

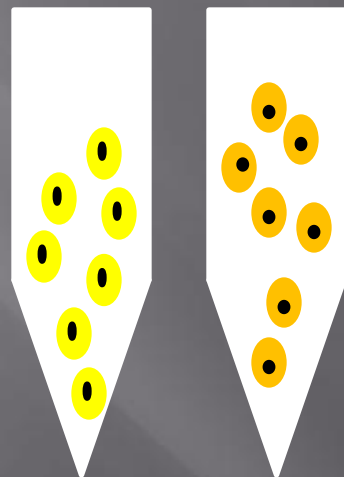
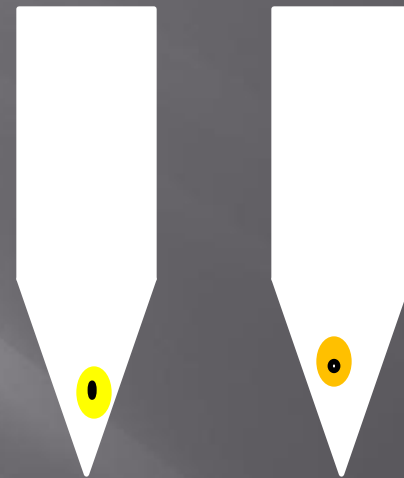
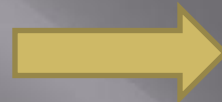
ANÁLISE DE EXPRESSÃO GÊNICA DE GENOMA COMPLETO

José Luiz Rybarczyk Filho

Sumário

- ▣ Expressão gênica
- ▣ Reorganização
- ▣ Cálculo de Modularidade
- ▣ Análise Funcional
- ▣ Transcriptograma

