Supporting tables

Table S1. List of cell pairs between which an effective cell contact is called (in separate file).

Table S2. List of cells expressing Notch ligands or receptors.

Table S3. List of strains and its genotypes

Strain name	Genotype	Tissue marker	Tissue of interest
RW10226	*unc-119(ed3)* III; *stIs10226 [Phis-72::HIS-24::mCherry ::let-858 3' UTR + unc-119(+)]; stIs37[Ppie-1::mCherry::H2B::pie-1 3'UTR + unc-119(+)]*	NA	mCherry lineaging strain
RW10029	*unc-119(ed3)* III; *zuIs178 [his-72(1kb 5' UTR)::his-72::SRPVAT::GFP::his-72 (1KB 3' UTR) + 5.7 kb XbaI - HindIII unc-119(+)];stIs10024 [pie-1::H2B::GFP::pie-1 3' UTR + unc-119(+)]*	*lin-12*	GFP lineaging strain
ZZY0549	*unc-119(tm4063)* III; *stIs10226 [Phis-72::HIS-24::mCherry ::let-858 3' UTR + unc-119(+)]; stIs37[Ppie-1::mCherry::H2B::pie-1 3'UTR + unc-119(+)]; zzySi0549[Plin-12::HIS24::his-72 3' UTR+ unc-119(+)]*	*lin-12*	Notch receptor
ZZY0558	*unc-119(tm4063)* III; *stIs10226 [Phis-72::HIS-24::mCherry ::let-858 3' UTR + unc-119(+)]; stIs37[Ppie-1::mCherry::H2B::pie-1 3'UTR + unc-119(+)]; zzySi0558[Pglp-1::HIS24::his-72 3' UTR+ unc-119(+)]*	*glp-1*	Notch receptor
ZZY0559	*unc-119(tm4063)* III; *stIs10226 [Phis-72::HIS-24::mCherry ::let-858 3' UTR + unc-119(+)]; stIs37[Ppie-1::mCherry::H2B::pie-1 3'UTR + unc-119(+)];zzySi0559[Papx-1::HIS24::his-72 3' UTR+ unc-119(+)]*	*apx-1*	Notch ligand
