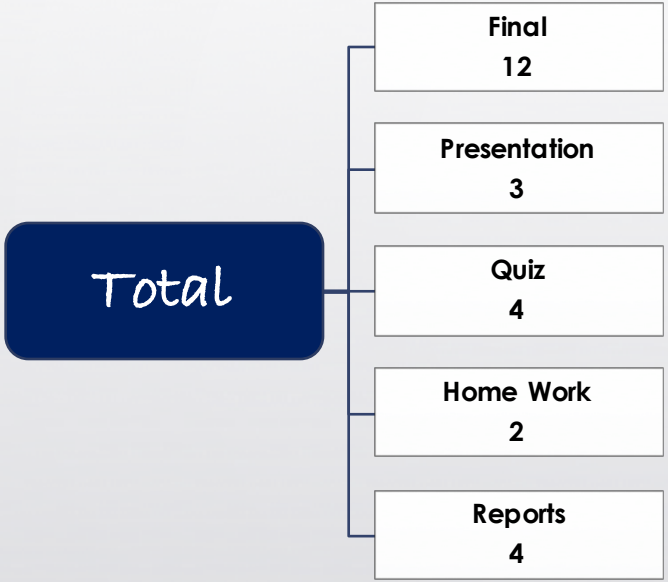
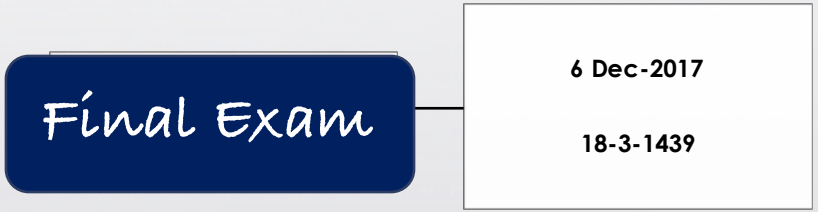
Molecular Biology

361 BCH

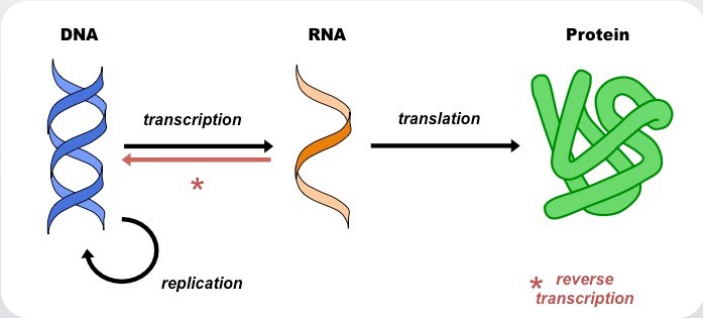
Mark Distribution/ Final Date





What is Molecular Biology?

- "Molecular Biology" is the study of biology at the molecular level.
- The interactions between the nucleic acids (DNA and RNA) and synthesis of proteins, and how these processes (replication, transcription, translation) are regulated
- The techniques used for these studies are referred to as "Techniques of Molecular Biology".

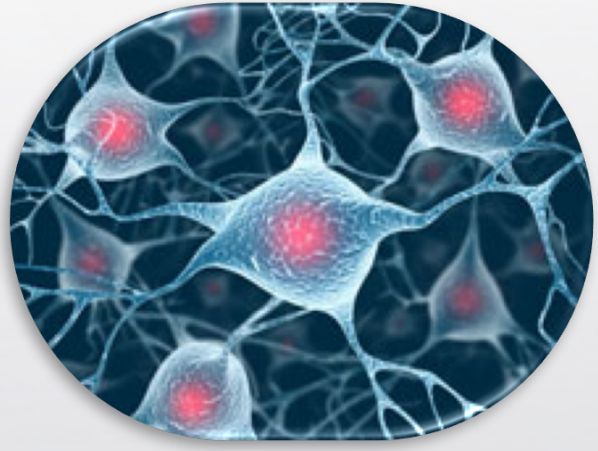


Understanding Molecular Biology-Why it is important?