Expressão Gênica



Cultiva as células

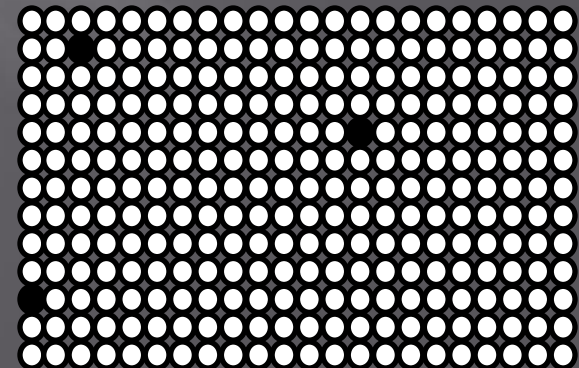
Expressão Gênica



aplica-se um
marcador, verde para
normal e vermelho
para câncer

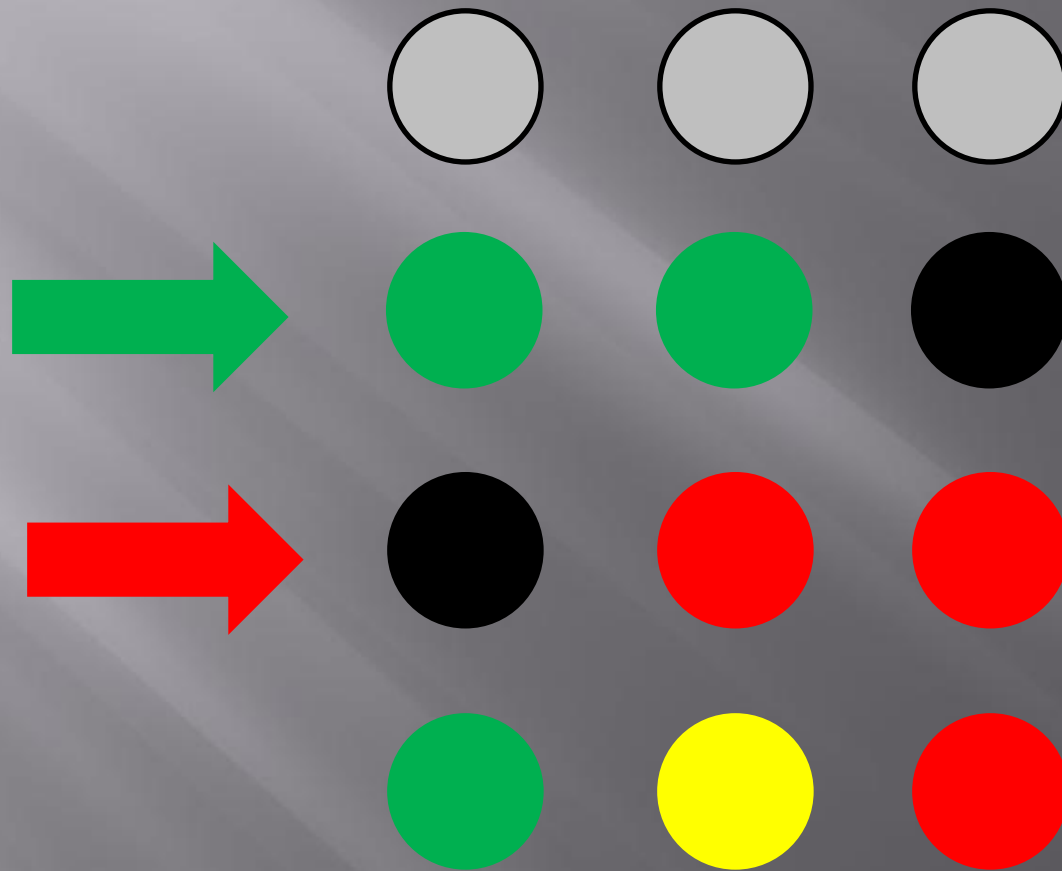


Mistura os dois,
Aplique a mistura
No microarranjo

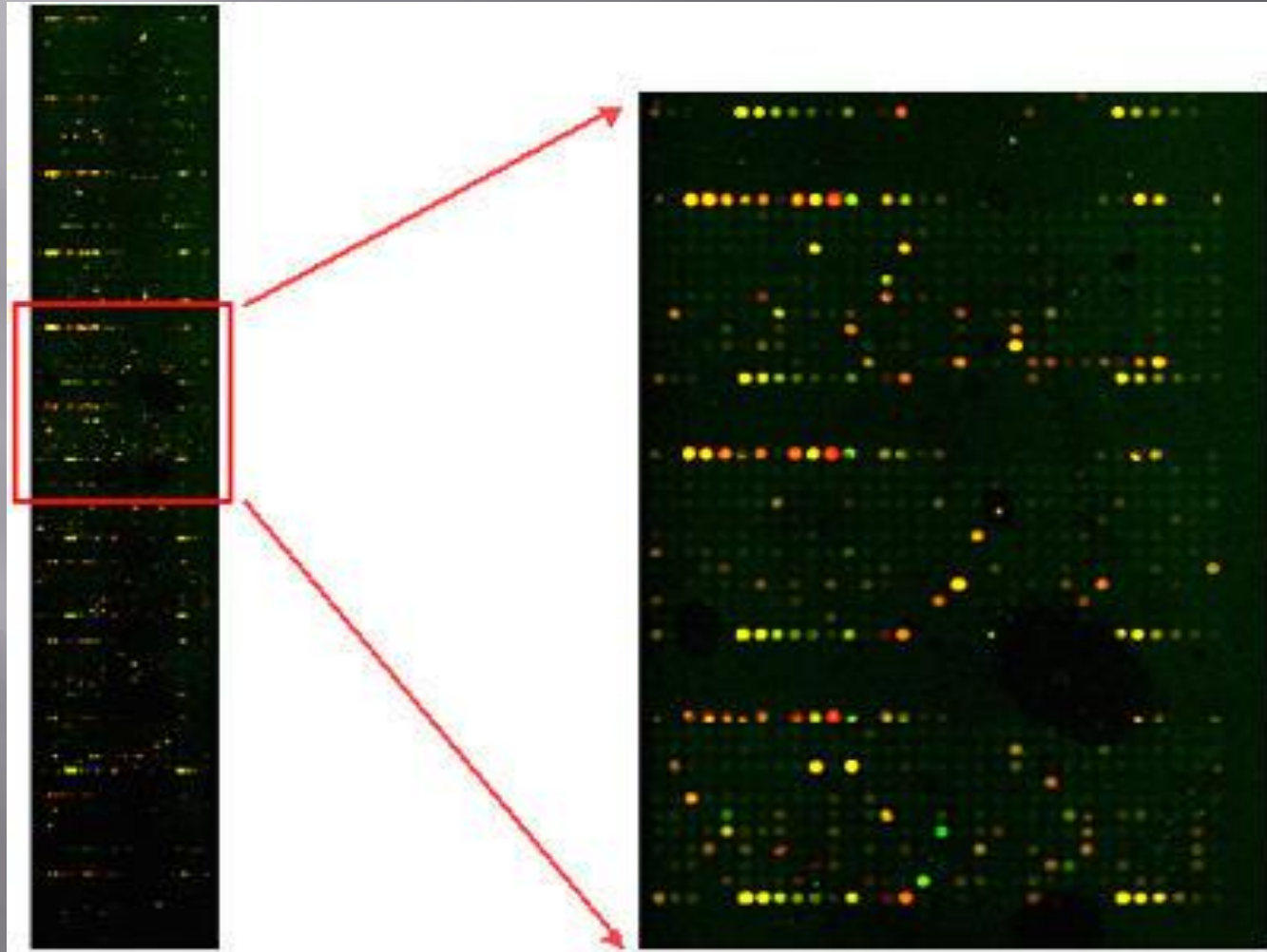


Microarranjo

Expressão Gênica



Expressão Gênica



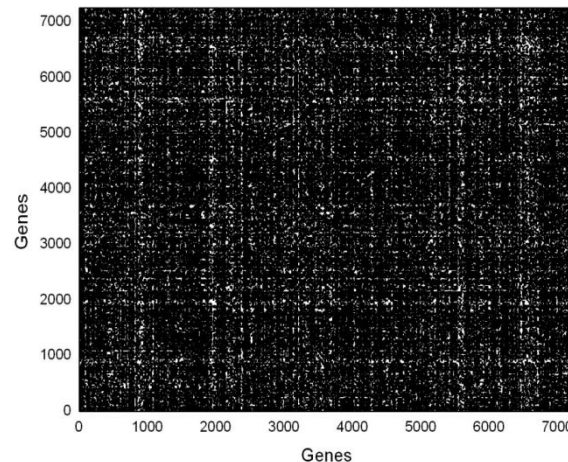
Transcriptoma

Matriz de adjacência

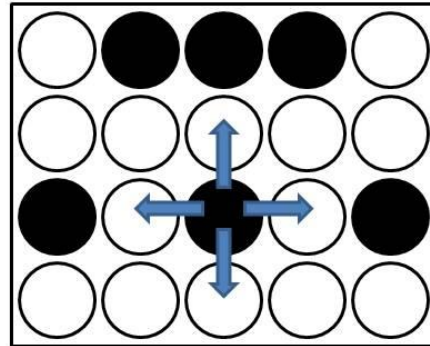
- ▣ Enumeram-se as proteínas
- ▣ Constrói-se a matriz de interações A_{ij} de tal maneira que

