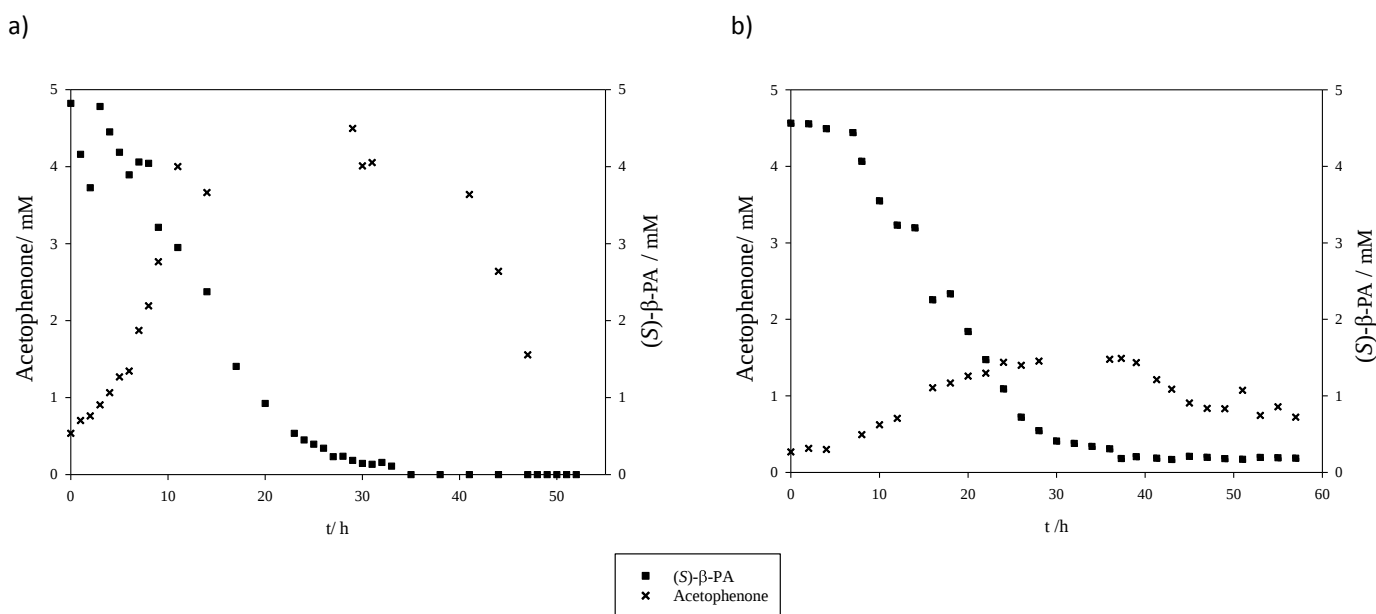


## Supplementary Material

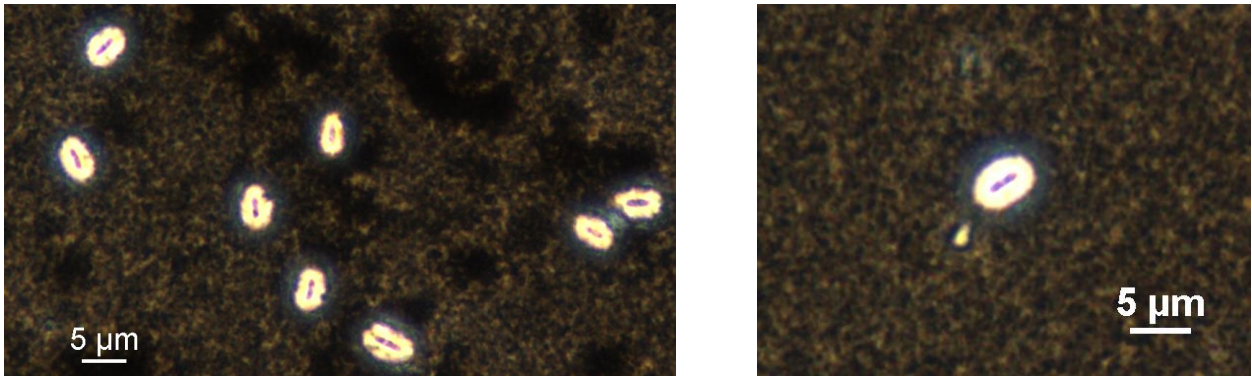
### Enantiomer discrimination in $\beta$ -phenylalanine degradation by a newly isolated Paraburkholderia strain BS115 and type strain PsJN

