

Table S9. Various CAM functions and the associated proteins identified in this study.

Functions		Involved proteins	Involved cell/tissue
Ca ²⁺ transport	Calcium mobilization from ES (Acidification)	<ul style="list-style-type: none"> ▪ Carbonic anhydrase (<i>CA2</i>, <i>CA13</i>) ▪ Vacuolar H⁺-ATPase (<i>ATP6V0A4</i>, <i>ATP6V1C2</i>, <i>ATP6VOD1</i>, <i>ATP6V1E1</i>, <i>ATP6V1G1</i>, <i>LOC776719</i>) ▪ Cell-cell junction proteins (<i>CDC42</i>, <i>ITGB3</i>, <i>LAMC1</i>, <i>THY1</i>) 	CE, AE CE, AE CE
	Intracellular Ca ²⁺ transport (Ca ²⁺ binding proteins, CaBPs)	<ul style="list-style-type: none"> ▪ Annexin (<i>ANXA1</i>, <i>ANXA2</i>, <i>ANXA5</i>) ▪ Calmodulin (<i>CALML3</i>) ▪ S100 calcium binding protein (<i>S100A11</i>, <i>S100A11</i>, <i>S100A16</i>) ▪ Calcineurin like EF-hand protein 1 (<i>CHP1</i>) ▪ Calcium binding protein 39 (<i>CAB39</i>) 	CE
	Intracellular Ca ²⁺ transport (ATPases)	<ul style="list-style-type: none"> ▪ Ca²⁺-ATPase (<i>ATP2A2</i>) and Na⁺/K⁺-ATPase (<i>ATP1B1</i>, <i>ATP1B3</i>) 	CE
Protection against pathogen invasion	Antimicrobial activities	<ul style="list-style-type: none"> ▪ Cystatins (B, C, F) ▪ SERPINs (<i>SERPINB1</i>, <i>SERPINB2</i>, <i>SERPINB5</i>, <i>SERPINB6</i>, <i>SERPINB10B</i>, <i>SERPINB14C</i>, <i>SERPINH1</i>) ▪ Histones (H2AFY, <i>HIST1H2BO</i>, HIST1H4B, HISTH2A4L2) ▪ SPINKs (Ovomucoid, ovoinhibitor) ▪ BPI fold containing family B member 2 (<i>TENP</i>) 	CE, M, AE
Vascular system	Diffusion	<ul style="list-style-type: none"> ▪ From external air to the blood capillaries 	ES, ESM, CE
	Gaseous exchange	<ul style="list-style-type: none"> ▪ Annexins (A1, A2, A5, A7, A8 like) ▪ Catenin subunits ($\alpha1$, $\beta1$) ▪ Collagen subunits (1$\alpha1$, 1$\alpha2$, 3$\alpha1$, 4$\alpha1$, 4$\alpha2$, 5$\alpha2$, 6$\alpha1$, 6$\alpha2$, 6$\alpha3$, 7$\alpha1$, 11$\alpha1$, 12$\alpha1$, 18$\alpha1$) ▪ Decorin ▪ Fibulin (1,2) ▪ Glypican 4 ▪ Integrin subunits ($\alpha1$, $\alpha3$, $\alpha5$, $\alpha6$, $\alpha8$, $\alpha9$, αv, $\beta1$, $\beta3$, $\beta4$) ▪ Laminin subunits ($\alpha1$, $\alpha5$, $\beta1$, $\beta2$, $\gamma1$) ▪ Nidogen (1,2) ▪ Tubulin subunits ($\beta2A$, $\beta2B$, $\beta3$ class III, $\beta6$ class V, α like 3) ▪ Tenascin XB 	M
	Lymphatics	<ul style="list-style-type: none"> ▪ Collagen IV subunits ($\alpha1$, $\alpha2$) ▪ Laminin subunits ($\alpha1$, $\alpha5$, $\beta1$, $\beta2$, $\gamma1$) ▪ Neuropilin-1 (<i>NRP1</i>) ▪ Mitogen-activated protein kinase (MAPK3, Erk) ▪ Nidogen (1,2) ▪ Mannose receptor (<i>MRC1</i>, <i>MRC2</i>) ▪ Desmoplakin (<i>DSP</i>) ▪ PDZ and LIM domain 3 (<i>PDLIM3</i>) ▪ TIMP metalloproteinase inhibitor 3 (<i>TIMP3</i>) ▪ Proteasome assembly chaperone 1 (<i>PSMG1</i>) ▪ Junction plakoglobin (<i>JUP</i>) ▪ Integrin subunit $\alpha6$ (<i>ITGA6</i>) ▪ Myoferlin (<i>MYOF</i>) ▪ Apolipoprotein D (<i>APOD</i>) ▪ Collectin subfamily member 12 (<i>COLEC12</i>) 	M

		<ul style="list-style-type: none"> ▪ Galectin-1 (<i>LGALS1</i>) 	
	Blood serum	<ul style="list-style-type: none"> ▪ Hemoglobins alpha subunits (π, αA, αD) and β subunits (βA, βH, ϵ, ρ) 	B
Defense against luminal toxic contents	Glycoconjugates rich in α -fucose	<ul style="list-style-type: none"> ▪ Protein O-fucosyltransferase (POFUT1 and POFUT1) ▪ α-L-fucosidase 2 (FUCA2) 	AE
	Cell-cell junction	<ul style="list-style-type: none"> ▪ Cell division cycle 42 (CDC42) ▪ integrin subunit $\beta 3$ ▪ Laminin subunit $\gamma 1$ ▪ Thy-1 cell surface antigen (THY1) 	AE

AE: allantoic epithelium, B: blood, CE: chorionic epithelium, ES: eggshell, ESM: eggshell membrane, M: mesodermal layer