Multi-tissue analysis of gene expression

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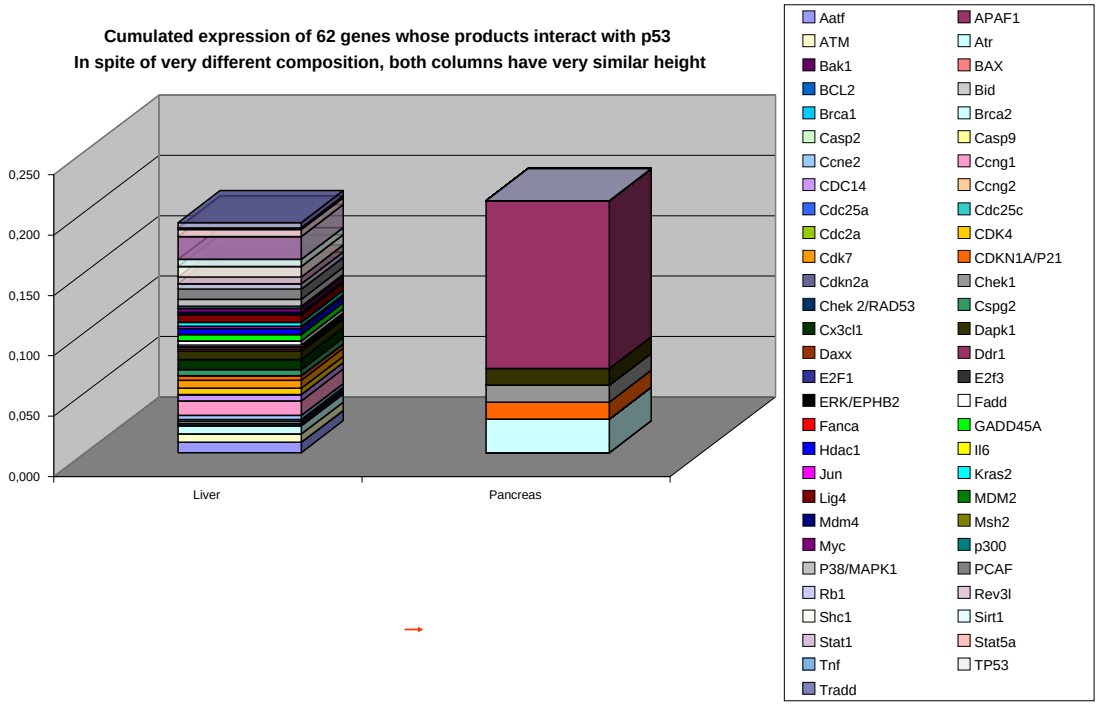
In experimental work, gene expression is usually studied only for a few cells, cell lines or tissues.

A general overview on the expression of many genes in "all" tissues can , at the present state of the art, only be obtained by data mining (cooperation with B.Altenberg, EMBL)



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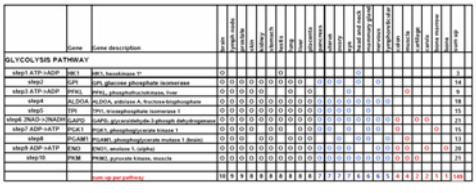
Warburg effect / Over - expression of 10 glyco-lysis genes in 24 cancers

High Warburg effect: 8 – 10 genes overexpressed
brain, lymph node, prostate, skin, kidney, stomach, testis, lung, liver, placenta

Intermediate Warburg effect: 5 – 7 genes overexpr.
pancreas, uterus, ovary, eye, head and neck, mammary gland, nervous, lymphoreticular

Low Warburg effect: 1 – 4 genes overexpressed
colon, muscle, cartilage, cervix, bone marrow, bone



Only 42 out of the 20 000 human genes are widely over-expressed in cancer

One can investigate all 20 000 human genes using a small program which works itself through the dbEST database of NIH overnight.

The result is a surprise:
Most genes, even some which are clearly known to be cancer genes, are over- expressed only in a few tissues

Only approx. 50 / 20000 genes are over- expressed in more than half of the investigated tissues

The consequence
Cancer genes "hold their promise" only in selected tissues
The true general (ubiquitous) cancer genes are others !!!!

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