

Accepted Manuscript

What causes the different functionality in type-III-copper enzymes? A state of the art perspective

Matthias Pretzler, Annette Rompel

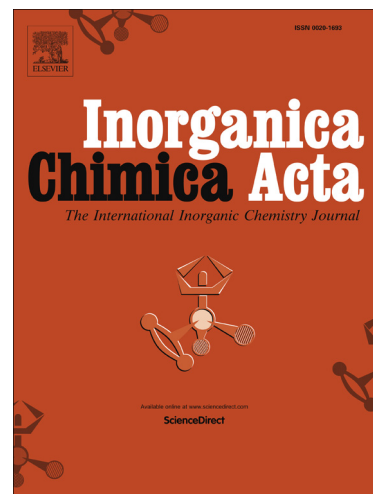
PII: S0020-1693(17)30177-9
DOI: <http://dx.doi.org/10.1016/j.ica.2017.04.041>
Reference: ICA 17546

To appear in: *Inorganica Chimica Acta*

Received Date: 6 February 2017
Revised Date: 11 April 2017
Accepted Date: 20 April 2017

Please cite this article as: M. Pretzler, A. Rompel, What causes the different functionality in type-III-copper enzymes? A state of the art perspective, *Inorganica Chimica Acta* (2017), doi: <http://dx.doi.org/10.1016/j.ica.2017.04.041>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



What causes the different functionality in type-III-copper enzymes?

A state of the art perspective.

Matthias Pretzler¹, Annette Rompel^{1,*}

¹ Universität Wien, Fakultät für Chemie, Institut für Biophysikalische Chemie, Althanstraße 14, 1090 Wien, Austria; <http://www.bpc.univie.ac.at>

*Correspondence to: annette.rompel@univie.ac.at

Keywords: tyrosinase; catechol oxidase; aurone synthase; oxidoreductase; monophenolase activity; diphenolase activity

Abstract

The structural difference between tyrosinase and catechol oxidase as the basis for their catalytic activity is still a puzzle although several crystal structures of both enzymes exist. In this review we discuss the structural motifs that had been proposed to be responsible for the lack of hydroxylase activity. However, up to now, all worked out structural restrictions could be disproved by more recent crystal structures of type-III-copper enzymes. The search for the function-determining amino acids continues and after decades of intensive research we still do not know more than that the substrate binding residues must be directly responsible for the mono- and / or diphenolase activity. In the last part the review discusses possibilities to address the topic in the future: What causes the different functionality in type-III-copper enzymes?

Matthias Pretzler obtained his bachelor's degree in technical chemistry and his master's degree in biotechnology at the Technical University of Graz, Austria. He joined the Department of Biophysical Chemistry at the University of Vienna in 2013, where he is currently completing his PhD in chemistry. The main focus of his work is on the structure-function relationship of fungal tyrosinases.

Annette Rompel studied chemistry at the Westfälische Wilhelms University of Münster, Germany, where she received her PhD. Besides research at the University of California, Berkeley and the Lawrence Berkeley National Laboratory, USA, she was a visiting scientist at

Download English Version:

<https://daneshyari.com/en/article/8942877>

Download Persian Version:

<https://daneshyari.com/article/8942877>

[Daneshyari.com](https://daneshyari.com)