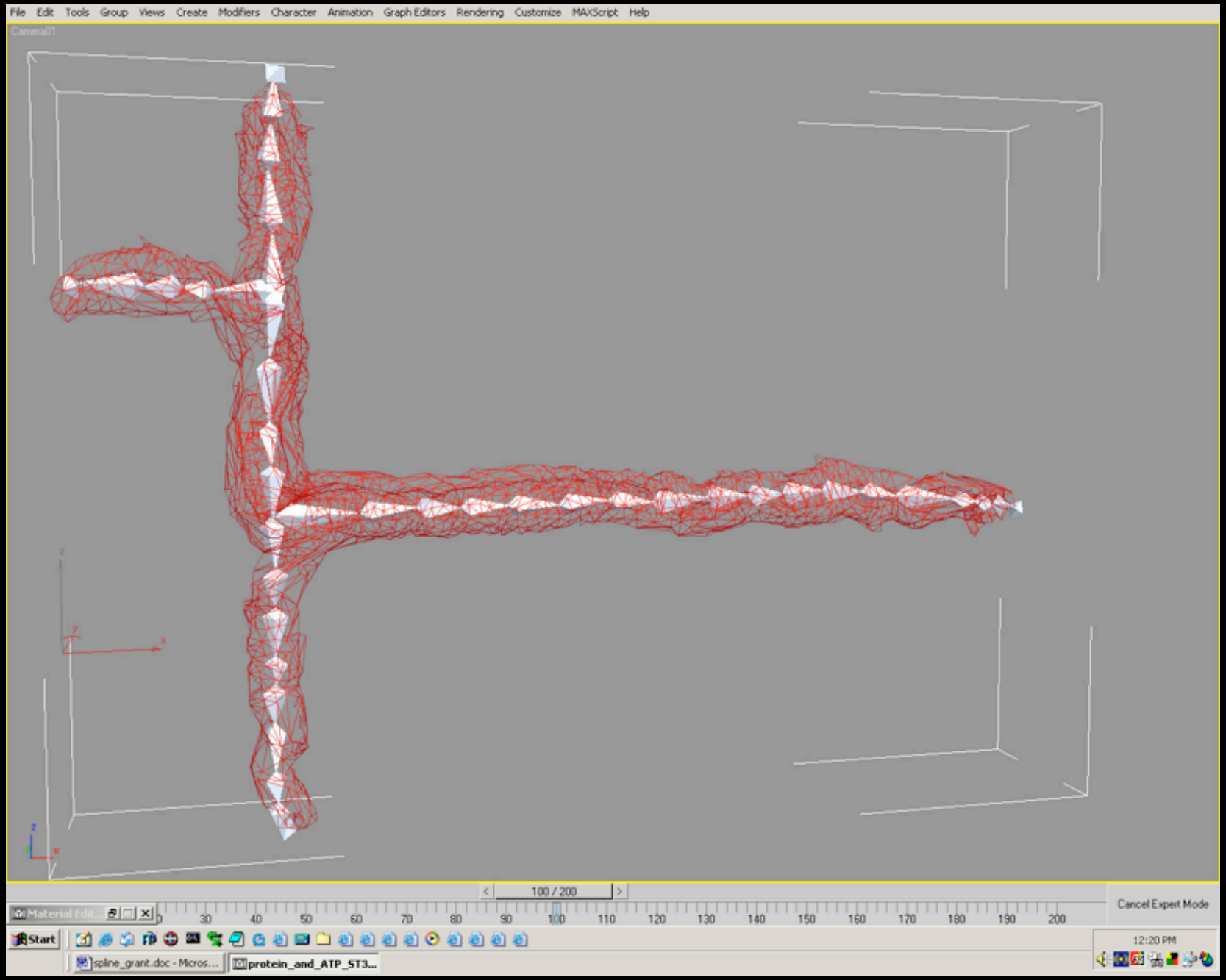
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