

**Whole-genome resequencing reveals domestication and signatures of selection in Ujimqin, Sunit, and
Wu Ranke Mongolian sheep breeds**

Hanning *Wang*^{1a}, Liang *Zhong*^{2a}, Yanbing *Dong*¹, Lingbo *Meng*¹, Cheng *Ji*¹, Hui *Luo*¹, Mengrong *Fu*¹, Zhi
Qi^{1*}, and Lan *Mi*^{1*}

***Corresponding Author: Lan Mi**

E-mail: lanmi_90@126.com

Zhi Qi

E-mail: qizhi@imu.edu.cn

¹ State Key Laboratory of Reproductive Regulation and Breeding of Grassland Livestock, School of Life Sciences, Inner Mongolia University, Hohhot 020020, China

² Hebei Provincial Key Laboratory of Basic Medicine for Diabetes, The Shijiazhuang Second Hospital, Shijiazhuang 050051, China

^a These authors contributed equally to this work.

Table S1 GO terms between SNT and UJMQ

P-value	Term	Symbols
<u>1</u>	<u>0.001324</u> <u>gamma-aminobutyric acid catabolic process</u>	<u>ABAT</u>
<u>2</u>	<u>0.002647</u> <u>gamma-aminobutyric acid metabolic process</u>	<u>ABAT</u>
<u>3</u>	<u>0.003968</u> <u>estrogen biosynthetic process</u>	<u>HSD17B12</u>
<u>4</u>	<u>0.005288</u> <u>estrogen metabolic process</u>	<u>HSD17B12</u>
<u>5</u>	<u>0.005288</u> <u>behavioral response to cocaine</u>	<u>ABAT</u>
<u>6</u>	<u>0.006606</u> <u>response to cocaine</u>	<u>ABAT</u>
<u>7</u>	<u>0.009239</u> <u>neurotransmitter catabolic process</u>	<u>ABAT</u>
<u>8</u>	<u>0.009239</u> <u>response to anesthetic</u>	<u>ABAT</u>
<u>9</u>	<u>0.010553</u> <u>cellular response to increased oxygen levels</u>	<u>ATP6V1A</u>
<u>10</u>	<u>0.010553</u> <u>response to increased oxygen levels</u>	<u>ATP6V1A</u>
<u>11</u>	<u>0.013467</u> <u>monocarboxylic acid metabolic process</u>	<u>ABAT;HSD17B12</u>
<u>12</u>	<u>0.014486</u> <u>response to alkaloid</u>	<u>ABAT</u>
<u>13</u>	<u>0.017101</u> <u>cellular iron ion homeostasis</u>	<u>ATP6V1A</u>
<u>14</u>	<u>0.021013</u> <u>hormone biosynthetic process</u>	<u>HSD17B12</u>
<u>15</u>	<u>0.024911</u> <u>cellular transition metal ion homeostasis</u>	<u>ATP6V1A</u>
<u>16</u>	<u>0.026208</u> <u>energy coupled proton transmembrane transport, against electrochemical gradient</u>	<u>ATP6V1A</u>
<u>17</u>	<u>0.026208</u> <u>ATP hydrolysis coupled proton transport</u>	<u>ATP6V1A</u>
<u>18</u>	<u>0.026208</u> <u>iron ion homeostasis</u>	<u>ATP6V1A</u>
<u>19</u>	<u>0.026208</u> <u>response to ammonium ion</u>	<u>ABAT</u>
<u>20</u>	<u>0.026208</u> <u>ATP hydrolysis coupled transmembrane transport</u>	<u>ATP6V1A</u>
<u>21</u>	<u>0.026208</u> <u>ATP hydrolysis coupled ion transmembrane transport</u>	<u>ATP6V1A</u>
<u>22</u>	<u>0.027503</u> <u>monocarboxylic acid catabolic process</u>	<u>ABAT</u>
<u>23</u>	<u>0.028439</u> <u>small molecule metabolic process</u>	<u>ABAT;ATP6V1A;HSD17B12</u>
<u>24</u>	<u>0.035244</u> <u>transition metal ion homeostasis</u>	<u>ATP6V1A</u>
<u>25</u>	<u>0.03653</u> <u>cellular response to oxygen levels</u>	<u>ATP6V1A</u>
<u>26</u>	<u>0.039096</u> <u>response to xenobiotic stimulus</u>	<u>ABAT</u>
<u>27</u>	<u>0.039096</u> <u>cellular hormone metabolic process</u>	<u>HSD17B12</u>
<u>28</u>	<u>0.041656</u> <u>adult behavior</u>	<u>ABAT</u>
<u>29</u>	<u>0.044211</u> <u>ATP hydrolysis coupled cation transmembrane transport</u>	<u>ATP6V1A</u>
<u>30</u>	<u>0.04617</u> <u>carboxylic acid metabolic process</u>	<u>ABAT;HSD17B12</u>
<u>31</u>	<u>0.04676</u> <u>regulation of exocytosis</u>	<u>RPH3AL</u>
<u>32</u>	<u>0.04676</u> <u>neurotransmitter metabolic process</u>	<u>ABAT</u>
<u>33</u>	<u>0.049303</u> <u>steroid biosynthetic process</u>	<u>HSD17B12</u>
<u>34</u>	<u>0.049642</u> <u>oxoacid metabolic process</u>	<u>ABAT;HSD17B12</u>
<u>35</u>	<u>0.051578</u> <u>organic acid metabolic process</u>	<u>ABAT;HSD17B12</u>
<u>36</u>	<u>0.053108</u> <u>cellular amino acid catabolic process</u>	<u>ABAT</u>
<u>37</u>	<u>0.065698</u> <u>fatty acid biosynthetic process</u>	<u>HSD17B12</u>
<u>38</u>	<u>0.065698</u> <u>hormone metabolic process</u>	<u>HSD17B12</u>

