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Scholarly Article Analysis

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Pathways to Regeneration: An Analysis

In a paper called “Preventing Engrailed-1 activation in fibroblasts yields wound regeneration without scarring” published in *Science*, Shamik Mascharak and his team (2021) found how to prevent the formation of rigid and non-functioning scar tissue in wound healing. The research that the scientists present is complicated and nuanced, but the article itself is organized in a way that helps readers better understand the key takeaways and significance of their work. Through the use of detailed subheadings, labeled diagrams and figures, active voice, and a proper framework introducing and concluding the research, the scientists present their research in a coherent and thorough manner outside of the conventional IMRAD format.

While the heading “Introduction” isn’t used like typical research papers in the IMRAD format, the first section begins with a broad contextualization of the established research about tissue damage and regeneration to familiarize readers with the topic and help them better understand the roots of the research problem. The scientists explain the issues with scars in terms of appearance, function, and cost to communicate how their findings could contribute to medicine. From there, the researchers specifically explain the process of scar formation and how their experiments are designed to inhibit this process. The structure of their first section follows the upright funnel-shaped framework common in most introductions (Wu 2011). They incorporate active voice throughout the paper, using phrases like “we next performed…” or “we

therefore questioned…," but sometimes switch to passive voice when describing techniques or procedures, such as the final section titled "Methods" where they explain their strategies in a replicable manner.

After the introduction, the scientists divided the following paragraphs under specific subheadings pertaining to different experiments they performed. Each section chronologically explains the scientists' objective, techniques, and results for that experiment, unlike traditional methods and results segments. For example, for the section that explains the role of the Yes-associated protein (YAP) in regeneration, they stated, "we questioned whether YAP inhibition could…reduce scarring" and then described their techniques to answer this question, as well as the results afterward by saying "strength did not significantly differ from that of unwounded skin." Diagrams and graphical representations of the results were integrated throughout these sections, being referenced in the text when appropriate to provide clarity to and corroborate them. Writing in this non-traditional format allows the scientists to establish a timeline of how the research was developed and communicate their thought process more seamlessly.

In the discussion, the scientists cite published studies done with similar goals as theirs to both validate their findings and demonstrate what their findings add to a puzzling field. For example, they explained how compared to the cell types used in another study, the specific fibroblasts they used "may be of greater clinical relevance for scarring." Also shown by this example is the tentative diction in the discussion– the scientists use words and phrases like "may be," "suggest," and "can potentially impair," to express that some implications are favorable but indefinite due to the mercurial nature of science. After stating the overall interpretations of their results, the scientists broaden the narrative by describing how their findings can be applied to

therapies for recovering damaged tissue in skin and other organs. A limitation they emphasize is that while their findings helped reduce scar tissue formation, they don't account for the regeneration of certain elements underneath the skin that are lost after a wound opens. The scientists concluded their paper with the advancements made possible and the further research required to expand their findings.

References

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