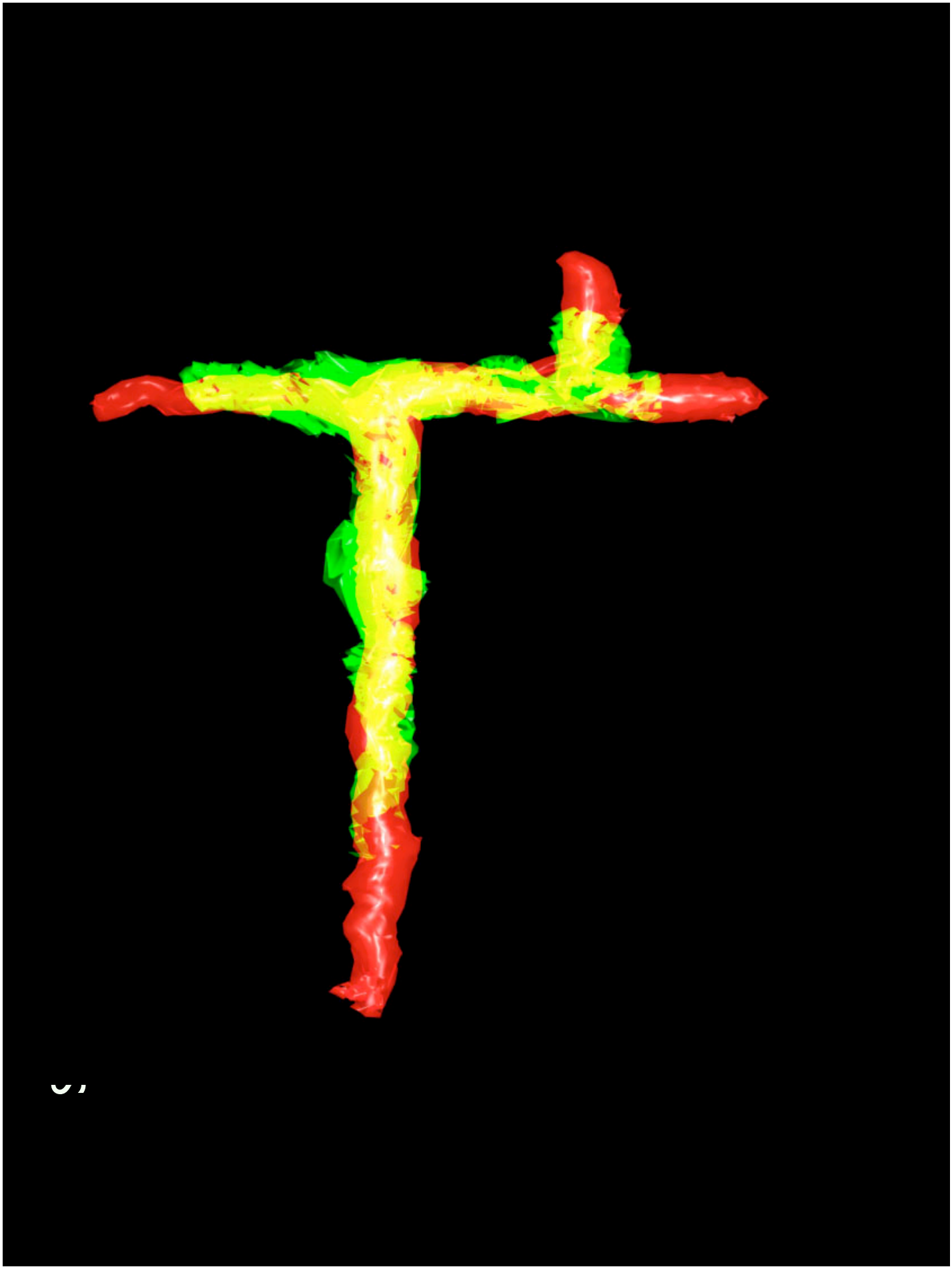
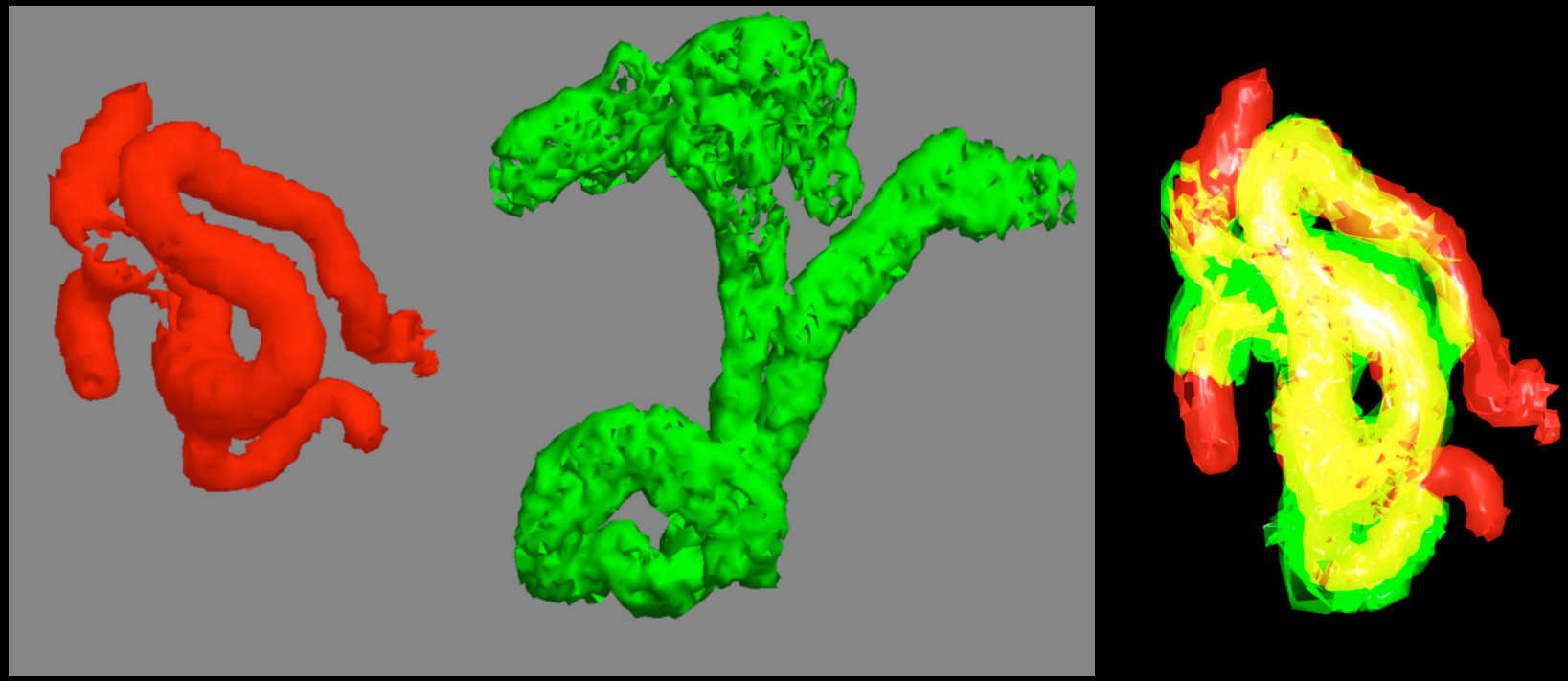
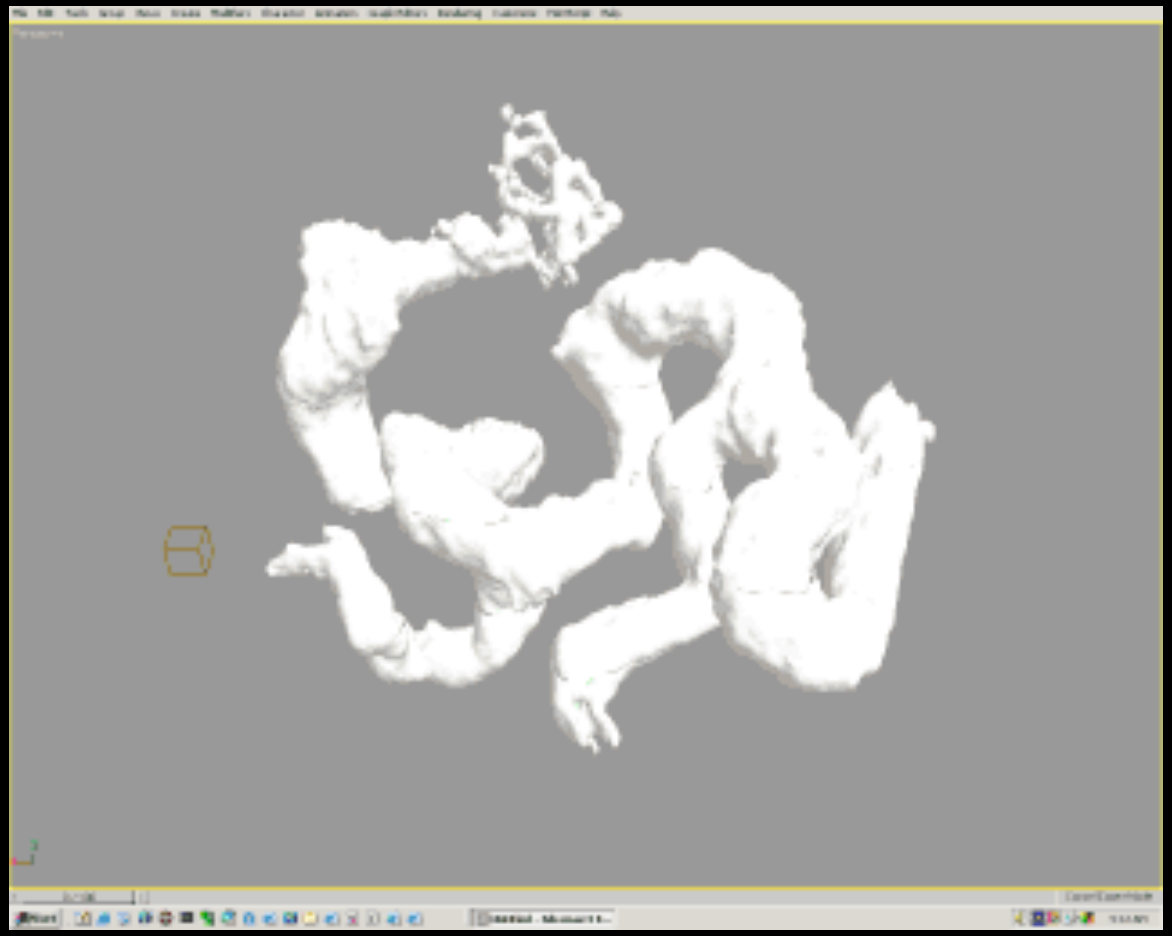


