

Supplementary materials: Table S1, Figure S1 – S5.

Table S1 Comparison of the relative biosorption (%) of four REEs by *B. subtilis* (experiment 1) with the relative biosorption (%) of eight REEs by *B. subtilis* (experiment 2) at pH 2.5. Biomass was 5 g/l. Concentration of REEs was 15 $\mu\text{mol/l}$ for each element. Experiment 1 was carried out without parallels, experiment 2 was carried out with two parallel assays, mean values are shown.

Experiment	Sampling time	La	Ce		Nd	Gd	Dy	Er	Yb	Lu
1	2h	8			23		33		86	
1	4h	11			19		29		87	
2	2h	11	16		18	21	14	24	57	74
2	4h	11	16		19	22	12	24	57	74

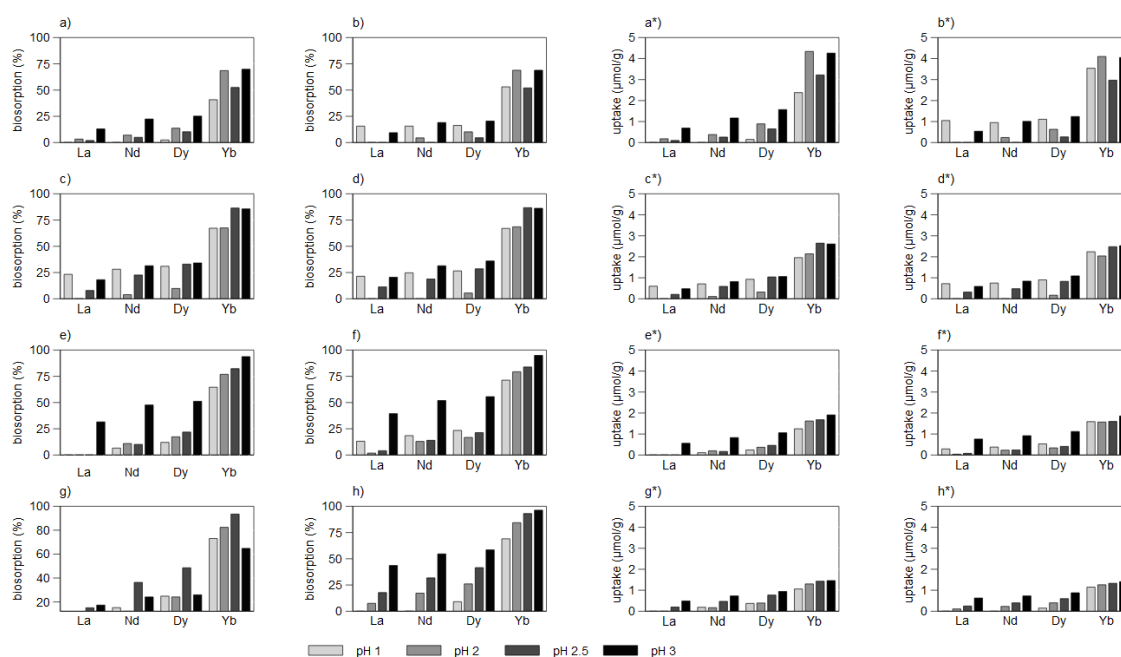


Fig. S1 Relative biosorption (a - h) and amount of REE uptake (a* - h*) by *B. subtilis* tested with different amounts of biomass at different pH and different time intervals: a) and b): biomass 2.5 g/l, c) and d): biomass 5 g/l, e) and f): biomass 7.5 g/l. g) and h): biomass 10 g/l. a), c), e), g): samples were taken after two hours; b), d), f), h): samples were taken after four hours.