39	0.066238	regulation of biological quality	ABAT;ATP6V1A;HSD17B12
40	0.069448	response to oxygen levels	ATP6V1A
41	0.081856	regulation of neurotransmitter levels	ABAT
42	0.083089	proton transmembrane transport	ATP6V1A
43	0.086781	organic acid catabolic process	ABAT
44	0.086781	carboxylic acid catabolic process	ABAT
45	0.089235	exocytosis	RPH3AL
46	0.09046	steroid metabolic process	HSD17B12
47	0.10626	ATP metabolic process	ATP6V1A
48	0.10626	regulation of vesicle-mediated transport	RPH3AL
49	0.107466	monocarboxylic acid biosynthetic process	HSD17B12
50	0.111075	fatty acid metabolic process	HSD17B12
51	0.114672	cellular metal ion homeostasis	ATP6V1A
52	0.114672	purine ribonucleoside triphosphate metabolic process	ATP6V1A
53	0.117064	purine nucleoside triphosphate metabolic process	ATP6V1A
54	0.117064	ribonucleoside triphosphate metabolic process	ATP6V1A
55	0.11945	cellular amino acid metabolic process	ABAT
56	0.123019	purine nucleoside monophosphate metabolic process	ATP6V1A
57	0.123019	purine ribonucleoside monophosphate metabolic process	ATP6V1A
58	0.123019	regulation of hormone levels	HSD17B12
59	0.124206	behavior	ABAT
60	0.124206	small molecule catabolic process	ABAT
61	0.126576	nucleoside triphosphate metabolic process	ATP6V1A
62	0.127759	ribonucleoside monophosphate metabolic process	ATP6V1A
63	0.1313	cellular cation homeostasis	ATP6V1A
64	0.132477	nucleoside monophosphate metabolic process	ATP6V1A
65	0.133654	metal ion homeostasis	ATP6V1A
66	0.136002	cellular ion homeostasis	ATP6V1A
67	0.148825	carboxylic acid biosynthetic process	HSD17B12
68	0.149983	organic acid biosynthetic process	HSD17B12
69	0.152295	cation homeostasis	ATP6V1A
70	0.154601	inorganic ion homeostasis	ATP6V1A
71	0.155752	regulation of secretion by cell	RPH3AL
72	0.158259	biological regulation	ABAT;ATP6V1A;ADGRE5;RPH3AL;HSD17B12
73	0.161489	cellular chemical homeostasis	ATP6V1A
74	0.162632	monovalent inorganic cation transport	ATP6V1A
75	0.163774	purine ribonucleotide metabolic process	ATP6V1A

