<html>

<head>

<script>

function call\_close(){

var buttonstring = '<form><input type=button name=close value=Close onclick=window.close();></form>';

document.writeln(buttonstring);

}

</script>

<title>

ZFIN Zebrafish Developmental Stages

</title>

</head>

<script language="JavaScript" src="/javascript/header.js"></script> <table bgcolor="#ffcccc" width="50%" align="center"> <tr><td class="small"> This material is from the 4th edition of The Zebrafish Book. The 5th edition is available <a href="http://zebrafish.org/zirc/orders/buyBookQ.php?item=Book&id=book&detail=The%20Zebrafish%20Book">in print</a> and within the <a href="https://wiki.zfin.org/display/prot/ZFIN+Protocol+Wiki">ZFIN Protocol Wiki</a>. </td></tr> <table>

<body>

<h2 align="center">Zebrafish Developmental Staging Series</h2>

<p>Embryonic stages are modified from <a href="stages.html">Kimmel et al., 1995.

Developmental Dynamics 203:253-310</a>. Copyright &copy;1995 Wiley-Liss, Inc.

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Inc.</p>

<p>Select a stage name below to get a detailed description and images. You can

also browse the zebrafish <a href="/action/ontology/search">Anatomical

Ontology</a> (AO) to show anatomical terms that are present at that stage.</p>

<p>(h = hours of development at 28.5&deg;C)</p>

<table width="100%" border="0" cellspacing="0" cellpadding="5">

<tr>

<td bgcolor="#cccccc"><strong>Period</strong></td>

<td bgcolor="#cccccc"><strong>Stage</strong></td>

<td nowrap bgcolor="#cccccc" style="padding-right:15px"><strong>Begins</strong></td>

<td bgcolor="#cccccc"><strong>Developmental Landmarks</strong></td>

<td bgcolor="#cccccc"><strong>Anatomy</strong></td>

</tr>

<tr>

<td nowrap class="separator"><strong><a name="Zygote" href="zygote.html">Zygote</a></strong>

(0 - 0.75 h)</td>

<td class="separator"><a href="zygote.html">1-cell</a></td>

<td class="separator">0.00 h</td>

<td class="separator">Cytoplasm streams toward animal pole to form blastodisc</td>

<td class="separator"><a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-4">Browse

AO</a></td>

</tr>

<tr>

<td rowspan="6" valign="top" class="separator"><strong><a name="Cleavage" href="cleave.html">Cleavage</a></strong><br>

(0.75 - 2.25 h)</td>

<td class="stripe"><a href="cleave\_stgs.html#2-cell">2-cell </a></td>

<td class="stripe">0.75 h</td>

<td class="stripe">Partial cleavage</td>

<td class="stripe"> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-15">Browse

AO</a></td>

</tr>

<tr>

<td><a href="cleave\_stgs.html#4-cell">4-cell</a></td>

<td>1.00 h</td>

<td>2 X 2 array of blastomeres</td>

<td><a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-11">Browse

AO</a></td>

</tr>

<tr>

<td class="stripe"><a href="cleave\_stgs.html#8-cell">8-cell</a></td>

<td class="stripe">1.25 h</td>

<td class="stripe">2 X 4 array of blastomeres</td>

<td class="stripe"> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-33">Browse

AO</a></td>

</tr>

<tr>

<td><a href="cleave\_stgs.html#16-cell">16-cell</a></td>

<td>1.50 h</td>

<td>4 X 4 array of blastomeres</td>

<td><a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-20">Browse

AO</a></td>

</tr>

<tr>

<td class="stripe"><a href="cleave\_stgs.html#32-cell">32-cell</a></td>

<td class="stripe">1.75 h</td>

<td class="stripe">4 X 8 array of blastomeres</td>

<td class="stripe"> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-25">Browse

AO</a></td>

</tr>

<tr>

<td class="separator"><a href="cleave\_stgs.html#64-cell">64-cell</a></td>

<td class="separator">2.00 h</td>

<td class="separator">3 regular tiers of blastomeres</td>

<td class="separator"><a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-28">Browse

