

Q&A ATCC® Excellence in Research Webinar “Drug-resistant *Acinetobacter baumannii* – A growing superbug population”

General Questions

1. Will we be able to download the presentation?
This presentation will be available to watch on demand [here](#).
2. Can the drug-resistant *Acinetobacter baumannii* strains be shipped overseas?
Yes, these strains are available to both domestic and international customers.
3. What other drug-resistant strains are available from ATCC?
ATCC has a number of drug-resistant strains available. Some of our more popular strains include methicillin-resistant *Staphylococcus aureus* (MRSA); Vancomycin-resistant Enterococci (VRE); Carbapenem-resistant Enterobacteriaceae (CRE), including NDM and KPC strains; Extended-Spectrum beta-lactamase (ESBL) strains; drug-resistant *Acinetobacter baumannii*, drug-resistant *Pseudomonas aeruginosa*; isoniazid-resistant mycobacteria; drug-resistant *Candida albicans*; and drug-resistant vector-borne parasitic protozoa, including strains of *Plasmodium falciparum*. For more information about superbugs, please visit our website at www.atcc.org/superbugs. To view a complete listing of our multidrug-resistant strains, visit us online at www.atcc.org, or download a copy of our [Multidrug Resistant & Antimicrobial Reference Strains](#) brochure.
4. Have the 13 drug-resistant *Acinetobacter baumannii* strains been analyzed for the mechanisms that resulted in drug resistance?
No, these particular strains have only been tested for overall antibiotic resistance or susceptibility to the different antibiotic classes. They have not been tested for the underlying cause of resistance.
5. How big is the impact of transduction on the transfer of antibiotic resistance genes?
There is evidence that transduction is a viable method of antibiotic resistance acquisition. However, to our knowledge, the overall impact of transduction on the transfer of antibiotic resistance genes is still unknown.
6. How does ATCC culture *Acinetobacter baumannii*?
ATCC primarily grows this species aerobically in nutrient broth or on nutrient agar at 37°C. For each of these products, we provide an online product sheet that has the propagation information and growth conditions provided.

7. The concept of using antisense agents to combat drug-resistant strains is interesting, how is this done?

The use of antisense RNA is one method that could be used to stop gene expression. In this case, antisense RNA can be artificially generated from transfected plasmid vectors as a means to inhibit bacterial gene expression. The introduction of the antisense oligonucleotides allows for the formation of stable DNA:RNA interactions, thus leading to the degradation of the resulting heterodimers by RNase H. However, this inhibition is short-lived. Moreover, for this method to work properly during clinical use, the antisense agent would need to be able to be delivered to the site of infection, and delivered to the site of action within the bacterial cell (Woodford, Wareham, Journal of Antimicrobial Chemotherapy 63(2), 2008).

8. Can you comment on the prevalence of drug-resistance among *Acinetobacter* strains?

Drug-resistant *A. baumannii* has been found in a number of locations, primarily in hospitals. There have been reports of drug-resistant *A. baumannii* from hospitals in Europe, North America, Argentina, Brazil, China, Taiwan, Hong Kong, Japan, and Korea (Perez *et al.*, Antimicrobial Agents and Chemotherapy 51(10), 2007). More recently, cases of military and nonmilitary personnel returning to the United Kingdom or the United States from operations in Iraq and Afghanistan have been found to have infections caused by drug-resistant *A. baumannii*.

9. Is the incidence on the increase in drug-resistant *Acinetobacter* in the past few years, or is this something that was always there but has come to the forefront now along with other superbugs?

There have been strains of drug-resistant *A. baumannii* isolated within the last several decades, often associated with the overuse or misuse of antibiotics. More recently, widespread public awareness of the risk of this bacterium in healthcare settings has escalated, primarily as a result of the media attention given to infections in military personnel that have been seriously wounded in non-native conflict zones.

10. Have all of the *A. baumannii* strains offered by ATCC been sequenced?

ATCC has only been verifying cultures with sequencing for a few years. Any strains that have not been grown in the last few years have not been sequenced. For information on if a particular strain has been sequenced, please contact ATCC Technical Services at tech@atcc.org.

11. How can I know if my strain of *A. baumannii* is in the *A. calcoaceticus*-*A. baumannii* complex?

There are several methods to determine if your strain is in the *A. calcoaceticus*-*A. baumannii* complex. One method is through restriction analysis of the 16S-23S rRNA intergenic spacer sequences (Dolzani *et al.* Journal of Clinical Microbiology 33(5), 1995). This method is based on the combined digestion by the restriction endonucleases *AluI* and *NdeII* of DNA fragments amplified from the 16S-23S rRNA intergenic spacer region.

Another method is through the sequencing analysis of the 16S-23S rRNA intergenic spacer region (Chang *et al.* Journal of Clinical Microbiology 43(4), 2005).

12. Are there any deaths related to *A. baumannii*?

Yes, *A. baumannii* infection typically occurs in immunologically compromised patients and has been shown to be able to either cause or contribute to the death of these patients.

13. Are there any quarantine procedures to detect *A. baumannii* when coming from abroad?

To our knowledge, there are no specific quarantine procedures to detect *A. baumannii* when coming from abroad.

14. What is known about the natural competence of these bacteria?

There have been isolates found that have demonstrated natural competence; an example of this is strain A118 (Ramirez *et al.* Journal of Clinical Microbiology 48(4), 2010). Moreover, it has been shown that the genes for natural competence are present in *A. baumannii*, and strains are clearly able to incorporate foreign DNA (Vallenet *et al.*, PLoS One 3, 2008). However, to our knowledge, it is unknown if all strains of *A. baumannii* are naturally competent.