<u>76</u>	<u>0.16833</u>	<u>ribonucleotide metabolic process</u>	<u>ATP6V1A</u>
<u>77</u>	<u>0.169466</u>	<u>purine nucleotide metabolic process</u>	<u>ATP6V1A</u>
<u>78</u>	<u>0.169466</u>	<u>response to organic cyclic compound</u>	<u>ABAT</u>
<u>79</u>	<u>0.169466</u>	<u>ribose phosphate metabolic process</u>	<u>ATP6V1A</u>
<u>80</u>	<u>0.172865</u>	<u>regulation of secretion</u>	<u>RPH3AL</u>
<u>81</u>	<u>0.175124</u>	<u>ion homeostasis</u>	<u>ATP6V1A</u>
<u>82</u>	<u>0.187461</u>	<u>purine-containing compound metabolic process</u>	<u>ATP6V1A</u>
<u>83</u>	<u>0.191909</u>	<u>lipid biosynthetic process</u>	<u>HSD17B12</u>
<u>84</u>	<u>0.194125</u>	<u>intracellular protein transport</u>	<u>RPH3AL</u>
<u>85</u>	<u>0.195231</u>	<u>response to organonitrogen compound</u>	<u>ABAT</u>
<u>86</u>	<u>0.19744</u>	<u>inorganic cation transmembrane transport</u>	<u>ATP6V1A</u>
<u>87</u>	<u>0.202939</u>	<u>nucleotide metabolic process</u>	<u>ATP6V1A</u>
<u>88</u>	<u>0.204035</u>	<u>response to drug</u>	<u>ABAT</u>
<u>89</u>	<u>0.206224</u>	<u>nucleoside phosphate metabolic process</u>	<u>ATP6V1A</u>
<u>90</u>	<u>0.209497</u>	<u>cellular homeostasis</u>	<u>ATP6V1A</u>
<u>91</u>	<u>0.218171</u>	<u>inorganic ion transmembrane transport</u>	<u>ATP6V1A</u>
<u>92</u>	<u>0.219249</u>	<u>secretion by cell</u>	<u>RPH3AL</u>
<u>93</u>	<u>0.219249</u>	<u>cation transmembrane transport</u>	<u>ATP6V1A</u>
<u>94</u>	<u>0.223552</u>	<u>response to nitrogen compound</u>	<u>ABAT</u>
<u>95</u>	<u>0.23634</u>	<u>nucleobase-containing small molecule metabolic process</u>	<u>ATP6V1A</u>
<u>96</u>	<u>0.239509</u>	<u>small molecule biosynthetic process</u>	<u>HSD17B12</u>
<u>97</u>	<u>0.248952</u>	<u>secretion</u>	<u>RPH3AL</u>
<u>98</u>	<u>0.251037</u>	<u>response to abiotic stimulus</u>	<u>ATP6V1A</u>
<u>99</u>	<u>0.251037</u>	<u>chemical homeostasis</u>	<u>ATP6V1A</u>
<u>100</u>	<u>0.259329</u>	<u>drug metabolic process</u>	<u>ATP6V1A</u>
<u>101</u>	<u>0.276695</u>	<u>ion transmembrane transport</u>	<u>ATP6V1A</u>
<u>102</u>	<u>0.279659</u>	<u>response to chemical</u>	<u>ABAT;ATP6V1A</u>
<u>103</u>	<u>0.279725</u>	<u>cell adhesion</u>	<u>ADGRE5</u>
<u>104</u>	<u>0.283747</u>	<u>translation</u>	<u>MRPL19</u>
<u>105</u>	<u>0.283747</u>	<u>cellular lipid metabolic process</u>	<u>HSD17B12</u>
<u>106</u>	<u>0.28475</u>	<u>biological adhesion</u>	<u>ADGRE5</u>
<u>107</u>	<u>0.288749</u>	<u>peptide biosynthetic process</u>	<u>MRPL19</u>
<u>108</u>	<u>0.297679</u>	<u>cation transport</u>	<u>ATP6V1A</u>
<u>109</u>	<u>0.308466</u>	<u>organophosphate metabolic process</u>	<u>ATP6V1A</u>
<u>110</u>	<u>0.310412</u>	<u>response to oxygen-containing compound</u>	<u>ABAT</u>
<u>111</u>	<u>0.315258</u>	<u>amide biosynthetic process</u>	<u>MRPL19</u>
<u>112</u>	<u>0.315258</u>	<u>organonitrogen compound catabolic process</u>	<u>ABAT</u>
<u>113</u>	<u>0.318152</u>	<u>peptide metabolic process</u>	<u>MRPL19</u>
<u>114</u>	<u>0.322953</u>	<u>carbohydrate derivative metabolic process</u>	<u>ATP6V1A</u>
<u>115</u>	<u>0.327725</u>	<u>intracellular transport</u>	<u>RPH3AL</u>
<u>116</u>	<u>0.343742</u>	<u>cellular protein localization</u>	<u>RPH3AL</u>
<u>117</u>	<u>0.345605</u>	<u>cellular macromolecule localization</u>	<u>RPH3AL</u>

