Immune Privilege and the Philosophy of Immunology

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Immune privilege and the philosophy of immunology

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Like other scientists, immunologists use two types of approaches to research: one reduces the problem to its parts; the other studies the emergent phenomenon produced by the parts. Scientists that reduce the problem to its parts are sometimes called reductionists. The conclusions of reductionist experiments are often applied to the greater whole, when in actuality they may only apply to that particular experimental set. We, reductionists, are the ones who think our immune behavior exists solely because of genes, the presence of TGFβ, the presence of inflammatory cytokines, and appearance of a receptor. We tend to interpret the outcome in the presence of TGFβ as one thing when there is a bacterial invasion but the same toll-like receptor might lead to a different outcome when activated by danger signals.

Our point? Immune privilege is broadly understood as the ability of the tissue to actively regulate and direct immune responses that take place in its “territory.” The articles in this Research Topic in Frontiers in Immunology, “Good news–bad news,” support the idea that to understand how immune privilege works, one has to allow unmatched cornea grafts long-term survival without systemic immunosuppression. It is clear that we do not know all the immune privilege paradigms, but by understanding the emergent phenomena that are produced by the parts of immune privilege that is used by other tissues, may help to understand the concept of immune privilege as a whole. The needs of the tissue, its environment, and consequently the mechanisms used by each tissue to immunoregulate may vary. But yet, many of the basic concepts may be shared. Thus, out of the parts, emerges a whole that is greater than the sum of the parts.
We hope this Research Topic has successfully outlined the many layers involved in immune privilege, established that they vary with each tissue and clarified that the outcome cannot always be predicted. Because clinical expectations of medical research often hurry scientific discoveries prematurely to therapeutic applications, the scientists who break new ground should also use caution. Caution, that premature application of the basic science good news without sufficient understanding and application of the chaos theory, may lead to bad news.

REFERENCES

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