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Citation Statement

The nominee's laboratory has demonstrated that intracellular thiol reductive stress induces mycobacterial biofilm formation, with cellulose being its major component [Nature Communications 2016 Apr 25;7: 11392, Impact factor 12.12]. Before this study, mycolic acids were believed to be the most important constituent of mycobacterial biofilms (Cell 2005). The nominee's laboratory has not only provided several pieces of evidence to conclude that mycolic acids only contribute to initial interaction between mycobacterial cells (Microbial Cell 2019) but also shown that cellulose is a major contributor of the extracellular material of mycobacterial biofilms [Nature communications 2021, Impact factor 12.12].

In addition, they have shown that Mtb forms biofilms inside lungs and is the reason for drug tolerance and its evasion of the host immune system. It is an important observation that could have far-reaching benefits in our fight against Mtb. Administration of cellulase aided agents in the in vivo killing of Mtb firmly supports the contention that TB is hard to treat, as it is a biofilm based infection and why we need multiple drugs to treat TB. Thus, cellulase, represents new generation of molecules, which could be utilized for their antimicrobial properties.

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