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Identification and tissue distribution by *in-silico* analysis and RT-qPCR expression profiling of chicken c-type lectin-like domain containing proteins



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We investigated

- Genes in the chicken genome encoding c-type lectin-like domain containing proteins (CTLDcps)
- Gene validation by tissue expression profiling of identified CTLDcps in respiratory tissue and spleen

We found

- 15 novel chicken CTLDcps of which CLEC17AL-A and -B belong to group II C-type lectins
- An avian specific expansion of group V C-type lectins
- Differential tissue expression of identified CTLDcps

Why

- To find CTLDcps in the chicken genome and potential mammalian orthologues
- Verification of mRNA expression in respiratory tissues and spleen

How

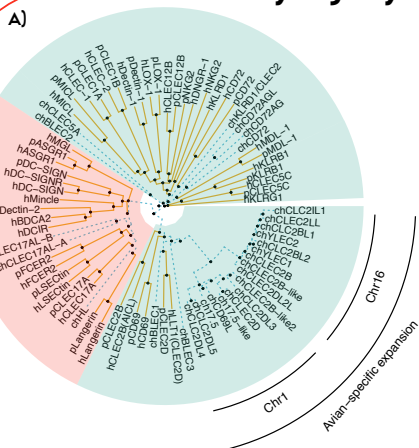
In silico analysis (GRCq6a):

- BLASTp
- Synteny analysis
- Phylogenetic analysis

RT-qPCR:

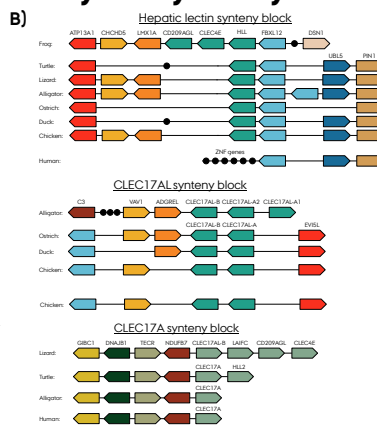
- B15 day-old chicks (n=3)
- Tissues: NALT Trachea Lung Spleen

Phylogeny and synteny analysis of chicken CTLDcps



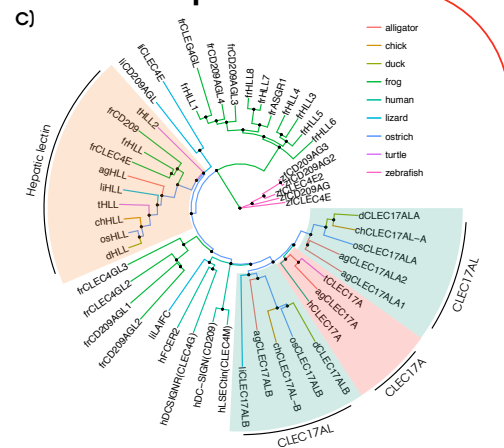
A) Phylogeny of chicken (blue dotted lines) and mammalian (yellow lines):

- chHL*, *chCLEC17AL-A*, and *-B* belong to group II CTLDcps (red)
- Avian specific expansion of group V (green) chicken CTLDcps located on Chr16 and Chr1



B) Synteny for:

- chCLEC17AL-A* and *-B* between birds and alligator
- CLEC17A* in reptiles and human
- chHL* between reptiles and frog



C) Phylogeny of group II CTLDcps:

- Orthologues of *chHL* present in reptiles and amphibians (yellow) but not in human
- Gene lineages to *chCLEC17AL-A* and *-B* on one side (green), and human *CLEC17A* (red) on the other side, evolved separately from a common ancestral gene

RT-qPCR expression profiling in respiratory tissue and spleen

Gene name	NCBI symbol	Protein refseq	Chr	Genomic location
CLEC2D5	CLEC2D5	XP_015128576.1	1	NC_006088.5 (21888-35006)
CLEC2B-like	LOC107049947	XP_025058952.1	1	NC_006088.5 (194192-195843, complement)
CLEC2D4	CLEC2D4	XP_025090560.1	1	NC_006088.5 (45693-56400)
CD69L	CD69L	XP_015154933.2	1	NC_006088.5 (237200-246154)
CLEC2D2	CLEC2D3	NP_001264787.1	1	NC_006088.5 (301435-303113)
CLEC2D	LOC101747821	XP_015128259.1	1	NC_006088.5 (217130-221977)
CLEC2D2	CLEC2D2	XP_015156592.1	16 (Unlocal. Scaffold)	HWI001997581.1 (115489-12304), complement)
CLEC2B-like2	LOC101747901	XP_025011701.1	16	NC_006103.5 (1965499-1987472, complement)
CLEC2B1	CLEC2B2	XP_015150564.1	16	NC_006103.5 (1997252-2000939, complement)
CLEC2B1	CLEC2B1	XP_015157579.1	16	NC_006103.5 (2025330-2028494)
CLEC2L1	CLEC2L1	XP_025011883.1	16	NC_006103.5 (1988931-1997406, complement)
CLEC2B	LOC100859902	XP_025011727.1	16	NC_006103.5 (2099136-2099604)
CLEC2D-like	LOC107056497	XP_015150513.2	16	NC_006103.5 (2238108-2438953, complement)
CLEC2L	CLEC2L	XP_015157574.1	16	NC_006103.5 (2107090-2109214)
BLEC3	BLEC3	NP_001300626.1	16	NC_006103.5 (2443806-2447961, complement)
CD72AC2L	CD72AC2L	XP_001231206.2	2	NC_006127.5 (9061547-9065031)
CLEC5A	CLEC5A	XP_0030443020.1	2	NC_006127.5 (9069752-9071837, complement)
HLL	Hepatic lectin	NP_990815.1	30	NC_028739.2 (1043772-1067914)
CLEC17AL-A	FEB2	XP_0030443419.1	30	NC_028739.2 (595219-599514)
CLEC17AL-B	CLEC17A	XP_423779.5	30	NC_028739.2 (599757-604620)

- Information on the chicken CTLDcps analysed

- Fold change in log scale (95% CI) compared to *CLEC5A* expression in trachea
- Differential expression of chicken CTLDcps in respiratory tissue and spleen
- High overall expression of *17.5-like*, *CD69L*, and *CLEC2D-like*
- High expression of *CLEC17AL-A* and *-B* in spleen
- High expression of *CLEC17AL-A* in trachea