reverse time-line to refold





automated spline generation

gene A

ear
kidney

embryo stage: 23

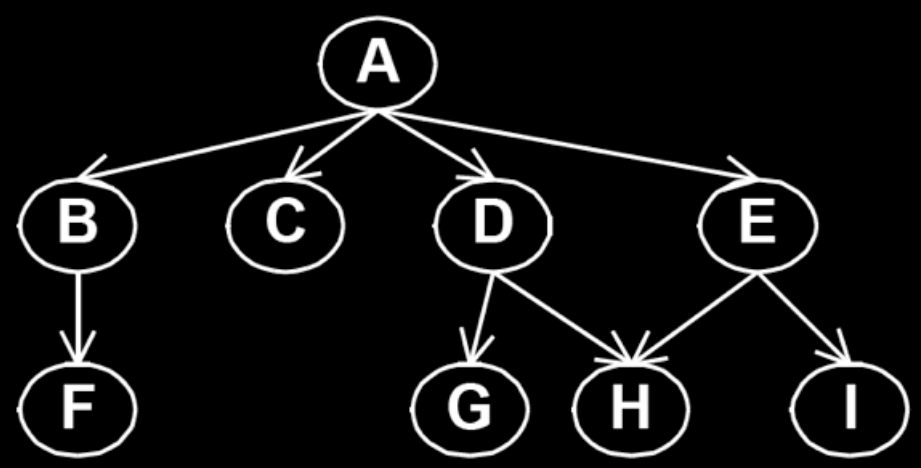
gene B

ear
branchial arches
neural crest

embryo stage: 23

Anatomical Ontology

- controlled vocabulary of terms
- map of relationships between terms



Summary | Expression | Gene Literature (21) | Interactants (105)

XB-FEAT-483692

Gene Symbol: pax8

Gene Name: paired box 8

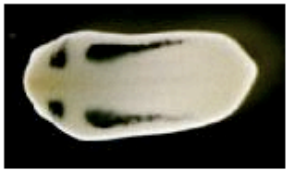
Anatomy terms

oviduct, whole organism

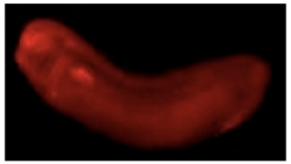
Anatomy stages

NF stage 15 to adult

Community Submitted Images



NF stage 23

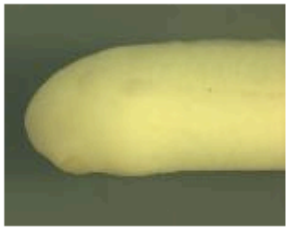


unspecified stage

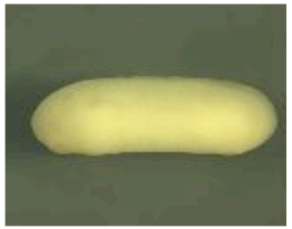
XDB3 & Axel DB Images

NF stage 28

NF stage 28



NF stage 28

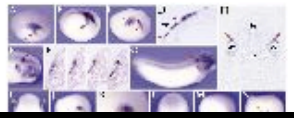


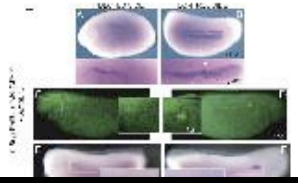
NF stage 28

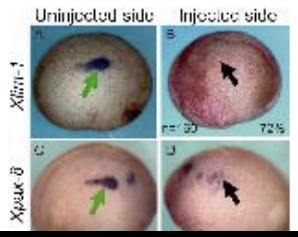
NF stage 28

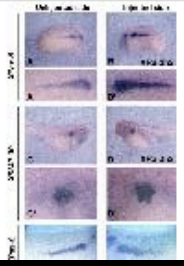
43 more [+]

Literature Images









21 more [+]

XB-ART-12317

Dev Biol. October 1, 1999; 214 (1): 46-59.

Synergism between Pax-8 and lim-1 in embryonic kidney development.

Carroll TJ , Vize PD .

Abstract

Pax genes encode a family of highly conserved DNA-binding transcription factors. These proteins play key roles in regulating a number of vertebrate a invertebrate developmental processes. Mutations in Pax-6 result in eye defects in flies, mice, and humans, and ectopic expression of this gene can trig development of ectopic compound eyes in flies. Likewise, mutation of other Pax genes in vertebrates results in the failure of specific differentiation pr Pax-1 causes skeletal defects; Pax-2, kidney defects; Pax-3 or Pax-7, neural crest defects; Pax-4, pancreatic beta-cell defects; Pax-5, B-cell defects; thyroid defects; and Pax-9, tooth defects. Although this class of genes is obviously required for the normal differentiation of a number of distinct orga they have not previously been demonstrated to be capable of directing the embryonic development of organs in vertebrates. In this report, it is demo that Pax-8 plays such a role in the establishment of the Xenopus embryonic kidney, the pronephros. However, in order to efficiently direct cells to for pronephric kidneys, XPax-8 requires cofactors, one of which may be the homeobox transcription factor Xlim-1. These two genes are initially expresse overlapping domains in late gastrulae, and cells expressing both genes will go on to form the kidney. Ectopic expression of either gene alone has a m effect on pronephric patterning, while coexpression of XPax-8 plus Xlim-1 results in the development of embryonic kidneys of up to five times normal and also leads to the development of ectopic pronephric tubules. This effect was synergistic rather than additive. XPax-2 can also synergize with Xlim- expression profile of this gene indicates that it normally functions later in pronephric development than does XPax-8. Together these data indicate tha interaction between XPax-8 and Xlim-1 is a key early step in the establishment of the pronephric primordium.

