



Instructor: Sael Lee

CS549 Spring – Computational Biology

PROJECT PROPOSAL WRITING & GENERAL WRITING TIPS

Resources: <http://owl.english.purdue.edu>

PROJECT REQUIREMENTS FOR CSE 549

- × Project Type
 - + Implementation (encouraged)
 - + Theory (if you can take the challenge)
 - + Survey
- × Project subject
 - + Topics in Computational Biology
 - + Can be any subject related to
 - × Information theory
 - × Gaussian mixture model and/or Expectation maximization
 - × Feature selection
 - × Feature extraction
 - × Graph mining
- × Grading (50% total):
 - + proposal 10% + report 35% + presentation 5%
- × **Plan to come meet me to verify that your topic is adequate before Oct 5th!**

PROJECT PROPOSAL

- × Written proposal (3 – 5) pages, excluding references,
 - + 12 points ; 1.5 spaced; Times New Roman.
- × Due date: 10/19

- × Purpose of the Proposal:
 - + Allows the student to clarify 1) what it is he/she wants to do, 2) why and how he/she wants to do it.
 - + Provides time to look over existing works related to what he/she wants to do.
 - + Presents what she/he wants to do in 1) the manner and 2) timeframe proposed
 - + Once approved, provides a written contract between the student and the supervisor

COMPONENTS OF A PROJECT PROPOSAL

1. Title
2. Abstract
 - + (1 or 2 paragraphs)
3. Introduction
 - + (2~3 pages)
4. Project Details
 - + (1~2 pages)
5. Conclusion
 - + (1 paragraph)
6. References

Credit: <https://people.ok.ubc.ca/rlawrenc/teaching/writingProposal.html>

Compiled by Dr. Ramon Lawrence, Associate Professor of Computer Science at the University of British Columbia - Okanagan Campus and founder of UnityJDBC.

TITLE

What title will make your title
“Google friendly”?
Not too common but have the key words.

- × The title of the project is significant.
- × The title must be
 - + Clear,
 - + Appropriate for the topic
 - + Keep it less than 45 characters
- × Take hints from published works when you do a short survey for the proposal.

After searching, abstract will determine whether a person will take his/her time to read your work.

ABSTRACT

- × A self-contained piece of writing that can be understood independently from the essay or project
- × One to two paragraphs; no figures & references
- × Should contain:
 - + Problem/Motivation/Objective
 - × A statement of the problem and objectives
 - + Methods or Approach you will use
 - × A summary of methods you will employ or your research approach;
 - + Expected Results
 - × The significance of the proposed topic should become clear
 - + Conclusions and comments
 - × Broader Impact

OBJECTIVE SHOULD BE SMART

- × All objectives should be **SMART**
- × **Specific**
 - + Be precise about what you are going to achieve
- × **Measurable**
 - + Quantify your objectives
- × **Achievable**
 - + Are you attempting too much?
- × **Realistic**
 - + Do you have the resources to make the realize the objective (human resources, financial, the right context and opportunities)?
- × **Timed**
 - + State when you will achieve the objective

INTRODUCTION

Shows whether the writer know the field they're writing about.

Aligns the reader with the writer by providing adequate info about the topic.

- × The Introduction to the project provides a general introduction to the phenomena or issue of interest, and is usually contained in 2 pages.
- × The issue or problem under investigation is described,
- × Background and/or context for understanding the nature of the issue is provided.
- × Provides answers to two main questions:
 - + What is the project all about? (Problem Definition and Goal)
 - + Why is the project important or worthwhile? (Motivation)
 - + What is new compared to existing publications related to the topic? (Short Survey)
- × The Introduction will also typically conclude with a brief description of the structure of the remainder of the document.

INTRODUCTION: CLASS SPECIFIC

- × Specify also at the end of introduction
 - + Why you are fit to do this project (List your skills)
 - × 2~3 sentences
 - + What will you learn more to do this project.
 - × 2~3 sentences
 - +

PROJECT DETAILS

(This section must make sense within the context of the document and be linked with the sections preceding it.)

