Review of: "[Review Article] Melatonin, ATP, and Cataracts: The Two Faces of Crystallin Phase Separation"

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Potential competing interests: No potential competing interests to declare.

The article contributes significantly to the existing literature by elucidating the complex biological mechanisms behind lens clarity and cataract formation, with a specific focus on the role of crystallin proteins and phase separation. The analysis of how environmental and physiological factors affect crystallin structure, leading to lens opacification and the development of cataracts, is particularly noteworthy.

The manuscript's exploration of 3D domain swapping in crystallin proteins and the consequent implications for protein stability and cataractogenesis offers new insights into the dual functionality of these proteins. This could have profound implications for our understanding of age-related vision decline and the biological underpinnings of cataract formation. The discussion of molecular crowding and the formation of membrane-less organelles provides a solid theoretical framework for further research into the pathogenesis of cataracts.

Based on the in-depth review provided, I would strongly recommend the publication.