Pubmed Id: 10491256

Article link: Dev Biol.

delete

Xenbase Gene:Expression data for pax8 [Xenopus]

http://xenbase.org/gene/expression.do?method=displayGenePageExpression&geneId=483692&geneSymbol=pax8&geneNa

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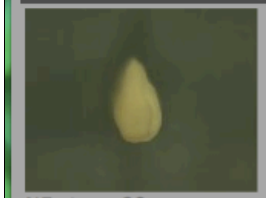
NF stage 23

XDB3 & Axel DB Images



NF stage 28

Literature Images

NF stage 35 and 36

PREV NEXT

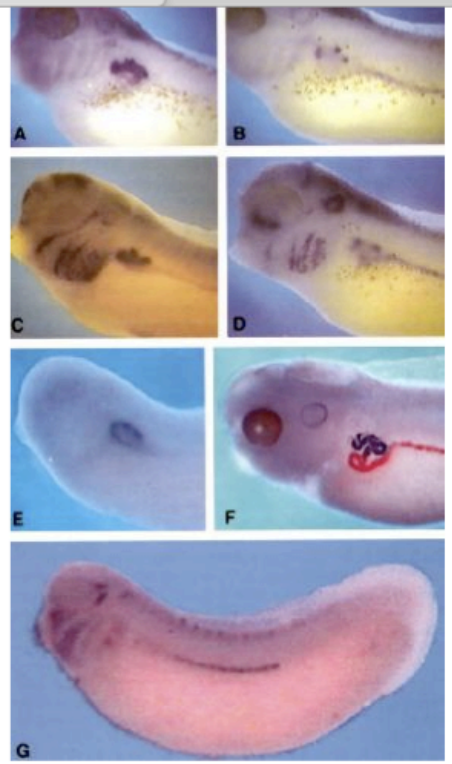


Fig. 3. Gene expression during pronephric development. A) Xpax-8 (pax8) stage 36. Within the pronephros only the pronephric tubules are stained. B) Xlim-1, stage 36. Strongest staining in within the nephrostomes and the pronephric duct, with weaker staining in the pronephric tubules. C). Xwnt-4, stage 35. Strong staining is in the pronephric tubules and weaker staining in the duct. D) Xpax-2, stage 36. E) xWT1, stage 36. F) Double stain with antibodies 3G8 (blue) and 4A6 (red). G) X-ret, stage 28. Staining is strongest in the posterior portion of the pronephric duct.

Image published in Molecular regulation of pronephric development.

Species	Stage(s)	Tissue	Annotation Status
Xenopus	NF stage 35 and 36	pronephric kidney early proximal tubule	Automated curation, no stage curation, no tissue curation

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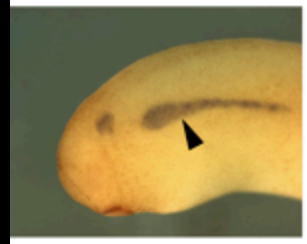