AO</a></td>

</tr>

<tr>

<td rowspan="9" valign="top" class="separator"><strong><a name="Blastula" href="blast.html">Blastula</a></strong><br>

(2.25 - 5.25 h)</td>

<td class="stripe"><a href="blast\_stgs.html#128-cell">128-cell</a></td>

<td class="stripe">2.25 h</td>

<td class="stripe">5 blastomere tiers; cleavage planes irregular</td>

<td class="stripe"> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-7">Browse

AO</a></td>

</tr>

<tr>

<td><a href="blast\_stgs.html#256-cell">256-cell</a></td>

<td>2.50 h</td>

<td>7 blastomere tiers</td>

<td><a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-1">Browse

AO</a></td>

</tr>

<tr>

<td class="stripe"><a href="blast\_stgs.html#512-cell">512-cell</a></td>

<td class="stripe">2.75 h</td>

<td class="stripe">9 blastomere tiers; YSL forms</td>

<td class="stripe"> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-14">Browse

AO</a></td>

</tr>

<tr>

<td><a href="blast\_stgs.html#1k-cell">1k-cell</a></td>

<td>3.00 h</td>

<td>11 blastomere tiers; single row of YSL nuclei; asynchronous cell cycle

</td>

<td><a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-22">Browse

AO</a></td>

</tr>

<tr>

<td class="stripe"><a href="blast\_stgs.html#High">High</a></td>

<td class="stripe">3.33 h</td>

<td class="stripe">&gt; 11 blastomere tiers; blastodisc flattening begins;

YSL nuclei in two rows</td>

<td class="stripe"> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-27">Browse

AO</a></td>

</tr>

<tr>

<td><a href="blast\_stgs.html#Oblong">Oblong</a></td>

<td>3.66 h</td>

<td>Blastodisc flattening; multiple rows of YSL nuclei</td>

<td><a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-24">Browse

AO</a></td>

</tr>

<tr>

<td class="stripe"><a href="blast\_stgs.html#Sphere">Sphere</a></td>

<td class="stripe">4.00 h</td>

<td class="stripe">Spherical shape; flat border between blastodisc and yolk</td>

<td class="stripe"> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-21">Browse

AO</a></td>

</tr>

<tr>

<td><a href="blast\_stgs.html#Dome">Dome</a></td>

<td>4.33 h</td>

<td>Yolk cell bulging toward animal pole as epiboly begins</td>

<td><a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-19">Browse

AO</a></td>

</tr>

<tr>

<td bgcolor="#eeeeee" class="separator"><a href="blast\_stgs.html#30%-epiboly">30%-epiboly</a></td>

<td bgcolor="#eeeeee" class="separator">4.66 h</td>

<td bgcolor="#eeeeee" class="separator">Blastoderm an inverted cup of uniform

thickness</td>

<td bgcolor="#eeeeee" class="separator"> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-17">Browse

AO</a></td>

</tr>

<tr>

<td rowspan="6" valign="top" class="separator"><strong><a name="Gastrula" href="gast.html">Gastrula</a></strong><br>

(5.25 - 10.33 h)</td>

<td><a href="gast\_stgs.html#50%-epiboly">50%-epiboly</a></td>

<td>5.25 h</td>

<td>Blastoderm remains of uniform thickness</td>

<td><a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-6">Browse

AO</a></td>

</tr>

<tr>

<td class="stripe"><a href="gast\_stgs.html#Germ-ring">Germ-ring</a></td>

<td class="stripe">5.66 h</td>

<td class="stripe">Germ ring visible from animal pole; 50%-epiboly</td>

<td class="stripe"> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-3">Browse

AO</a></td>

</tr>

<tr>

<td><a href="gast\_stgs.html#Shield">Shield</a></td>

<td>6.00 h</td>

<td>Embryonic shield visible from animal pole; 50%-epiboly</td>

<td><a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-2">Browse

AO</a></td>

</tr>

<tr>

<td class="stripe"><a href="gast\_stgs.html#75%-epiboly">75%-epiboly</a></td>

<td class="stripe">8.00 h</td>

<td class="stripe">Dorsal side distinctly thicker; epiblast, hypoblast, evacuation

zone visible</td>

<td class="stripe"> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-18">Browse