Oliver Buß\*, Sarah-Marie Dold, Pascal Obermeier, Dennis Litty, Delphine Muller, Jens Grüninger and Jens Rudat

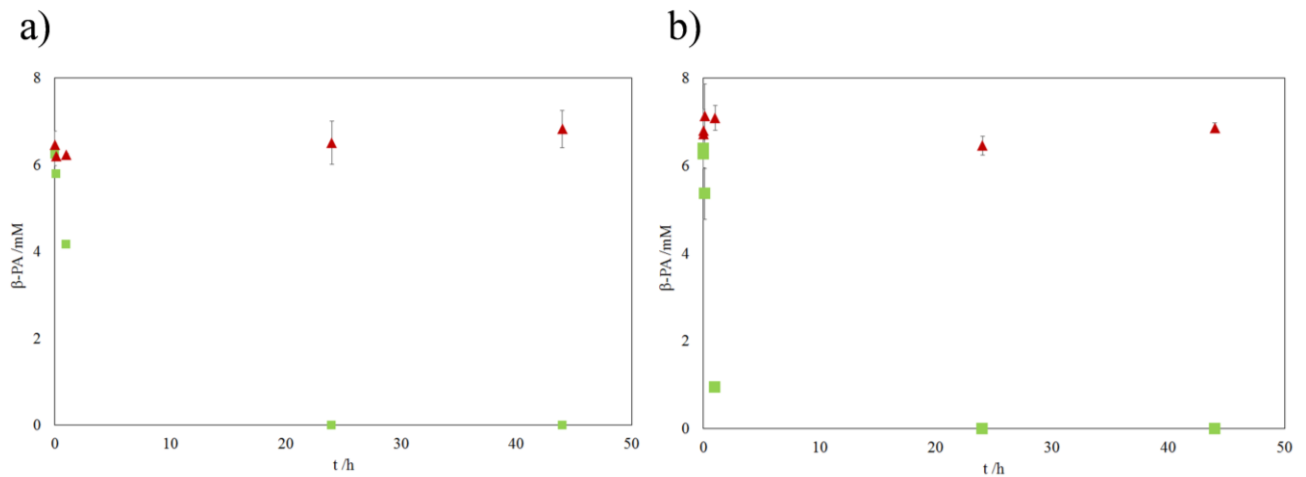
\* **Correspondence:** Corresponding Authors: [oliver.buss@kit.edu](mailto:oliver.buss@kit.edu), [jens.rudat@kit.edu](mailto:jens.rudat@kit.edu)



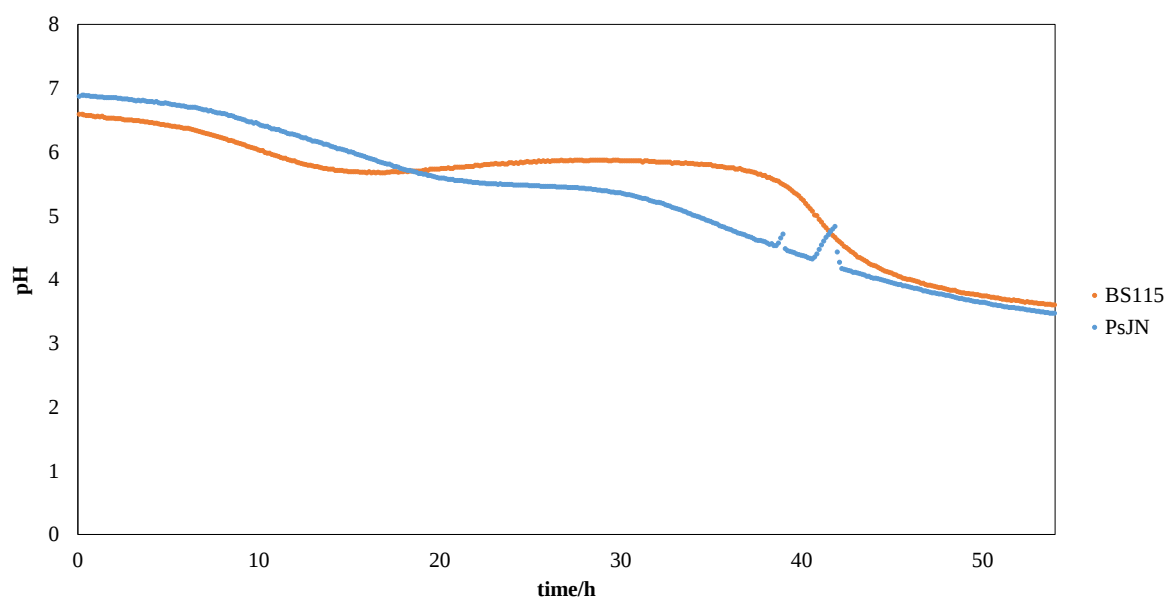
**Figure S1.** Acetophenone (AP) content during fermentation process in comparison to (S)- $\beta$ -PA concentration. AP concentration rises inversely proportional to (S)- $\beta$ -PA degradation and decreases after (S)- $\beta$ -PA depletion. a) BS115 fermentation b) PsJN fermentation.