stage 25 lateral view

stage 25 dorsal view

Phenote 1.4

Source	XDB3
Image	XL044I19_RA036_2g09_r39_2
Gene	pax8
Stage	NF stage 25
Anatomy (XAO)	pronephric mesenchyme (Comp)
Expression Qualifier	uniform
Present or Absent	present
Evidence	inferred from in situ hybridization
Comments	

Term Info

pronephric mesenchyme

ONTOLOGY xenopus_anatomy

ID XAO:0000264

Related Synonyms: pronephric anlage
pronephric bulge
pronephric primordium

Definition Portion of tissue that consists of the mesenchymal precursor to the pronephric kidney and that begins to separate from the intermediate mesoderm at NF stage 21 and epithelializes by NF stage 30.

Superclass portion of tissue

starts during (start_stage) NF stage 21

ends during (end_stage) NF stage 29 and 30

develops from (develops_from) intermediate mesoderm

develops into (develops_into) nephrostome
pronephric kidney
pronephric duct

Source	Image	Gene	Stage	Anatomy	Expression Qualifier	Present or Absent	Evidence
XDB3	XL044I19...	pax8	NF stage 25	ear vesicle	uniform	present	inferred from in situ hybridization
XDB3	XL044I19...	pax8	NF stage 25	pronephric mesenchyme	uniform	present	inferred from in situ hybridization

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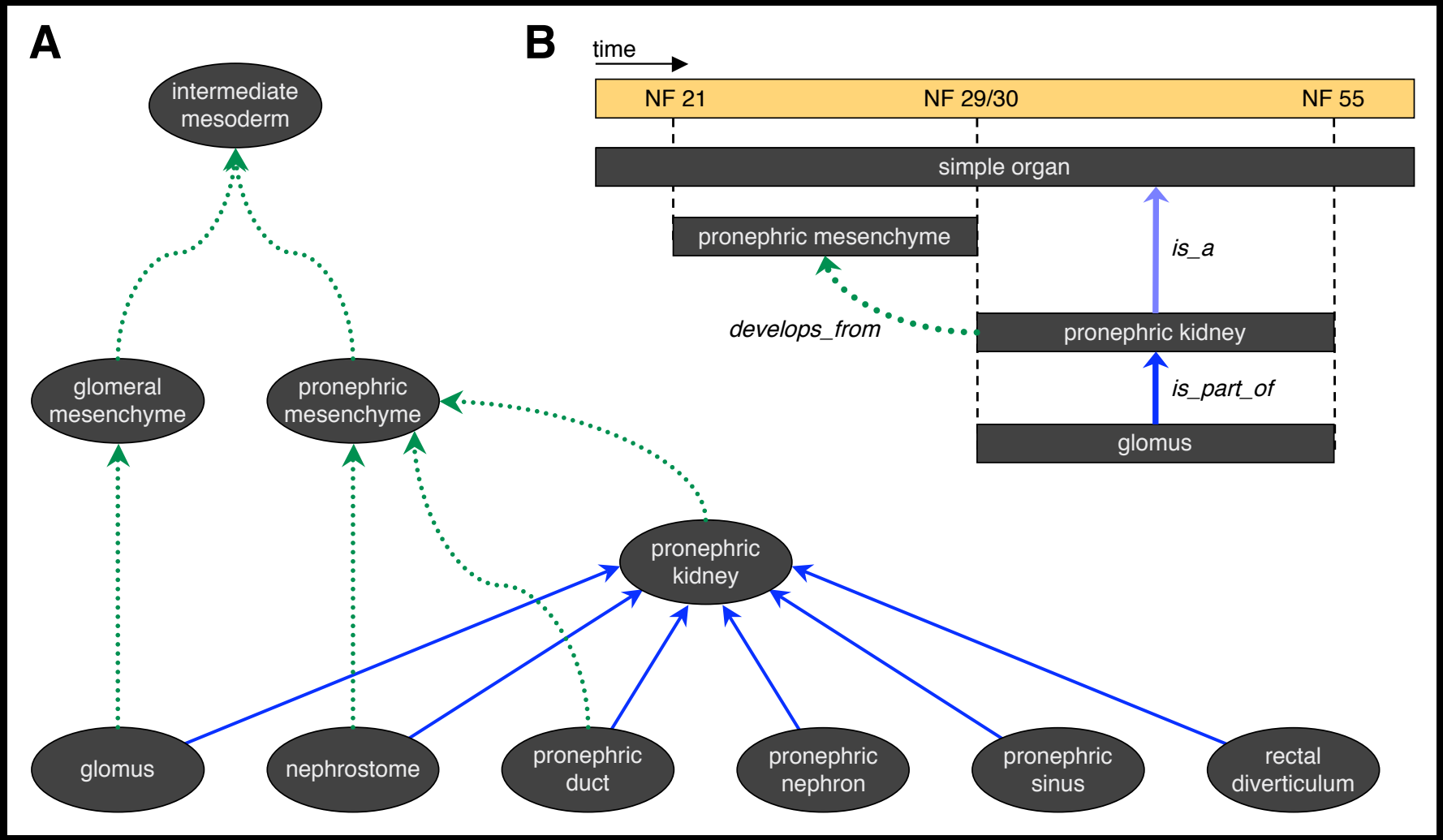
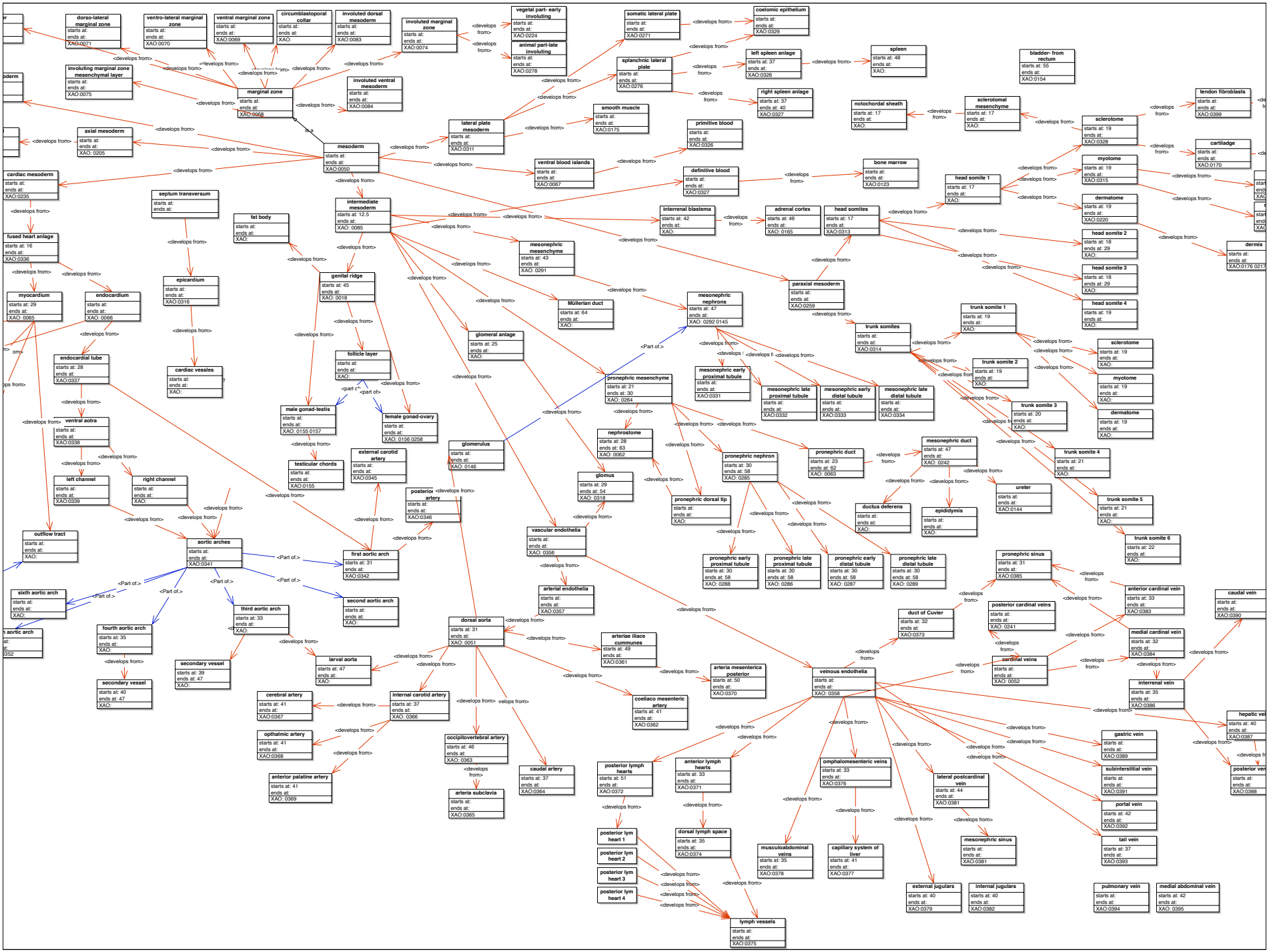
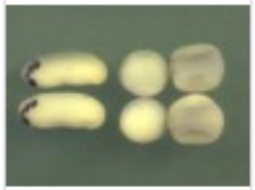