ZZY0596	*unc-119(tm4063)* III; *stIs10226 [Phis-72::HIS-24::mCherry ::let-858 3' UTR + unc-119(+)]; stIs37[Ppie-1::mCherry::H2B::pie-1 3'UTR + unc-119(+)];zzySi0596[Plin-12::HIS24::his-72 3' UTR+ unc-119(+)]*	*lag-2*	Notch ligand
RW140752	*unc-119(tm4063)* III; *zu178 [his-72::HIS-72::GFP; unc-119(+)]V; stIs10024 [pie-1::H2B::GFP::pie-1 3' UTR + unc-119(+)]; stIs10691 [Pref-1::HIS-24::mCherry + unc-119(+)]*	*ref-1*	Notch target
ZZY0535	*unc-119(tm4063) III; zu178 [his-72:: HIS-72::GFP; unc-119(+)]V; stIs10024 [pie-1::H2B::GFP::pie-1 3' UTR + unc-119(+)];ltIs44 [Ppie-1:: mCherry::PH(PLC1delta1) + unc-119(+)]*	NA	Membrane labeling

NA: Not applicable

Table S4. List of PCR primers for amplification of promoters for Notch ligands and receptors

| Primer	Sequences	Expected size (bp)
Plin-12-F	ttttACGCGTcgatatgaactgttcgagttgtagggag	3341
Plin-12-R	ttttGGGCCCttttttgaaattgagcaaagtctgttgagcaa	
Pglp-1-F	ttttACGCGTgcacatttttcgaactaaaaatcgttga	2805
Pglp-1-R	ttttGGGCCCtgttgtgttcgctgttcgagattctgttattattagttgtt	
Papx-1-F	ttttACGCGTtttccctgtttcgcttcagtttttatct	5321
Papx-1-R	ttttGGGCCCagtacaggatcgtgtgctagaagggcggg	
Plag-2-F	ttttAGATCTtccgccgaaatttctgggtt	1946
Plag-2-F	ttttGGGCCCgaggagtaagaggaagtaagcgat	

Supporting figures
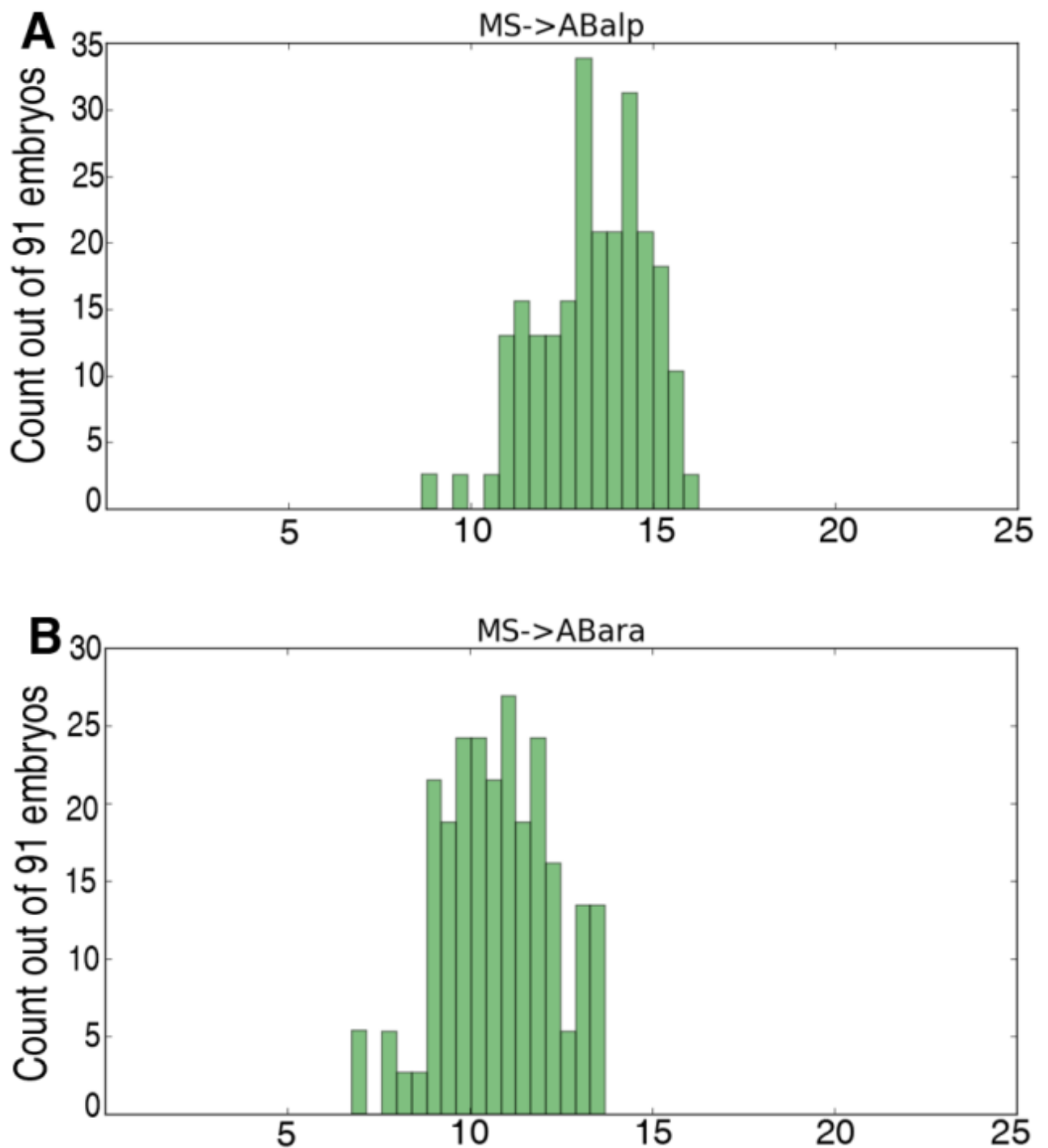
Figure S1. Occurrence distribution of the ratio of modeled contact area between MS and ABalp (A) or ABara (B) relative to average total cell surface area at the current time point. Second Notch signaling interactions are well established between the two cell pairs.
