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Articles of Significant Interest Selected from This Issue by the Editors

Better Tools for Studying *Helicobacter* Genetics

How far researchers can delve into the mysteries of their favorite organism is often limited only by their curiosity and the genetic tools at their disposal. Unlike those for other bacterial pathogens, the genetic toolbox for helicobacters is limited. Debowski et al. (p. 7969–7980) have expanded the functionality of inducible gene regulation in *Helicobacter pylori* with the addition of the reverse *tet* repressor system, as well as new promoters to better match expression of the target gene(s). This advancement opens the way for investigating the function of essential genes and the effect of gene dosage on *Helicobacter* physiology and chronic infection.

Redox Engineering of *Saccharomyces cerevisiae* Improves Acetate Uptake and Bioethanol Yield

In 2010, Guadalupe Medina et al. (http://dx.doi.org/10.1128/AEM.01772-09) pioneered the use of an acetylating acetaldehyde dehydrogenase in *Saccharomyces cerevisiae*, enabling this yeast to anaerobically convert acetate to ethanol. Henningsen et al. (p. 8108–8117) now show that this acetate-to-ethanol pathway quickly becomes constrained by limited NADH availability. The authors successfully improved the anaerobic NADH supply by expressing a heterologous NADPH-specific alcohol dehydrogenase, allowing for increased acetate uptake and higher ethanol titers. Since lignocellulosic feedstock pretreatment often releases inhibitory concentrations of acetate, this approach is especially applicable to second-generation bioethanol production.

O Antigen Modulates the *Xylella fastidiosa*-Vector Interaction

Xylella fastidiosa is a xylem-limited bacterial plant pathogen that is transmitted by xylem-feeding insect vectors. While vector transmission biology at the organismal level has been well characterized, the molecular mechanisms underlying the complex vector-pathogen interactions during the acquisition process are not well understood. Consequently, research aimed at disrupting the vector-pathogen interface is ongoing. Through investigation of the *X. fastidiosa*-vector interaction in the context of the bacterial cell surface carbohydrate lipopolysaccharide, Rapicavoli et al. (p. 8145–8154) established the role of O antigen as an important mediator of acquisition of this destructive agricultural pathogen.

Avian Body Temperature Keeps Nontyphoid *Salmonella* in Check

Poultry has been implicated in outbreaks of nontyphoid *Salmonella* (NTS); however, these birds are largely asymptomatic when colonized by NTS. Within the host, *Salmonella* pathogenicity island 1 (SPI-1) contributes to disease signs and localization to the liver and spleen. Studies by Troxell et al. (p. 8192–8201) demonstrated poor localization of NTS to these tissues within challenged chicks. At body temperature, which is higher in birds than in other animals, the activity of the pivotal activator of SPI-1, HilD, was inoperative. This result indicates that the body temperature of the avian host serves as a regulatory cue that modulates virulence within NTS.

New Beer Yeasts Enable Brewers To Create More-Diverse Lager Beers

Lager beers, such as Budweiser, Stella Artois, Heineken, and Miller, represent more than 90% of beer production. However, recent comparative genomic analyses revealed that today's lager yeasts belong to one of only two genetically related superfamilies, which partly explains why lager beers are less diverse than ales. Mertens and colleagues (p. 8202–8214) used high-throughput robot-assisted selection and breeding techniques to develop a set of 31 new lager yeasts. Pilot-scale tests revealed that some of the newly created yeasts not only exhibit very diverse aroma profiles but also increase fermentation efficiency.

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