- **You may know** of someone who has been ill with a disease or disorder such as meningitis, malaria, diabetes, a type of cancer, cystic fibrosis, or Alzheimer's disease.

- **All these diseases** and disorders are caused by problems at a cell or molecular level.

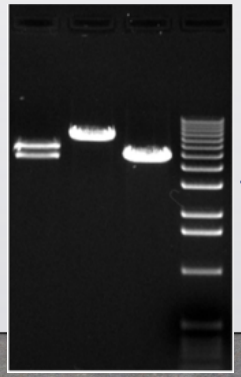
- **Understanding the molecular** basis of these diseases will lead to find more effective treatment

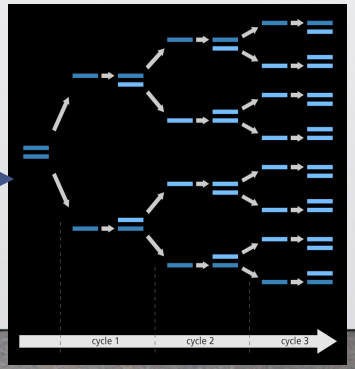


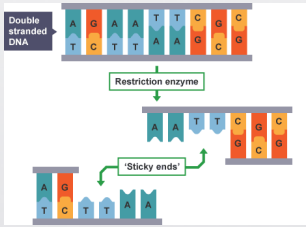
Outline

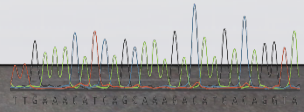
DNA Extraction From Blood → DNA Extraction From plant tissue → Characterization of the DNA → Agarose Gel Electrophoresis → Primer Design → The Polymerase Chain Reaction → Digestion of DNA with Restriction Enzyme → DNA Sequencing → Presentation

