

For more than 100 years we have understood that high levels of oxygen are overtly toxic and that lower levels chronically damage organisms of all types. Most of this toxicity is mediated by partially reduced forms of oxygen: superoxide, hydrogen peroxide, and the hydroxyl radical. However, it has been challenging to determine how these species are formed inside cells, what types of molecular injuries they can create, and how cells defend themselves against them. We are finally finding answers to these questions, and it is satisfying to recognize that these answers fit well with what we understand about the chemical nature of these distinct oxidants.