

## Selected Bioinformatics Resources 2020

### Top recommended resources:

OMIM:	<a href="http://www.omim.org">http://www.omim.org</a>
University of Santa Cruz Genome Browser:	<a href="http://genome.ucsc.edu/">http://genome.ucsc.edu/</a>
Allen Brain atlas:	<a href="http://www.brain-map.org">http://www.brain-map.org</a>
Linnarson lab Mouse brain Atlas:	<a href="http://mousebrain.org/">http://mousebrain.org/</a>
Comparative Toxicogenomics Database:	<a href="http://ctdbase.org/">http://ctdbase.org/</a>
Gtex:	<a href="http://www.gtexportal.org/home/">http://www.gtexportal.org/home/</a>
Gemma:	<a href="https://gemma.msl.ubc.ca/home.html">https://gemma.msl.ubc.ca/home.html</a>
GREIN:	<a href="http://www.ilincs.org/apps/grein/?gse=">http://www.ilincs.org/apps/grein/?gse=</a>
Omics DI:	<a href="https://www.omicsdi.org/">https://www.omicsdi.org/</a>

### University licenced resources

#### Ingenuity Pathway Analysis (IPA)

Geneious: <https://www.geneious.com/>

To request a Geneious license, log a request via the Staff Portal <https://unimelb.service-now.com/sp>  
-> Information Technology -> Request Something -> Computers Email and Printers -> Software Installation -> choose 'Geneious'  
For students your supervisor will need to request the software on your behalf.

Cortellus (PKA Clarivate): <https://clarivate.com/cortellis/>

Available through the library <http://cat.lib.unimelb.edu.au/record=e1001620~S30>

### Selected additional resources

#### Data and tool Repositories

Omic tools	<a href="https://omictools.com">https://omictools.com</a>
Gene Expression Omnibus:	<a href="https://www.ncbi.nlm.nih.gov/geo/">https://www.ncbi.nlm.nih.gov/geo/</a>
Omics Discovery Index:	<a href="https://www.omicsdi.org/">https://www.omicsdi.org/</a>
SciCrunch:	<a href="https://scicrunch.org/">https://scicrunch.org/</a>
GREIN (processed sequencing data):	<a href="http://www.ilincs.org/apps/grein/?gse=">http://www.ilincs.org/apps/grein/?gse=</a>
Gemma:	<a href="http://www.chibi.ubc.ca/Gemma/home.html">http://www.chibi.ubc.ca/Gemma/home.html</a>

#### Gene Nomenclature

Human Gene Nomenclature committee:	<a href="http://www.genenames.org/">http://www.genenames.org/</a>
Mouse Genome Informatics:	<a href="http://www.informatics.jax.org">http://www.informatics.jax.org</a>
Rat genome database:	<a href="http://rgd.mcw.edu/">http://rgd.mcw.edu/</a>
Fly base:	<a href="http://flybase.org/">http://flybase.org/</a>
Worm base:	<a href="http://www.wormbase.org/#01-23-6">http://www.wormbase.org/#01-23-6</a>
Convert lists of gene IDs and orthologs:	<a href="https://biodbnet-abcc.ncifcrf.gov/db/db2db.php#biodb">https://biodbnet-abcc.ncifcrf.gov/db/db2db.php#biodb</a>

#### Gene info

Gene ontology:	<a href="http://geneontology.org/">http://geneontology.org/</a>
Genecards:	<a href="https://www.genecards.org/">https://www.genecards.org/</a>
NBCI:	<a href="https://www.ncbi.nlm.nih.gov/gene">https://www.ncbi.nlm.nih.gov/gene</a>
OMIM:	<a href="http://www.omim.org">http://www.omim.org</a>

**Gene list / Pathway / Network interrogation**

David database:	<a href="https://david.ncifcrf.gov">https://david.ncifcrf.gov</a>
WEBgestalt:	<a href="http://www.webgestalt.org/option.php">http://www.webgestalt.org/option.php</a>
NetworkAnalyst	<a href="http://www.networkanalyst.ca">http://www.networkanalyst.ca</a>
Toppgene:	<a href="https://toppgene.cchmc.org/">https://toppgene.cchmc.org/</a>

**Genome analysis (gene structure- genome browsers)**

University of Santa Cruz Genome Browser:	<a href="http://genome.ucsc.edu/">http://genome.ucsc.edu/</a>
Ensembl Genome Browser:	<a href="http://ensembl.org/">http://ensembl.org/</a>
Wash U epigenome browser:	<a href="http://epigenomegateway.wustl.edu/">http://epigenomegateway.wustl.edu/</a>
Integrated Genome Browser:	<a href="http://bioviz.org/igb/">http://bioviz.org/igb/</a>
Integrative Genomics Viewer:	<a href="http://www.broadinstitute.org/igv/">http://www.broadinstitute.org/igv/</a>

