|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Supplementary Table 1.** Presence or absence of pahways involved in amino acid, carbohydrate, and energy utilization among the *Prevotella* isolates. | | | | | | | | | | | | | | |
|  | ***P. amnii* CRIS 21A-A** | | ***P. bivia* DNF00188** | ***P. bivia* DNF00650** | ***P. bivia* GED7760C** | ***P. bivia* GED7880** | ***P. bivia* JCVIHMP010** | ***P. buccae* D17** | ***P. corporis* MJR7716** | ***P. denticola* DNF00960** | ***P. denticola* F0289** | ***P. disiens* DNF00882** | ***P. histicola* F0411** | ***P. timonensis* CRIS 5C-B1** |
| **Degradation/Utilization/Assimilation - Amino Acid Degradation** | | | | | | | | | | | | | | |
| [**glycine cleavage**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=GLYCLEAV-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYCLEAV-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYCLEAV-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYCLEAV-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYCLEAV-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYCLEAV-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYCLEAV-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYCLEAV-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYCLEAV-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYCLEAV-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYCLEAV-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYCLEAV-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**L-asparagine degradation I**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=ASPARAGINE-DEG1-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ASPARAGINE-DEG1-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ASPARAGINE-DEG1-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ASPARAGINE-DEG1-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ASPARAGINE-DEG1-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ASPARAGINE-DEG1-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ASPARAGINE-DEG1-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ASPARAGINE-DEG1-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ASPARAGINE-DEG1-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |
| [**L-aspartate degradation I**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=ASPARTATE-DEG1-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  |  |  | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ASPARTATE-DEG1-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ASPARTATE-DEG1-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |
| [**L-glutamate degradation I**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=GLUTAMATE-DEG1-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  |  |  |  | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTAMATE-DEG1-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |
| [**L-glutamate degradation II**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=GLUTDEG-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**L-glutamate degradation VI (to pyruvate)**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY-5087&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  |  | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5087&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |  |  |
| [**L-glutamate degradation X**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY-5766&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  |  |  |  | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5766&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |
| [**L-glutamine degradation I**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=GLUTAMINDEG-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTAMINDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTAMINDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTAMINDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTAMINDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTAMINDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTAMINDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTAMINDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTAMINDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTAMINDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTAMINDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTAMINDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTAMINDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTAMINDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**L-glutamine degradation II**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=GLUTAMINEFUM-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  |  |  |  | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTAMINEFUM-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |
| [**L-serine degradation**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=SERDEG-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERDEG-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**L-threonine degradation II**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=THREONINE-DEG2-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=THREONINE-DEG2-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=THREONINE-DEG2-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=THREONINE-DEG2-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=THREONINE-DEG2-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=THREONINE-DEG2-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=THREONINE-DEG2-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=THREONINE-DEG2-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=THREONINE-DEG2-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=THREONINE-DEG2-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=THREONINE-DEG2-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=THREONINE-DEG2-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=THREONINE-DEG2-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=THREONINE-DEG2-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| **Biosynthesis - Amino Acid Biosynthesis** | | | | | | | | | | | | | | |
| [**glycine biosynthesis I**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=GLYSYN-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**L-alanine biosynthesis I**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=ALANINE-VALINESYN-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ALANINE-VALINESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ALANINE-VALINESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ALANINE-VALINESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ALANINE-VALINESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ALANINE-VALINESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ALANINE-VALINESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ALANINE-VALINESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ALANINE-VALINESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ALANINE-VALINESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ALANINE-VALINESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ALANINE-VALINESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ALANINE-VALINESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |
| [**L-alanine biosynthesis III**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY0-1021&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1021&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1021&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1021&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1021&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1021&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1021&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1021&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1021&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1021&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1021&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1021&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1021&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1021&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**L-asparagine biosynthesis II**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=ASPARAGINESYN-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ASPARAGINESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ASPARAGINESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ASPARAGINESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ASPARAGINESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ASPARAGINESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ASPARAGINESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ASPARAGINESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ASPARAGINESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ASPARAGINESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**L-aspartate biosynthesis**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=ASPARTATESYN-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  |  |  | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ASPARTATESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ASPARTATESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |
| [**L-cysteine biosynthesis I**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=CYSTSYN-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=CYSTSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=CYSTSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=CYSTSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=CYSTSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=CYSTSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=CYSTSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=CYSTSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=CYSTSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=CYSTSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=CYSTSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=CYSTSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**L-glutamate biosynthesis I**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=GLUTSYN-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  |  |  |  | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |
| [**L-glutamate biosynthesis II**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=GLUTAMATE-SYN2-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  |  |  |  | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTAMATE-SYN2-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |
| [**L-glutamate biosynthesis III**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=GLUTSYNIII-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTSYNIII-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTSYNIII-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTSYNIII-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTSYNIII-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTSYNIII-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTSYNIII-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTSYNIII-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTSYNIII-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTSYNIII-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTSYNIII-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTSYNIII-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTSYNIII-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTSYNIII-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**L-glutamine biosynthesis I**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=GLNSYN-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLNSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLNSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLNSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLNSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLNSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLNSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLNSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLNSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLNSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLNSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLNSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLNSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**L-histidine biosynthesis**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=HISTSYN-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=HISTSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |  | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=HISTSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |
