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Atlas of an Organism: Gene Expression in Developing Mouse Embryo

While every cell of an organism contains the same genes only a proportion are expressed in any tissue at a given stage in development. Knowing the extent of gene transcription is valuable and a team of European researchers has generated an atlas of gene expression for the developing mouse embryo. This will be a powerful resource to determine co-expression of genes and to identify functional associations between genes relevant to development and disease.

The findings are published in the online, open access journal PLoS Biology.

The comprehensive, interactive and freely accessible digital gene expression atlas (www.eurexpress.org) includes expression data for over 15,000 genes in hundreds of anatomical structures and led to the identification of tissue-specific and tissue-overlapping gene networks. For instance the data revealed new information for several developing structures, such as the telencephalon, a novel organization for the hypothalamus and insight on the signaling pathways involved in renal epithelial differentiation during kidney development.

The project involved researchers from 12 different European institutions, from 6 different countries (Italy, Spain, United Kingdom, Germany, France and Switzerland).

"This study was only possible due to the close collaboration

of all scientists involved and nicely illustrates the success a coordinated and collaborative effort can achieve. The gene expression atlas will be an important guide to discover gene function and disease mechanisms," says Professor Andrea Ballabio, the coordinator of the study from the Telethon Institute of Genetics and Medicine, Naples, Italy.

"The size of the task required a team of specialists whose combination of different expertise was needed to achieve an output that is greater than the sum of the parts; the freely available data and the impressive images will be of great help to all researchers working on the function of the genome and the molecular causes of the myriads of genetic disorders" says Professor Stylianos Antonarakis, one of the collaborators of this study at the University of Geneva.

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