

## Appendix 1.1 Top 100 Membrane protein genes

| Reference              | Human Refseq (Oct. 2017) best blast result                               | logFC       |
|------------------------|--|-------------|
| TRINITY_DN37680_c2_g5  | NP_653187.3_ly6/PLAUR_domain-containing_protein_1_isoform_a_precursor    | 9.086893436 |
| TRINITY_DN34968_c1_g4  | NP_005236.2_protocadherin_Fat_1_precursor_[Homo_sapiens]                 | 8.635229884 |
| TRINITY_DN30003_c0_g1  | NP_001243689.1_5-hydroxytryptamine_receptor_2C_isoform_a_precursor_[H    | 8.565321051 |
| TRINITY_DN30975_c0_g2  | NP_001191047.1_C-type_lectin_domain_family_17,_member_A_isoform_1_[      | 7.891534121 |
| TRINITY_DN29054_c0_g2  | NP_963869.2_seizure_6-like_protein_2_isoform_2_precursor_[Homo_sapien    | 7.877294217 |
| TRINITY_DN33812_c0_g1  | NP_000441.2_E-selectin_precursor_[Homo_sapiens]                          | 7.744467549 |
| TRINITY_DN29054_c0_g2  | NP_000441.2_E-selectin_precursor_[Homo_sapiens]                          | 7.558234059 |
| TRINITY_DN4263_c0_g1:: | NP_055736.2_adhesion_G_protein-coupled_receptor_L1_isoform_2_precurs     | 7.257868699 |
| TRINITY_DN35130_c1_g2  | NP_005573.2_CD180_antigen_precursor_[Homo_sapiens]                       | 7.218322367 |
| TRINITY_DN30553_c0_g1  | NP_004548.3_neurogenic_locus_notch_homolog_protein_4_preproprotein_[H    | 7.200095753 |
| TRINITY_DN63110_c0_g1  | NP_000789.1_D(1B)_dopamine_receptor_[Homo_sapiens]                       | 7.187671696 |
| TRINITY_DN36333_c1_g2  | NP_001161940.1_Na(+)/H(+)_exchange_regulatory_cofactor_NHE-RF4_isofc     | 7.061261869 |
| TRINITY_DN28793_c0_g1  | NP_005202.2_macrophage_colony-stimulating_factor_1_receptor_precursor    | 6.939851724 |
| TRINITY_DN30021_c0_g1  | NP_919298.1_ly6/PLAUR_domain-containing_protein_6_precursor_[Homo_s      | 6.929830334 |
| TRINITY_DN35395_c0_g1  | NP_002996.2_P-selectin_precursor_[Homo_sapiens]                          | 6.831675286 |
| TRINITY_DN35351_c2_g1  | NP_002996.2_P-selectin_precursor_[Homo_sapiens]                          | 6.758755533 |
| TRINITY_DN33194_c0_g2  | NP_002326.2_low-density_lipoprotein_receptor-related_protein_5_isoform_1 | 6.611441238 |
| TRINITY_DN34483_c0_g1  | NP_054860.1_contactin-associated_protein-like_2_precursor_[Homo_sapiens] | 6.584736494 |
| TRINITY_DN31078_c0_g1  | NP_473362.1_probable_G-protein_coupled_receptor_101_[Homo_sapiens]       | 6.452948879 |
| TRINITY_DN38480_c6_g1  | NP_116232.3_fibrinogen_C_domain-containing_protein_1_[Homo_sapiens]      | 6.181066468 |
| TRINITY_DN38243_c1_g9  | NP_001072.2_cubilin_precursor_[Homo_sapiens]                             | 6.166767415 |
| TRINITY_DN34750_c3_g1  | NP_001191047.1_C-type_lectin_domain_family_17,_member_A_isoform_1_[      | 6.161717612 |
| TRINITY_DN36333_c1_g2  | NP_001161940.1_Na(+)/H(+)_exchange_regulatory_cofactor_NHE-RF4_isofc     | 6.145887612 |
| TRINITY_DN38276_c11_g  | NP_003974.3_Y+L_amino_acid_transporter_2_[Homo_sapiens]                  | 6.127735009 |
