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Biology and the Understanding of Skin Diseases

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Introduction

A medical organisation, conducts research on the burdens of various diseases. The National Institutes of Health (NIH), which is a part of Priorities for spending congressional funds The goal of NIAMS is to assist research. research on the causes, symptoms, and management of arthritis musculoskeletal and skin conditions; instruction in fundamental clinical scientists to carry out the investigation; and providing updates on scientific developments in certain ailments. Although NIAMS's annual budget has exceeded $500 million since 2005, we still lack sufficient funds to support all of the outstanding research proposals we receive. Hence, NIAMS does need to set research funding priorities.

NIAMS targets funding in two primary areas to enhance the study of skin biology and our understanding of skin diseases. First and foremost, we want to support the best research proposals we get. By "excellent," I mean ideas that are thought to be most likely to advance our fundamental or clinical knowledge of skin biology and skin disease. In my opinion and in accordance with previous NIH research funding policies5, financing these scientific opportunities is the best use of taxpayer money. Even while it's impossible to forecast with absolute certainty which scientific projects will pay off the most, some have a higher likelihood of leading to significant discoveries [1-3].

Peer assessment of research proposals, which NIAMS utilises to assess each proposal's worth, has proved to aid in the identification of proposals that are more likely to provide significant results, despite its limitations. 6 Secondly, NIAMS places a high priority on sponsoring early-stage researchers and assisting aspiring scientists in their career exploration. Beyond those 2 priorities, other considerations also weigh on our funding decisions, including whether the proposal addresses a critical public health need; whether it relates to an understudied area or diseases; whether it is mission-relevant; whether it is affordable; and, for clinical trials, whether it is likely to yield results that change clinical practice.

The Patient-Centered Outcomes Research Institute (PCORI), a nonprofit, nongovernmental institution formed by Congress, focuses on comparative-effectiveness research, which NIH and NIAMS do have an interest in. 8 According to some, the NIH should prioritise its research funding in a manner similar to PCORI. However, because the NIH and NIAMS missions are far more expansive than PCORI's, it is crucial to take into account the other considerations mentioned above.

NIAMS and the NIH do not often distribute money proportionally based on illness loads, particularly those assessed by disability-adjusted life years, although the aforementioned factors occasionally make diseases with large disease burdens a priority. Two major drawbacks would result from funding that was purely based on illness burden [4].

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Literature Review

Biomedical research on rare diseases, which has advanced fundamental understanding of human biology and provided significant benefits for people with specific diseases and their families, as well as knowledge that is frequently relevant to more widespread diseases. For instance, xeroderma pigmentosum, a relatively rare illness marked by exceptional sensitivity to sunlight that causes skin cancer to grow at a very young age, has been the subject of extensive investigation. These investigations have revealed a great deal about DNA repair processes in several of the more prevalent cancer types.

Second, research in basic science that often does not map to one particular disease but can result in therapeutic advancements in a variety of fields would suffer from disease burden-based funding. One such instance is the NIH-funded study of cachectin's function in cancer, which ultimately paved the way for the creation of anti-tumor necrosis factor medicines that are now used to treat a variety of immune-mediated inflammatory disorders.

Another illustration is the NIH-funded study of RNA tumour viruses, which aided in the creation of antiretroviral drugs used to treat HIV. Conversely, in a resource-constrained setting, we should not fund research proposals that fall short of outstanding solely because they relate to a high-burden disease. These investigations have revealed a great deal about DNA repair processes in several of the more prevalent cancer types

Skin anatomy and disease localization

The thickness of the interfollicular epidermis, as well as variations in the size and number of skin appendages, including hair, cause variances in the composition of human skin at different body sites.

Different disease processes in the skin are localised differently, and this has an impact on how they affect the skin. Acne vulgaris, which mostly affects the face, chest, and back where sebaceous glands are numerous, is characterised by hyperproliferation and obstruction of the sebaceous duct.

The putative hair follicle epidermal stem cells and the upper portion of the hair follicle are frequently the focus of the inflammation linked to discoid lupus erythematosus. When this illness affects skin that bears hair, damage to these cells is likely a factor in the typical scarring alopecia that is observed [5].

The skin has a sophisticated immune system with an important role in host defence. When the skin is exposed to a new antigen, activated antigen-expressing Langerhans' cells migrate from the skin to the lymph nodes, where they activate naive T cells.

These activated T cells become memory T cells and express new surface markers that allow them to accumulate preferentially in the skin in response to cutaneous injury. The molecular interactions that are fundamental to the normal physiology of immunosurveillance also have a key role in the capacity of malignant cells to migrate to the skin in cutaneous T cell lymphoma..

Conclusion

Second, research in basic science that often does not map to one particular disease but can result in therapeutic advancements in a variety of fields would suffer from disease burden-based funding. One such instance is the NIH-funded study of cachectin's function in cancer, which ultimately paved the way for the creation of anti-tumor necrosis factor medicines that are now used to treat a variety of immune-mediated inflammatory disorders. 9 Another

illustration is the NIH-funded study of RNA tumour viruses, which aided in the creation of antiretroviral drugs used to treat HIV. We are fortunate that other additional NIH institutes and centres sponsor research into the biology of the skin and skin diseases, as has been mentioned by others1 For instance, NIAMS is also interested in the research being supported by the National Cancer Institute (NCI) on melanoma and other skin malignancies.

Conflict of Interest

The authors declare that there was no conflict of interest in the present study.

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