

Publication**Analysis of the eye developmental pathway in Drosophila using DNA microarrays****JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 152860**Author(s)** Michaut, Lydia; Flister, Susanne; Neeb, Martin; White, Kevin P; Certa, Ulrich; Gehring, Walter J**Author(s) at UniBasel** [Gehring, Walter Jakob](#) ;**Year** 2003**Title** Analysis of the eye developmental pathway in Drosophila using DNA microarrays**Journal** Proceedings of the National Academy of Sciences of the United States of America**Volume** 100**Number** 7**Pages / Article-Number** 4024-9**Keywords** Animals; Drosophila Proteins/*genetics; Drosophila melanogaster/*embryology; Embryo; Non-mammalian/physiology; Eye/*embryology; Gene Expression Regulation; Developmental; *Oligonucleotide Array Sequence Analysis/methods

Pax-6 genes encode evolutionarily conserved transcription factors capable of activating the gene-expression program required to build an eye. When ectopically expressed in Drosophila imaginal discs, Pax-6 genes induce the eye formation on the corresponding appendages of the adult fly. We used two different Drosophila full-genome DNA microarrays to compare gene expression in wild-type leg discs versus leg discs where eyeless, one of the two Drosophila Pax-6 genes, was ectopically expressed. We validated these data by analyzing the endogenous expression of selected genes in eye discs and identified 371 genes that are expressed in the eye imaginal discs and up-regulated when an eye morphogenetic field is ectopically induced in the leg discs. These genes mainly encode transcription factors involved in photoreceptor specification, signal transducers, cell adhesion molecules, and proteins involved in cell division. As expected, genes already known to act downstream of eyeless during eye development were identified, together with a group of genes that were not yet associated with eye formation.

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