| TRINITY_DN35890_c1_g5  | NP_006335.2_C-type_lectin_domain_family_10_member_A_isoform_2_[Hom       | 6.072733782 |
| TRINITY_DN37976_c1_g1  | NP_000441.2_E-selectin_precursor_[Homo_sapiens]                          | 5.979837415 |
| TRINITY_DN32025_c0_g1  | NP_848657.1_tetraspanin-33_[Homo_sapiens]                                | 5.974461811 |
| TRINITY_DN30975_c0_g1  | NP_001191047.1_C-type_lectin_domain_family_17,_member_A_isoform_1_[      | 5.967740001 |
| TRINITY_DN35569_c0_g2  | NP_001277716.1_endothelin-converting_enzyme-like_1_isoform_2_[Homo_s     | 5.910939706 |
| TRINITY_DN38294_c2_g1  | NP_001163886.1_tight_junction_protein_ZO-2_isoform_4_[Homo_sapiens]      | 5.827726666 |
| TRINITY_DN37348_c2_g3  | NP_001243181.1_adhesion_G_protein-coupled_receptor_E1_isoform_2_prec     | 5.773696375 |
| TRINITY_DN26472_c0_g1  | NP_001268661.1_solute_carrier_family_26_member_6_isoform_5_[Homo_sa      | 5.712817386 |
| TRINITY_DN27071_c0_g1  | NP_001308904.1_adhesion_G-protein_coupled_receptor_F3_isoform_5_[Ho      | 5.583469667 |
| TRINITY_DN37976_c1_g1  | NP_000441.2_E-selectin_precursor_[Homo_sapiens]                          | 5.57460392  |
| TRINITY_DN34649_c0_g2  | NP_663788.1_rho_guanine_nucleotide_exchange_factor_7_isoform_b_[Hom      | 5.503654776 |
| TRINITY_DN34727_c0_g1  | NP_001298.3_claudin-7_isoform_1_precursor_[Homo_sapiens]                 | 5.482378372 |
| TRINITY_DN37515_c1_g2  | NP_996816.2_usherin_isoform_B_precursor_[Homo_sapiens]                   | 5.470360412 |
| TRINITY_DN4822_c0_g1:: | NP_443132.3_CUB_and_sushi_domain-containing_protein_3_isoform_3_[Ho      | 5.40096616  |
| TRINITY_DN33931_c0_g1  | NP_061027.2_low-density_lipoprotein_receptor-related_protein_1B_precurs  | 5.298015979 |
| TRINITY_DN35473_c2_g6  | NP_077719.2_neurogenic_locus_notch_homolog_protein_2_isoform_1_prepr     | 5.205978233 |
| TRINITY_DN36989_c1_g4  | NP_001092286.2_teneurin-4_[Homo_sapiens]                                 | 5.099372583 |
| TRINITY_DN29725_c0_g2  | NP_000103.2_sulfate_transporter_[Homo_sapiens]                           | 5.074806329 |
| TRINITY_DN29428_c0_g1  | NP_612419.1_CKLF-like_MARVEL_transmembrane_domain-containing_prot        | 5.02233166  |
| TRINITY_DN38127_c3_g3  | NP_000441.2_E-selectin_precursor_[Homo_sapiens]                          | 4.979096346 |
| TRINITY_DN36059_c0_g4  | NP_963869.2_seizure_6-like_protein_2_isoform_2_precursor_[Homo_sapien    | 4.959235207 |
| TRINITY_DN37976_c1_g1  | NP_002996.2_P-selectin_precursor_[Homo_sapiens]                          | 4.941109151 |
| TRINITY_DN29955_c0_g2  | NP_439896.1_MFS-type_transporter_SLC18B1_[Homo_sapiens]                  | 4.931742025 |
| TRINITY_DN37050_c3_g1  | NP_000646.2_L-selectin_precursor_[Homo_sapiens]                          | 4.930332678 |
| TRINITY_DN38005_c0_g1  | NP_003719.3_netrin_receptor_UNC5C_precursor_[Homo_sapiens]               | 4.908344927 |
