**S1 Table: PSI blast of HZ lipase gene from *A. thermoaerophilus* strain HZ**.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Crystal structure** | **Subfamily** | **Length** | **E\_value** | **Identity****(%)** | **Resolution****(Å)** |
| >gi|377656427|pdb|3UMJ|A | I.5 | 387 | 8e-135 | 57 | 2.10 |
| >gi|152148977|pdb|2DSN|A  | I.5 | 387 | 3e-134 | 57 | 1.50 |
| >gi|159795726|pdb|2Z5G|A  | I.5 | 387 | 2e-133 | 57 | 1.80 |
| >gi|23200288|pdb|1KU0|A  | I.5 | 388 | 2e-132 | 57 | 2.00 |
| >gi|24987388|pdb|1JI3|A  | I.5 | 388 | 4e-132 | 57 | 2.20 |
| >gi|374977502|pdb|3AUK|A  | I.5 | 389 | 1e-131 | 56 | 1.66 |
| >gi|218681560|pdb|2W22|A  | I.5 | 389 | 9e-131 | 56 | 2.20 |
| >gi|149241972|pdb|2HIH|A  | I.6 | 431 | 4e-82 | 40 | 2.86 |
| >gi|2194040|pdb|1OIL|A | I.2 | 320 | 4e-07 | 28 | 2.10 |

**Note:** *Geobacillus zalihae* T1 lipase D311E mutant (3UMJ), [*Geobacillus zalihae*](http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?lvl=0&id=213419) T1 lipase (2DSN), [*Geobacillus zalihae*](http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?lvl=0&id=213419) T1 lipase F16L mutant (2Z5G), [*Bacillus stearothermophilus* L1 lipase](http://www.pdb.org/pdb/explore/explore.do?structureId=1KU0) (1KU0), *Bacillus stearothermophilus* P1 lipase (1JI3), *Geobacillus* sp. SBS-4S lipase (3AUK), *Bacillus thermocatenulatus* BTL2 lipase (2W22), *Staphylococcus hyicus* lipase (2HIH) and *Burkholderia cepacia* lipase (1OIL).