$A_{ij}=1$ se i e j interagem

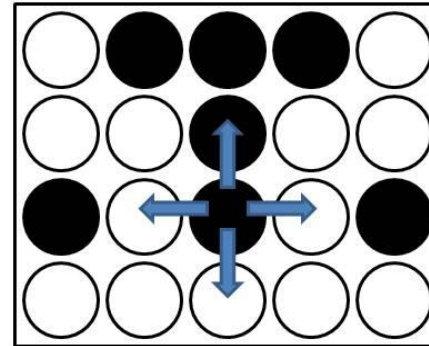
$A_{ij}=0$ se i e j não interagem



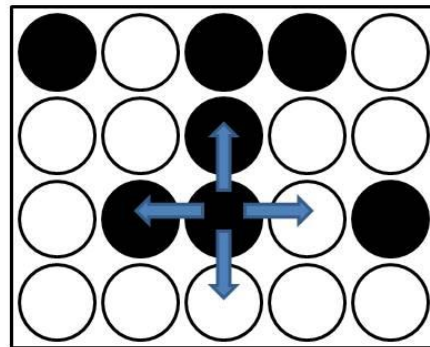
Reorganização



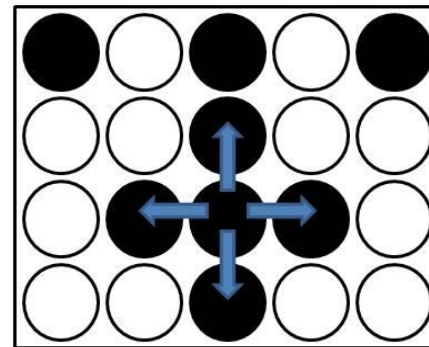
Configuração nº 1
 E_1



Configuração nº 2
 E_2

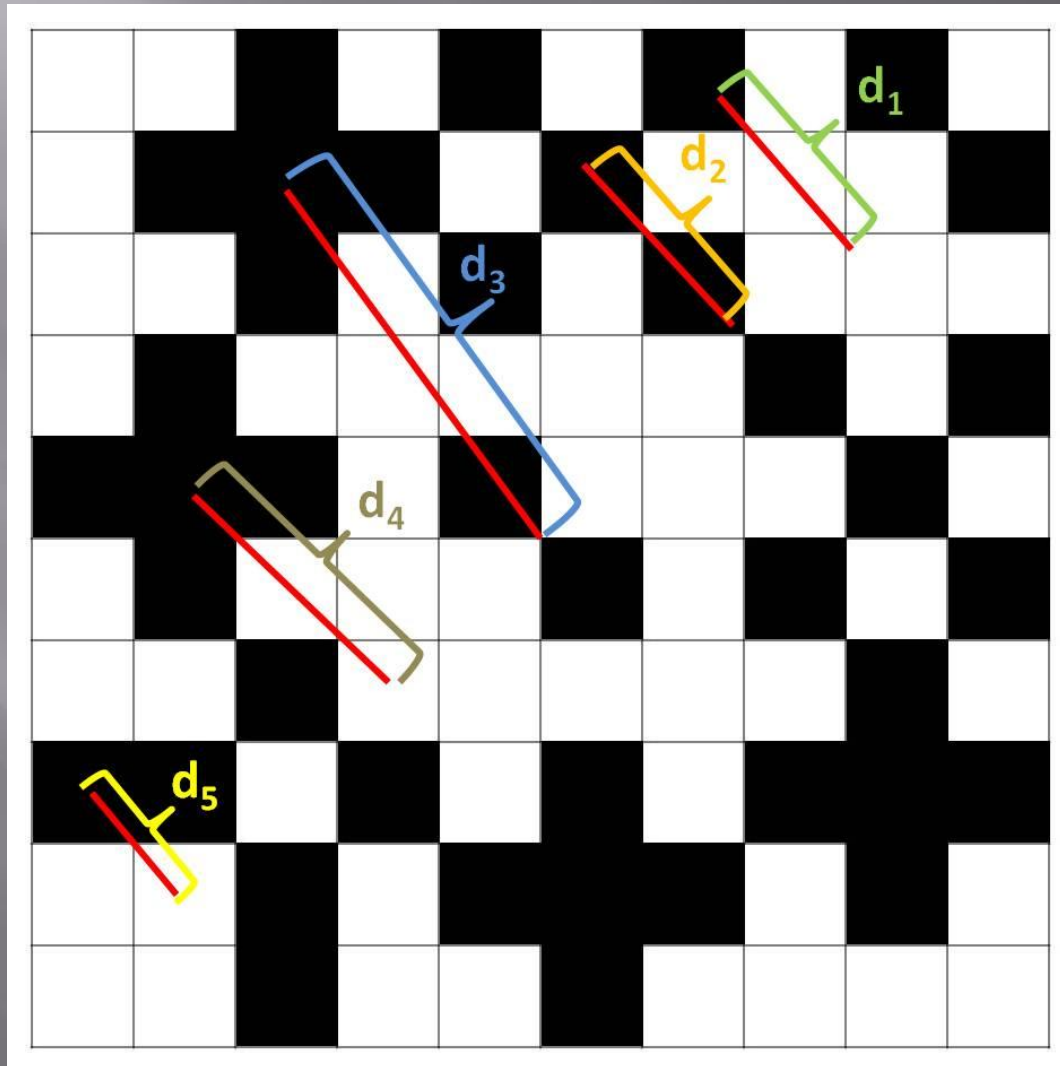


Configuração nº 3
 E_3



Configuração nº 4
 E_4

Reorganização



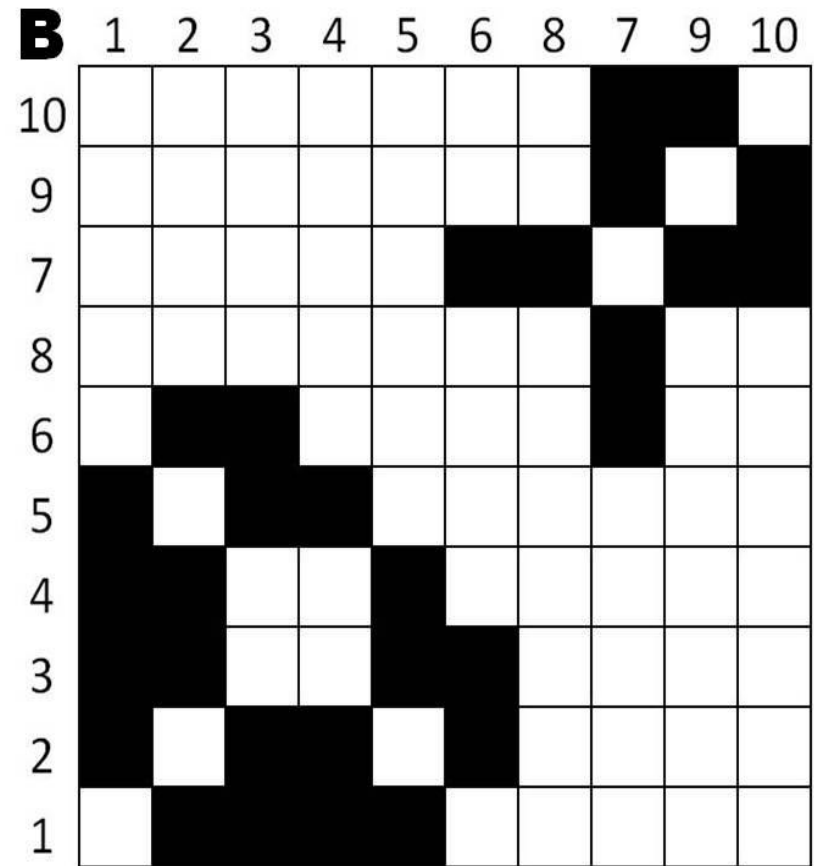
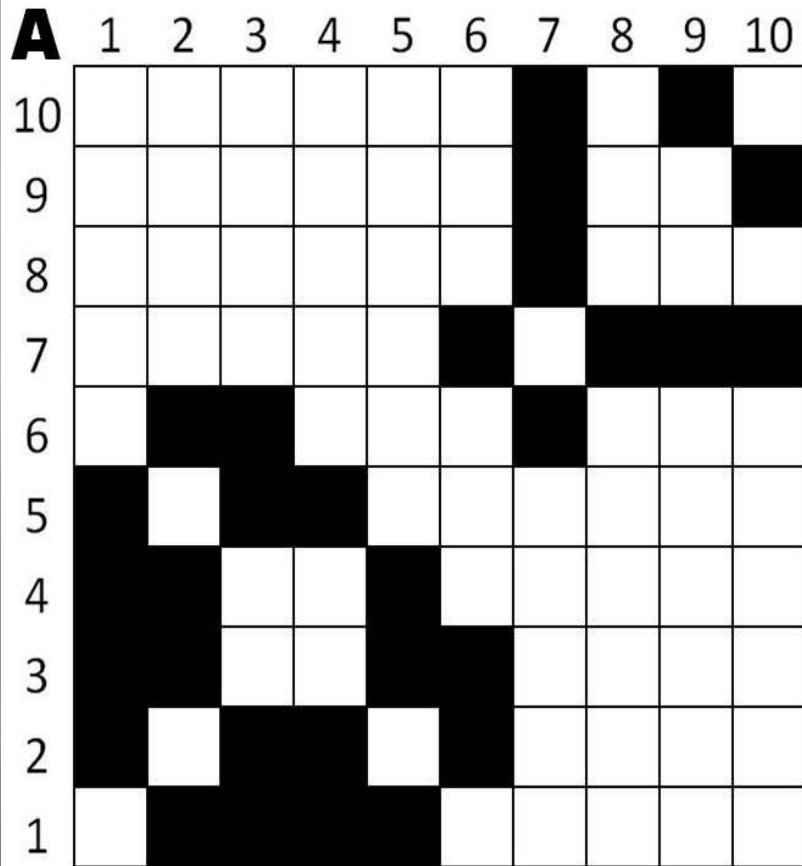
Reorganização

- ▣ Associamos uma energia a cada configuração da matriz:

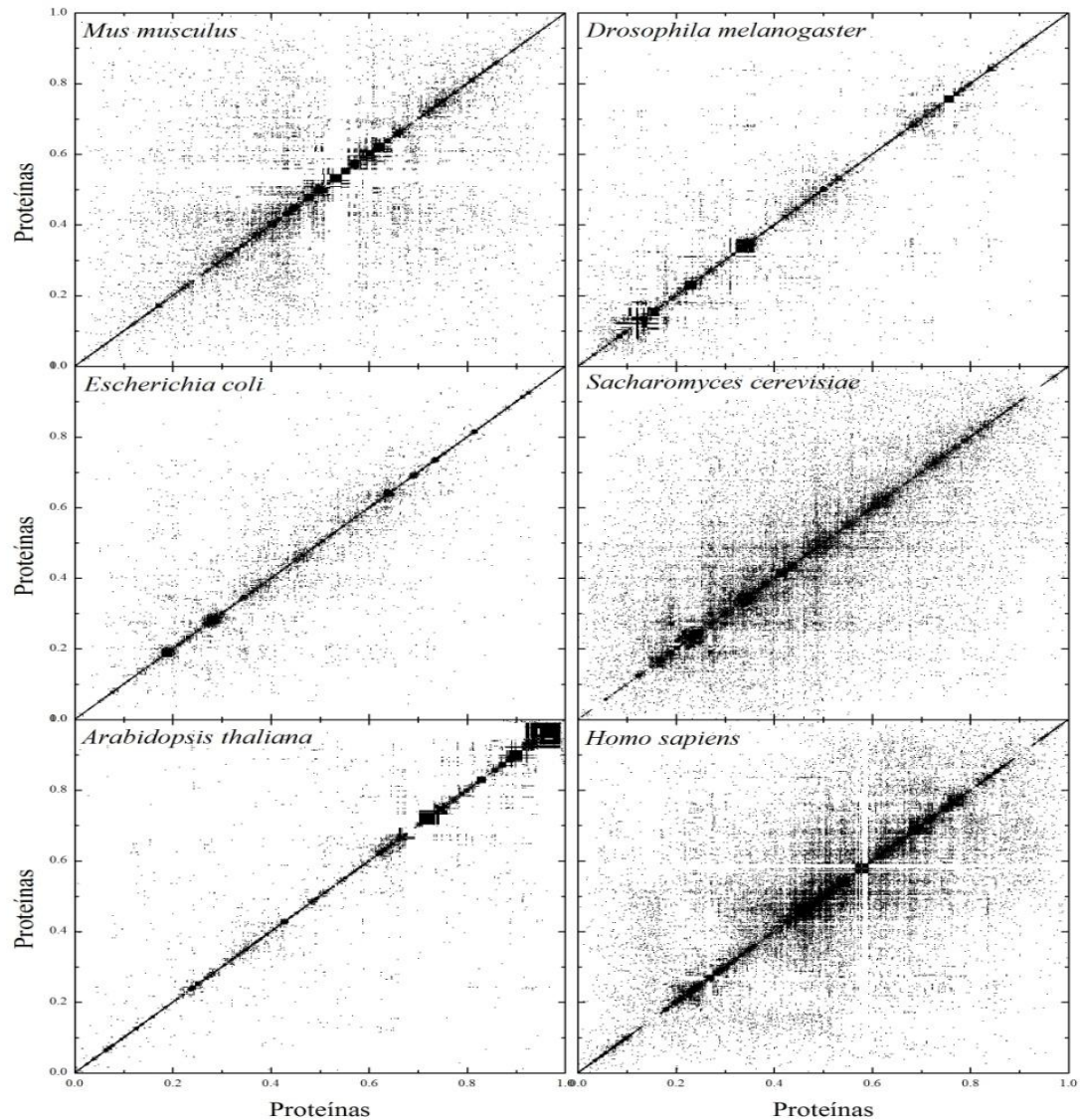
$$\mathcal{E} = \sum_{i=1}^N \sum_{j=1}^N (i^2 - j^2)^{\frac{1}{2}} [|A_{i,j} - A_{i+1,j}| + |A_{i,j} - A_{i-1,j}| + |A_{i,j} - A_{i,j+1}| + |A_{i,j} - A_{i,j-1}|]$$

- ▣ Escolhemos dois rótulos ao acaso, trocamos as proteínas de lugar, reobtemos a matriz e sua energia.
- ▣ Se a nova energia é menor a troca é aceita
- ▣ Caso contrário, volta-se à configuração inicial
- ▣ Repete-se o procedimento