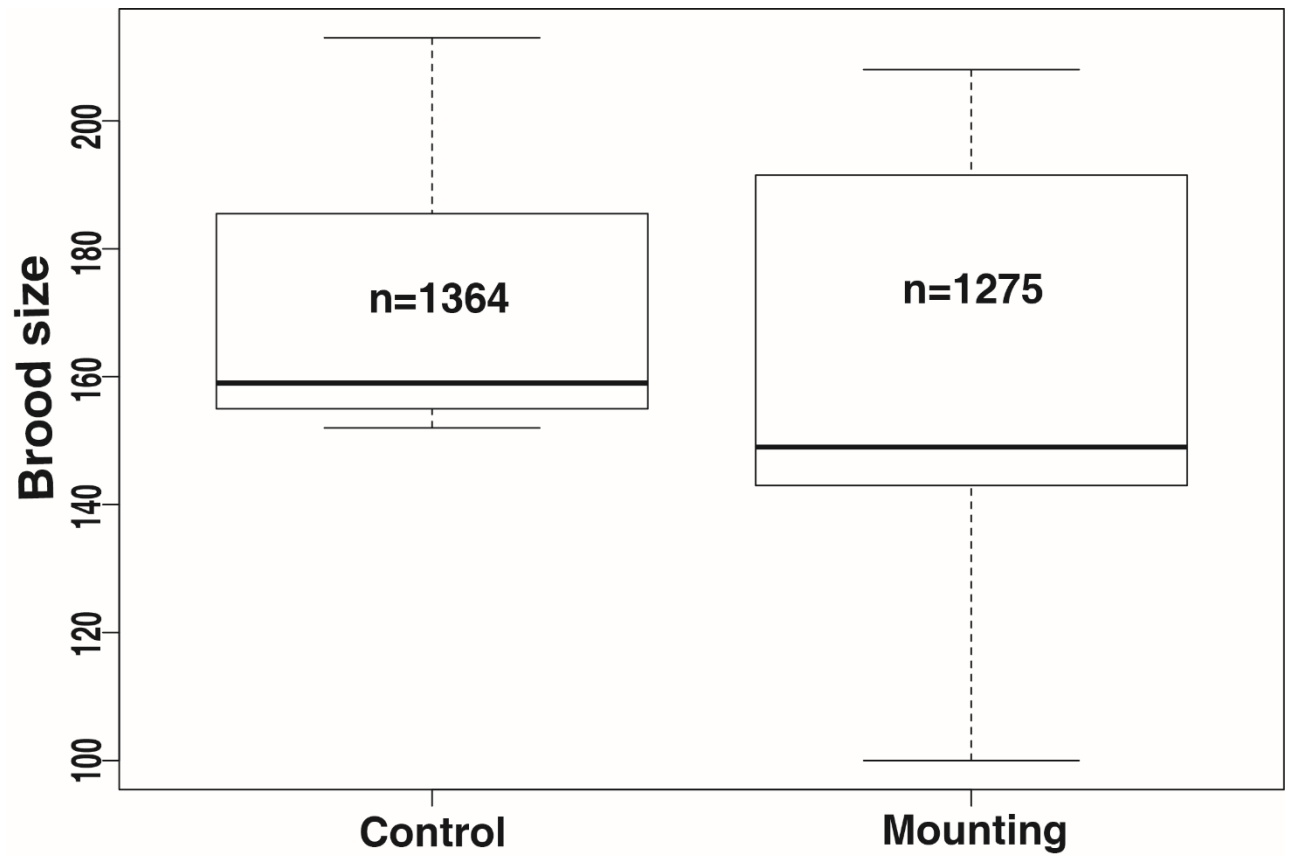
Figure S2. Comparison of brood sizes between unmounted (non-pressurized control) and mounted (mounting under pressure) embryos. Shown are boxplots of brood sizes that were scored from eight adults for each group with the total number of counted embryos indicated.
