

SUPPORTING FILES

Integrative view of β -galactoside α 2,3-sialyltransferases (ST3Gal) molecular and functional evolution in deuterostomes: significance of lineage specific losses.

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Supplemental figures :

Figure S6: Restricted spatio-temporal expression of the zebrafish *st3gal* genes from the GR1 and GR3 group during zebrafish embryonic development. (A-L) expression pattern of *st3gal2* from the GR1 group; (M-U) expression patterns of members from the GR2 group: *st3gal3* (M-O), *st3gal3-r* (P-R) and *st3gal7* (S-U). (A) gastrula stage, (B-D) early somitogenesis (5-somite stage), (E, M, P) middle of somitogenesis (14-18 somite stages), (F-H, N, Q) 24 hpf, (I, J, O, R-T) 36hpf, (K, U) 48 hpf, (L) 120 hpf. Embryos are in lateral view anterior to the top (A), lateral view anterior to the left (B, E, F, H, J-N, P-R), dorsal view anterior to the left (C, D, G, I, O, S-U). (C) dorsal view of the tail bud region, (D) dorsal view of the head region (G, I, K, L, O, U) head and anterior trunk regions (H, J, R) tail region (T) truncal region. cfm: caudal fin mesenchyme, cl: cleithrum, cs: corpuscle of Stannius, h: heart, hy: hypochord, li: liver, m: embryonic margin, mc: mucus cells, mcev: middle cerebral vein, pa: pancreas, pct: proximal convoluted tubule of the pronephric nephron, pf: pectoral fin, ph.a: pharyngeal arches, pmcb: primordial midbrain channel, pst: proximal straight tubule of the pronephric nephron, s: somites, sk: skull, sp: segmental plate, tb: tail bud, vm: ventral mesoderm, ysl: yolk syncytial layer.

Figure S7: Restricted expression pattern of the *st3gal4* gene during zebrafish embryonic and larval development. Embryo at (A) 16-somite stage, (B-D) 24 hpf, (E-H) 36 hpf; (I-L) 48 hpf. (M-P) larvae at 120 hpf. Embryos are in lateral view anterior to the right (A-E; I, J, M, P); in dorsal view anterior to the right (F-H, K, L); in frontal view dorsal to the top (N) and in dorsal view anterior to the top (O). (C; F, G, P) truncal region, (E, J, -L, N, O) head region, (H) trunk and tail regions. ax.v: axial vasculature, aw: aorta wall, bv: blood vessels, ev: eye blood vessel (inner optic circle), eg: endoskeletal girdle, cs: corpuscle of Stannius, gl: glomeruli, h: heart, hg: hindgut, inl: inner nuclear layer of the retina, isv: intersegmental blood vessels, nc: migrating neural crest cells, pc.et: parachondrium of the ethmoid plate, pe: retina pigmented epithelium, ph: pharynx, ph.a: pharyngeal arches, pst: proximal straight tubule of the pronephric nephron, vm: ventral mesoderm.

Figure S8: Non spatially restricted expression pattern of the zebrafish *st3gal* genes from the GR1 and GR3 group during zebrafish embryonic and larval development. (A-F) expression pattern of *st3gal1A* from the GR1 group; (G-J) expression pattern of *st3gal1B* from the GR1 group; (K, M) expression patterns of *st3gal1C* from the GR1 group; (N, T) expression patterns of *st3gal8* from the GR1 group; (U, W) expression patterns of *st3gal5* from the GR3 group. Developmental stage of the embryo is indicated at the bottom right of each panel. 1st an: first anterior lateral plate neuromast, all. n.: anterior lateral line neuromasts, ES: early somitogenesis (5-somite stage), fb-vz: forebrain ventricular zone, di: diencephalon, G: gastrula stage, hyp: hypothalamus, mhb: midbrain-hindbrain boundary, mid: midbrain, MS: middle of somitogenesis (14-18 somite stages), ol: olfactory vesicle, ot: otic vesicle, pcl: photoreceptor cell layer, rh2: rhombomere 2, rpz: retina proliferative zone, te: telencephalon, vz: ventricular zone. Embryos are in lateral view anterior to the top (A, D), lateral view anterior to the left (B-C, E- F, H, J-Q, T, W), dorsal view anterior to the left (G, I, R, U-V). Dorsal view of the head region anterior to the top (S).

Figure S9: *St3gal* EST expression profile analysis in vertebrate using principal component analysis (PCA). The quality of projection on the C1-C2 plane is satisfactory as it expresses 52.7 + 32.3 % of total variance, hence to 85 % of total explanation. For each model organism, the different *st3gal* positions were outlined by an envelope. The mammals are situated on the right side, corresponding to high values of *st3gal* expression for most studied tissues.