<u>118</u>	<u>0.347196</u>	<u>cellular process</u>	<u>ABAT;ATP6V1A;ADGRE5;MRPL19;RPH3AL;HSD17B12</u>
<u>119</u>	<u>0.350244</u>	<u>vesicle-mediated transport</u>	<u>RPH3AL</u>
<u>120</u>	<u>0.363088</u>	<u>regulation of transport</u>	<u>RPH3AL</u>
<u>121</u>	<u>0.367623</u>	<u>cellular amide metabolic process</u>	<u>MRPL19</u>
<u>122</u>	<u>0.374823</u>	<u>transmembrane transport</u>	<u>ATP6V1A</u>
<u>123</u>	<u>0.376613</u>	<u>lipid metabolic process</u>	<u>HSD17B12</u>
<u>124</u>	<u>0.38814</u>	<u>homeostatic process</u>	<u>ATP6V1A</u>
<u>125</u>	<u>0.389898</u>	<u>establishment of localization in cell</u>	<u>RPH3AL</u>
<u>126</u>	<u>0.392061</u>	<u>organonitrogen compound metabolic process</u>	<u>ABAT;ATP6V1A;MRPL19</u>
<u>127</u>	<u>0.405528</u>	<u>ion transport</u>	<u>ATP6V1A</u>
<u>128</u>	<u>0.408955</u>	<u>protein transport</u>	<u>RPH3AL</u>
<u>129</u>	<u>0.416607</u>	<u>peptide transport</u>	<u>RPH3AL</u>
<u>130</u>	<u>0.423339</u>	<u>amide transport</u>	<u>RPH3AL</u>
<u>131</u>	<u>0.424176</u>	<u>establishment of protein localization</u>	<u>RPH3AL</u>
<u>132</u>	<u>0.425847</u>	<u>oxidation-reduction process</u>	<u>HSD17B12</u>
<u>133</u>	<u>0.427103</u>	<u>transport</u>	<u>ATP6V1A;RPH3AL</u>
<u>134</u>	<u>0.437426</u>	<u>primary metabolic process</u>	<u>ABAT;ATP6V1A;MRPL19;HSD17B12</u>
<u>135</u>	<u>0.440943</u>	<u>establishment of localization</u>	<u>ATP6V1A;RPH3AL</u>
<u>136</u>	<u>0.443962</u>	<u>cell surface receptor signaling pathway</u>	<u>ADGRE5</u>
<u>137</u>	<u>0.456671</u>	<u>cellular metabolic process</u>	<u>ABAT;ATP6V1A;MRPL19;HSD17B12</u>
<u>138</u>	<u>0.45916</u>	<u>response to stimulus</u>	<u>ABAT;ATP6V1A;ADGRE5</u>
<u>139</u>	<u>0.471019</u>	<u>cellular catabolic process</u>	<u>ABAT</u>
<u>140</u>	<u>0.476451</u>	<u>organic substance catabolic process</u>	<u>ABAT</u>
<u>141</u>	<u>0.491715</u>	<u>nitrogen compound transport</u>	<u>RPH3AL</u>
<u>142</u>	<u>0.498462</u>	<u>cellular localization</u>	<u>RPH3AL</u>
<u>143</u>	<u>0.499245</u>	<u>organic substance metabolic process</u>	<u>ABAT;ATP6V1A;MRPL19;HSD17B12</u>
<u>144</u>	<u>0.502178</u>	<u>regulation of localization</u>	<u>RPH3AL</u>
<u>145</u>	<u>0.523996</u>	<u>protein localization</u>	<u>RPH3AL</u>
<u>146</u>	<u>0.528262</u>	<u>catabolic process</u>	<u>ABAT</u>
<u>147</u>	<u>0.52897</u>	<u>organonitrogen compound biosynthetic process</u>	<u>MRPL19</u>
<u>148</u>	<u>0.529883</u>	<u>cellular biosynthetic process</u>	<u>MRPL19;HSD17B12</u>
<u>149</u>	<u>0.534882</u>	<u>organic cyclic compound metabolic process</u>	<u>ATP6V1A;HSD17B12</u>
<u>150</u>	<u>0.535302</u>	<u>response to organic substance</u>	<u>ABAT</u>
<u>151</u>	<u>0.546296</u>	<u>organic substance biosynthetic process</u>	<u>MRPL19;HSD17B12</u>
<u>152</u>	<u>0.54912</u>	<u>organic substance transport</u>	<u>RPH3AL</u>
<u>153</u>	<u>0.553197</u>	<u>cellular response to chemical stimulus</u>	<u>ATP6V1A</u>
<u>154</u>	<u>0.559054</u>	<u>biosynthetic process</u>	<u>MRPL19;HSD17B12</u>
<u>155</u>	<u>0.571171</u>	<u>localization</u>	<u>ATP6V1A;RPH3AL</u>
<u>156</u>	<u>0.577024</u>	<u>macromolecule localization</u>	<u>RPH3AL</u>
<u>157</u>	<u>0.609752</u>	<u>metabolic process</u>	<u>ABAT;ATP6V1A;MRPL19;HSD17B12</u>
<u>158</u>	<u>0.611654</u>	<u>cellular response to stimulus</u>	<u>ATP6V1A;ADGRE5</u>

