

# A is for Auramine O

**A-Z of Staining** - a series of articles where we share a little extra information about stains, staining techniques and some of the interesting chemicals associated.



Welcome to the first of our A-Z series all about staining. In this series, we hope to share a little extra information about stains, staining techniques and some of the interesting chemicals associated. We kickstart our series with A is for Auramine O.

Auramine O can be used alone as a fluorescent dye or can be combined with rhodamine to make auramine-rhodamine stain- also known as the Truant auramine-rhodamine stain. Both are used with fluorescence microscopy to detect acid-fast bacteria, for example, mycobacteria such as *Mycobacterium tuberculosis*. Being

considered 'acid-fast' is based on the presence of mycolic acids found in the cell walls of all mycobacteria and means the cells cannot be decolourised using acid after staining. This is an important property to distinguish mycobacteria from other bacteria as all mycobacteria are acid-fast and very few other species have this trait. The bond between auramine and the mycolic acid in the cell wall is extremely strong and resists intense decolourisation. This allows the mycolic acid of the mycobacteria to retain a bright yellow colour.

In pure form, Auramine O is solid and forms yellow 'needle crystals.' It is very soluble in water and also soluble in ethanol. Auramine O would not be used routinely but may be used in cases where tuberculosis infection is suspected. Once stained, slides should be kept in the dark and read as soon as possible to prevent the fluorescence fading. Stained acid-fast bacteria appear bright yellow against a dark background as shown. In our next post, we will discuss the process of bluing. All suggestions for future posts throughout our staining alphabet are very welcome.

## References

StopTB. c2019. Standard Operating Procedure (SOP) Auramine staining. [Online]. [10 December 2019]. Available from: <http://www.stoptb.org> › gli › assets › documents › 27\_auramine\_staining\_fin

Truant, J.P., Brett, W.A. and Thomas Jr, W., 1962. Fluorescence microscopy of tubercle bacilli stained with auramine and rhodamine. Henry Ford Hospital Medical Journal, 10(2), pp.287-296.

**[CellPath \(September 2020\)](#)**