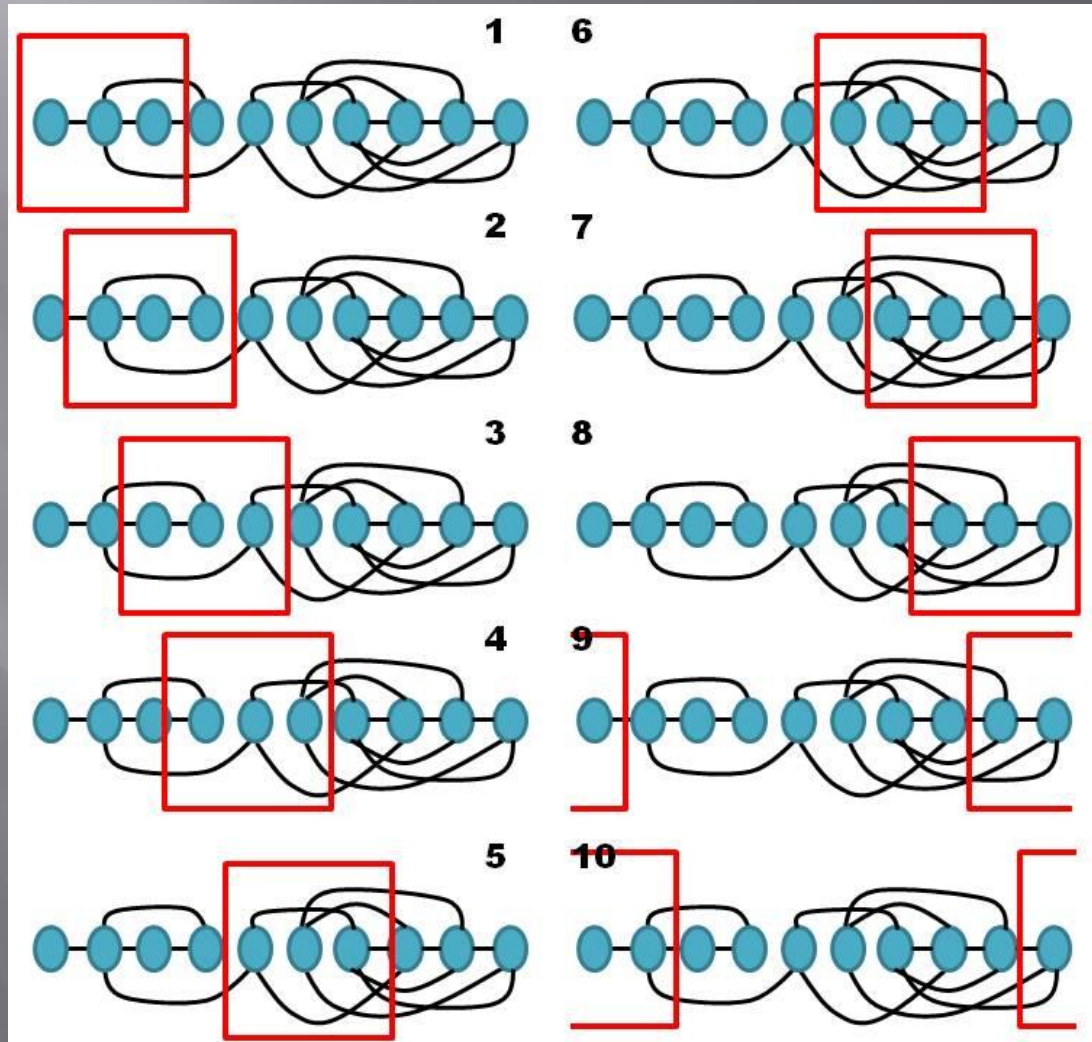
Reorganização



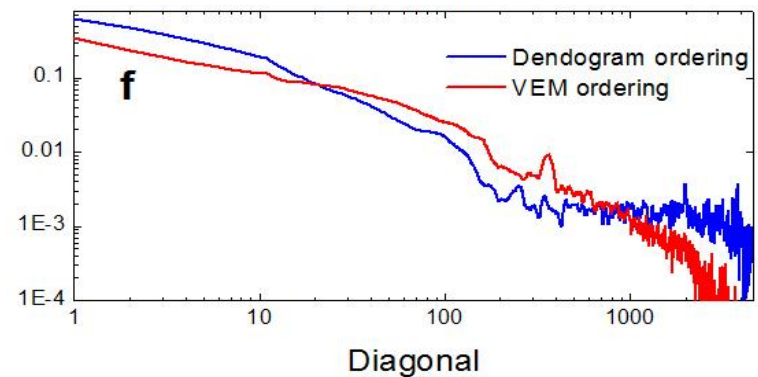
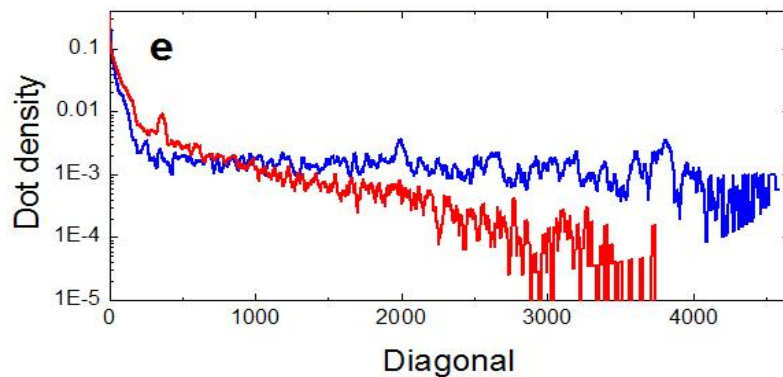
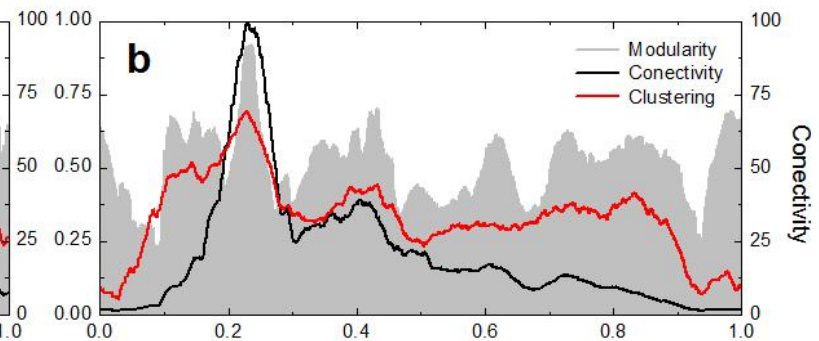
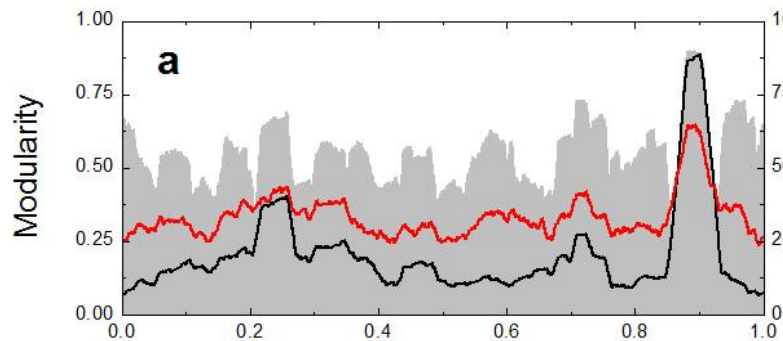
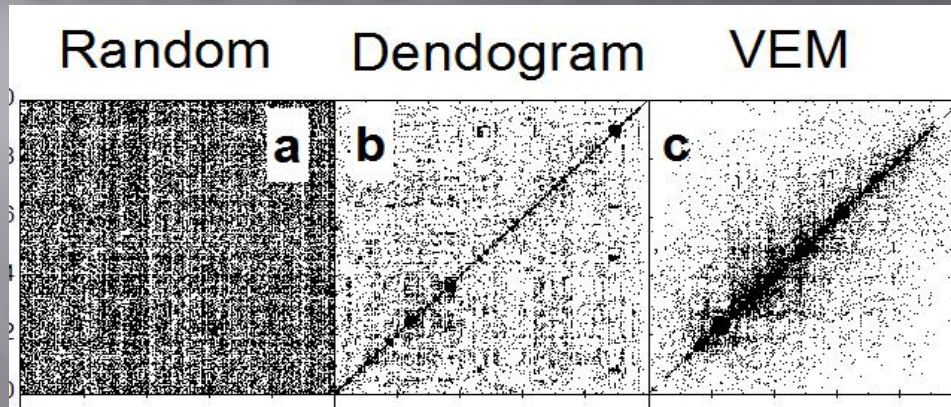
Reorganização



