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Development of kinase inhibitors in non-oncology indications

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Human genome encodes over 500 protein kinases that are involved in regulating complex cellular functions. Perturbation of protein kinase activity is linked to diseases, especially in cancer, and therefore, protein kinases have become the major therapeutic targets in oncology area. The use of kinase inhibitors for non-oncology indications was thought to be a difficult challenge due to adverse effects, but the recent success of JAK3 inhibitors for the treatment of rheumatoid arthritis has sparked interest in small molecule kinase inhibitors for non-oncology indications. However, it becomes more important to develop safer drugs by eliminating unnecessary kinase inhibitions.

We will discuss emerging kinase molecules as new therapeutic targets in non-oncology area. Also the methods employed in the development of selective kinase inhibitors with several successful examples will be presented.