| TRINITY_DN32051_c0_g1  | NP_002996.2_P-selectin_precursor_[Homo_sapiens]                          | 4.900053146 |
| TRINITY_DN31695_c0_g1  | NP_114481.1_protocadherin_gamma-A11_isoform_3_precursor_[Homo_sapi       | 4.893380995 |
| TRINITY_DN34505_c2_g1  | NP_002996.2_P-selectin_precursor_[Homo_sapiens]                          | 4.843701549 |
| TRINITY_DN36223_c1_g3  | NP_079092.2_rab_GTPase-binding_effector_protein_2_[Homo_sapiens]         | 4.819064531 |
| TRINITY_DN35078_c0_g1  | NP_001138378.1_C-type_lectin_domain_family_4_member_M_isoform_7_[H       | 4.818633121 |
| TRINITY_DN38005_c0_g1  | NP_001281264.1_adhesion_G_protein-coupled_receptor_B2_isoform_1_pre      | 4.81081634  |
| TRINITY_DN37491_c3_g1  | NP_036245.1_carbonic_anhydrase_14_precursor_[Homo_sapiens]               | 4.806021035 |
| TRINITY_DN36686_c0_g5  | NP_060179.2_protein_FAM46C_[Homo_sapiens]                                | 4.769256686 |
| TRINITY_DN32500_c0_g1  | NP_116190.3_junctional_adhesion_molecule_C_isoform_1_precursor_[Hom      | 4.682951657 |
| TRINITY_DN37619_c1_g2  | NP_001072.2_cubilin_precursor_[Homo_sapiens]                             | 4.649780086 |
| TRINITY_DN35620_c0_g2  | NP_001004416.2_uromodulin-like_1_isoform_1_precursor_[Homo_sapiens]      | 4.601307394 |
| TRINITY_DN28766_c0_g1  | NP_001138378.1_C-type_lectin_domain_family_4_member_M_isoform_7_[H       | 4.589052773 |

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| TRINITY_DN27215_c0_g1 | NP_005406.3_sodium-dependent_phosphate_transporter_1_[Homo_sapiens]      | 4.580983159 |
| TRINITY_DN35044_c1_g4 | NP_001171663.1_astrotactin-2_isoform_e_[Homo_sapiens]                    | 4.551310084 |
| TRINITY_DN34377_c4_g1 | NP_940799.1_growth_hormone_secretagogue_receptor_type_1_isoform_1a       | 4.540114642 |
| TRINITY_DN26313_c0_g1 | NP_892018.1_transmembrane_protease_serine_9_[Homo_sapiens]               | 4.538600357 |
| TRINITY_DN38005_c0_g1 | NP_001281265.1_adhesion_G_protein-coupled_receptor_B2_isoform_2_pre      | 4.53834014  |
| TRINITY_DN35803_c0_g1 | NP_002996.2_P-selectin_precursor_[Homo_sapiens]                          | 4.52993887  |
| TRINITY_DN35473_c2_g6 | NP_077719.2_neurogenic_locus_notch_homolog_protein_2_isoform_1_pre       | 4.467180863 |
| TRINITY_DN32613_c0_g1 | NP_065392.1_adipocyte_plasma_membrane-associated_protein_[Homo_sap       | 4.446124211 |
| TRINITY_DN81368_c0_g1 | NP_001268885.1_CUB_and_sushi_domain-containing_protein_2_isoform_1       | 4.380709912 |
| TRINITY_DN35890_c1_g5 | NP_055173.1_C-type_lectin_domain_family_4_member_E_[Homo_sapiens]        | 4.37963029  |
| TRINITY_DN38005_c0_g1 | NP_001281264.1_adhesion_G_protein-coupled_receptor_B2_isoform_1_pre      | 4.375152425 |
| TRINITY_DN35584_c0_g7 | NP_002763.2_enteropeptidase_precursor_[Homo_sapiens]                     | 4.335913661 |
| TRINITY_DN35473_c2_g6 | NP_077719.2_neurogenic_locus_notch_homolog_protein_2_isoform_1_pre       | 4.286982513 |