<u>159</u>	<u>0.613031</u>	<u>cellular nitrogen compound metabolic process</u>	<u>ATP6V1A;MRPL19</u>
<u>160</u>	<u>0.643932</u>	<u>phosphate-containing compound metabolic process</u>	<u>ATP6V1A</u>
<u>161</u>	<u>0.64561</u>	<u>phosphorus metabolic process</u>	<u>ATP6V1A</u>
<u>162</u>	<u>0.672967</u>	<u>nitrogen compound metabolic process</u>	<u>ABAT;ATP6V1A;MRPL19</u>
<u>163</u>	<u>0.674183</u>	<u>organic cyclic compound biosynthetic process</u>	<u>HSD17B12</u>
<u>164</u>	<u>0.743578</u>	<u>cellular macromolecule biosynthetic process</u>	<u>MRPL19</u>
<u>165</u>	<u>0.764563</u>	<u>macromolecule biosynthetic process</u>	<u>MRPL19</u>
<u>166</u>	<u>0.766146</u>	<u>cellular nitrogen compound biosynthetic process</u>	<u>MRPL19</u>
<u>167</u>	<u>0.797056</u>	<u>gene expression</u>	<u>MRPL19</u>
<u>168</u>	<u>0.799151</u>	<u>signal transduction</u>	<u>ADGRE5</u>
<u>169</u>	<u>0.818175</u>	<u>signaling</u>	<u>ADGRE5</u>
<u>170</u>	<u>0.824483</u>	<u>cell communication</u>	<u>ADGRE5</u>
<u>171</u>	<u>0.825414</u>	<u>nucleobase-containing compound metabolic process</u>	<u>ATP6V1A</u>
<u>172</u>	<u>0.838883</u>	<u>heterocycle metabolic process</u>	<u>ATP6V1A</u>
<u>173</u>	<u>0.843458</u>	<u>cellular aromatic compound metabolic process</u>	<u>ATP6V1A</u>
<u>174</u>	<u>0.846262</u>	<u>cellular protein metabolic process</u>	<u>MRPL19</u>
<u>175</u>	<u>0.847017</u>	<u>regulation of cellular process</u>	<u>ADGRE5;RPH3AL</u>
<u>176</u>	<u>0.879982</u>	<u>multicellular organismal process</u>	<u>ABAT</u>
<u>177</u>	<u>0.88575</u>	<u>protein metabolic process</u>	<u>MRPL19</u>
<u>178</u>	<u>0.892937</u>	<u>regulation of biological process</u>	<u>ADGRE5;RPH3AL</u>
<u>179</u>	<u>0.947792</u>	<u>cellular macromolecule metabolic process</u>	<u>MRPL19</u>
<u>180</u>	<u>0.975561</u>	<u>macromolecule metabolic process</u>	<u>MRPL19</u>
<u>181</u>	<u>0.001538</u>	<u>4-aminobutyrate transaminase activity</u>	<u>ABAT</u>
<u>182</u>	<u>0.001538</u>	<u>4-aminobutyrate:2-oxoglutarate transaminase activity</u>	<u>ABAT</u>
<u>183</u>	<u>0.001538</u>	<u>(S)-3-amino-2-methylpropionate transaminase activity</u>	<u>ABAT</u>
<u>184</u>	<u>0.001538</u>	<u>3-oxo-arachidoyl-CoA reductase activity</u>	<u>HSD17B12</u>
<u>185</u>	<u>0.001538</u>	<u>3-oxo-behenoyl-CoA reductase activity</u>	<u>HSD17B12</u>
<u>186</u>	<u>0.001538</u>	<u>3-oxo-lignoceroyl-CoA reductase activity</u>	<u>HSD17B12</u>
<u>187</u>	<u>0.001538</u>	<u>3-oxo-cerotoyl-CoA reductase activity</u>	<u>HSD17B12</u>
<u>188</u>	<u>0.007671</u>	<u>estradiol 17-beta-dehydrogenase activity</u>	<u>HSD17B12</u>
		<u>steroid dehydrogenase activity, acting on the</u>	
<u>189</u>	<u>0.015292</u>	<u>CH-OH group of donors, NAD or NADP as acceptor</u>	<u>HSD17B12</u>
<u>190</u>	<u>0.016811</u>	<u>transaminase activity</u>	<u>ABAT</u>
<u>191</u>	<u>0.016811</u>	<u>steroid dehydrogenase activity</u>	<u>HSD17B12</u>