AO</a></td>

</tr>

<tr>

<td><a href="gast\_stgs.html#90%-epiboly">90%-epiboly</a></td>

<td>9.00 h</td>

<td>Axis and neural plate; brain and notochord rudiments</td>

<td><a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-29">Browse

AO</a></td>

</tr>

<tr>

<td bgcolor="#eeeeee" class="separator"><a href="gast\_stgs.html#Bud">Bud</a></td>

<td bgcolor="#eeeeee" class="separator">10.00 h</td>

<td bgcolor="#eeeeee" class="separator">Tail bud prominent; early polster;

100%-epiboly</td>

<td bgcolor="#eeeeee" class="separator"> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-12">Browse

AO</a></td>

</tr>

<tr>

<td rowspan="6" valign="top" class="separator"><strong><a name="Segmentation" href="seg.html">Segmentation</a></strong><br>

(10.33 - 24 h)</td>

<td><a href="seg\_stgs.html#1-somite">1-4 somites</a></td>

<td>10.33 h</td>

<td>First somite furrow</td>

<td><a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-23">Browse

AO</a></td>

</tr>

<tr>

<td class="stripe"><a href="seg\_stgs.html#5-somite">5-9 somites</a></td>

<td class="stripe">11.66 h</td>

<td class="stripe">Polster prominent; optic vesicle, Kupffer's vesicle, neural

keel</td>

<td class="stripe"> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-5">Browse

AO</a></td>

</tr>

<tr>

<td><a href="seg\_stgs.html#10-somite">10-13 somites</a></td>

<td>14 h</td>

<td>Pronephros forms</td>

<td><a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-020626-1">Browse

AO</a></td>

</tr>

<tr>

<td class="stripe"><a href="seg\_stgs.html#14-somite">14-19 somites</a></td>

<td class="stripe">16 h</td>

<td class="stripe">EL (embryo length) = 0.9 mm; otic placode, brain neuromeres</td>

<td class="stripe"> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-30">Browse

AO</a></td>

</tr>

<tr>

<td><a href="seg\_stgs.html#20-somite">20-25 somites</a></td>

<td>19 h</td>

<td>EL = 1.4 mm; lens, otic vesicle, hindbrain neuromeres</td>

<td><a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-16">Browse

AO</a></td>

</tr>

<tr>

<td bgcolor="#eeeeee" class="separator"><a href="seg\_stgs.html#26-somite">26+

somites</a></td>

<td bgcolor="#eeeeee" class="separator">22 h</td>

<td bgcolor="#eeeeee" class="separator">EL = 1.6 mm; blood islands, otoliths,

midbrain-hindbrain boundary</td>

<td bgcolor="#eeeeee" class="separator"> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-34">Browse

AO</a></td>

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<tr>

<td rowspan="4" valign="top" class="separator"><strong><a name="Pharyngula" href="phar.html">Pharyngula</a></strong><br>

(24 - 48 h)</td>

<td><a href="phar\_stgs.html#Prim-5">Prim-5</a></td>

<td>24 h</td>

<td>EL = 1.9 mm; early pigmentation, heartbeat</td>

<td><a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-10">Browse

AO</a></td>

</tr>

<tr>

<td class="stripe"><a href="phar\_stgs.html#Prim-15">Prim-15</a></td>

<td class="stripe">30 h</td>

<td class="stripe">EL = 2.5 mm; early touch reflex, retina pigmented</td>

<td class="stripe"> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-32">Browse

AO</a></td>

</tr>

<tr>

<td><a href="phar\_stgs.html#Prim-25">Prim-25</a></td>

<td>36 h</td>

<td>EL = 2.7 mm; early motility, tail pigmentation</td>

<td><a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-13">Browse

AO</a></td>

</tr>

<tr>

<td bgcolor="#eeeeee" class="separator"><a href="phar\_stgs.html#High-pec">High-pec</a></td>

