

A Hub for the Nuclear Receptor Signaling Atlas

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Over the past decade the field of NR signaling has generated a large volume of global datasets that collectively describe sequences of NR and coregulator genes (genomics); the regulation by NRs and coregulators of gene networks in specific target tissues (transcriptomics); protein-protein interactions required for the efficient function of NRs and coregulators (proteomics); specific sites of action of NRs in target gene promoters (cistromics); covalent modification of chromatin (epigenomics); and, more recently, specific functional endpoints in the form of regulation of cellular metabolic pathways (metabolomics). In order to effectively leverage these resources, we propose the continued development of the Nuclear Receptor Signaling Atlas (NURSA) web resource that will assemble and integrate these datasets, build user-friendly data analysis tools and present these to the community for hypothesis generation and validation. To fully engage the research community, we propose to administer a program of NURSA Data Source Projects (NDSPs) that will generate new global scale datasets that will be submitted to the website and integrated with existing datasets. We will also engage in outreach efforts that will offer members of the research community to participate in NURSA as Affiliate members, as well as in testing software tools during their development. With the involvement of the community, we anticipate that NURSA will be an important research resource for this field. PUBLIC HEALTH RELEVANCE: Nuclear receptors (NRs) and coregulators are important therapeutic targets in many different disease states including cancer, obesity, diabetes, inflammation, neurological disorders and senescent diseases. This application proposes a web resource for information and data analysis tools for the NR research community, as well as a community research grant program that will generate global-scale 'omics datasets for distribution via the web resource. These initiatives will have tangible benefits for the progress of research in the field towards developing novel NR- and coregulator-based therapeutics.