- ✘ In this section provide a clear, explicit and thorough description of how you will complete your project and the timetable for completing each step.
- ✘ It is the writer's responsibility to ensure that the proposal is clear about what is being proposed, with whom, where and when. (WHY should already have been explained.)

PROJECT DETAILS: ARCHITECTURE AND ENVIRONMENT

- × 2-3 paragraphs + figures

- × Describe the project environment
 - + Implementation: software, hardware, languages, organizations, etc.
 - + Survey: database & keywords & how many references

- × Diagrams and figures are useful if appropriate.

- × What software, hardware, or tools will you use?

PROJECT DETAILS

IMPLEMENTATION ISSUES AND CHALLENGES

- × What will be the most difficult issues and challenges in the implementation/survey?
- × How are you using or extending current tools/systems/algorithms for your problem?
- × What makes your project unique?

PROJECT DETAILS

DELIVERABLES

- × 3-5 paragraphs
 - + Point form maybe used for listing out products
- × What will the project produce?
 - + (program, report, etc.)
- × Describe in relative detail the features of each of the project's products.

- × **Emphasize what your project contributes or achieves!**

PROJECT DETAILS

EVALUATION PLAN

- × Strategy to measure the success
- × Explanation of the criteria used to measure the success
- × Includes:
 - + quantitative indicators (numbers)
 - + qualitative indicators (contents)
 - + vision of success (what you want to achieve)

PROJECT DETAILS

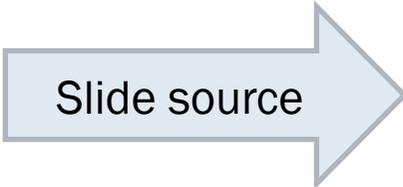
TIMELINE

- × 1 paragraph
 - + point-form is suitable
- × Provide an estimated timeline of project deliverables and important dates.
- × You have from **about 2 months** to finish the project.
- × **Make your plans REALISTIC!**

CONCLUSION

- × 1 paragraph
- × Summarize the project including the problem, motivation, and proposed solution, and re-state important (planned) contributions.

GENERAL WRITING TIPS



Thematic programme
"Non State Actors and Local Authorities in Development"

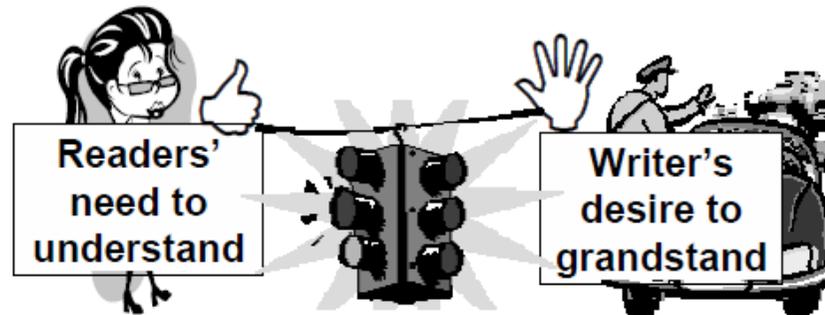
**PROJECT DESIGN AND PROPOSAL WRITING WORKSHOP
FOR INDIGENOUS PEOPLE'S GROUPS AND PARTNERS**

**MODULE 3:
TECHNICAL TIPS FOR PROPOSAL WRITING**

 DELEGATION OF THE
EUROPEAN COMMISSION
TO THE PHILIPPINES

SOFTSKILLSDEV
CONSULTANCY 

WRITE TO EXPRESS,
~~NOT TO IMPRESS~~



▶ BEING SPECIFIC

Use precise, exact words

Provide enough detail

Avoid ambiguity and vagueness

▶ AVOIDING HIGH-SOUNDING WORDS

Simpler words are easier to understand

Difficult words do not make your writing better, only more difficult to read and understand.