Cálculo de Modularidade



Cálculo de Modularidade

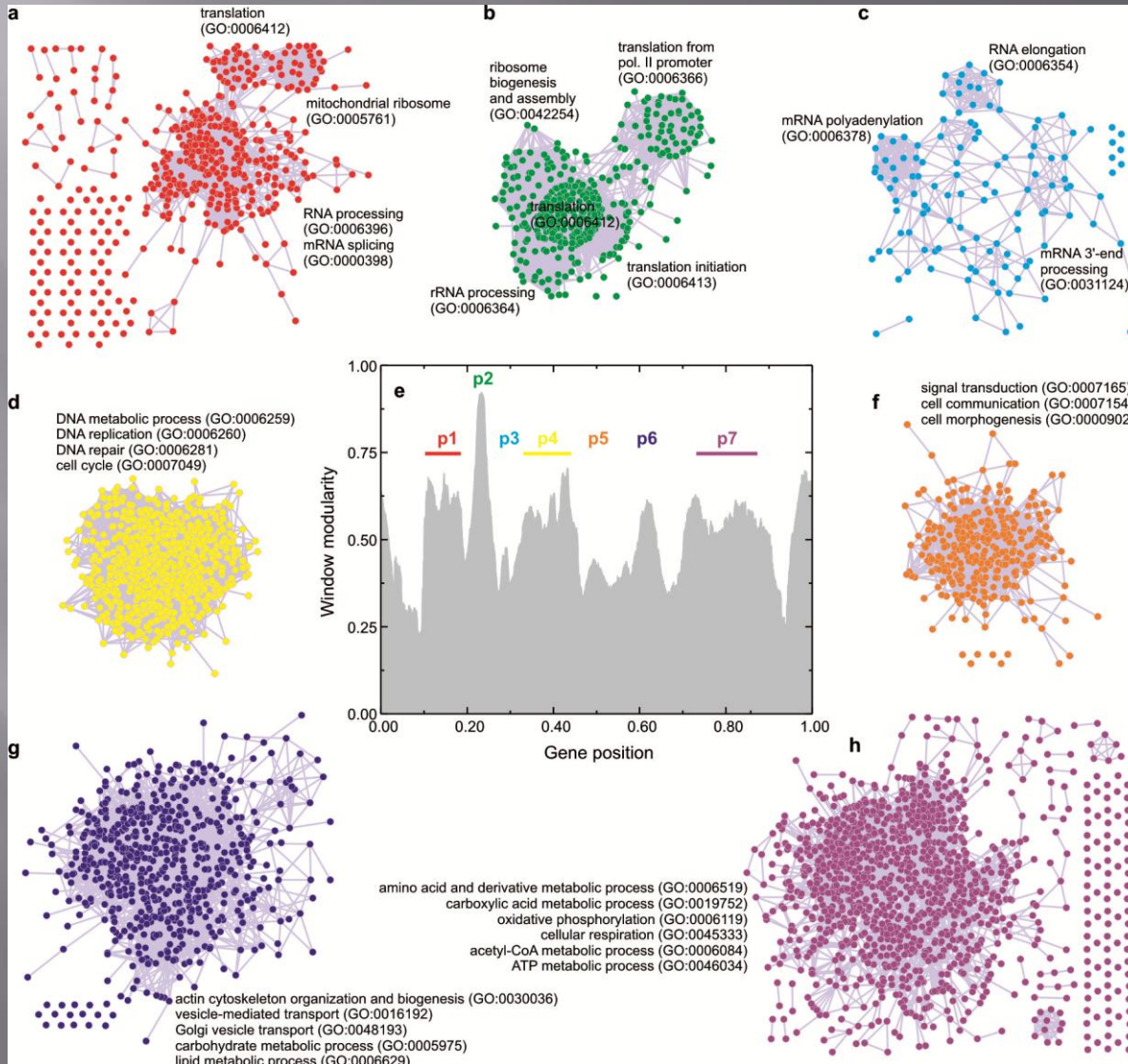


Análise Funcional

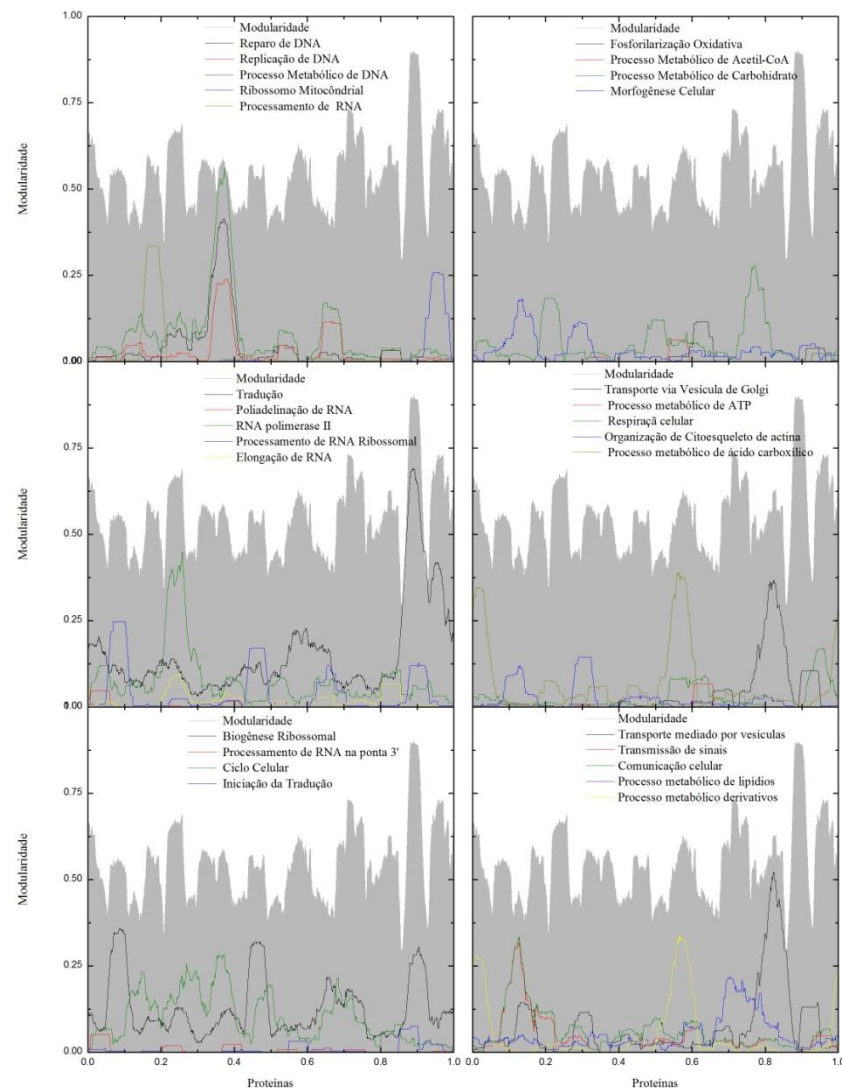
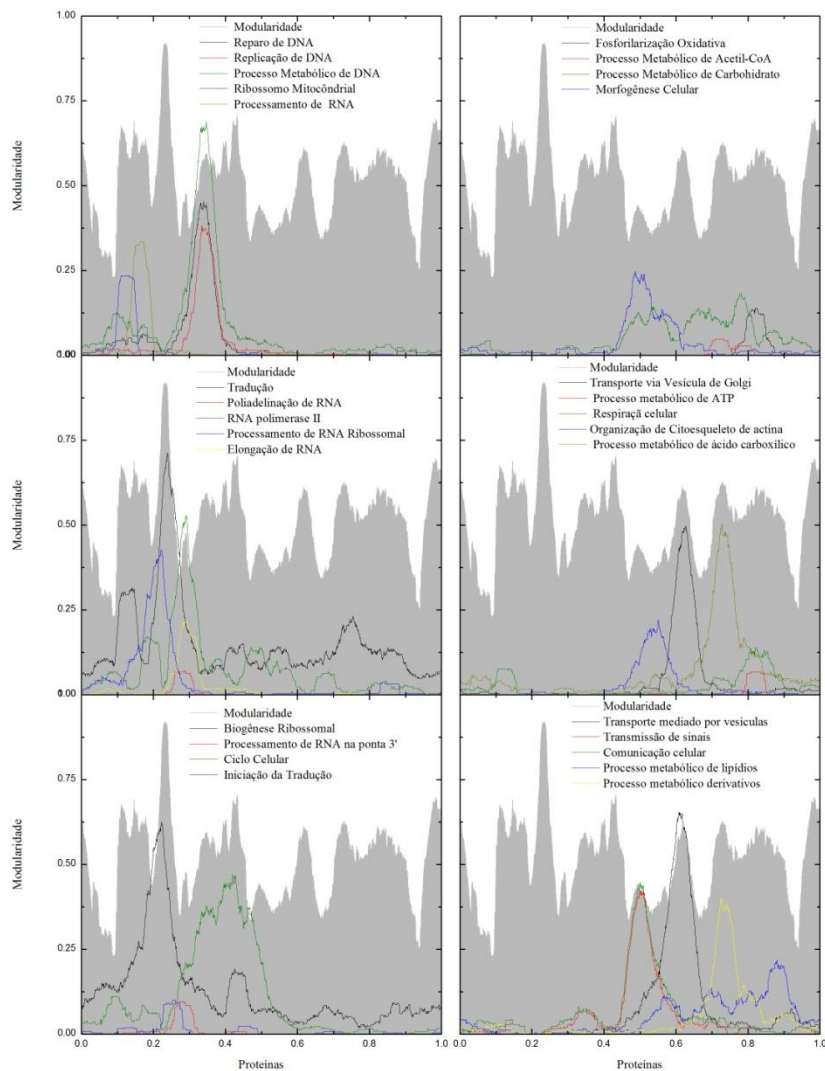
- ▣ Classificação dos genes por ontologias:
 - Processos Biológicos
 - Funções Moleculares
 - Componentes Celulares
- ▣ Hierárquico: GO's Mães, filhas, netas, etc...

