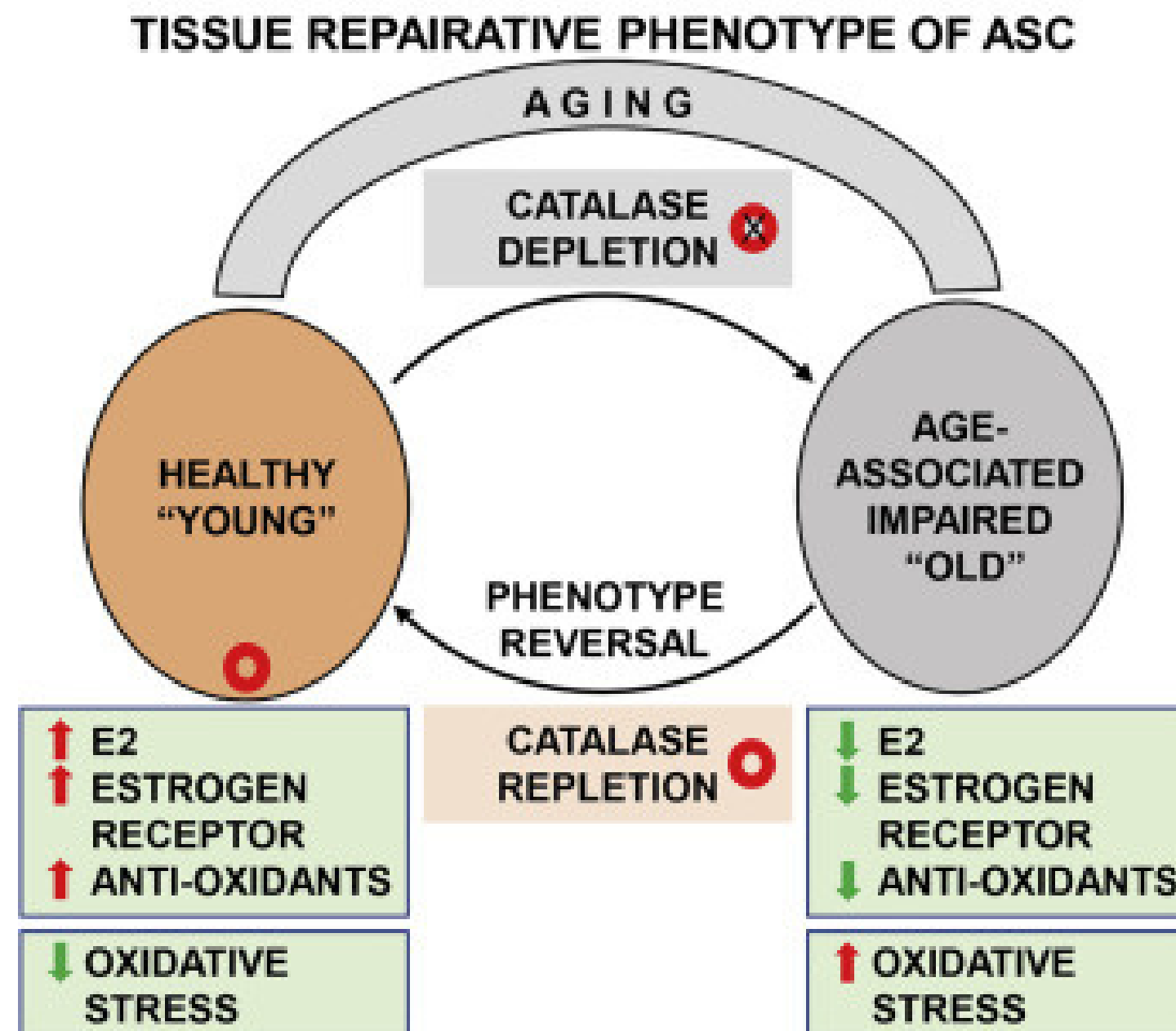


# Catalase, a therapeutic target in the reversal of Estrogen-mediated aging

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Yashas Chhapola  
BM23BTECH11025

# Central Core of Paper



Graphical abstract

# Background and Objective of the study

- **Brief Background:** Aging impacts stem cells' repair ability, especially in post-menopausal women, due to increased oxidative stress.
- **Objective of the Study:**  
To examine if catalase activation can help these aging cells restore their tissue repair function.

# Methods and Reasoning

- Tested on skin samples from **pre-menopausal** and **post-menopausal women** to study how catalase affects tissue repair.
- Rationale: Post-menopausal cells have lower estrogen and catalase levels, reducing repair function. Researchers believed that boosting catalase could also enhance estrogen receptor levels, helping to restore cell function.

# Key Findings – Impact of Catalase

- **Post-Menopausal stem cells**, without any catalase activation, showed only about **30% healing capacity** in skin samples, far below the regenerative ability of younger, **pre-menopausal cells**, which had **90% healing capacity**.
- **Catalase Activation Results:** By activating catalase, researchers observed improved wound healing in these cells, achieving around **79% healing capacity**!- a significant improvement.



# Visualisation

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**Table 1. mRNA expression/18 s**

Sample name	SOD2	Catalase
29 years #1	6,643	3,741
29 years #2	17,460	2,332
23 years	4,528	2,035
80 years	76	593
66 years	6	14
63 years	334	427
59 years	75	205
58 years	363	498

# Economic Feasibility

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- **Economic Feasibility:** Catalase production from microbial sources is cost-effective, making it a viable option for therapeutic applications.
- **Reduced Treatment Costs:** Catalase-based therapies could be more economical than other anti-aging or regenerative options, especially as they don't require expensive synthetic compounds or extensive modifications. This can make treatments more accessible to a wider population, especially as demand for affordable anti-aging solution grows.

# Future Studies and Prospects

- **From the Study:** The paper suggests further research on improving catalase stability through genetic medications, which would increase its effectiveness, especially for long term therapies.  
**Suggested Future Direction:**
- Building on these findings, catalase activation could potentially be developed into a therapy to help post-menopausal women reverse aging-related tissue damage. With further trials and testing, this approach could provide a groundbreaking treatment to restore tissue repair functions lost due to estrogen decline.



# References-

## Molecular Therapy



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Original Article

### Catalase, a therapeutic target in the reversal of estrogen-mediated aging

Sharon J. Elliot<sup>1</sup> , Paola Catanuto<sup>1</sup>, Simone Pereira-Simon<sup>1</sup>, Xiaomei Xia<sup>3</sup>, Irena Pastar<sup>2</sup>, Seth Thaller<sup>1</sup>, Cheyanne R. Head<sup>2</sup>, Olivera Stojadinovic<sup>2</sup>, Marjana Tomic-Canic<sup>2</sup>, Marilyn K. Glassberg<sup>1,3</sup>

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