“We would like to take this opportunity to extend to your good office our most profound and sincere gratitude for the prompt and favorable response to our request.”



“Thank you very much for your fast approval.”

▶ AVOIDING WORDINESS

If you can say it with one word, say it with one word

*The fewer the words used,
the easier the reader understands.*

“The conduct of an investigation is necessitated of us by the situation”



“It is necessary that we investigate”



“We need to investigate”



“We must investigate”

▶ AVOIDING JARGON

Jargon – technical terms,
abbreviations or
“slang” understood only
by a specific group

*Use words and terms that the ‘average’ intended reader
can understand easily*

WRITING GOOD SENTENCES

SHORT ≈ 15 to 20 words

Use mostly **SIMPLE SENTENCES** combined with some **COMPOUND SENTENCES** and occasional **COMPLEX SENTENCES**.

Avoid as much as possible **COMPOUND-COMPLEX SENTENCES**.

SIMPLE SENTENCE

- One (1) independent clause (“stand-alone” subject-and-predicate combination)
- Has only one basic idea

Subject (what is described) Predicate (the description)

“Barangay residents don’t have a safe source of drinking water.”

SHORT DIRECT CLEAR

ONLY ONE IDEA AT A TIME

“CHOPPY”, BORING, DISTRACTING

“Barangay residents don’t have a safe source of drinking water. They get water from holes in the riverbank. The river water is dirty. Residents often get sick from the dirty water they drink. Many die.”

Write mostly in the ACTIVE VOICE

ACTIVE VOICE
Subject does the action

“The boy ate the food.”

SHORTER

EMPHASIZES THE DOER

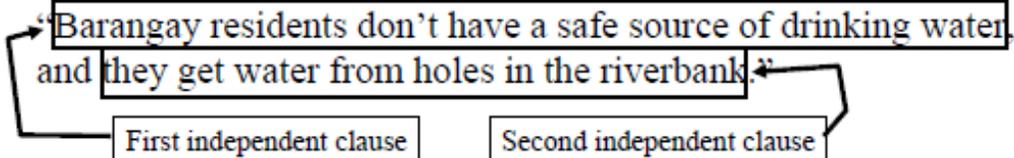
PASSIVE VOICE
Subject receives the action

“The food was eaten by the boy.”

← Back to main discussion

COMPOUND SENTENCE

- Two (2) independent clauses linked by
 - ☐ a comma (,) or a semicolon (;)
 - ☐ a coordinating conjunction (“and”, “or”, “nor”, “for”, “so”, “yet”, “but”)



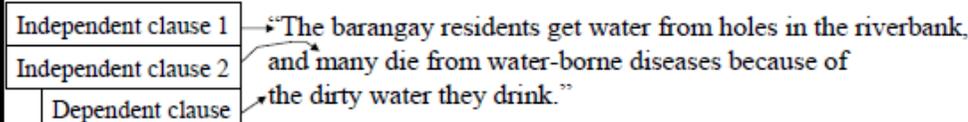
- ☑ STILL SOMEWHAT SHORT
- ☑ CAN EXPRESS MORE THAN ONE IDEA
- ☑ CAN MAKE RELATIONSHIPS BETWEEN IDEAS CLEAR

COMPLEX SENTENCE

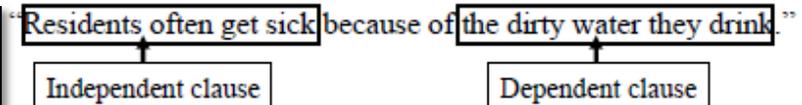
- One independent clause and at least one dependent clause, linked by a subordinating conjunction (“although”, “even”, “despite”, “because”, “if”, “while”)

COMPOUND-COMPLEX SENTENCE

- At least two independent clauses and at least one dependent clause



- ☒ RATHER LONG
- ☒ MAY BE HARD TO FOLLOW, EVEN CONFUSING
- ☑ SOMETIMES NEEDED TO SHOW SOMEWHAT COMPLICATED RELATIONSHIPS