- ▣ all : all [251827 gene products]
 - ▣ **I** GO:0005575 : cellular_component [171409 gene products]
 - ⊕ **I** GO:0005623 : cell [107250 gene products]
 - ⊕ **I** GO:0044464 : cell part [107213 gene products]
 - ▣ **I** GO:0031975 : envelope [3942 gene products]
 - ⊕ **I** GO:0030313 : cell envelope [667 gene products]
 - ⊕ **I** GO:0031967 : organelle envelope [3275 gene products]
 - ▣ **I** GO:0005576 : extracellular region [3935 gene products]
 - ▣ **I** GO:0048046 : apoplast [264 gene products]
 - ▣ **P** GO:0044421 : extracellular region part [2002 gene products]
 - ⊕ **I** GO:0048180 : activin complex [3 gene products]
 - ▣ **I** GO:0032311 : angiogenin-PRI complex [22 gene products]
 - ▣ **I** GO:0031395 : bursicon neuropeptide hormone complex [2 gene products]
 - ▣ **I** GO:0005601 : classical-complement-pathway C3/C5 convertase complex [0 gene products]

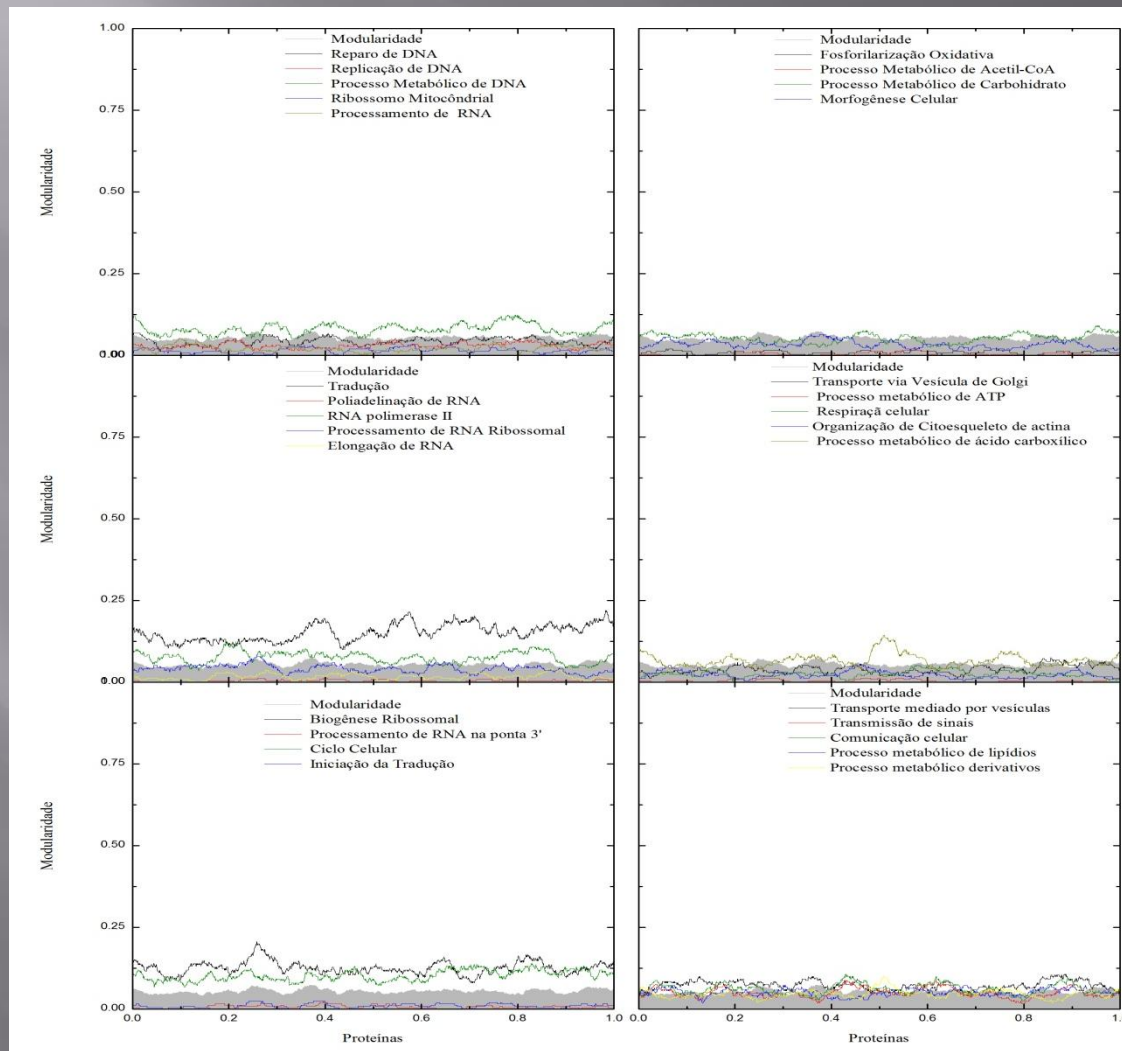
Análise Funcional





Análise Funcional



Análise Funcional



GEO



Gene Expression Omnibus

HOME SEARCH SITE MAP Handout NAR 2006 Paper NAR 2002 Paper FAQ MIAME Email GEO

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Gene Expression Omnibus: a gene expression/molecular abundance repository supporting [MIAME compliant](#) data submissions, and a curated, online resource for gene expression data browsing, query and retrieval.

GEO navigation

QUERY

- DataSets [GO](#)
- Gene profiles [GO](#)
- GEO accession [GO](#)
- GEO BLAST

BROWSE

- DataSets
- GEO accessions
 - Platforms
 - Samples
 - Series

SUBMIT

- Direct deposit / update [Create new account](#)
- Web deposit / update

GEO navigation help window. Mouse over flow chart for information.