**Genomics variation**

DBsnp	<a href="https://www.ncbi.nlm.nih.gov/SNP/">https://www.ncbi.nlm.nih.gov/SNP/</a>
gnomAD browser:	<a href="https://gnomad.broadinstitute.org/">https://gnomad.broadinstitute.org/</a>
GWAS catalogue	<a href="https://www.ebi.ac.uk/gwas/">https://www.ebi.ac.uk/gwas/</a>

**Mouse phenotypes and resources**

Mouse gene expression GXD	<a href="http://www.informatics.jax.org/expression.shtml">http://www.informatics.jax.org/expression.shtml</a>
Genenetwork:	<a href="http://www.genenetwork.org/webqtl/main.py">http://www.genenetwork.org/webqtl/main.py</a>
Mouse Phenome Database:	<a href="http://phenome.jax.org/">http://phenome.jax.org/</a>
International mouse phenotyping consort:	<a href="http://www.mousephenotype.org/">http://www.mousephenotype.org/</a>

**Genotype-disease and eQTL human**

DisGeNET	<a href="http://www.disgenet.org/web/DisGeNET/menu/home">http://www.disgenet.org/web/DisGeNET/menu/home</a>
Gtex	<a href="http://www.gtexportal.org/home/">http://www.gtexportal.org/home/</a>
PheGenI	<a href="https://www.ncbi.nlm.nih.gov/gap/phegeni">https://www.ncbi.nlm.nih.gov/gap/phegeni</a>
dbGaP controlled access data browser	<a href="https://www.ncbi.nlm.nih.gov/gap/ddb/">https://www.ncbi.nlm.nih.gov/gap/ddb/</a>
GeneNetwork	<a href="http://www.genenetwork.org/webqtl/main.py">http://www.genenetwork.org/webqtl/main.py</a>

**Phenotype model organisms**

Mouse Phenome Database:	<a href="http://phenome.jax.org/">http://phenome.jax.org/</a>
International Mouse Phenotyping Consortium:	<a href="https://www.mousephenotype.org/">https://www.mousephenotype.org/</a>
GeneNetwork	<a href="http://www.genenetwork.org/webqtl/main.py">http://www.genenetwork.org/webqtl/main.py</a>
Mouse knockout project:	<a href="https://www.komp.org/">https://www.komp.org/</a>

**Protein info**

Uniprot:	<a href="https://www.uniprot.org">https://www.uniprot.org</a>
Nextprot:	<a href="https://www.nextprot.org/">https://www.nextprot.org/</a>
Genecards:	<a href="https://www.genecards.org/">https://www.genecards.org/</a>
Phosphosite:	<a href="http://www.phosphosite.org/homeAction.do">http://www.phosphosite.org/homeAction.do</a>

**Protein interaction networks**

Intact:	<a href="http://www.ebi.ac.uk/intact/">http://www.ebi.ac.uk/intact/</a>
TissueNet 2.0	<a href="http://netbio.bgu.ac.il/tissuenet/#/">http://netbio.bgu.ac.il/tissuenet/#/</a>
Biogrid:	<a href="http://thebiogrid.org/">http://thebiogrid.org/</a>
String:	<a href="https://string-db.org/">https://string-db.org/</a>

### Networks with additional features

Comparative Toxicogenomics Database:	<a href="http://ctdbase.org/">http://ctdbase.org/</a>
Drug Bank:	<a href="http://www.drugbank.ca/">http://www.drugbank.ca/</a>
IMP:	<a href="http://imp.princeton.edu/">http://imp.princeton.edu/</a>
String:	<a href="https://string-db.org/">https://string-db.org/</a>
Genemania:	<a href="http://www.genemania.org/">http://www.genemania.org/</a>
Gemma:	<a href="http://www.chibi.ubc.ca/Gemma/home.html">http://www.chibi.ubc.ca/Gemma/home.html</a>
GeneNetwork:	<a href="http://www.genenetwork.org/webqtl/main.py">http://www.genenetwork.org/webqtl/main.py</a>

### Pathway analysis

Pathguide:	<a href="http://www.pathguide.org/">http://www.pathguide.org/</a>
Pathway commons:	<a href="http://www.pathwaycommons.org/pc/">http://www.pathwaycommons.org/pc/</a>
KEGG pathways :	<a href="http://www.genome.jp/kegg/">http://www.genome.jp/kegg/</a>