| TRINITY_DN26353_c0_g1 | NP_001240658.1_relaxin_receptor_1_isoform_4_[Homo_sapiens]               | 4.277085682 |
| TRINITY_DN34419_c4_g1 | NP_001007268.1_secretory_phospholipase_A2_receptor_isoform_2_pre         | 4.243562047 |
| TRINITY_DN34216_c1_g2 | NP_000426.2_neurogenic_locus_notch_homolog_protein_3_precursor_[Hom      | 4.216243052 |
| TRINITY_DN34508_c0_g1 | NP_653187.3_ly6/PLAUR_domain-containing_protein_1_isoform_a_pre          | 4.207824212 |
| TRINITY_DN38480_c6_g1 | NP_116232.3_fibrinogen_C_domain-containing_protein_1_[Homo_sapiens]      | 4.173958375 |
| TRINITY_DN27102_c0_g1 | NP_000642.3_complement_receptor_type_1_isoform_S_precursor_[Homo_s       | 4.160470742 |
| TRINITY_DN35765_c1_g1 | NP_001273164.1_solute_carrier_family_2_facilitated_glucose_transporter_m | 4.141640528 |
| TRINITY_DN34771_c0_g2 | NP_001316999.1_C-type_lectin_domain_family_10_member_A_isoform_3_[H      | 4.103796116 |
| TRINITY_DN36827_c0_g1 | NP_443128.2_CUB_and_sushi_domain-containing_protein_2_isoform_2_[Ho      | 4.068912579 |
| TRINITY_DN37512_c0_g3 | NP_002996.2_P-selectin_precursor_[Homo_sapiens]                          | 4.053010966 |
| TRINITY_DN34159_c0_g2 | NP_006507.2_solute_carrier_family_2_facilitated_glucose_transporter_mem  | 4.041468183 |
| TRINITY_DN36643_c0_g1 | NP_002996.2_P-selectin_precursor_[Homo_sapiens]                          | 4.033503499 |
| TRINITY_DN34581_c0_g3 | NP_065902.1_immunoglobulin_superfamily_containing_leucine-rich_repea     | 4.000868055 |
| TRINITY_DN35131_c0_g1 | NP_002996.2_P-selectin_precursor_[Homo_sapiens]                          | 3.958132383 |
| TRINITY_DN38005_c0_g1 | NP_001281265.1_adhesion_G_protein-coupled_receptor_B2_isoform_2_pre      | 3.945070699 |
| TRINITY_DN30667_c0_g1 | NP_001277025.1_transmembrane_protease_serine_4_isoform_7_[Homo_sa        | 3.941361956 |
| TRINITY_DN34887_c1_g1 | NP_001070706.1_signal_peptide_peptidase-like_2B_isoform_3_precursor_[H   | 3.885629474 |
| TRINITY_DN28976_c0_g1 | NP_001695.1_adhesion_G_protein-coupled_receptor_B3_[Homo_sapiens]        | 3.879081905 |
| TRINITY_DN33804_c0_g1 | NP_001185689.1_LY75-CD302_fusion_protein_isoform_2_precursor_[Homo       | 3.85485083  |
| TRINITY_DN35890_c1_g5 | NP_001191047.1_C-type_lectin_domain_family_17_member_A_isoform_1_[       | 3.851190853 |
| TRINITY_DN34216_c1_g1 | NP_001005619.1_integrin_beta-4_isoform_2_precursor_[Homo_sapiens]        | 3.838470268 |
| TRINITY_DN36112_c0_g3 | NP_006030.2_C-type_mannose_receptor_2_precursor_[Homo_sapiens]           | 3.837618943 |
| TRINITY_DN33916_c0_g4 | NP_002429.1_macrophage_mannose_receptor_1_precursor_[Homo_sapiens]       | 3.810137661 |
| TRINITY_DN36023_c0_g1 | NP_001001916.2_olfactory_receptor_52J3_[Homo_sapiens]                    | 3.805468065 |
| TRINITY_DN37392_c0_g5 | NP_258428.2_membrane_metallo-endopeptidase-like_1_[Homo_sapiens]         | 3.800654038 |
| TRINITY_DN38005_c0_g1 | NP_001281264.1_adhesion_G_protein-coupled_receptor_B2_isoform_1_pre      | 3.760327639 |