- ☑ STILL SOMEWHAT SHORT
- ☑ EXPRESSES MORE THAN ONE IDEA
- ☑ CAN MAKE RELATIONSHIPS BETWEEN IDEAS CLEAR

WRITING GOOD PARAGRAPHS

Paragraph → Group of sentences discussing a central point or clarifying a main idea

EXAMPLE:

A paragraph groups several sentences (although sometimes it may have only one sentence) into a single unit that discusses a central point or clarifies a main idea. Aside from putting together sentences that clearly support one main idea, a paragraph should also relate clearly to and logically follow the paragraph that comes before it.

TOPIC SENTENCE



Support sentences

Main idea or central point

Make topic sentence clearer and more convincing

EXAMPLE:

While putting the "point" clearly, the topic sentence alone is usually not enough. The reader still needs to be convinced of the "point." Thus, the topic sentence must be supported by additional sentences to complete the paragraph.

How long should
a paragraph be?



**Good
paragraphs
should be
SHORT.**



Topic sentence
+ 4 or 5 support sentences
5 to 6 sentences ≈ 75 to 120 words

AVOID long unbroken blocks of text

*If necessary, break up
presentation of one main idea
into two or more paragraphs*

COHERENCE

WITHIN PARAGRAPHS

- Sentences must have logical, clear and smooth linking and flow of ideas

BETWEEN PARAGRAPHS

- Paragraphs that follow each other must have a clear and smooth flow of related thought

GENERAL WRITING TIPS & COMMON MISTAKES

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× Unnecessary Capitalization

- + Do not capitalize terms in sentence unless they are proper names.

× "Because ..."

- + Do not start a sentence with because.

- + Re-arrange your sentence so that “because” is not needed

- + Or if unavoidable substitute “because” to "Since ..." or "Due to ...".

× Avoid Contractions

- + Do not use contractions such as "let's" (let us) and "that's" (that is).

× Self-References is OK

- + “I” ,”we”, “our” is OK but do not over do it.

× "Further" Instead of "Also" (not a strong suggestion)

- + Replace "Also" with "Further" to start a sentence.

GENERAL WRITING TIPS & COMMON MISTAKES CONT.

× Dangling "This"

- + Do not abuse "this" to substitute for a topic in discussion.

EX> "For example, **this** is a bad situation because the sentence is ambiguous."

- + Replace "this" with the item being described such as "Using the word 'this' inappropriately results in a bad situation because the sentence may be ambiguous."

× Define Before Use !!!

- + For terms and abbreviations, please define before use (DBU). Otherwise, the reader may not understand the concept or abbreviation if you do not DBU.

× New Paragraphs

- + As a general rule, split larger paragraphs into two or more paragraphs if the topics described are sufficiently distinct.

GENERAL WRITING TIPS & COMMON MISTAKES CONT.

× **Be Consistent with Terms**

- + If you define a term, abbreviation, or proper name, be consistent in its spelling, use, and capitalization throughout the text.

× **Dangling Headers**

- + Do not have text headers end a page followed by no text.
- + Similarly, try to avoid lines of text with only one or two words at the end of a paragraph.

× **'An' versus 'A':**

- + Abbreviations such as XML requires the article 'an'.
 - × *Example:* an XML document
- + Some words beginning with 'u' require the article 'a':
 - × *Example:* a unique or a unified approach

× **'That' versus 'Which'**

- + 'That' should be preferentially used instead of 'which'.

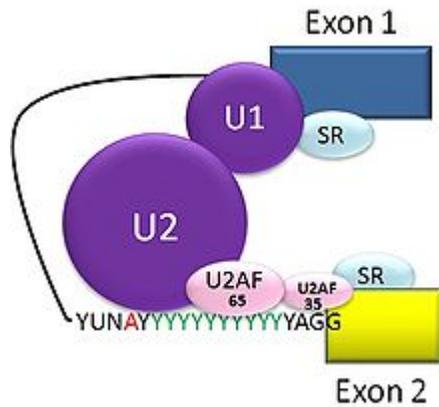
GENERAL WRITING TIPS & COMMON MISTAKES CONT.