### Gene expression localisation

Gtex:	<a href="http://www.gtexportal.org/home/">http://www.gtexportal.org/home/</a>
Allen Brain atlas:	<a href="http://www.brain-map.org">http://www.brain-map.org</a>
Eurexpress:	<a href="http://www.eurexpress.org/ee/">http://www.eurexpress.org/ee/</a>
Gensat:	<a href="http://www.gensat.org/index.html">http://www.gensat.org/index.html</a>
Gene paint:	<a href="http://www.genepaint.org/">http://www.genepaint.org/</a>

### Developmental gene expression

Brainspan:	<a href="http://www.brainspan.org">http://www.brainspan.org</a>
Human Brain Transcriptome:	<a href="http://hbatlas.org/">http://hbatlas.org/</a>
Allen Developing Mouse Brain:	<a href="http://developingmouse.brain-map.org">http://developingmouse.brain-map.org</a>
BrainCloud:	<a href="http://braincloud.jhmi.edu/plots/">http://braincloud.jhmi.edu/plots/</a>
LIBD Human DLPFC Development:	<a href="http://genome.ucsc.edu/cgi-bin/hgHubConnect?hgsid=691572023_iAnrARw5BsOdpaMvfPNNlqtV3gYz">http://genome.ucsc.edu/cgi-bin/hgHubConnect?hgsid=691572023_iAnrARw5BsOdpaMvfPNNlqtV3gYz</a>

### Cell type specific gene expression

Neuroexpresso	<a href="http://neuroexpresso.org">http://neuroexpresso.org</a>
Brain RNAseq:	<a href="http://www.brainrnaseq.org/">http://www.brainrnaseq.org/</a>
Allen Brain Atlas Cell tax:	<a href="http://casestudies.brain-map.org/celltax">http://casestudies.brain-map.org/celltax</a>
Astrocyte gene expression	<a href="http://astrocyternaseq.org">http://astrocyternaseq.org</a>
Linnarsson Lab-cortex and hippocampus	<a href="http://linnarssonlab.org/cortex/">http://linnarssonlab.org/cortex/</a>
Linnarsson Lab-ventral midbrain	<a href="http://linnarssonlab.org/ventralmidbrain/">http://linnarssonlab.org/ventralmidbrain/</a>
Hippocampus RNA-seq atlas:	<a href="https://hipposeq.janelia.org/">https://hipposeq.janelia.org/</a>
DropViz:	<a href="http://dropviz.org/">http://dropviz.org/</a>
Celltypes database:	<a href="http://celltypes.brain-map.org/">http://celltypes.brain-map.org/</a>
Immunological genome:	<a href="http://www.immgen.org/index_content.html">http://www.immgen.org/index_content.html</a>

### Connectivity

Mouselight Neuron browser:	<a href="http://mouselight.janelia.org/">http://mouselight.janelia.org/</a>
Mouse Brain Connectivity Atlas:	<a href="http://connectivity.brain-map.org/">http://connectivity.brain-map.org/</a>

### Gene expression analysis (differential expression)

Gemma: <http://www.chibi.ubc.ca/Gemma/home.html>  
Gene expression omnibus : <http://www.ncbi.nlm.nih.gov/geo/>  
Immunological genome: [http://www.immgen.org/index\\_content.html](http://www.immgen.org/index_content.html)  
Array Express: <http://www.ebi.ac.uk/arrayexpress/>  
Stemformatics: <https://www.stemformatics.org>

### Protein localisation

Human protein atlas <http://www.proteinatlas.org/>

### GWAS studies

GWAS central: <https://www.gwascentral.org>  
Alzheimer's Disease: <http://www.alzgene.org/>  
Schizophrenia: <http://www.szgene.org/>  
Multiple sclerosis: <http://www.msgene.org/>  
Parkinson's disease : <http://www.pdgene.org/>

### Tools

Primer3 program: <http://frodo.wi.mit.edu/primer3/>  
In silico PCR <http://genome.ucsc.edu/cgi-bin/hgPcr>  
ApE plasmid editor: <http://biologylabs.utah.edu/jorgensen/wayned/ape/>  
Venny: <http://bioinfogp.cnb.csic.es/tools/venny/>  
Cytoscape <http://www.cytoscape.org>

### Find species orthologous

UCSC browser "Tools / View in other genome" for single genes: <http://genome.ucsc.edu/index.html>

Biomart (for large lists) <https://asia.ensembl.org/info/data/biomart/index.html>

Instructions: <http://www.ensembl.info/2009/01/21/how-to-get-all-the-orthologous-genes-between-two-species/>