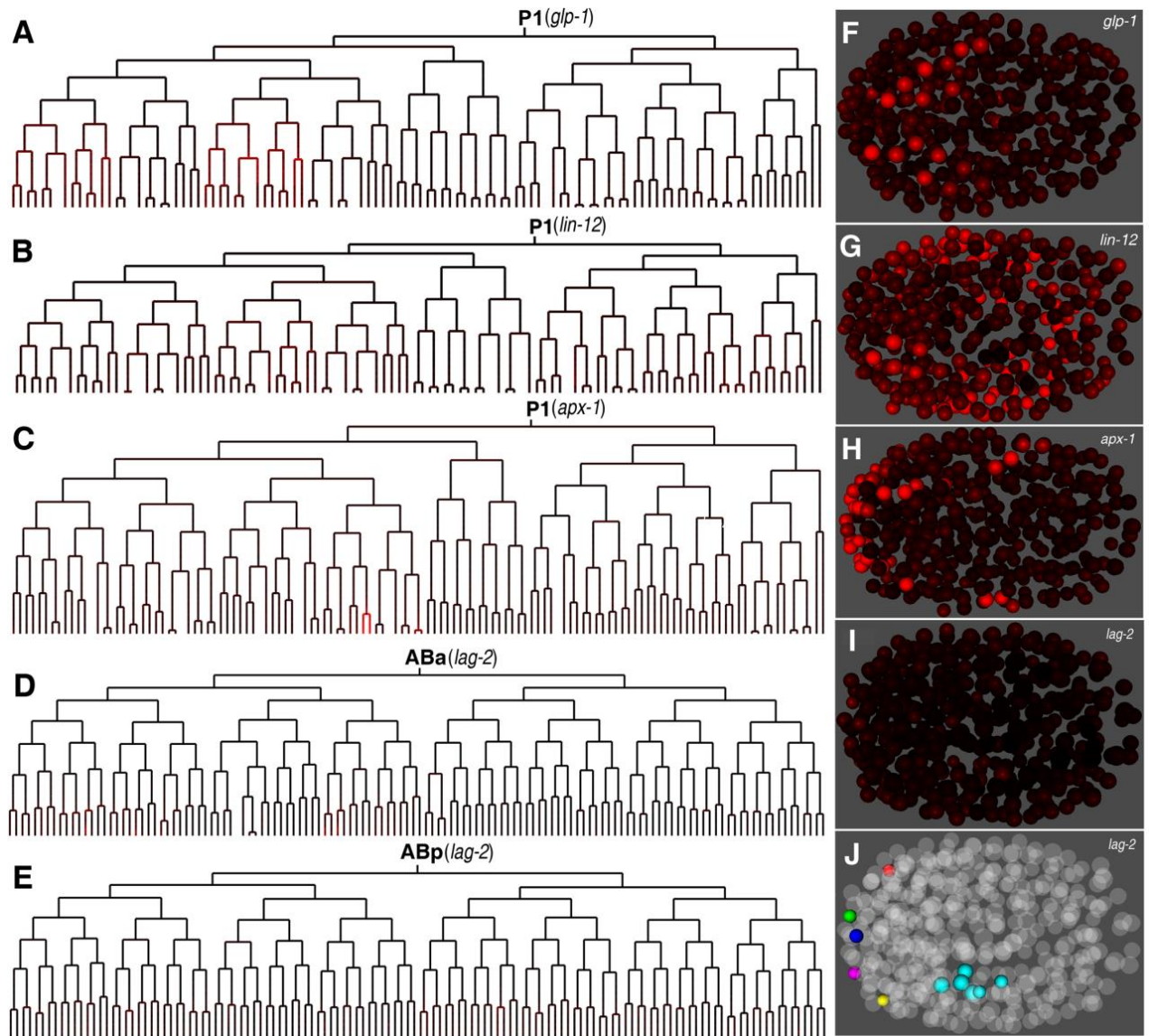
Figure S3. Lineal and spatial expression of Notch components up to 350 cells. A-C. Lineal expression of two Notch receptors, *glp-1* (A) and *lin-12* (B), and a Notch ligand, *apx-1* (C), in P1 sublineage. D-E. Lineal expression of a Notch ligand, *lag-2*, in ABa (D) and ABp (E) sublineage. F-I. Space-filling models showing spatial expression of the above four genes in a 350-celled *C. elegans* embryo. Brightness in red corresponds to expression intensity. J. Spatial expression of *lag-2* based on their lineal origins in a 350-celled *C. elegans* embryo. ABalaappaa, red; ABalapapaa, blue; ABalppaaaa, pink; ABalppaapa, yellow; ABalappaaa, green; MSapp descendants, cyan.