<u>192</u>	<u>0.019842</u>	<u>transferase activity, transferring nitrogenous groups</u>	<u>ABAT</u>
<u>193</u>	<u>0.027385</u>	<u>Rab GTPase binding</u>	<u>RPH3AL</u>
<u>194</u>	<u>0.029576</u>	<u>calcium ion binding</u>	<u>ADGRE5;EFCAB3</u>
<u>195</u>	<u>0.043811</u>	<u>pyridoxal phosphate binding</u>	<u>ABAT</u>
<u>196</u>	<u>0.043811</u>	<u>vitamin B6 binding</u>	<u>ABAT</u>
<u>197</u>	<u>0.052672</u>	<u>iron-sulfur cluster binding</u>	<u>ABAT</u>
<u>198</u>	<u>0.052672</u>	<u>metal cluster binding</u>	<u>ABAT</u>
<u>199</u>	<u>0.052746</u>	<u>ion binding</u>	<u>ABAT;ATP6V1A;ADGRE5;EFCAB3;RPH3AL</u>
<u>200</u>	<u>0.056755</u>	<u>metal ion binding</u>	<u>ABAT;ADGRE5;EFCAB3;RPH3AL</u>
<u>201</u>	<u>0.058185</u>	<u>cation binding</u>	<u>ABAT;ADGRE5;EFCAB3;RPH3AL</u>
<u>202</u>	<u>0.067289</u>	<u>Ras GTPase binding</u>	<u>RPH3AL</u>
<u>203</u>	<u>0.067289</u>	<u>small GTPase binding</u>	<u>RPH3AL</u>
		<u>oxidoreductase activity, acting on the CH-</u>	
<u>204</u>	<u>0.073083</u>	<u>OH group of donors, NAD or NADP as acceptor</u>	<u>HSD17B12</u>
		<u>oxidoreductase activity, acting on CH-OH group of donors</u>	<u>HSD17B12</u>
<u>206</u>	<u>0.094544</u>	<u>vitamin binding</u>	<u>ABAT</u>
<u>207</u>	<u>0.104417</u>	<u>GTPase binding</u>	<u>RPH3AL</u>
<u>208</u>	<u>0.147209</u>	<u>drug binding</u>	<u>ABAT;ATP6V1A</u>
<u>209</u>	<u>0.160458</u>	<u>coenzyme binding</u>	<u>ABAT</u>
<u>210</u>	<u>0.257824</u>	<u>cofactor binding</u>	<u>ABAT</u>
<u>211</u>	<u>0.270931</u>	<u>protein homodimerization activity</u>	<u>ABAT</u>
<u>212</u>	<u>0.311136</u>	<u>small molecule binding</u>	<u>ABAT;ATP6V1A</u>
<u>213</u>	<u>0.32183</u>	<u>anion binding</u>	<u>ABAT;ATP6V1A</u>
<u>214</u>	<u>0.365863</u>	<u>oxidoreductase activity</u>	<u>HSD17B12</u>
<u>215</u>	<u>0.37632</u>	<u>protein dimerization activity</u>	<u>ABAT</u>
<u>216</u>	<u>0.430337</u>	<u>enzyme binding</u>	<u>RPH3AL</u>
<u>217</u>	<u>0.451197</u>	<u>identical protein binding</u>	<u>ABAT</u>
<u>218</u>	<u>0.462303</u>	<u>ATP binding</u>	<u>ATP6V1A</u>
<u>219</u>	<u>0.475923</u>	<u>adenyl ribonucleotide binding</u>	<u>ATP6V1A</u>
<u>220</u>	<u>0.476821</u>	<u>adenyl nucleotide binding</u>	<u>ATP6V1A</u>
<u>221</u>	<u>0.530029</u>	<u>transferase activity</u>	<u>ABAT</u>
<u>222</u>	<u>0.559576</u>	<u>purine ribonucleoside triphosphate binding</u>	<u>ATP6V1A</u>
<u>223</u>	<u>0.576398</u>	<u>purine ribonucleotide binding</u>	<u>ATP6V1A</u>
<u>224</u>	<u>0.57715</u>	<u>purine nucleotide binding</u>	<u>ATP6V1A</u>
<u>225</u>	<u>0.5779</u>	<u>ribonucleotide binding</u>	<u>ATP6V1A</u>
<u>226</u>	<u>0.597024</u>	<u>binding</u>	<u>ABAT;ATP6V1A;ADGRE5;EFCAB3;RPH3AL</u>
<u>227</u>	<u>0.633129</u>	<u>carbohydrate derivative binding</u>	<u>ATP6V1A</u>
<u>228</u>	<u>0.635012</u>	<u>heterocyclic compound binding</u>	<u>ABAT;ATP6V1A</u>
<u>229</u>	<u>0.642373</u>	<u>nucleotide binding</u>	<u>ATP6V1A</u>
<u>230</u>	<u>0.642373</u>	<u>nucleoside phosphate binding</u>	<u>ATP6V1A</u>
<u>231</u>	<u>0.643237</u>	<u>organic cyclic compound binding</u>	<u>ABAT;ATP6V1A</u>