× Title Capitalization Rule

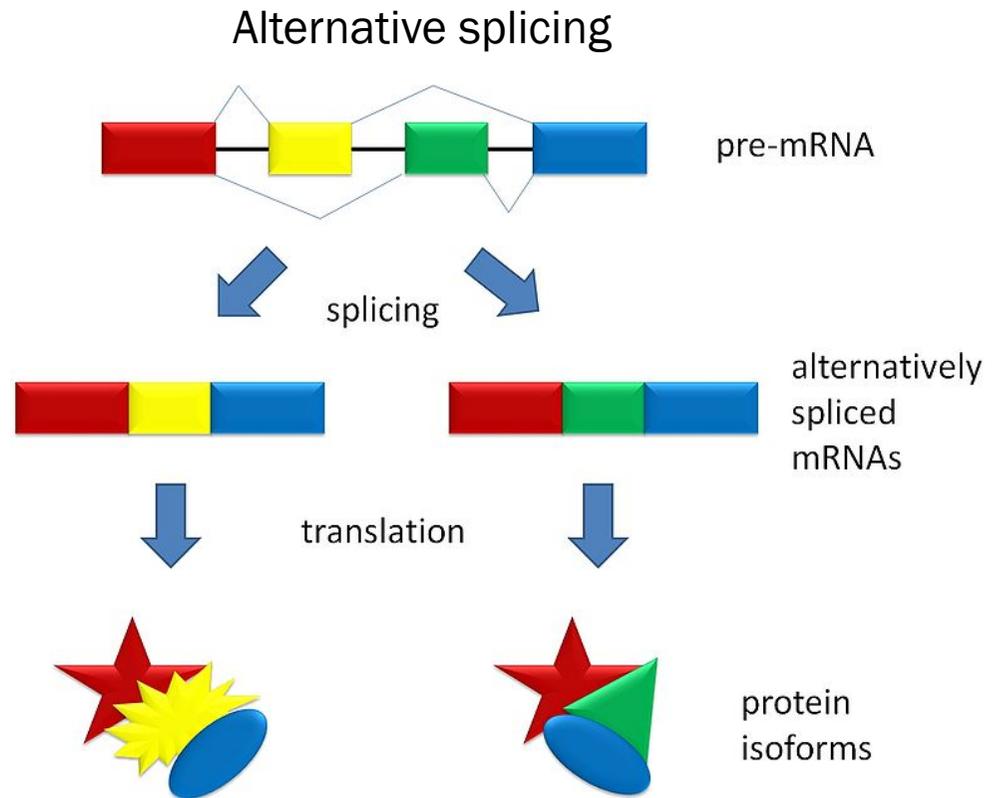
- + Headings should be capitalized
 - × i.e., nouns, verbs, and all other words except articles, prepositions, and conjunctions should be set with an initial capital
- + Headings should, with the exception of the title, be aligned to the left.
- + Words joined by a hyphen are subject to a special rule.
 - × If the first word can stand alone, the second word should be capitalized.
- + Here are some examples of headings:
 - × "Criteria to Disprove **Context-Freeness** of Collage Languages",
 - × "On Correcting the Intrusion of Tracing **Non-deterministic** Programs by Software",
 - × "A **User-Friendly** and Extendable Data Distribution System",
 - × "**Multi-flip Networks: Parallelizing** GenSAT".