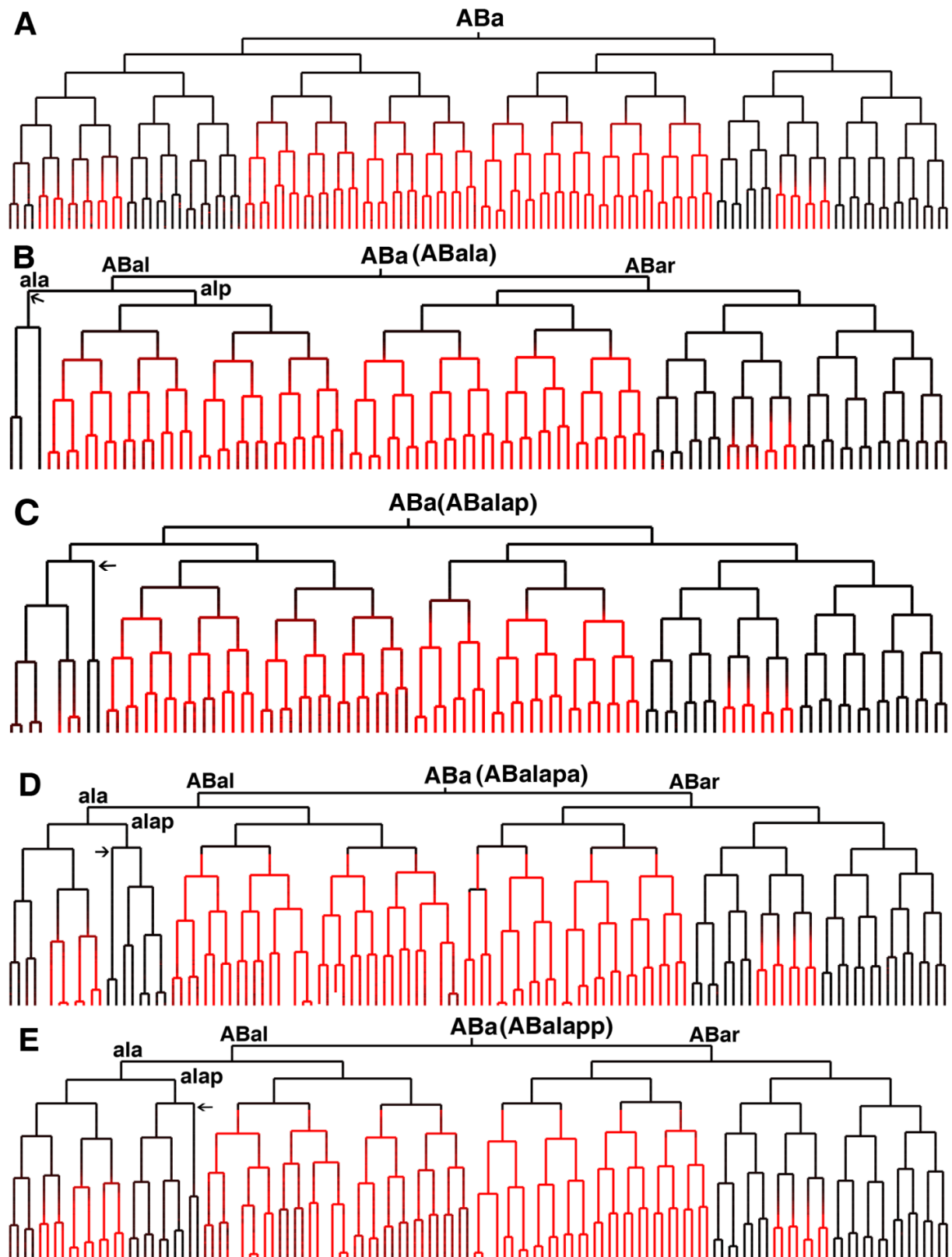
Figure S4. Lineal expression of *ref-1* in ABa sublineage of embryos before (A) or after (B-E) cell ablation. Names of the ablated cells are indicated in parenthesis with approximate ablation timing indicated by an arrow. Note a loss of *ref-1* expression in descendants of the ablated cells.
