# Allergic Reactions to Drugs

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> Now this is not the end. It is not even the beginning of the end. But it is, perhaps, the end of the beginning.[1]

## 1 INTRODUCTION

There are many pharmaceutical scientists today who say that one of the most difficult obstacles to overcome in drug discovery is the prediction, and therefore the knowledgeable prevention, of idiosyncratic allergic reactions to drugs. The immune system is a highly complex and developed system and is our natural defense in fighting varied pathogenic organisms. The more we have learned about the immune system over the last two decades, due in large part to molecular advancements in immunology, the more it has revealed for researchers to come closer to understanding the mechanism(s) of allergic reactions to drugs (Uetrecht, 2008). Unfortunately, the immune system is susceptible to devastating diseases. Such diseases can occur when the immune system does not differentiate between host cells/macromolecules and foreign substances which leads to autoimmune-type disorders like multiple sclerosis, systemic lupus, rheumatoid arthritis, type I diabetes, and inflammatory bowel disease. In this chapter, some of the proposed chemical mechanisms by which example drugs cause allergic reactions will be discussed. Allergic reactions to drugs can lead to potentially life-threatening reactions such as asthma, anaphylaxis, dermatitis, hepatitis, hemolytic anemia, lupus, nephritis, Stevens–Johnson syndrome, toxic epidermal necrolysis, urticaria, and vasculitis (Dansette *et al.*, 1998; Ewan, 1998; Zimmerman, 1999; Fung *et al.*, 2001). These drug-induced immune-based diseases can create an enormous burden to affected patients and to the respective pharmaceutical companies involved in their manufacturing. There

[1] A quotation from Winston Churchill—*Lord Mayor's Luncheon, Mansion House following the victory at El Alameinin North Africa, London, 10 November 1942* (http://www.winstonchurchill.org/).

*Pharmaceutical Sciences Encyclopedia: Drug Discovery, Development, and Manufacturing*
Edited by Shayne C. Gad