GDS Analysis

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Technology and Tools

affymetrix

MICROARRAYS

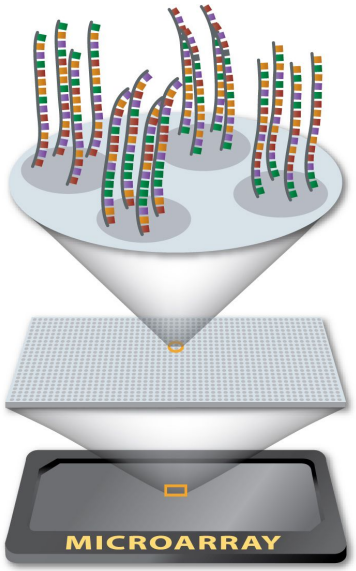
Formato experimental basado en la síntesis o fijación de sondas que presentan los objetos a estudiar (genes, proteínas…), sobre un sustrato sólido (cristal, plástico, sílice), y expuestos a molécuals diana (la muestra)

Source GDS packages

1. **¿Qué es un GDS?**
2. Formato GEO SOFT = información de microarrays en formato GEO
3. GEO = Gene Expression Omnibus database
4. Repositorio de información genómica pública (Consorcio NCBI)
5. 2. GDS = paquetes GEO que contienen ficheros de microarrays de un mismo experimento con anotaciones de la plataforma

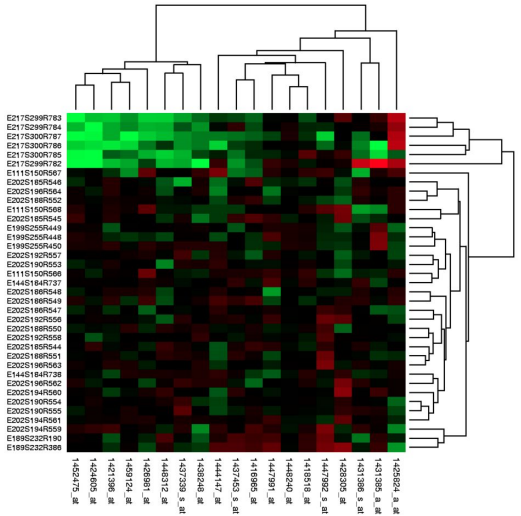
¿Cómo?

El nivel de hibridación entre la sonda (probe) y la molécula diana (target) se indica generalmente mediante fluorescencia y se mide por análisis de imagen, indicando el nivel de expresión del gen correspondiente



¿Para qué?

* Estudio de genes que se expresan diferencialmente entre varias condiciones–Sanos/enfermos, mutantes/salvajes, tratados/no tratados
* Clasificación molecular en enfermedades complejas
* Identificación de genes característicos de una patología (firma o “signature”)
* Predicción de respuesta a un tratamiento
*Detección de mutaciones y polimorfismos de un únicogen (SNP).