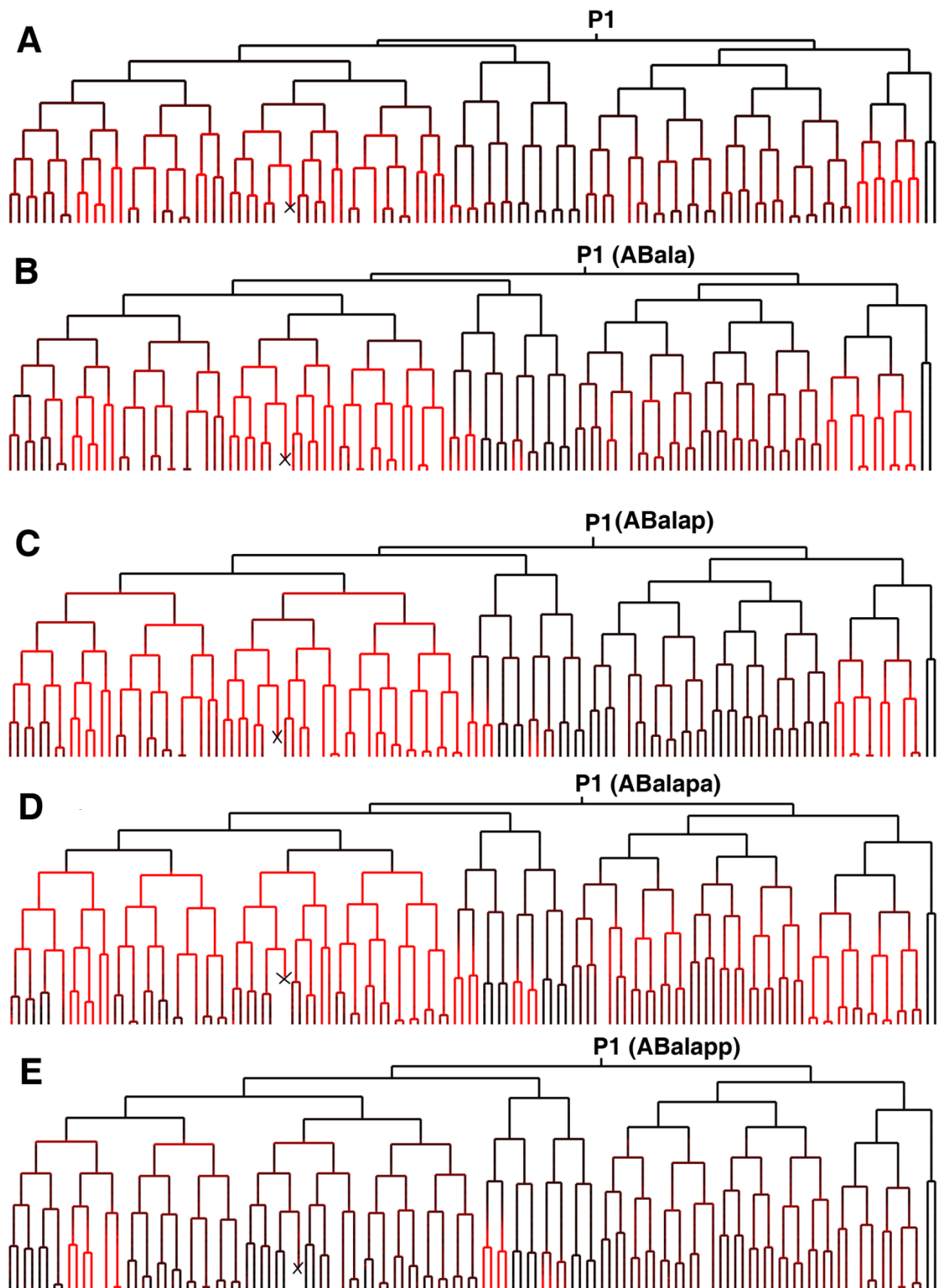
Figure S5. Lineal expression of *ref-1* in P1 sublineage of embryos before (A) or after (B-E) cell ablation. Programmed cell deaths are indicated with arrow.