SAMPLE PROJECTS

- × Information content of splice sites
- + Information Theory

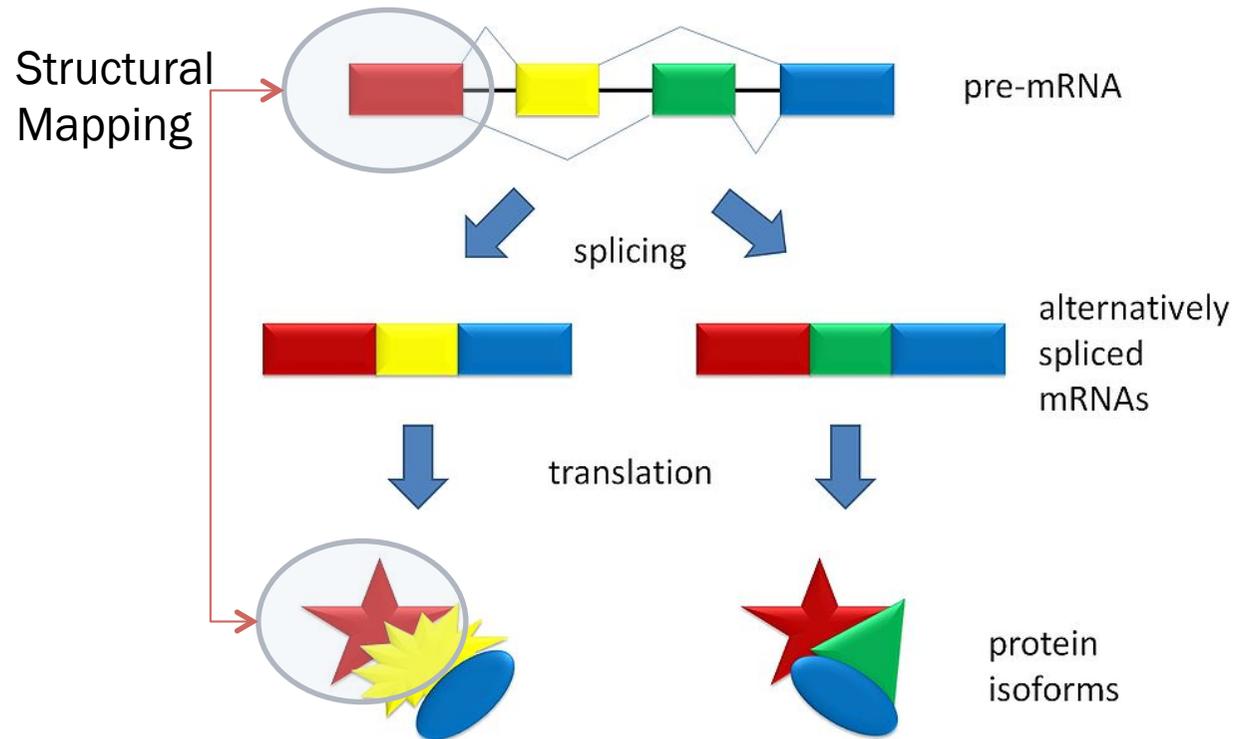


Splicing of mRNA is performed by an RNA and protein complex known as the spliceosome, containing snRNPs designated U1, U2, U4, U5, and U6 (U3 is not involved in mRNA splicing)