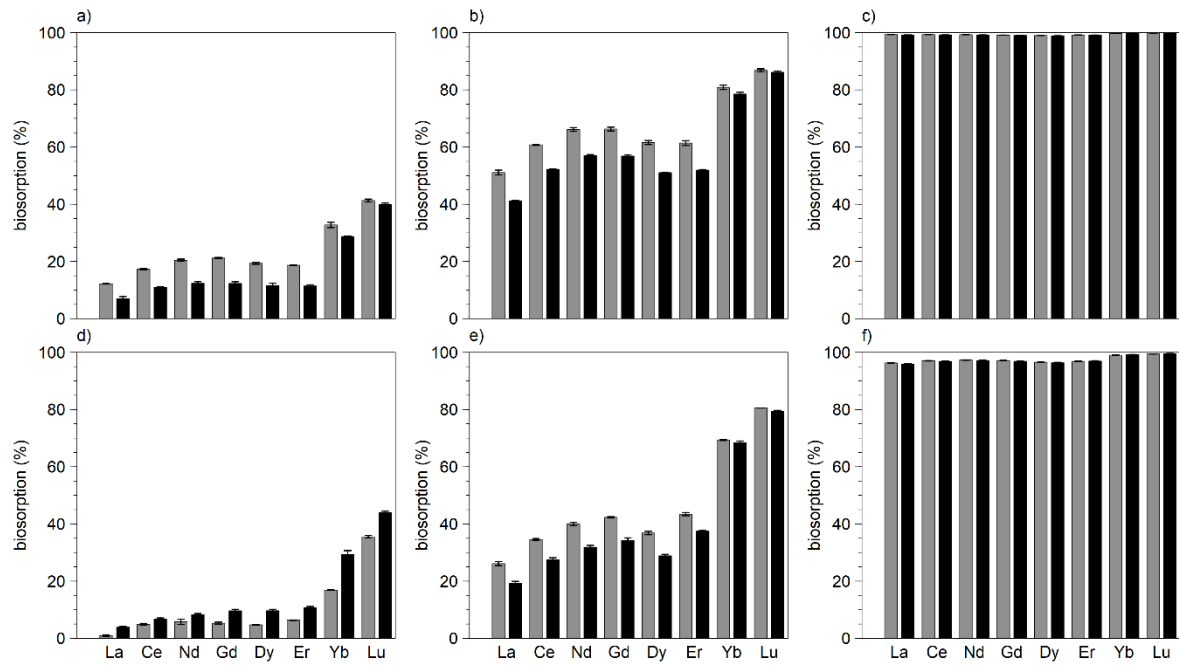


Fig. S2 Relative biosorption by *L. methylhalidivorans* (a -c) and *P. inhibens* (d – f) at different amounts of biomass (a, d: 2.5 g/l; b, e: 5 g/l; c, f. 10 g/l) and different time intervals (grey bars: 2h, black bars: 20h). Error bars show standard deviation of two parallels.

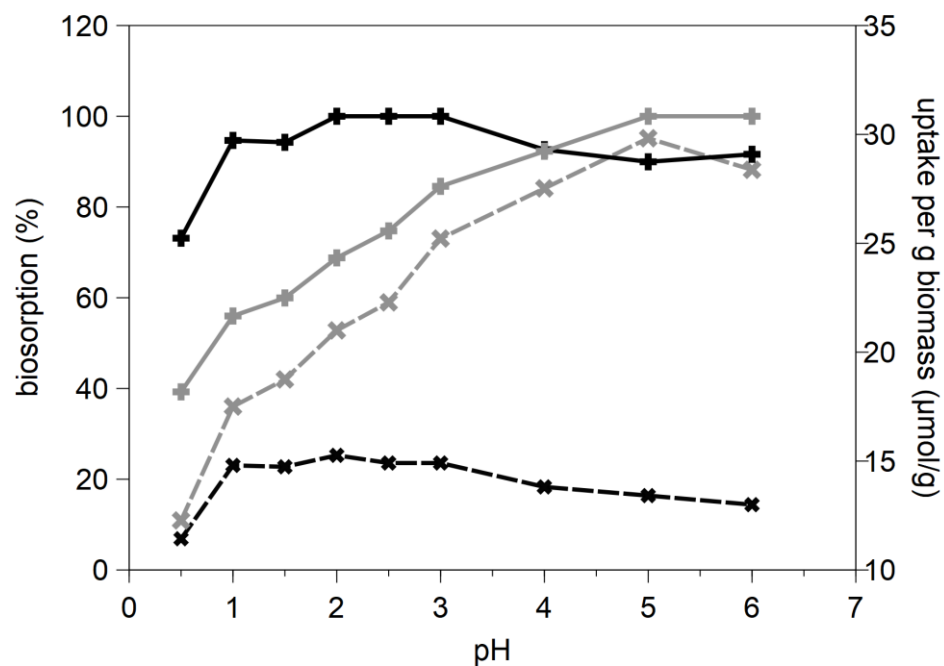


Fig. S3 REE biosorption by *Pichia* sp. at two different amounts of biomass (2 g/l: grey, 4 g/l: black) at different pH, tested for La, Nd, Dy and Lu (no parallel experiments). Relative biosorption of sum of REEs is shown. Dashed lines: uptake, solid lines: relative biosorption, samples were taken after 24 hours.

