Articles of Significant Interest Selected from This Issue by the Editors

Save Our *Staphylococcus*: the SOS Response Enables *Staphylococcus aureus* To Overcome Oxidative Stress

To combat the generation of reactive oxygen species (ROS) by immune cells, *Staphylococcus aureus* employs numerous defenses, including the golden pigment staphyloxanthin. However, this work by Painter et al. (p. 1830–1844) reveals an additional mechanism by which this pathogen resists oxidative stress. Exposure of *S. aureus* to ROS triggers the emergence of small colony variants (SCVs) via the SOS response. Despite their lack of staphyloxanthin pigment, SCVs are found to be highly resistant to oxidative stress, which may explain their ability to persist for extended periods in human tissues.

Attenuating *Chlamydia muridarum* with Pasteurian Selection

Chlamydia muridarum has been used for studying *Chlamydia trachomatis* pathogenesis because intravaginal infection of mice with *C. muridarum* causes hydrosalpinx, which is also found in *C. trachomatis*-infected women. To identify chlamydial virulence factors for hydrosalpinx induction, Chen et al. (p. 1881–1892) passage *C. muridarum* in cell culture with alternating selection pressure for many generations to accumulate genetic mutations for decreasing chlamydial pathogenic fitness in animals (Pasteurian selection). Comparison between isogenic strains led to the identification of genetic factors responsible for an *in vitro* attachment enhancement and an *in vivo* pathogenicity attenuation phenotype, respectively. The same mutants may also be candidates as live attenuated *Chlamydia* vaccines.

Anti-CD20 Antibody Therapy and Susceptibility to *Pneumocystis* Pneumonia

B-lymphocyte depletion by anti-CD20 antibodies is used to treat B-cell malignancies and autoimmune diseases. *Pneumocystis* pneumonia, caused by the opportunistic fungus *Pneumocystis jirovecii*, has been associated with anti-CD20 therapy. However, there is debate as to whether anti-CD20 alone confers risk to *Pneumocystis* infection or is an effect of an immunosuppressive regimen. Elsegeiny et al. (p. 2043–2052) use a murine model to show that depleting B cells with anti-CD20 antibody induces susceptibility to *Pneumocystis* infection, and this is associated with impaired type 2 immunity and failure to generate protective $CD4^+$ T-cell responses. This anti-CD20 model will be useful to study B-cell function in *Pneumocystis* pneumonia and provides a new model to test treatments.

The CpxRA Two-Component System Is Essential for *Citrobacter rodentium* Virulence

Citrobacter rodentium is a murine intestinal pathogen that is considered a model for the human pathogens enterohemorrhagic and enteropathogenic *Escherichia coli*. In order to cause disease, these pathogens must adapt to, and survive, in the environment of the host intestinal tract. Thomassin et al. (p. 1919–1928) demonstrate that the *C. rodentium* two-component system CpxRA is expressed *in vivo* and is required for virulence in two mouse infection models. This is the first study that identifies a *C. rodentium* two-component signal transduction system required for pathogenesis and further indicates that CpxRA may be a target for therapeutics against enteric pathogens.

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