| [**L-homocysteine biosynthesis**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY-5344&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5344&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5344&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5344&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5344&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5344&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5344&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5344&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5344&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5344&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5344&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5344&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**L-homoserine biosynthesis**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=HOMOSERSYN-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=HOMOSERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=HOMOSERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=HOMOSERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=HOMOSERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=HOMOSERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=HOMOSERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=HOMOSERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=HOMOSERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=HOMOSERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=HOMOSERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=HOMOSERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=HOMOSERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=HOMOSERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**L-isoleucine biosynthesis I (from threonine)**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=ILEUSYN-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ILEUSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |  | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ILEUSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |
| [**L-isoleucine biosynthesis IV**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY-5104&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5104&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5104&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5104&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5104&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5104&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5104&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5104&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5104&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5104&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5104&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5104&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5104&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5104&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**L-isoleucine biosynthesis V**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY-5108&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5108&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5108&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5108&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5108&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5108&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5108&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**L-leucine biosynthesis**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=LEUSYN-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=LEUSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |  | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=LEUSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |
| [**L-lysine biosynthesis III**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY-2942&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-2942&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-2942&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-2942&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-2942&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-2942&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-2942&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-2942&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-2942&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-2942&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-2942&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-2942&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-2942&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-2942&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**L-lysine biosynthesis VI**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY-5097&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  |  |  |  |  |  | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5097&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |
| [**L-ornithine biosynthesis I**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=GLUTORN-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLUTORN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |  |  |  |
| [**L-proline biosynthesis I**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PROSYN-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PROSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |  |  |  |
| [**L-serine biosynthesis**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=SERSYN-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=SERSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**L-threonine biosynthesis**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=HOMOSER-THRESYN-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=HOMOSER-THRESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |  | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=HOMOSER-THRESYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |
| [**L-tryptophan biosynthesis**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=TRPSYN-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=TRPSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |  |  | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=TRPSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=TRPSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=TRPSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=TRPSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |
| [**L-tyrosine biosynthesis I**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=TYRSYN&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  |  |  |  | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=TYRSYN&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |
| [**L-valine biosynthesis**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=VALSYN-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=VALSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |  | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=VALSYN-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |
| **Carbohydrate Degradation** | | | | | | | | | | | | | | |
| [**(1,4)-β-D-xylan degradation**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY-6717&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6717&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |  |  |  |
| [**2'-deoxy-α-D-ribose 1-phosphate degradation**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY-7180&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7180&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7180&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7180&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7180&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7180&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7180&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7180&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7180&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7180&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7180&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7180&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7180&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7180&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**chitin degradation II (Vibrio)**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY-6902&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6902&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6902&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6902&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6902&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6902&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6902&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6902&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6902&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6902&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6902&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**chitin degradation III (Serratia)**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY-7822&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7822&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7822&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |  |  |  |  |  |  |  |
| [**D-galactose degradation I (Leloir pathway)**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY-6317&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6317&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6317&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6317&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6317&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6317&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6317&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6317&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6317&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6317&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6317&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6317&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6317&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6317&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**D-mannose degradation**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=MANNCAT-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=MANNCAT-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=MANNCAT-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=MANNCAT-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=MANNCAT-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=MANNCAT-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=MANNCAT-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=MANNCAT-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=MANNCAT-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=MANNCAT-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=MANNCAT-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=MANNCAT-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=MANNCAT-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=MANNCAT-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**gellan degradation**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY-6827&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6827&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |  |  |  |
| [**L-arabinose degradation I**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=ARABCAT-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ARABCAT-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |  |  |  |
| [**L-rhamnose degradation I**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=RHAMCAT-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=RHAMCAT-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |  |  |  |