Get GEO accession Scope: [Self](#) Format: [HTML](#) Amount: [Quick](#) [GO](#)

Depositors only User: Password: [LOGIN](#) [Recover a password](#)

Public data

GPL Platforms	6135
GSM Samples	326908
GSE Series	12952
<i>Total</i>	<i>345995</i>

Site contents

Documentation

- Overview | [FAQ](#) | [Find Submission guide](#) | [Linking & citing](#) | [Journal citations](#) | [Programmatic access](#) | [DataSet clusters](#) | [GEO announce list](#) | [Data disclaimer](#) | [GEO staff](#)

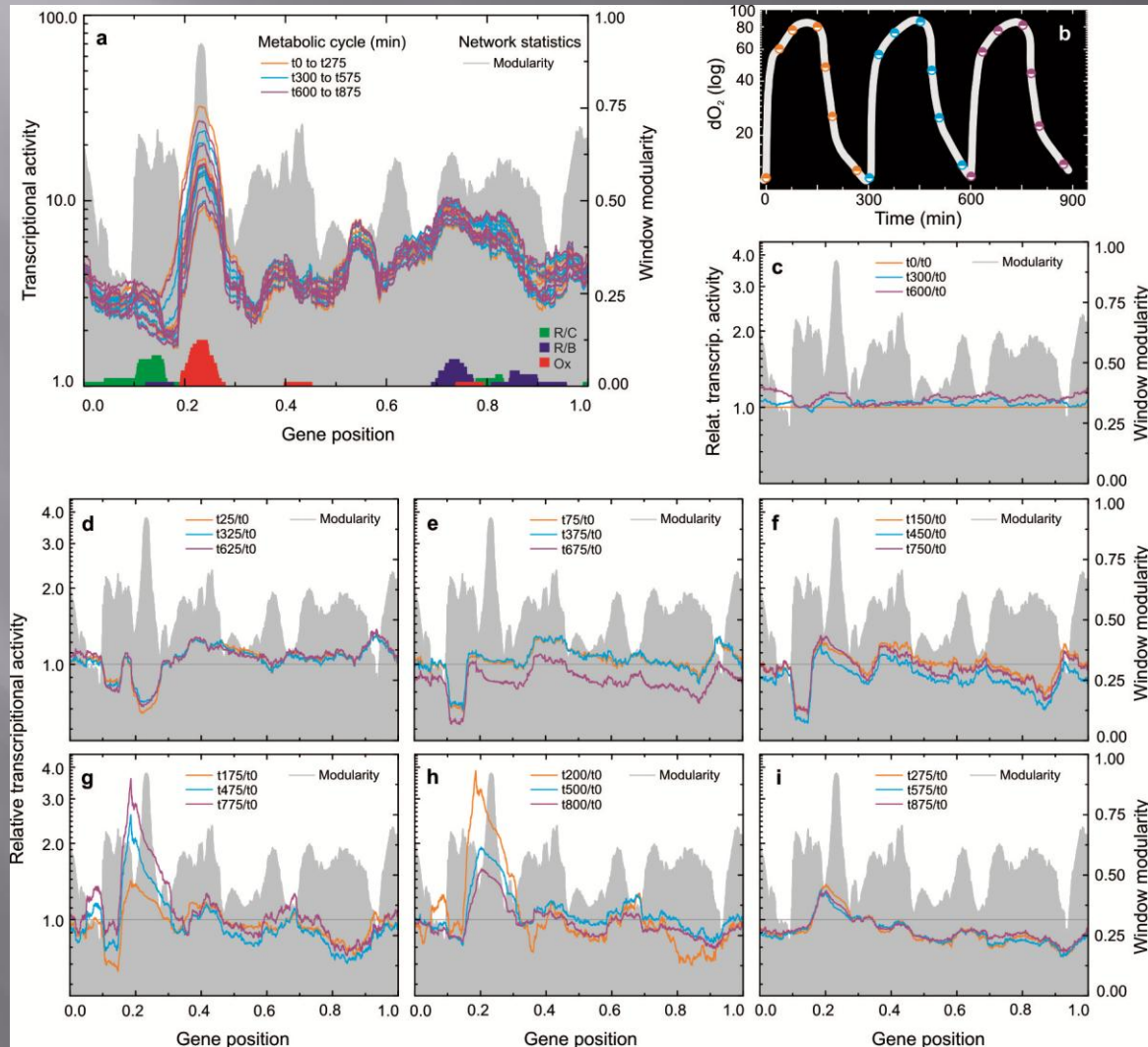
Query & Browse [?](#)

- Repository browser
- Submitter contacts
- SAGEmap
- FTP site
- GEO Profiles
- GEO DataSets

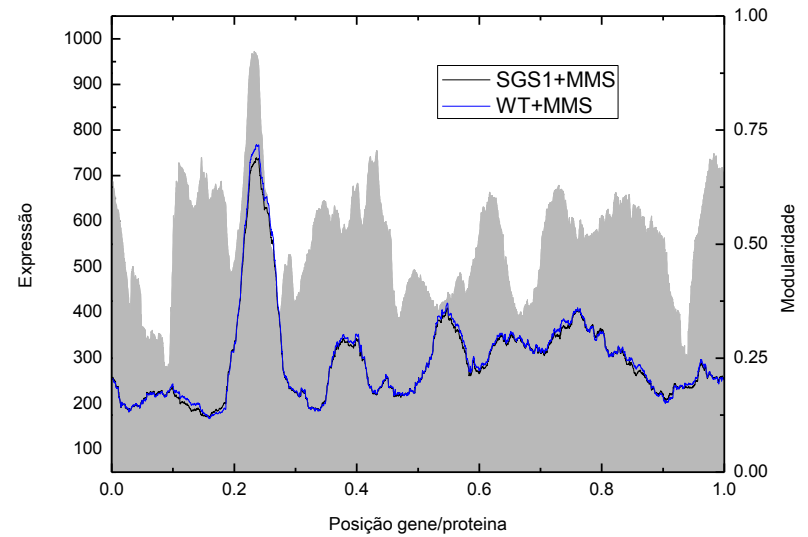
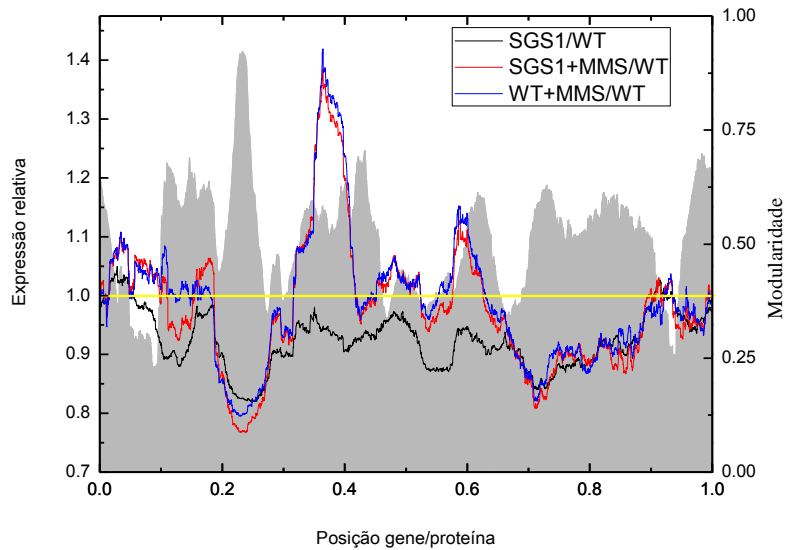
Deposit & Update [?](#)

- Direct deposit
- Web deposit
- New account

Transcriptograma



Transcriptograma



Muito Obrigado pela Atenção!!