**Metabolism of multiple aromatic compounds in corn stover hydrolysate by *Rhodopseudomonas palustris***

A major barrier to efficient conversion of lignocellulosic materials to biofuels is sensitivity of microbes to inhibitory compounds formed during biomass pretreatment. Aromatics derived from lignocellulose are a major class of inhibitors that are typically not metabolized by microbes commonly used as biocatalysts. However, the purple non-sulfur bacterium *Rhodopseudomonas palustris* is known to utilize aromatic compounds such as benzoate or ρ-hydroxybenzoate under anaerobic conditions. Researchers at Great Lakes Bioenergy Research Center have now shown that *R. palustris* is able to remove a majority of the aromatic compounds present in corn stover hydrolysates while leaving the sugars intact. The conditioned hydrolysate supported improved growth of a second microbe that was not able to grow in untreated hydrolysate. They also found that most of the aromatic compounds were metabolized via the known *R. palustris* benzoyl-CoA pathway. Furthermore, the use of benzoyl-CoA pathway mutants prevents complete degradation of the aromatics and allows for production of selected products that may be recovered as coproducts from fermentations. This work presents the first demonstration of the ability of a microbe to metabolize and remove mixed aromatics in biomass hydrolysate, compounds which are detrimental to most microbes and generally unsuitable as carbon sources. This knowledge may inform the design of new microbes for bioconversion that can generate valuable coproducts from fermentation of sugars in lignocellulosic biomass.

**Reference:** **Austin, S., Kontur, W.S., Ulbrich, A., Oshlag, J.Z., Zhang, W., Higbee, A., Zhang, Y., Coon, J.J., Hodge, D.B., Donohue, T.J., Noguera, D.R**. (2015) Metabolism of multiple aromatic compounds in corn stover hydrolysate by *Rhodopseudomonas palustris*. Environmental Science and Technology DOI: 10.1021/acs.est.5b02062.

**Contact**: Dr. N. Kent Peters, SC-23.2, (301) 903-5549