A
intermediate mesoderm
glomeral mesenchyme
pronephric mesenchyme
pronephric kidney
glomus
nephrostome
pronephric duct
pronephric nephron
pronephric sinus
rectal diverticulum
B
time
NF 21
NF 29/30
NF 55
simple organ
pronephric mesenchyme
is_a
develops_from
pronephric kidney
is_part_of
glomus


dorso-lateral marginal zone
starts at:
ends at:
XAO:0071
ventro-lateral marginal zone
starts at:
ends at:
XAO:0070
ventral marginal zone
starts at:
ends at:
XAO:0069
circumblastoporal collar
starts at:
ends at:
XAO:
involuted dorsal mesoderm
starts at:
ends at:
XAO:0083
involuted marginal zone
starts at:
ends at:
XAO:0074
vegetal part- early involuting
starts at:
ends at:
XAO:0224
animal part-late involuting
starts at:
ends at:
XAO:0278
somatic lateral plate
starts at:
ends at:
XAO:0271
coelomic epithelium
starts at:
ends at:
XAO:0329
spleen
starts at: 48
ends at:
XAO:
bladder- from rectum
starts at: 55
ends at:
XAO:0154
involuting marginal zone mesenchymal layer
starts at:
ends at:
XAO:0075
marginal zone
starts at:
ends at:
XAO:0068
involuted ventral mesoderm
starts at:
ends at:
XAO:0084
splanchnic lateral plate
starts at:
ends at:
XAO:0276
left spleen anlage
starts at: 37
ends at:
XAO:0326
right spleen anlage
starts at: 37
ends at: 40
XAO:0327
notochordal sheath
starts at: 17
ends at:
XAO:
sclerotomal mesenchyme
starts at: 17
ends at:
XAO:
tendon fibroblasts
starts at:
ends at:
XAO:0399
sclerotome
starts at: 19
ends at:
XAO:0328
cartilage
starts at:
ends at:
XAO:0170
axial mesoderm
starts at:
ends at:
XAO: 0205
mesoderm
starts at:
ends at:
XAO:0050
lateral plate mesoderm
starts at:
ends at:
XAO:0311
smooth muscle
starts at:
ends at:
XAO:0175
primitive blood
starts at:
ends at:
XAO:0326
ventral blood islands
starts at:
ends at:
XAO:0067
definitive blood
starts at:
ends at:
XAO:0327
bone marrow
starts at:
ends at:
XAO:0123
myotome
starts at: 19
ends at:
XAO:0315
cardiac mesoderm
starts at:
ends at:
XAO:0235
septum transversum
starts at:
ends at:
intermediate mesoderm
starts at: 12.5
ends at:
XAO: 0085
interrenal blastema
starts at: 42
ends at:
XAO:
adrenal cortex
starts at: 46
ends at:
XAO: 0165
head somites
starts at: 17
ends at:
XAO:0313
head somite 1
starts at: 17
ends at:
XAO:
dermatome
starts at: 19
ends at:
XAO:0220
fat body
starts at:
ends at:
XAO:
fused heart anlage
starts at: 16
ends at:
XAO:0336
mesonephric mesenchyme
starts at: 43
ends at:
XAO: 0291
head somite 2
starts at: 18
ends at: 29
XAO:
dermis
starts at:
ends at:
XAO:0176 0217
head somite 3
starts at: 18
ends at: 29
XAO:
head somite 4
starts at: 19
ends at:
XAO:
epicardium
starts at:
ends at:
XAO:0316
genital ridge
starts at: 45
ends at:
XAO: 0018
Müllerian duct
starts at: 64
ends at:
XAO:
mesonephric nephrons
starts at: 47
ends at:
XAO: 0292 0145
paraxial mesoderm
starts at:
ends at:
XAO:0259
myocardium
starts at: 29
ends at:
XAO: 0065
endocardium
starts at:
ends at:
XAO: 0066
trunk somites
starts at:
ends at:
XAO:0314
trunk somite 1
starts at: 19
ends at:
XAO:
glomeral anlage
starts at: 25
ends at:
XAO:
sclerotome
starts at: 19
ends at:
XAO:
endocardial tube
starts at: 28
ends at:
XAO:0337
follicle layer
starts at:
ends at:
XAO:
cardiac vessles
starts at:
ends at:
XAO:
mesonephric early proximal tubule
starts at:
ends at:
XAO:0331
mesonephric late proximal tubule
starts at:
ends at:
XAO:0332
mesonephric early distal tubule
starts at:
ends at:
XAO:0333
mesonephric late distal tubule
starts at:
ends at:
XAO:0334
trunk somite 2
starts at: 19
ends at:
XAO:
pronephric mesenchyme
starts at: 21
ends at: 30
XAO: 0264
myotome
starts at: 19
ends at:
XAO:
dermalome
starts at: 19
ends at:
XAO:
ventral aotra
starts at:
ends at:
XAO:0338
male gonad-testis
starts at:
ends at:
XAO: 0155 0157
female gonad-ovary
starts at:
ends at:
XAO: 0156 0258
trunk somite 3
starts at: 20
ends at:
XAO:
nephrostome
starts at: 28
ends at: 63
XAO: 0062
glomerulus
starts at:
ends at:
XAO: 0146
external carotid artery
starts at:
ends at:
XAO:0345
testicular chords
starts at:
ends at:
XAO:0155
mesonephric duct
starts at: 47
ends at:
XAO: 0242
pronephric duct
starts at: 23
ends at: 62
XAO: 0063
pronephric nephron
starts at: 30
ends at: 58
XAO: 0285
trunk somite 4
starts at: 21
ends at:
XAO:
left channel
starts at:
ends at:
XAO:0339
right channel
starts at:
ends at:
XAO:
glomus
starts at: 29
ends at: 54
XAO: 0318
ureter
starts at:
ends at:
XAO:0144
posterior artery
starts at:
ends at:
XAO:0346
pronephric dorsal tip
starts at:
ends at:
XAO:
ductus deferens
starts at:
ends at:
XAO:
epididymis
starts at:
ends at:
XAO:
trunk somite 5
starts at: 21
ends at:
XAO:
outflow tract
starts at:
ends at:
XAO:
aortic arches
starts at:
ends at:
XAO:0341
vascular endothelia
starts at:
ends at:
XAO: 0356
trunk somite 6
starts at: 22
ends at:
XAO:
first aortic arch
starts at: 31
ends at:
XAO:0342
pronephric early proximal tubule
starts at: 30
ends at: 58
XAO: 0288
pronephric late proximal tubule
starts at: 30
ends at: 58
XAO: 0286
pronephric early distal tubule
starts at: 30
ends at: 58
XAO: 0287
pronephric late distal tubule
starts at: 30
ends at: 58
XAO: 0289
pronephric sinus
starts at: 31
ends at:
XAO:0385
sixth aortic arch
starts at:
ends at:
XAO:
arterial endothelia
starts at:
ends at:
XAO:0357
anterior cardinal vein
starts at: 33
ends at:
XAO:0383
caudal vein
starts at:
ends at:
XAO:0390
second aortic arch
starts at:
ends at:
XAO:
third aortic arch
starts at: 33
ends at:
XAO:
dorsal aorta
starts at: 31
ends at:
XAO: 0051
duct of Cuvier
starts at: 32
ends at:
XAO:0373
posterior cardinal veins
starts at:
ends at:
XAO: 0241
medial cardinal vein
starts at: 32
ends at:
XAO:0384
fourth aortic arch
starts at: 35
ends at:
XAO:
arteriae iliace cummunes
starts at: 49
ends at:
XAO:0361
larval aorta
starts at: 47
ends at:
XAO:
secondary vessel
starts at: 39
ends at: 47
XAO:
arteria mesenterica posterior
starts at: 50
ends at:
XAO:0370
veinous endothelia
starts at:
ends at:
XAO: 0358
cardinal veins
starts at:
ends at:
XAO: 0052
interrenal vein
starts at: 35
ends at:
XAO:0386
secondary vessel
starts at: 40
ends at: 47
XAO:
cerebral artery
starts at: 41
ends at:
XAO:0367
internal carotid artery
starts at: 37
ends at:
XAO: 0366
coeliaco mesenteric artery
starts at: 41
ends at:
XAO:0362
hepatic vei
starts at: 40
ends at:
XAO:0387
opthalmic artery
starts at: 41
ends at:
XAO:0368
occipitovertebral artery
starts at: 46
ends at:
XAO: 0363
gastric vein
starts at:
ends at:
XAO:0389
posterior lymph hearts
starts at: 51
ends at:
XAO:0372
anterior lymph hearts
starts at: 33
ends at:
XAO:0371
omphalomesenteric veins
starts at: 33
ends at:
XAO:0376
lateral postcardinal vein
starts at: 44
ends at:
XAO:0381
subinterstitial vein
starts at:
ends at:
XAO:0391
posterior ven
starts at:
ends at:
XAO:0388
anterior palatine artery
starts at: 41
ends at:
XAO: 0369
caudal artery
starts at: 37
ends at:
XAO:0364
arteria subclavia
starts at:
ends at:
XAO:0365
portal vein
starts at: 42
ends at:
XAO:0392
tail vein
starts at: 37
ends at:
XAO:0393
posterior lym heart 1
dorsal lymph space
starts at: 35
ends at:
XAO:0374
musculoabdominal veins
starts at: 35
ends at:
XAO:0378
capillary system of liver
starts at: 41
ends at:
XAO:0377
mesonephric sinus
starts at:
ends at:
XAO:0381
posterior lym heart 2
posterior lym heart 3
posterior lym heart 4
external jugulars
starts at: 40
ends at:
XAO:0379
internal jugulars
starts at: 40
ends at:
XAO:0382
pulmonary vein
starts at:
ends at:
XAO:0394
medial abdominal vein
starts at: 42
ends at:
XAO: 0395
lymph vessels
starts at:
ends at:
XAO:0375
<develops from>
<Part of.>


XL069c09_all2.jpg


XL069c09_all.jpg


XL069c09_St32_1.jpg


XL069c09_St32_2.jpg


XL069c09_St32_anter...


XL069c09_St32_dors...


069c09_St32_head...


XL069c09_St32_lateral2.jpg


XL069c09_St32_later...


XL069c09_St32_poste...


XL069c09_St32_ventr...