| [**lactose degradation III**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=BGALACT-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  |  |  |  | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=BGALACT-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |
| [**melibiose degradation**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY0-1301&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1301&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |  |  |  |
| [**pectin degradation I**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY-7246&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7246&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |  |  |  |
| [**pectin degradation II**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY-7248&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7248&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |  |  |  |
| [**sucrose degradation III (sucrose invertase)**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY-621&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-621&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |  |  |  |  | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-621&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-621&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |
| [**trehalose degradation II (trehalase)**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY0-1182&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  |  |  | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1182&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1182&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1182&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |
| [**trehalose degradation VI (periplasmic)**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY0-1466&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  |  |  | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1466&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1466&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1466&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |
| [**xylose degradation I**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=XYLCAT-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | |  |  |  |  |  |  | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=XYLCAT-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  |  |  |  |  |
| **Generation of Precursor Metabolite and Energy** | | | | | | | | | | | | | | |
| [**2-oxoisovalerate decarboxylation to isobutanoyl-CoA**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY-5046&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5046&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5046&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5046&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5046&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5046&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5046&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5046&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5046&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5046&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5046&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5046&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-5046&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |
| [**acetate formation from acetyl-CoA I**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY0-1312&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1312&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1312&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1312&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1312&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1312&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1312&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1312&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1312&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1312&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1312&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1312&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1312&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1312&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**ATP biosynthesis**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY-7980&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7980&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7980&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7980&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7980&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7980&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7980&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7980&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7980&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7980&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7980&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7980&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7980&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-7980&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**glycerol-3-phosphate to cytochrome booxidase electron transfer**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY0-1561&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1561&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1561&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1561&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1561&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1561&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1561&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1561&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1561&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1561&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |
| [**glycerol-3-phosphate to fumarate electron transfer**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY0-1582&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1582&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1582&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1582&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1582&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1582&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1582&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1582&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1582&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1582&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |
| [**glycolysis I (from glucose 6-phosphate)**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=GLYCOLYSIS&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYCOLYSIS&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYCOLYSIS&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYCOLYSIS&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYCOLYSIS&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYCOLYSIS&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYCOLYSIS&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYCOLYSIS&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYCOLYSIS&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYCOLYSIS&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYCOLYSIS&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=GLYCOLYSIS&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**glycolysis III (from glucose)**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=ANAGLYCOLYSIS-PWY&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ANAGLYCOLYSIS-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |  | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ANAGLYCOLYSIS-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ANAGLYCOLYSIS-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ANAGLYCOLYSIS-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ANAGLYCOLYSIS-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ANAGLYCOLYSIS-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ANAGLYCOLYSIS-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=ANAGLYCOLYSIS-PWY&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |  |
| [**NADH repair**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY-6938&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6938&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6938&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6938&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6938&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6938&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6938&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6938&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6938&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6938&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6938&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6938&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6938&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY-6938&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**succinate to cytochrome bd oxidase electron transfer**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY0-1353&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1353&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1353&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1353&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1353&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1353&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1353&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1353&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1353&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1353&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1353&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1353&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1353&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1353&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |
| [**succinate to cytochrome bo oxidase electron transfer**](https://biocyc.org/compare-frame-in-orgs?type=PATHWAY&object=PWY0-1329&orgids=(GCF_000177355-HMP+GCF_000759045-HMP+GCF_000759165-HMP+GCF_001546565-HMP+GCF_001574405-HMP+GCF_000177315-HMP+GCF_000162455-HMP+GCF_001546595-HMP+GCF_000759205-HMP+GCF_000193395-HMP+GCF_000759225-HMP+GCF_000234055-HMP+GCF_000177055-HMP)) | | [X](file:///GCF_000177355-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1329&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759045-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1329&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759165-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1329&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546565-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1329&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001574405-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1329&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177315-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1329&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000162455-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1329&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_001546595-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1329&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759205-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1329&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000193395-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1329&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000759225-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1329&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000234055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1329&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) | [X](file:///GCF_000177055-HMP/NEW-IMAGE%3ftype=PATHWAY&object=PWY0-1329&orgids=(GCF_000177355-HMP%2520GCF_000759045-HMP%2520GCF_000759165-HMP%2520GCF_001546565-HMP%2520GCF_001574405-HMP%2520GCF_000177315-HMP%2520GCF_000162455-HMP%2520GCF_001546595-HMP%2520GCF_000759205-HMP%2520GCF_000193395-HMP%2520GCF_000759225-HMP%2520GCF_000234055-HMP%2520GCF_000177055-HMP)) |