**Figure S2.** Extracellular capsule built by BS115 during fermentation after depletion of (S)- $\beta$ -PA. The capsule of BS115 was visualized by negative contrasting with Chinese ink.

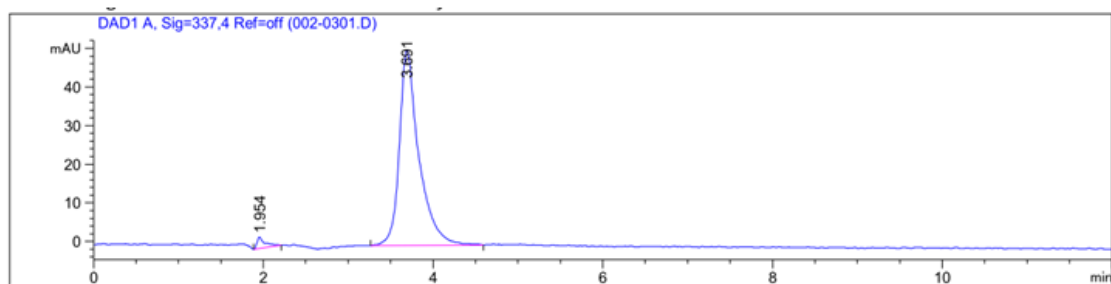


**Figure S3.** Transaminase activity of cell free lysate of BS115 and PsJN. In red triangles: (R)- $\beta$ -PA; in green triangles (S)- $\beta$ -PA. The reaction was performed at 30°C in reaction mixture (see also section 2.6) of 12 mM of *rac*-  $\beta$ -PA using  $\alpha$ -ketoglutarate as amino acceptor. The reaction and sampling time was chosen to depict fast reactions as well as possible long-term effects.

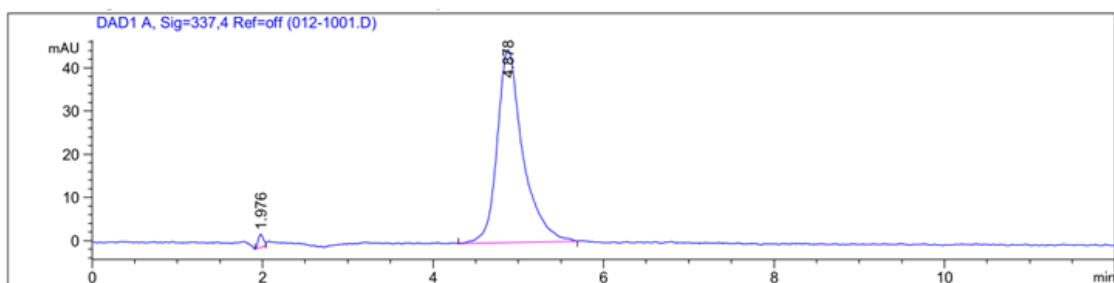


**Figure S4.** pH profile during fermentation of BS115 and PsJN in 1.5 L bioreactor systems using minimal medium. In contrast to PsJN, BS115 showed a stabilization of the pH value between 20 and 40 h.