XL094l20_all.jpg

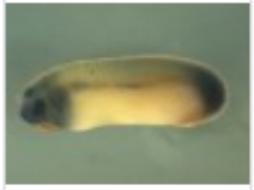

094l20_St27_lateral...


XL157e21_all.jpg


XL157e21_St30_later...


XL040i09_all.jpg


XL040i09_St25_l.jpg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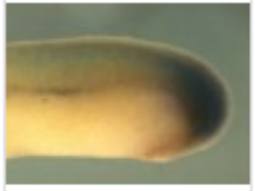
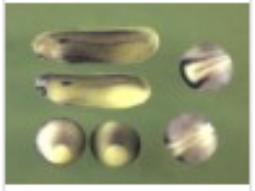
040i09_St25_poster...

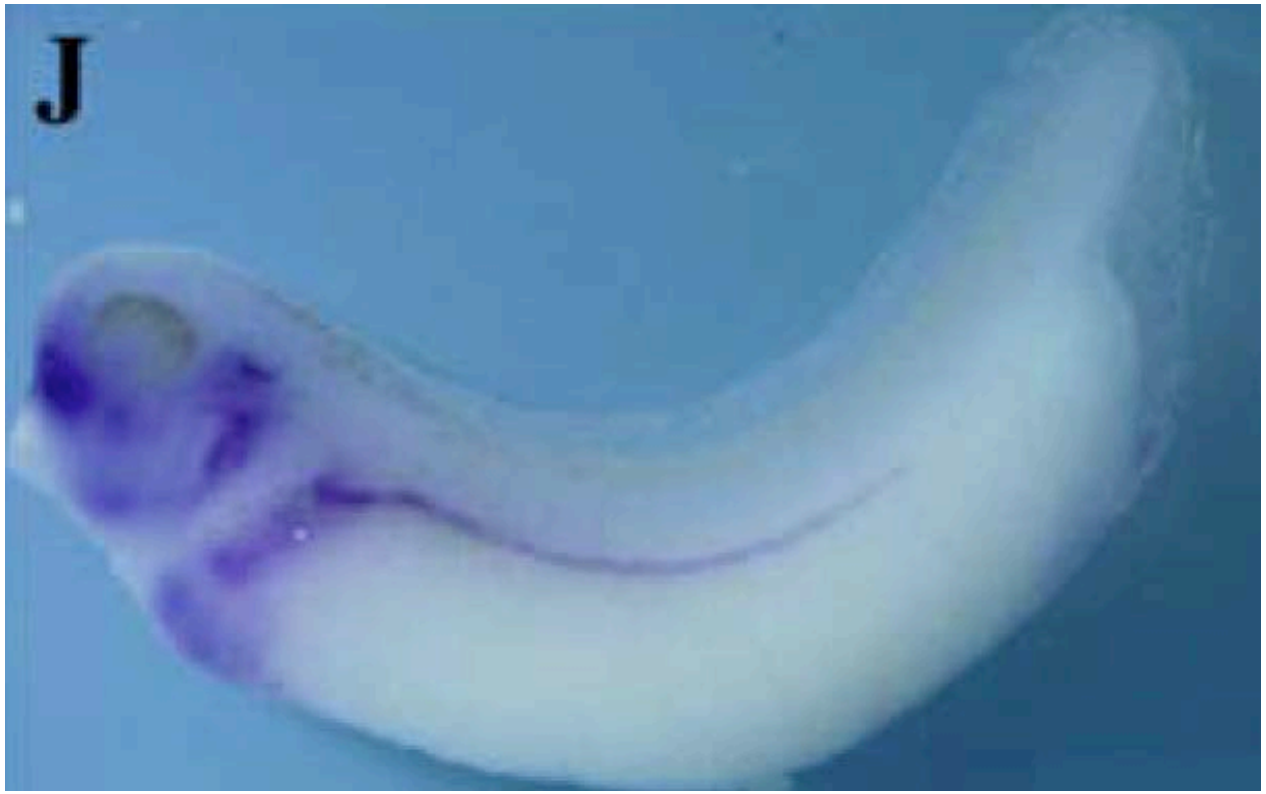

XL040i09_St25_tail.jpg


XL040i09_St25_ventr...