<u>232</u>	<u>0.70169</u>	<u>protein binding</u>	<u>ABAT;RPH3AL</u>
<u>233</u>	<u>0.712221</u>	<u>catalytic activity</u>	<u>ABAT;HSD17B12</u>
<u>234</u>	<u>0.001054</u>	<u>4-aminobutyrate transaminase complex</u>	<u>ABAT</u>
<u>235</u>	<u>0.006312</u>	<u>proton-transporting V-type ATPase, V1 domain</u>	<u>ATP6V1A</u>
<u>236</u>	<u>0.010502</u>	<u>proton-transporting two-sector ATPase complex, catalytic domain</u>	<u>ATP6V1A</u>
<u>237</u>	<u>0.01444</u>	<u>mitochondrial matrix</u>	<u>ABAT;MRPL19</u>
<u>238</u>	<u>0.01572</u>	<u>proton-transporting V-type ATPase complex</u>	<u>ATP6V1A</u>
<u>239</u>	<u>0.020915</u>	<u>microvillus</u>	<u>ATP6V1A</u>
<u>240</u>	<u>0.028364</u>	<u>cytoplasmic part</u>	<u>ABAT;ATP6V1A;MRPL19;RPH3AL;HSD17B12</u>
<u>241</u>	<u>0.040459</u>	<u>proton-transporting two-sector ATPase complex</u>	<u>ATP6V1A</u>
<u>242</u>	<u>0.044534</u>	<u>organellar large ribosomal subunit</u>	<u>MRPL19</u>
<u>243</u>	<u>0.044534</u>	<u>mitochondrial large ribosomal subunit</u>	<u>MRPL19</u>
<u>244</u>	<u>0.048595</u>	<u>large ribosomal subunit</u>	<u>MRPL19</u>
<u>245</u>	<u>0.048595</u>	<u>actin-based cell projection</u>	<u>ATP6V1A</u>
<u>246</u>	<u>0.05062</u>	<u>transport vesicle membrane</u>	<u>RPH3AL</u>
<u>247</u>	<u>0.066697</u>	<u>apical plasma membrane</u>	<u>ATP6V1A</u>
<u>248</u>	<u>0.075516</u>	<u>mitochondrial part</u>	<u>ABAT;MRPL19</u>
<u>249</u>	<u>0.075644</u>	<u>organellar ribosome</u>	<u>MRPL19</u>
<u>250</u>	<u>0.075644</u>	<u>mitochondrial ribosome</u>	<u>MRPL19</u>
<u>251</u>	<u>0.080585</u>	<u>apical part of cell</u>	<u>ATP6V1A</u>
<u>252</u>	<u>0.085505</u>	<u>transport vesicle</u>	<u>RPH3AL</u>
<u>253</u>	<u>0.088447</u>	<u>ribosomal subunit</u>	<u>MRPL19</u>
<u>254</u>	<u>0.101451</u>	<u>cytoplasm</u>	<u>ABAT;ATP6V1A;MRPL19;RPH3AL;HSD17B12</u>
<u>255</u>	<u>0.105939</u>	<u>ribosome</u>	<u>MRPL19</u>
<u>256</u>	<u>0.127433</u>	<u>protein-containing complex</u>	<u>ABAT;ATP6V1A;MRPL19</u>
<u>257</u>	<u>0.133614</u>	<u>mitochondrion</u>	<u>ABAT;MRPL19</u>
<u>258</u>	<u>0.140082</u>	<u>membrane</u>	<u>ATP6V1A;MRPL19;RPH3AL;HSD17B12</u>
<u>259</u>	<u>0.140117</u>	<u>cytoplasmic vesicle membrane</u>	<u>RPH3AL</u>
<u>260</u>	<u>0.141985</u>	<u>vesicle membrane</u>	<u>RPH3AL</u>
<u>261</u>	<u>0.14679</u>	<u>intracellular organelle part</u>	<u>ABAT;MRPL19;RPH3AL;HSD17B12</u>
<u>262</u>	<u>0.164428</u>	<u>organelle part</u>	<u>ABAT;MRPL19;RPH3AL;HSD17B12</u>
<u>263</u>	<u>0.165058</u>	<u>mitochondrial protein complex</u>	<u>MRPL19</u>
<u>264</u>	<u>0.167793</u>	<u>transferase complex</u>	<u>ABAT</u>
<u>265</u>	<u>0.227437</u>	<u>organelle membrane</u>	<u>MRPL19;RPH3AL</u>
<u>266</u>	<u>0.227893</u>	<u>cytoplasmic vesicle part</u>	<u>RPH3AL</u>
<u>267</u>	<u>0.246575</u>	<u>plasma membrane region</u>	<u>ATP6V1A</u>
<u>268</u>	<u>0.248255</u>	<u>ribonucleoprotein complex</u>	<u>MRPL19</u>
<u>269</u>	<u>0.254233</u>	<u>membrane-enclosed lumen</u>	<u>ABAT;MRPL19</u>
<u>270</u>	<u>0.254233</u>	<u>organelle lumen</u>	<u>ABAT;MRPL19</u>
<u>271</u>	<u>0.254233</u>	<u>intracellular organelle lumen</u>	<u>ABAT;MRPL19</u>
<u>272</u>	<u>0.258273</u>	<u>endoplasmic reticulum membrane</u>	<u>HSD17B12</u>