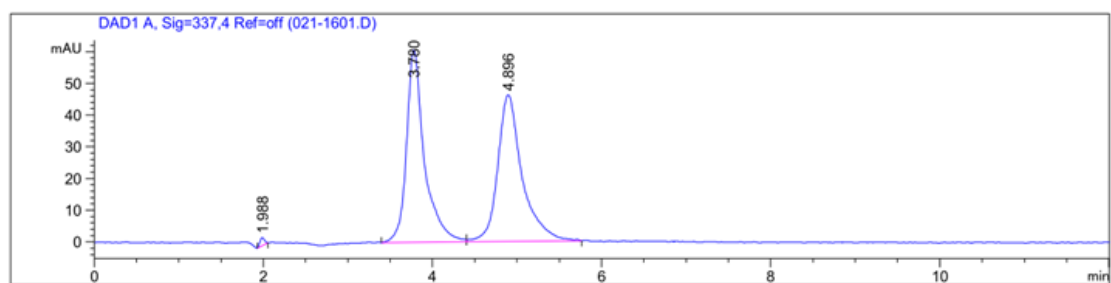
(*R*)- $\beta$ -Phenylalanine 5 mM



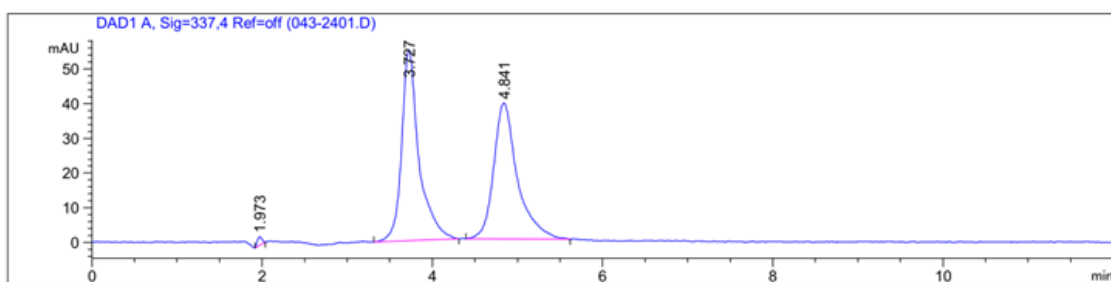
(*S*)- $\beta$ -Phenylalanine 5 mM



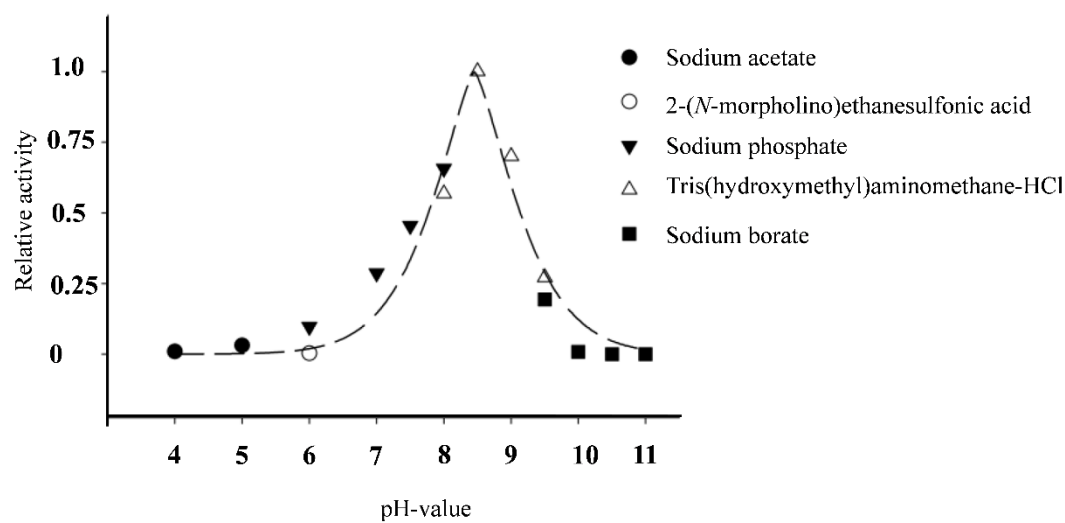
Racemate 10 mM



Fermentation sample



**Figure S5.** Chiral separation of  $\beta$ -PA using IBLC-OPA pre-column derivatization and reversed phase HPLC according to Brucher et al. (2010a). The retention time of the (*R*)-enantiomer is 3.7 min, of the (*S*)-enantiomer 4.8 min.



**Figure S6.** Relative transaminase activity of BS115 in regard to pH. The reactions were performed with 2.5 mM of racemic  $\beta$ -phenylalanine using 0.5 mg/mL of protein at 30°C. (Figure was adapted from doctoral thesis of (Brucher, 2011)).

## References

- Brucher, B. (2011). Novel Transaminases for the Biocatalytic Synthesis of Aromatic  $\beta$ -Amino Acids. Karlsruhe Institute of Technology.
- Brucher, B., Rudat, J., Syldatk, C., and Vielhauer, O. (2010). Enantioseparation of Aromatic  $\beta^3$ -Amino acid by Precolumn Derivatization with *o*-Phthaldialdehyde and *N*-Isobutyryl-L-cysteine. *Chromatographia* 71, 1063–1067. doi:10.1365/s10337-010-1578-x.