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This book is neither a comprehensive text nor an exam-review tool. It is an overview of the immune system, designed to give anyone who is learning immunology a feel for how the system fits together.

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LECTURE 1

An Overview, 1

The immune system is a “team effort,” involving many different players who work together to provide a powerful defense against invaders. Focusing on one player at a time makes it hard to understand the game. Here we view the action from the grandstand to get a wide-angle picture of what the immune system is all about.

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The innate immune system is a “hard-wired” defense that has evolved over millions of years to recognize pathogens that commonly infect humans. It provides a rapid and powerful response against “everyday” invaders.

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B cells and the antibodies they produce are part of the adaptive immune system – a system that protects us against pathogens both common and rare.

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T cells, another weapon of the adaptive immune system, only recognize invaders that are properly presented by specialized antigen presenting cells. This feature keeps T cells focused on the types of attackers they can defend against.

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Before they can spring into action, T cells must be activated. This requirement helps insure that only useful weapons will be mobilized.

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Once they have been activated, helper T cells orchestrate the immune response, and killer T cells destroy infected cells.

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B and T lymphocytes travel through secondary lymphoid organs looking for the intruders they can defend against. Once activated in the secondary lymphoid organs, B and T cells are dispatched to the particular areas of the body where they can be most useful.

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The powerful weapons of the immune system must be restrained lest they become overly exuberant. In addition, once an invader has been defeated, the immune system must be “reset” to prepare for future attacks.

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T cells must be “tested” to be sure they focus on appropriately presented antigens, and B and T lymphocytes must be screened to eliminate those which might attack our own bodies.

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