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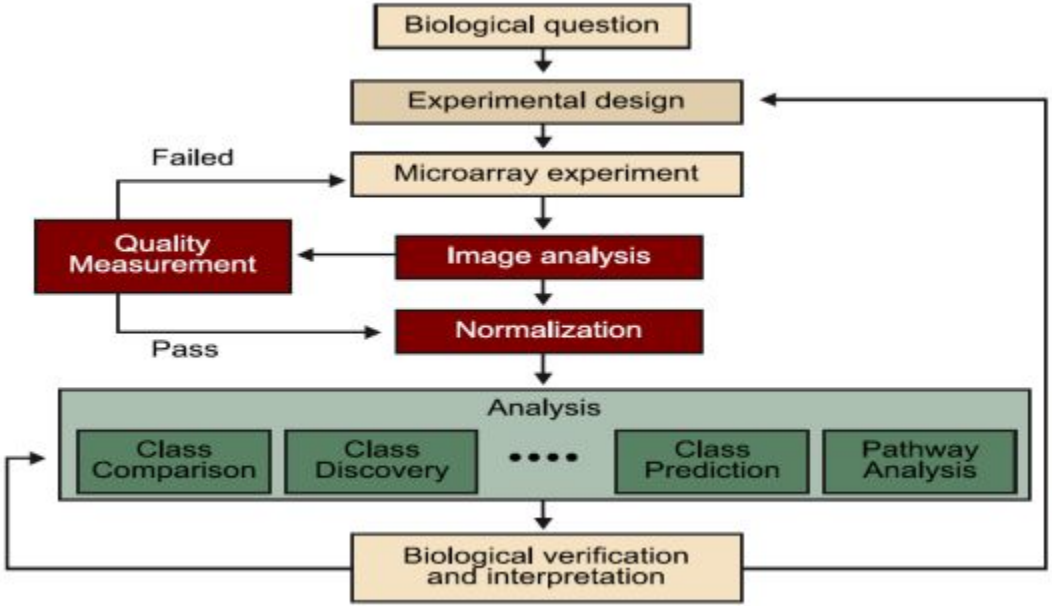
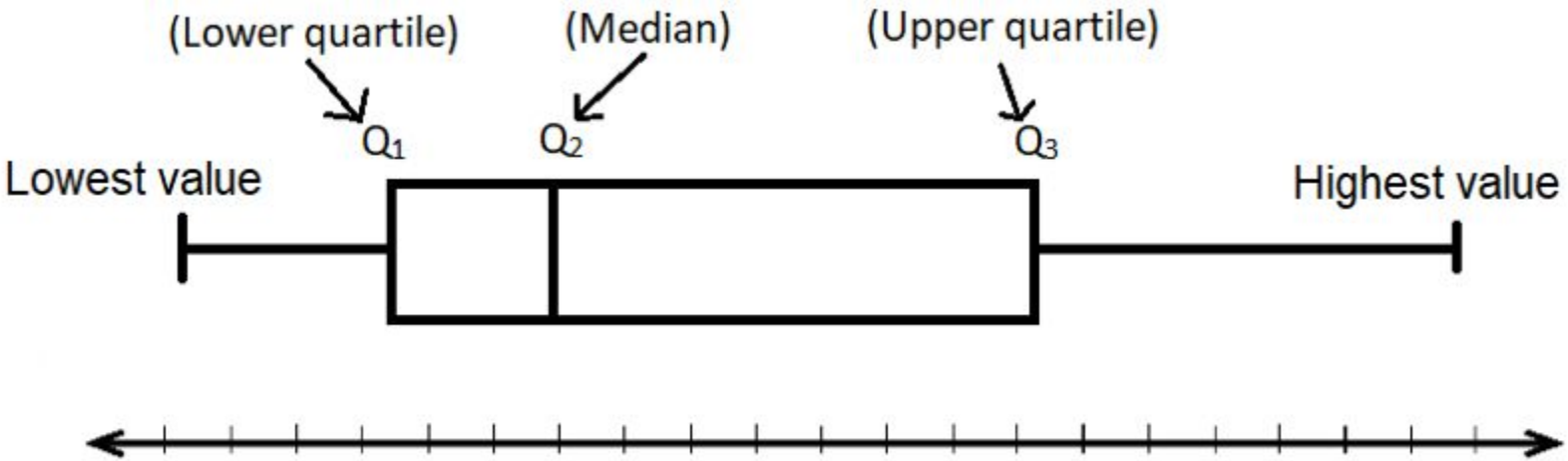
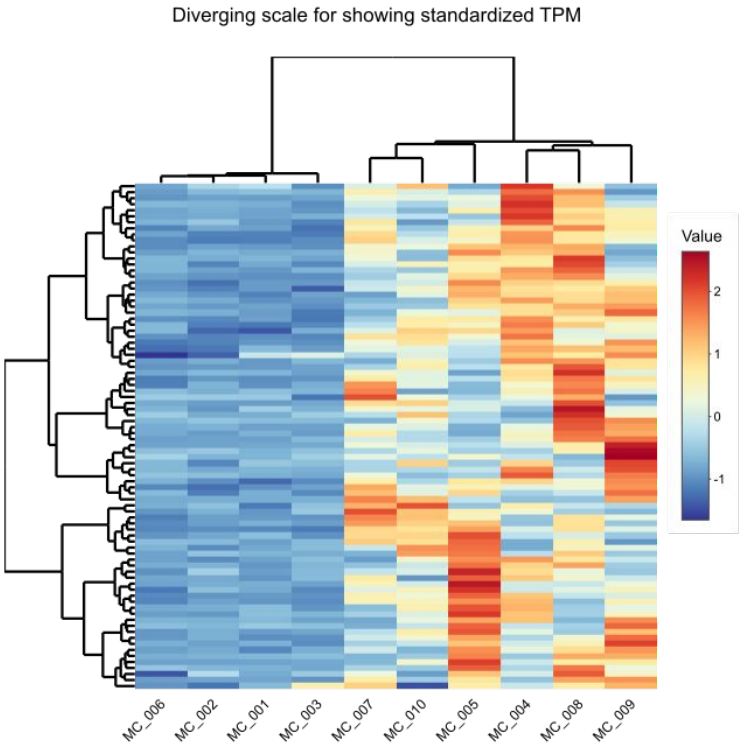
Pipeline


Biological question
Experimental design
Failed
Microarray experiment
Quality Measurement
Image analysis
Normalization
Pass
Analysis
Class Comparison
Class Discovery
Class Prediction
Pathway Analysis
Biological verification and interpretation

Quality Control



Diff Gene Expression



Tables and Single Gene Expression

ID	Gene symbol	Nucleotide Title	GO:Function
1007_s_at	MIR4640///DDR1	Human receptor tyrosine kinase DDR gene, complete cds	ATP binding///collagen binding///collagen binding///metal ion binding///protein binding///protein tyrosine kinase collagen receptor activity///transmembrane receptor protein tyrosine kinase activity
1053_at	RFC2	Human replication factor C, 40-kDa subunit (A1) mRNA, complete cds	ATP binding///contributes_to DNA clamp loader activity///enzyme binding///protein binding///contributes_to single-stranded DNA-depe activity
117_at	HSPA6	Human heat-shock protein HSP70B' gene	ATP binding///ATPase activity, coupled///enzyme binding///heat shock protein binding///protein binding///unfolded protein binding
121_at	PAX8	H.sapiens Pax8 mRNA	DNA binding///DNA binding///RNA polymerase II core promoter proximal region sequence-specific DNA binding///RNA polymerase II sequence-specific DNA binding///protein binding///thyroid-stimulating hormone receptor activity///transcription factor activity, sequenc binding///transcription regulatory region DNA binding///transcriptional activator activity, RNA polymerase II core promoter proximal re