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**Table S4** – Biological processes attributed to acid tolerance DEGs (% of DEGs) and genes showing the highest Log2fold change together with their biological process in each genome

<b>Genome</b>	<b>Biological processes</b>	<b>Gene (Log2fold change) and associated function</b>
<i>L. acidophilus</i>	Translation, ribosomal structure and biogenesis (51.5%); Energy production and conversion (21.2%); Amino acid transport and metabolism (9.1%); Nucleotide transport and metabolism (9.1%); DNA elements (6.06%); Proteins repair (3.03%)	<i>LBA0774</i> ( <i>atpF</i> ) (11.59) Energy production and conversion (ATP synthase B subunit)
<i>L. brevis</i>	Translation, ribosomal structure and biogenesis (54.5%); Energy production and conversion (18.18%); Protein repair (18.18%); Cell division (9.09%)	<i>LVIS_RS14560</i> ( <i>groEL</i> ) (8.67) Protein Repair
<i>L. buchneri</i>	Translation, ribosomal structure and biogenesis (43.7%); Repair proteins (25%); Nucleotide transport and metabolism (12.5%); Energy production and conversion (12.5%); Amino acid transport and metabolism (6.25%)	<i>LBUCD034_RS02605</i> ( <i>purB</i> ) (7.61) Nucleotide transport and metabolism (protein adenyl succinate lyse)
<i>L. casei</i>	Translation, ribosomal structure and biogenesis (100%)	<i>LBCZ_RS05780</i> ( <i>rpsD</i> ) (6.73) Translation, ribosomal structure and biogenesis ( <u>ribosomal protein</u> )
<i>L. crispatus</i>	Translation, ribosomal structure and biogenesis (57.1%); Nucleotide transport and metabolism (9.89%); Proteins repair (9.89%); Energy production and conversion (6.59%); Cell division (5.49%); Amino acid transport and metabolism (4.39%); Cell envelope biogenesis (3.29%); DNA elements (2.19%); Carbohydrate transport and metabolism (1.09%)	<i>LCRIS_RS01510</i> ( <i>rplC</i> ) (12.54) Translation, ribosomal structure and biogenesis ( <u>ribosomal protein</u> )
<i>L. curvatus</i>	Nucleotide transport and metabolism (33.3%); DNA elements (33.3%); Signal transduction (33.3%)	<i>OA78_RS05010</i> (8.10) DNA elements
<i>L. delbrueckii</i>	Translation, ribosomal structure and biogenesis (33.3%); Amino acid transport and metabolism (25%); Nucleotide transport and metabolism (25%); Cell envelope biogenesis (8.3%); DNA elements (8.3%)	<i>LDB_RS07740</i> (7.61) DNA elements (transposase)
<i>L. fermentum</i>	Translation, ribosomal structure and biogenesis (42.8%); DNA elements (15.3%); Nucleotide transport and metabolism (13.2%); Amino acid transport and metabolism (12.2%); Energy production and conversion (6.12%); Proteins repair r proteína (5.10%); Celg division (4.08%); Cell envelope biogenesis (1.02%)	<i>LAF_RS01020</i> (12.06) DNA elements (transposase)
<i>L. gasseri</i>	Translation, ribosomal structure and biogenesis (44.5%); Nucleotide transport and metabolism (15.2%); Cell envelope biogenesis (8.69%); Proteins Repair (8.69%); Amino acid transport and metabolism (7.60%); DNA elements (7.60%); Energy production and conversion (6.52%); Cell division (1.08%)	<i>LGAS_RS05580</i> ( <i>rfbB</i> ) (11.31) Cell envelope biogenesis ( <i>ABC-2 transporter</i> )

<i>L. jensenii</i>	Translation, ribosomal structure and biogenesis (50%); Amino acid transport and metabolism (25%); Energy production and conversion (25%)	<i>HMPREF0526_RS06110</i> (7.66) Amino acid transport and metabolism (ABC transporter)
<i>L. johnsonii</i>	Translation, ribosomal structure and biogenesis (65.8%); Proteins repair (14.6%); Amino acid transport and metabolism (4.87%); Energy production and conversion (4.87%); Cell envelope biogenesis (4.87%); Nucleotide transport and metabolism (2.43%); Carbohydrate transport and metabolism (2.43%)	<i>LJ_RS01875 (rpsE)</i> (10.26) Translation, ribosomal structure and biogenesis (ribosomal protein)
<i>L. paracasei</i>	Translation, ribosomal structure and biogenesis (23.5%); Nucleotide transport and metabolism (23.5%); Energy production and conversion (17.6%); Amino acid transport and metabolism (17.4%); Proteins Repair (11.7%); Unknown function (5.88%)	<i>LSEI_1868</i> (6.98) protein acyltransferase
<i>L. plantarum</i>	Nucleotide transport and metabolism (50%); Translation, ribosomal structure and biogenesis (25%); Cell division (25%)	<i>JDMI_RS04365</i> (7.31) Translation, ribosomal structure and biogenesis
<i>L. rhamnosus</i>	Translation, ribosomal structure and biogenesis (42.1%); Nucleotide transport and metabolism (16.6%); Amino acid transport and metabolism (14.9%); Energy production and conversion (7.89%); Proteins Repair (7.01%); Cell division (7.01%); Cell envelope biogenesis (2.63%); DNA elements (0.87%); Carbohydrate transport and metabolism (0.87%)	<i>LGG_RS11910 (fusA)</i> (11.21) Translation, ribosomal structure and biogenesis (G elongation factor)
<i>L. salivarius</i>	Translation, ribosomal structure and biogenesis (43.1%); Nucleotide transport and metabolism (18.1%); Energy production and conversion (7.75%); Proteins Repair (7.75%); Signal transduction (7.75%); Amino acid transport and metabolism (5.17%); Cell envelope biogenesis (4.3%); Cell division (4.3%); DNA element (1.72%)	<i>HMPREF0545_RS03630</i> (10.77) Proteins Repair