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The nuclear receptor (NR) gene family in humans represents a class of 48 known transcription factors that modulate gene expression in response to lipophilic ligands (Chambon, 1996; Mangelsdorf and Evans RM; 1995). Nuclear receptors are broadly implicated not only in normal physiological development and metabolism but also represent therapeutic targets for a wide range of human diseases, including cancer, endocrine and metabolic disorders, and heart disease (Kliwer et al., 2001; Chawla et al., 2001; McDonnell et al., 2002; Cheng and Balk, 2003). It is apparent from the literature that subcellular compartmentalization and dynamic movements of steroid/nuclear receptors are major steps in executing their transcription regulatory functions (Shank and Paschal, 2005). The regulation of gene expression by steroid/nuclear receptors is modulated mainly through the subcellular compartmentalization of liganded or unliganded receptors. When the localization of steroid/nuclear receptors is compromised, diseases, such as cancer, neurological disorders, etc. can occur (Kau et al., 2004; Gottlieb et al., 2004). A detailed understanding of the receptors responses and processes may provide further options for drug analyses, disease diagnosis and treatment. In this direction, investigations into the actions of steroids and in particular their interactions with steroid/nuclear receptors have been playing an increasingly important role in the understanding of human diseases.

In the light of existing literature, the aims of the present study were to gain better insight into ligand-modulated intracellular dynamics, organization and transcriptional functions of steroid/nuclear receptors with a special emphasis on androgen
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receptor. The major objectives covered in present study are as below:

➢ To study the nuclear export pathway of steroid receptors and the participating components of the nuclear import machinery.

➢ To study the dynamics of steroid/nuclear receptors during interphase and mitosis: potential implications in normal and pathological conditions.

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