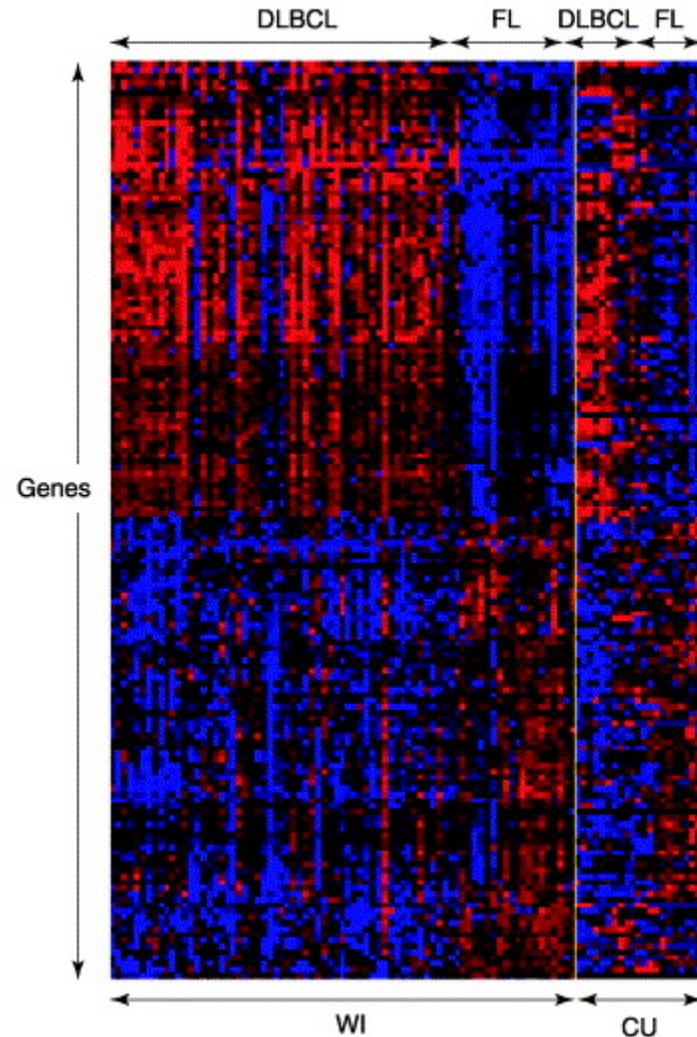
http://en.wikipedia.org/wiki/Alternative_splicing

× Splice sites and secondary structure signals + Information Theory

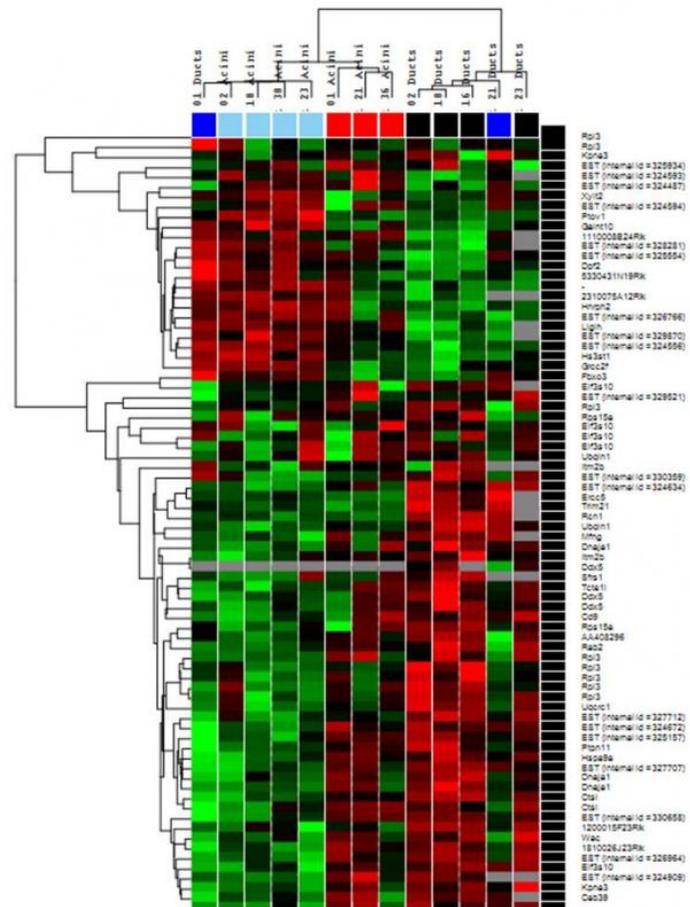


- × Gene selection in microarray – cancer genome
 - + Feature selection

Finding the set of gene that are most relevant to phenotype classification



- ✘ Clustering of microarray expression data via Gaussian mixture models
 - + Mixture model



- × Graph analysis on transcription factors (TF)
 - + Graph searching for patterns
 - + Can you find the all the TF interaction in the interaction graph?