<u>273</u>	<u>0.259104</u>	<u>endoplasmic reticulum subcompartment</u>	<u>HSD17B12</u>
<u>274</u>	<u>0.263243</u>	<u>mitochondrial inner membrane</u>	<u>MRPL19</u>
<u>275</u>	<u>0.264068</u>	<u>nuclear outer membrane-endoplasmic reticulum membrane network</u>	<u>HSD17B12</u>
<u>276</u>	<u>0.275549</u>	<u>organelle inner membrane</u>	<u>MRPL19</u>
<u>277</u>	<u>0.286886</u>	<u>endoplasmic reticulum part</u>	<u>HSD17B12</u>
<u>278</u>	<u>0.29027</u>	<u>endomembrane system</u>	<u>RPH3AL;HSD17B12</u>
<u>279</u>	<u>0.297017</u>	<u>intracellular</u>	<u>ABAT;ATP6V1A;MRPL19;RPH3AL;HSD17B12</u>
<u>280</u>	<u>0.297017</u>	<u>intracellular part</u>	<u>ABAT;ATP6V1A;MRPL19;RPH3AL;HSD17B12</u>
<u>281</u>	<u>0.302835</u>	<u>membrane protein complex</u>	<u>ATP6V1A</u>
<u>282</u>	<u>0.320822</u>	<u>mitochondrial membrane</u>	<u>MRPL19</u>
<u>283</u>	<u>0.331588</u>	<u>mitochondrial envelope</u>	<u>MRPL19</u>
<u>284</u>	<u>0.331588</u>	<u>catalytic complex</u>	<u>ABAT</u>
<u>285</u>	<u>0.33616</u>	<u>whole membrane</u>	<u>RPH3AL</u>
<u>286</u>	<u>0.347203</u>	<u>membrane-bounded organelle</u>	<u>ABAT;MRPL19;RPH3AL;HSD17B12</u>
<u>287</u>	<u>0.363069</u>	<u>organelle subcompartment</u>	<u>HSD17B12</u>
<u>288</u>	<u>0.369658</u>	<u>plasma membrane bounded cell projection</u>	<u>ATP6V1A</u>
<u>289</u>	<u>0.381955</u>	<u>plasma membrane part</u>	<u>ATP6V1A</u>
<u>290</u>	<u>0.386962</u>	<u>cell projection</u>	<u>ATP6V1A</u>
<u>291</u>	<u>0.389098</u>	<u>endoplasmic reticulum</u>	<u>HSD17B12</u>
<u>292</u>	<u>0.40109</u>	<u>organelle envelope</u>	<u>MRPL19</u>
<u>293</u>	<u>0.40109</u>	<u>envelope</u>	<u>MRPL19</u>
<u>294</u>	<u>0.416329</u>	<u>bounding membrane of organelle</u>	<u>RPH3AL</u>
<u>295</u>	<u>0.417698</u>	<u>cytoplasmic vesicle</u>	<u>RPH3AL</u>
<u>296</u>	<u>0.417698</u>	<u>intracellular vesicle</u>	<u>RPH3AL</u>
<u>297</u>	<u>0.435273</u>	<u>vesicle</u>	<u>RPH3AL</u>
<u>298</u>	<u>0.473813</u>	<u>intracellular organelle</u>	<u>ABAT;MRPL19;RPH3AL;HSD17B12</u>
<u>299</u>	<u>0.484874</u>	<u>cell part</u>	<u>ABAT;ATP6V1A;MRPL19;RPH3AL;HSD17B12</u>
<u>300</u>	<u>0.495606</u>	<u>cell</u>	<u>ABAT;ATP6V1A;MRPL19;RPH3AL;HSD17B12</u>
<u>301</u>	<u>0.502257</u>	<u>organelle</u>	<u>ABAT;MRPL19;RPH3AL;HSD17B12</u>
<u>302</u>	<u>0.5326</u>	<u>cytosol</u>	<u>ATP6V1A</u>
<u>303</u>	<u>0.552015</u>	<u>membrane part</u>	<u>ATP6V1A;HSD17B12</u>
<u>304</u>	<u>0.604898</u>	<u>intracellular membrane-bounded organelle</u>	<u>ABAT;MRPL19;HSD17B12</u>
<u>305</u>	<u>0.633825</u>	<u>plasma membrane</u>	<u>ATP6V1A</u>
<u>306</u>	<u>0.645476</u>	<u>cell periphery</u>	<u>ATP6V1A</u>
<u>307</u>	<u>0.72242</u>	<u>non-membrane-bounded organelle</u>	<u>MRPL19</u>
<u>308</u>	<u>0.72242</u>	<u>intracellular non-membrane-bounded organelle</u>	<u>MRPL19</u>
<u>309</u>	<u>0.761944</u>	<u>integral component of membrane</u>	<u>HSD17B12</u>
<u>310</u>	<u>0.774067</u>	<u>intrinsic component of membrane</u>	<u>HSD17B12</u>