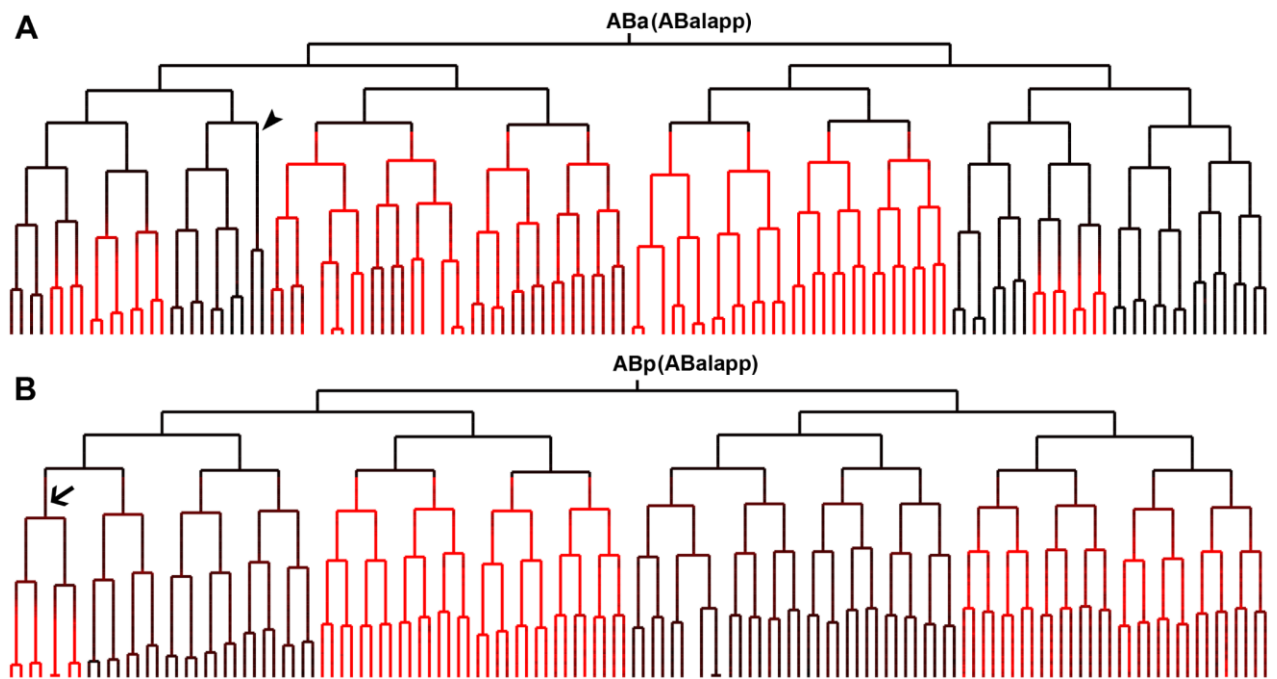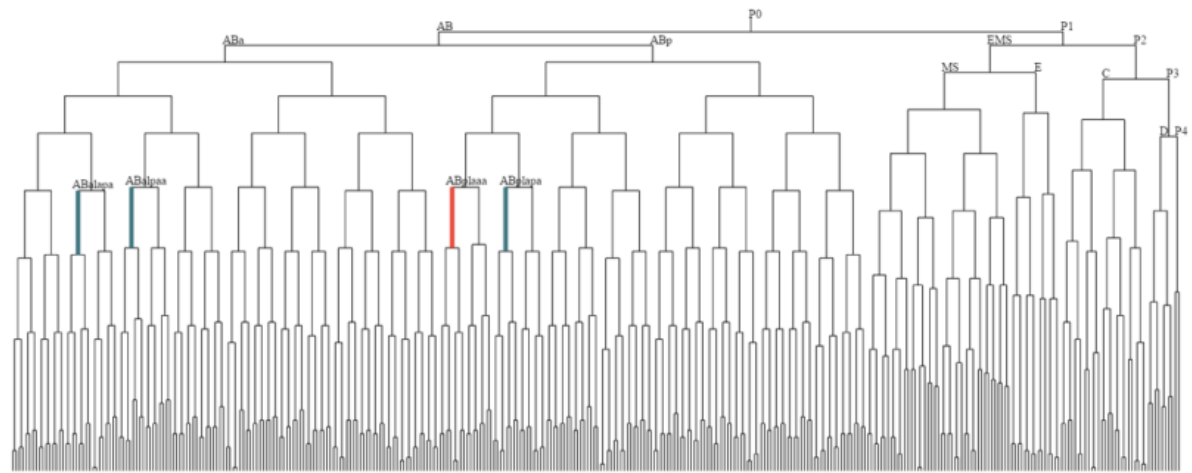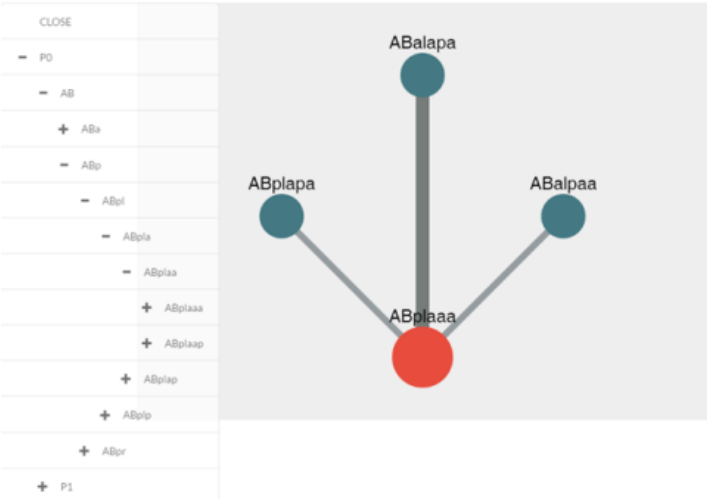
Figure S6. Lineal expression of *ref-1* in ABa (A) or ABp (B) sublineages of embryos before (A) or after (B-E) ablation of ABalapp as indicated on the top of each lineage tree. Cell ablation is indicated by "arrowhead" and the left head precursor, ABplaaa, is indicated by "arrow".

Figure S7. Screenshot of the output by searching website of *C. elegans* Cell-Cell Contact Map (CCCCM) using cell "ABplaaa" as a query. The querying cell is highlighted in red while its contacting cells in blue in both lineage tree (top, up to 350 cells) and network schematics (bottom). Relative contact area is shown in proportional to the thickness of the bar connecting contacting cells. Details of cell contact information are shown on the bottom right. Only contacts that satisfy our threshold are shown. Cells can also be queried using by navigating lineage tree as shown in bottom left.

Supporting videos

Movie 1. A time-lapse video showing the contacts between ABplaaa and ABalpap and those between their daughters.

Movie 2. A time-lapse video showing the contacts between excretory cell precursor, ABplpapp and MSapp and those between their daughters.