

Genetic studies in model organisms and humans, including human genome-wide association studies, have pinpointed genomic regions that contribute susceptibility to common disease. However, to date, these data have provided limited insights into the genes, molecular pathways and mechanisms underlying disease pathophysiology.

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The EU FP6 [Euratools](#) consortium has been a remarkable success that established significant research collaborations, expertise and infrastructure in the EU, making a major contribution to the rat focus issue of [Nature Genetics \(Volume 40, May 2008\)](#), which featured six papers from the consortium. These successes underpin the current proposal in which we will use state-of-the-art and emerging large-scale technologies and advanced computation in an expanded multi-disciplinary approach to identify gene networks and genomic mechanisms underlying common diseases. EURATRANS will use the rat as a model system to identify the major functional pathways underlying human inflammatory, cardiovascular and metabolic, and behavioral disorders.

Our consortium brings together world class investigators who will use next-generation sequencing technologies to generate genomic, transcriptomic and epigenomic datasets. To this, we will add cutting-edge, quantitative metabolomic and proteomic datasets to give significant depth of coverage, at multiple levels, across pathophysiological phenotypes. These datasets will be gathered, annotated and integrated in relational and dynamic models that will be used in comparative analyses to understand human gene function at the level of the molecule, cell, tissue and organism. These studies will lead to new insights into disease mechanisms, through an integrative, cross-disciplinary approach to understanding large-scale functional genomic datasets in rats and humans.

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**Links:**

- [EURATools](#) FP6 Integrated Project
- [Nature Genetics \(Volume 40, May 2008\)](#) Focus on Rat Genetics