<td bgcolor="#eeeeee" class="separator">42 h</td>

<td bgcolor="#eeeeee" class="separator">EL = 2.9 mm; rudiments of pectoral

fins</td>

<td bgcolor="#eeeeee" class="separator"> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-31">Browse

AO</a></td>

</tr>

<tr>

<td rowspan="2" valign="top" class="separator"><strong><a name="Hatching" href="hatch.html">Hatching</a></strong><br>

(48 - 72 h)</td>

<td><a href="hatch\_stgs.html#Long-pec">Long-pec</a></td>

<td>48 h</td>

<td>EL = 3.1 mm; elongated pectoral fin buds</td>

<td><a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-9">Browse

AO</a></td>

</tr>

<tr>

<td bgcolor="#eeeeee" class="separator"><a href="hatch\_stgs.html#Pec-fin">Pec-fin</a></td>

<td bgcolor="#eeeeee" class="separator">60 h</td>

<td bgcolor="#eeeeee" class="separator">EL = 3.3 mm; pectoral fin blades</td>

<td bgcolor="#eeeeee" class="separator"> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-26">Browse

AO</a></td>

</tr>

<tr>

<td rowspan="7" valign="top" class="separator"><strong><a name="Larval" href="larv\_stgs.html">Larval</a></strong></td>

<td nowrap><a href="larv\_stgs.html">Protruding-mouth</a></td>

<td>72 h</td>

<td>3.5 mm total body length</td>

<td> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-8">Browse

AO</a></td>

</tr>

<tr>

<td class="stripe">Day 4</td>

<td class="stripe">96 h</td>

<td class="stripe">3.7 mm total body length</td>

<td class="stripe"> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-35">Browse

AO</a></td>

</tr>

<tr>

<td>Day 5</td>

<td>120 h</td>

<td>3.9 mm total body length; 6 teeth</td>

<td> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-36">Browse

AO</a></td>

</tr>

<tr>

<td class="stripe">Day 6</td>

<td class="stripe">144 h</td>

<td class="stripe">4.2 mm total body length</td>

<td class="stripe"> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-37">Browse

AO</a></td>

</tr>

<tr>

<td>Days 7-13</td>

<td>168 h</td>

<td>4.5 mm total body length; 8 teeth</td>

<td> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-47">Browse

AO</a></td>

</tr>

<tr>

<td class="stripe">Days 14-20</td>

<td class="stripe">14 d</td>

<td class="stripe">6.2 mm total body length; 10 teeth</td>

<td class="stripe"> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-48">Browse

AO</a></td>

</tr>

<tr>

<td class="separator">Days 21-29</td>

<td class="separator">21 d</td>

<td class="separator">7.8 mm total body length</td>

<td class="separator"> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-49">Browse

AO</a></td>

</tr>

<tr>

<td rowspan="2" valign="top" class="separator"><strong><a name="Juvenile">Juvenile</a></strong></td>

<td class="stripe">Days 30-44</td>

<td class="stripe">30 d</td>

<td class="stripe">10 mm total body length; adult fins/pigment</td>

<td class="stripe"> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-51">Browse

AO</a></td>

</tr>

<tr>

<td class="separator">Days 45-89</td>

<td class="separator">45 d</td>

<td class="separator">14 mm total body length; 12 teeth</td>

<td class="separator"> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-52">Browse

AO</a></td>

</tr>

<tr>

<td nowrap class="separator"><strong><a name="Adult">Adult</a></strong> (90

d - 2 y)</td>

<td bgcolor="#eeeeee" class="separator">&nbsp;</td>

<td bgcolor="#eeeeee" class="separator">90 d</td>

<td bgcolor="#eeeeee" class="separator">Breeding adult</td>

<td bgcolor="#eeeeee" class="separator"> <a href="/action/ontology/show-anatomy-terms-by-stage?stage.zdbID=ZDB-STAGE-010723-39">Browse

AO</a></td>

</tr>

<tr>

<td class="separator"><strong><a name="Unknown">Unknown</a></strong></td>

<td colspan="4" class="separator">Stage yet to be determined.</td>

</tr>

</table>

</body>

</html>