Figure S6: Restricted spatio-temporal expression of the zebrafish *st3gal* genes from the GR1 and GR3 group during zebrafish embryonic development

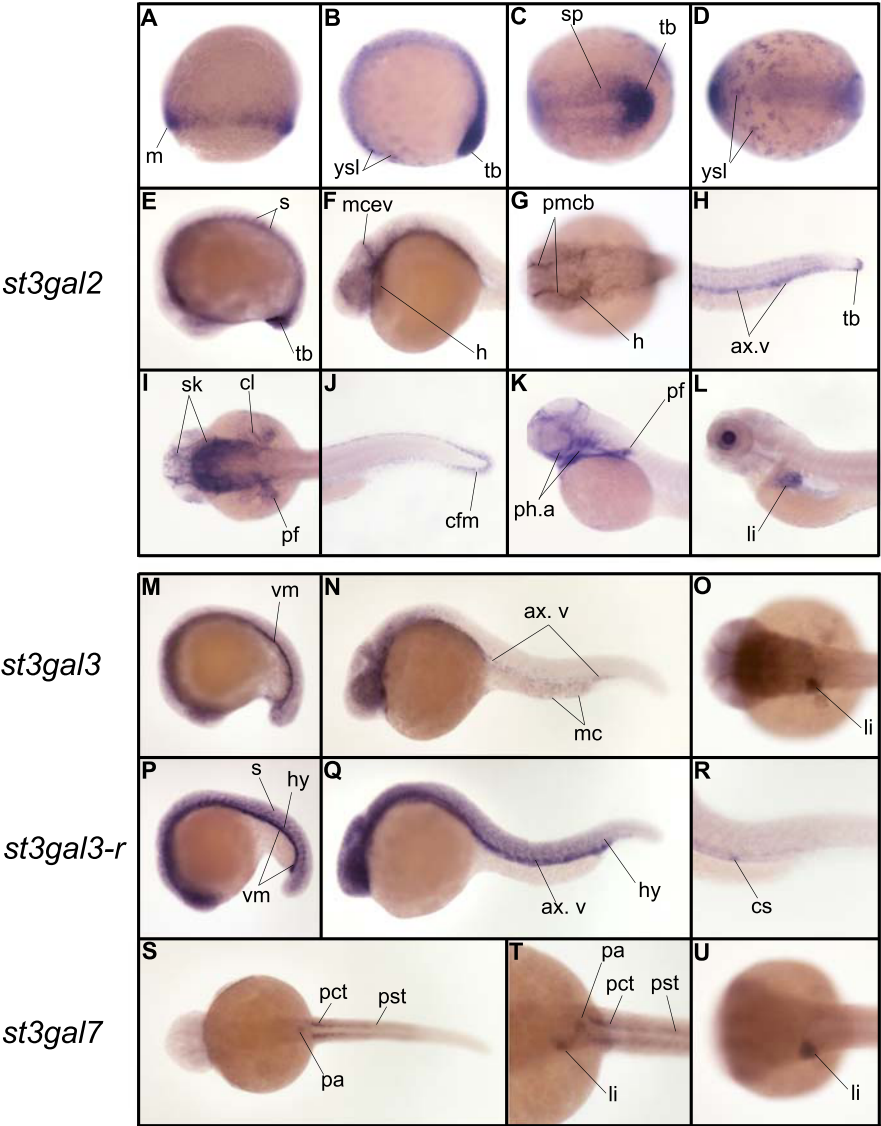


Figure S7: Restricted expression pattern of the *st3gal4* gene during zebrafish embryonic and larval development.