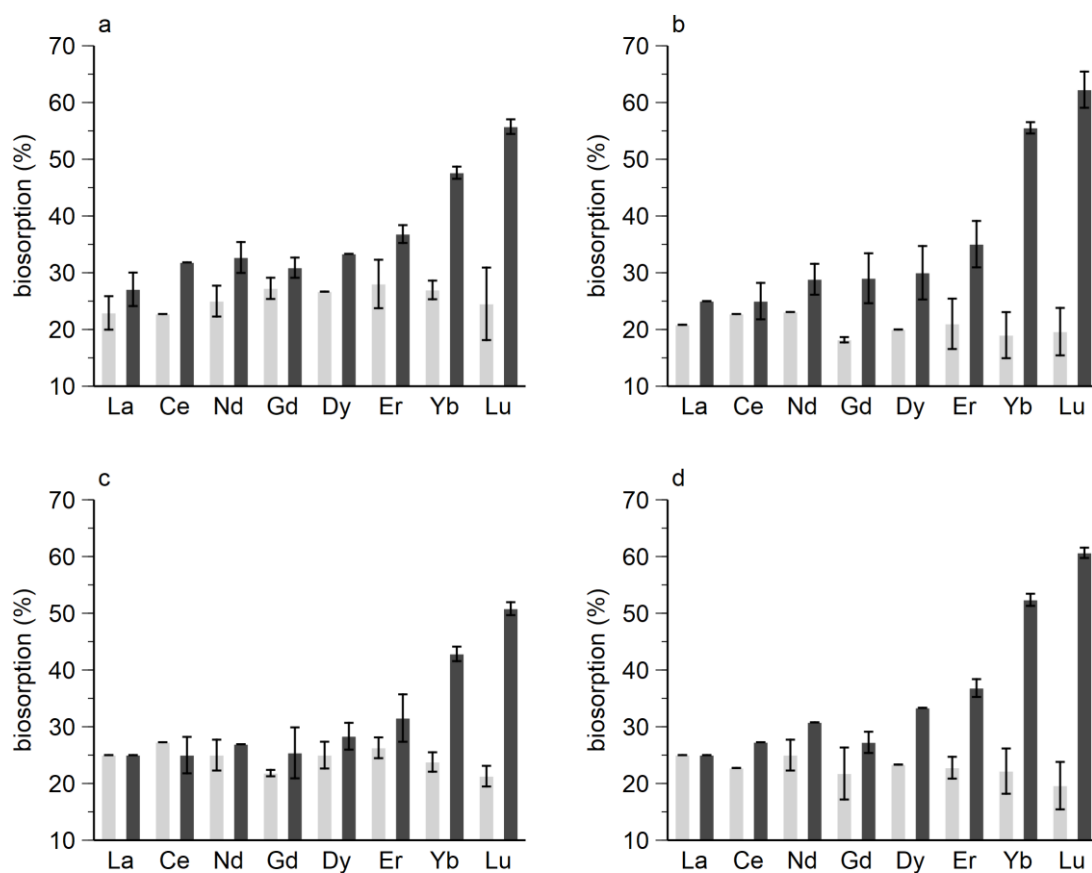


Fig. S4 Relative biosorption by *B. subtilis* immobilized in 1.5 % (a, b) and 2 % (c, d) agarose. Samples were taken after 2.5 hours (a, c) and 5 hours (b, d). Biomass 5 g/l, pH 2.5.

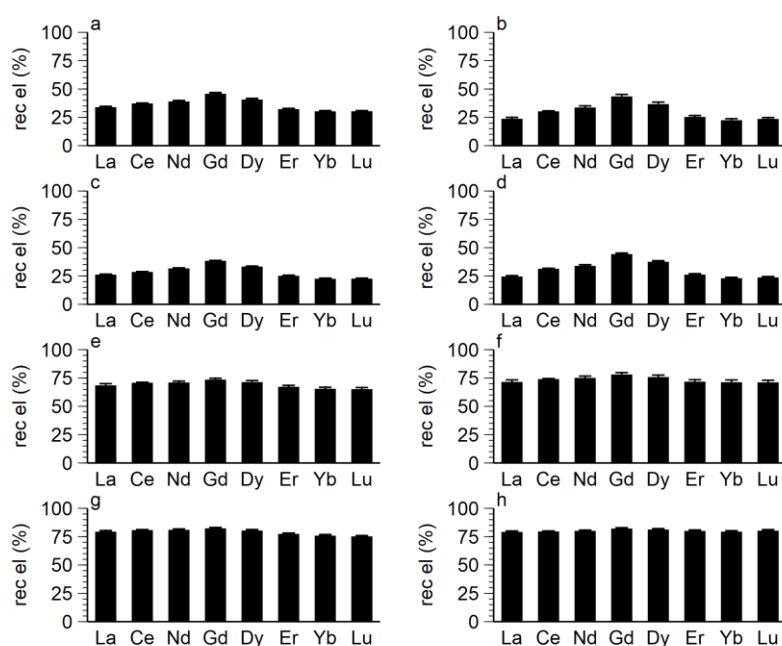


Fig. S5. Relative biosorption (rec el: recovered element) by *C. chromoblastomyces* tested at different pH and different time intervals: a, b: pH 1.5; c, d: pH 2.5; e, f: pH 3.5; g, h: pH 4.5. a, c, e, g: samples were taken after four hours; b, d, f, g: samples were taken after 24 hours. Biomass was 7.5 g/l.