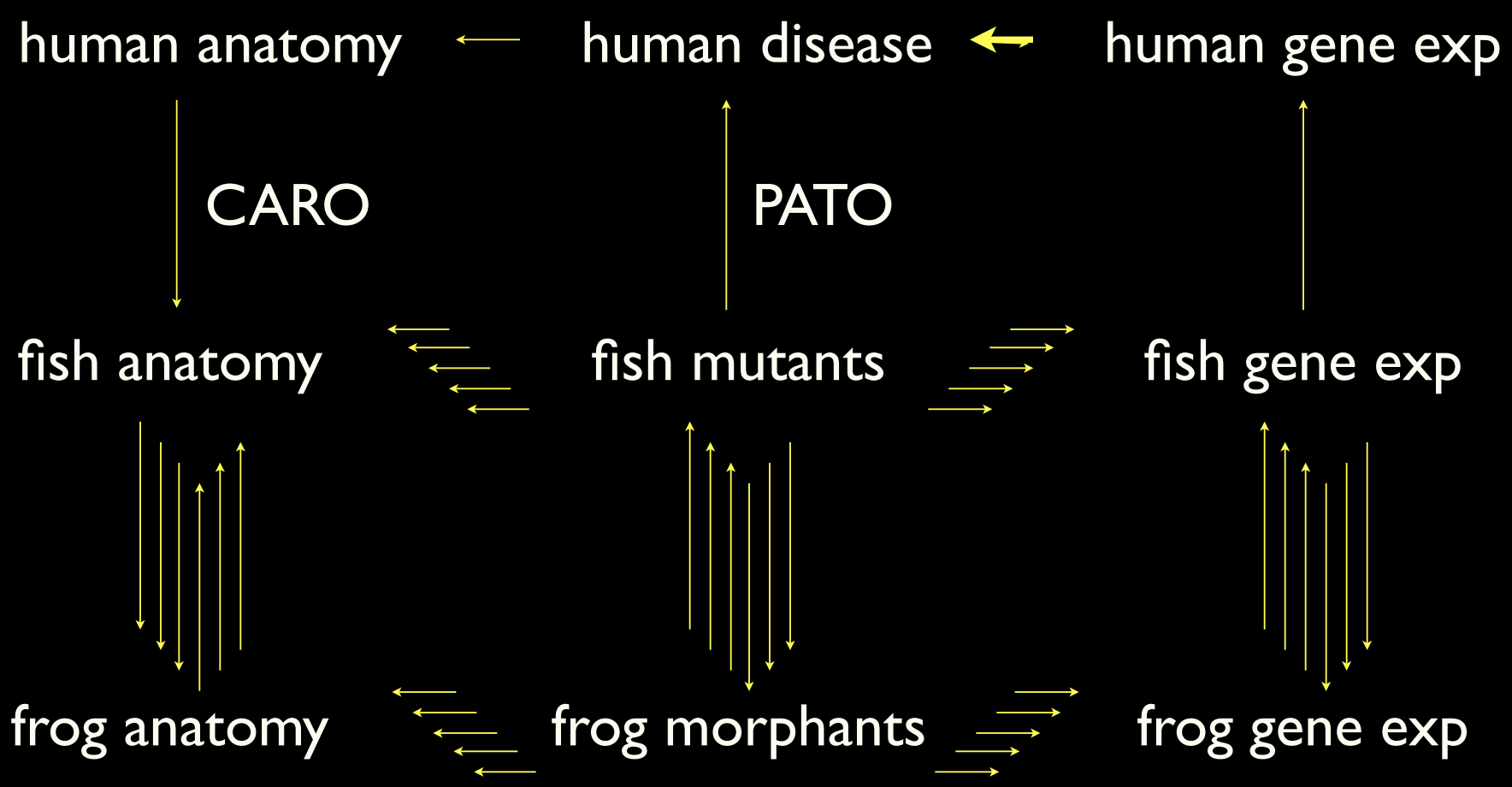

XL170d08_all.jpg

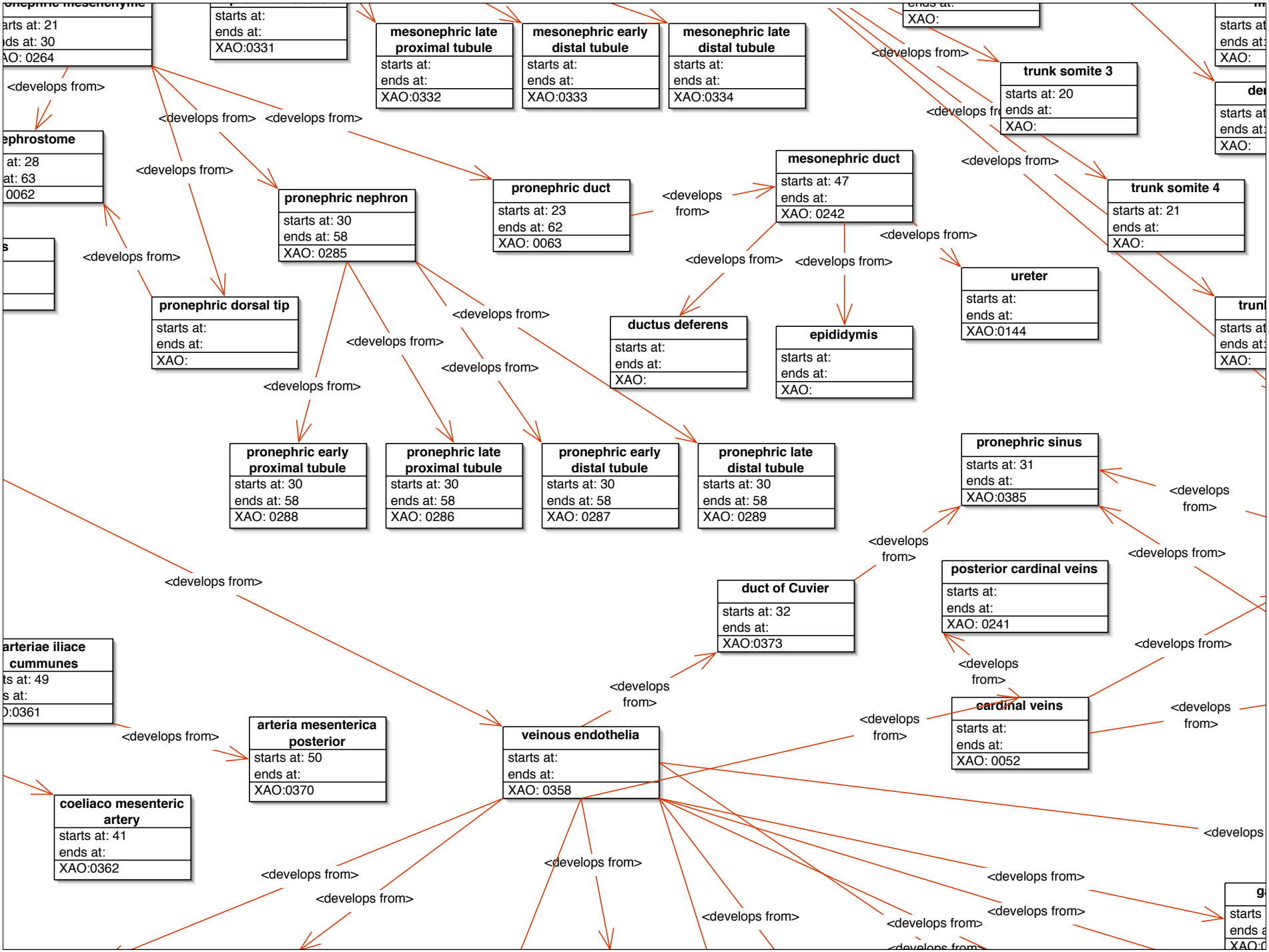

XL170d08_St27_anter...


XL170d08_St27_dors...



XAO:1000345	= NF stage 33
XAO:0000567	= liver
XAO:0000213	= pronephric duct
XAO:0000332	= cranial ganglia


human anatomy
human disease
human gene exp
CARO
PATO
fish anatomy
fish mutants
fish gene exp
frog anatomy
frog morphants
frog gene exp


starts at: 21
ends at: 30
XAO: 0264
starts at:
ends at:
XAO:0331
mesonephric late proximal tubule
starts at:
ends at:
XAO:0332
mesonephric early distal tubule
starts at:
ends at:
XAO:0333
mesonephric late distal tubule
starts at:
ends at:
XAO:0334
XAO:
trunk somite 3
starts at: 20
ends at:
XAO:
ephrostome
at: 28
at: 63
0062
pronephric nephron
starts at: 30
ends at: 58
XAO: 0285
pronephric duct
starts at: 23
ends at: 62
XAO: 0063
mesonephric duct
starts at: 47
ends at:
XAO: 0242
trunk somite 4
starts at: 21
ends at:
XAO:
ureter
starts at:
ends at:
XAO:0144
pronephric dorsal tip
starts at:
ends at:
XAO:
ductus deferens
starts at:
ends at:
XAO:
epididymis
starts at:
ends at:
XAO:
pronephric early proximal tubule
starts at: 30
ends at: 58
XAO: 0288
pronephric late proximal tubule
starts at: 30
ends at: 58
XAO: 0286
pronephric early distal tubule
starts at: 30
ends at: 58
XAO: 0287
pronephric late distal tubule
starts at: 30
ends at: 58
XAO: 0289
pronephric sinus
starts at: 31
ends at:
XAO:0385
posterior cardinal veins
starts at:
ends at:
XAO: 0241
duct of Cuvier
starts at: 32
ends at:
XAO:0373
arteriae iliace cummunes
ts at: 49
s at:
0:0361
arteria mesenterica posterior
starts at: 50
ends at:
XAO:0370
veinous endothelia
starts at:
ends at:
XAO: 0358
cardinal veins
starts at:
ends at:
XAO: 0052
coeliaco mesenteric artery
starts at: 41
ends at:
XAO:0362
<develops from>

- ontologies accurately represent gene expression patterns in space and time
- ontologies can use other ontologies for predicting gene function

acknowledgments...

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