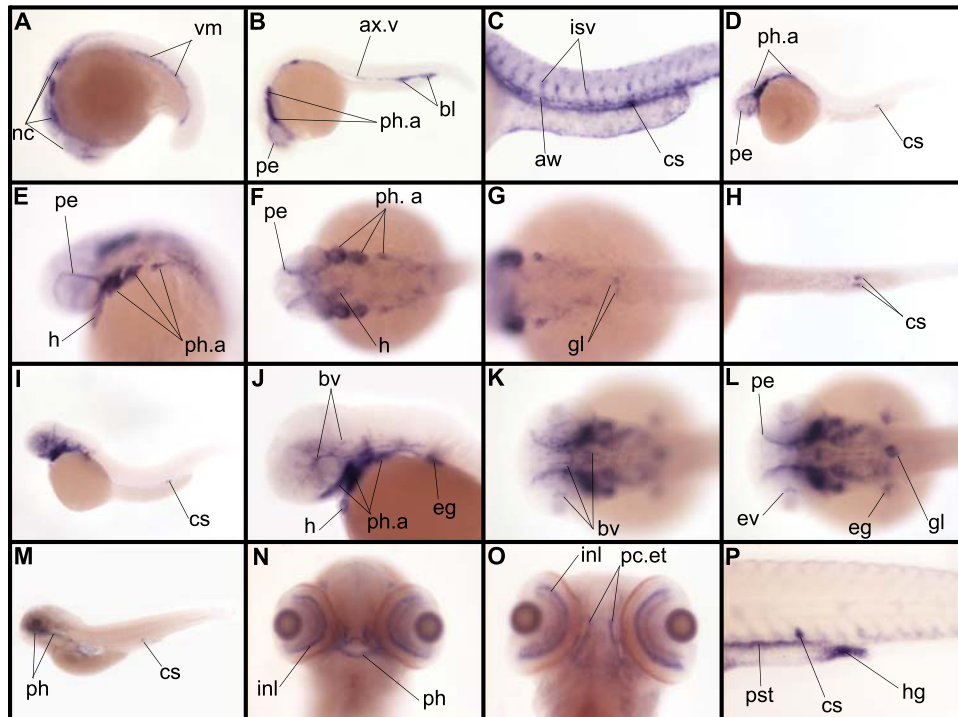


Figure S8: Non spatially restricted expression pattern of the zebrafish *st3gal* genes from the GR1 and GR3 group during zebrafish embryonic and larval development

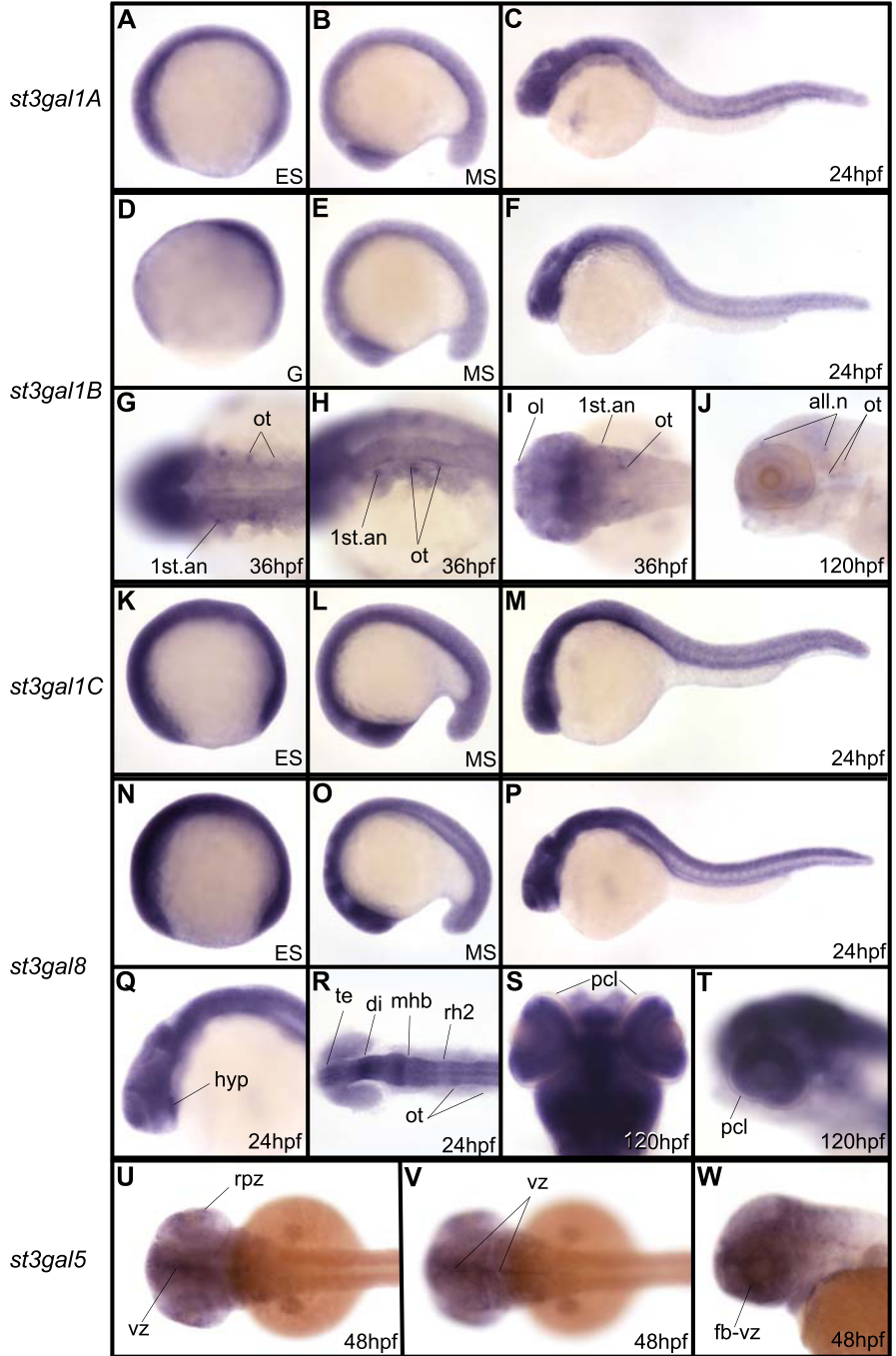


Figure S9: PCA analysis of *st3gal* EST