Purity and Concentration

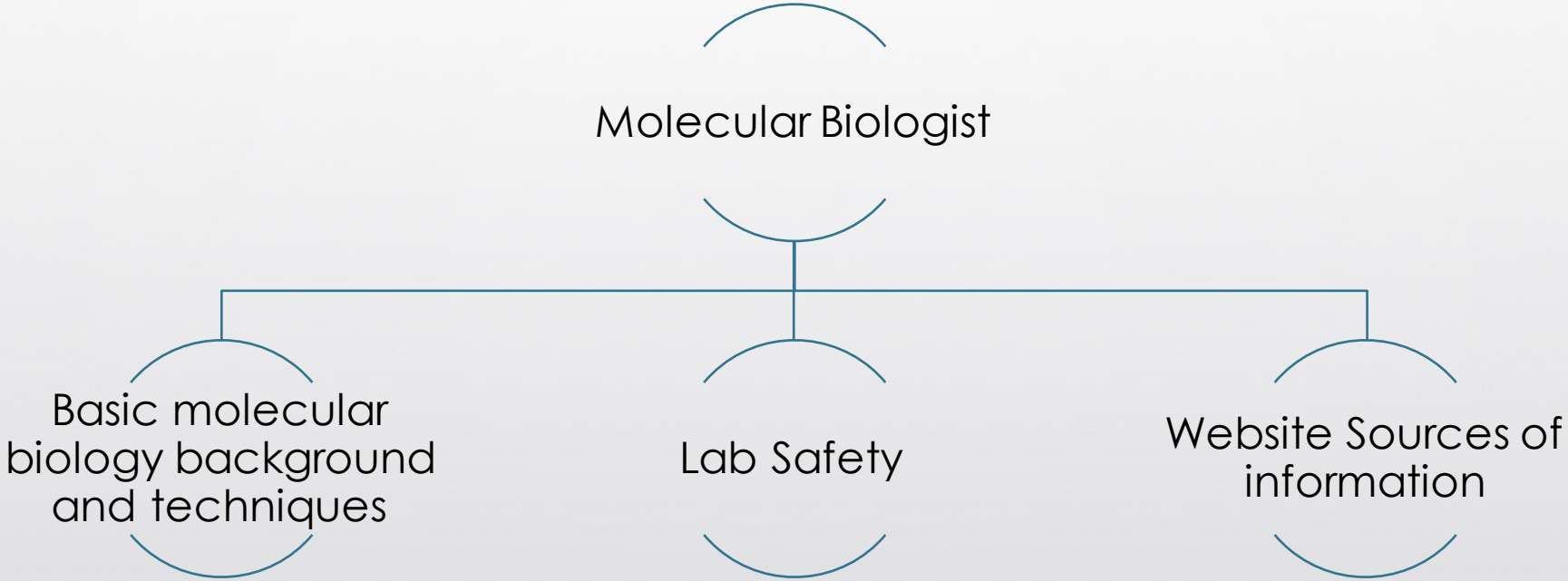






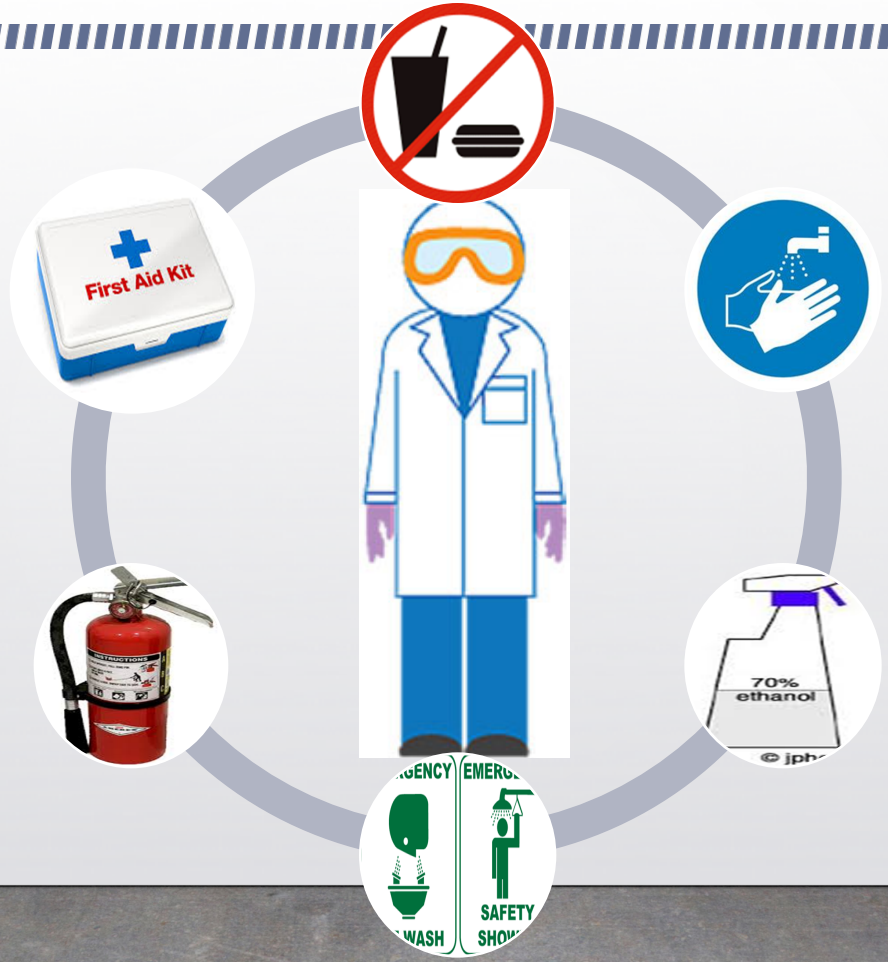


Things you need to understand as Molecular Biologist



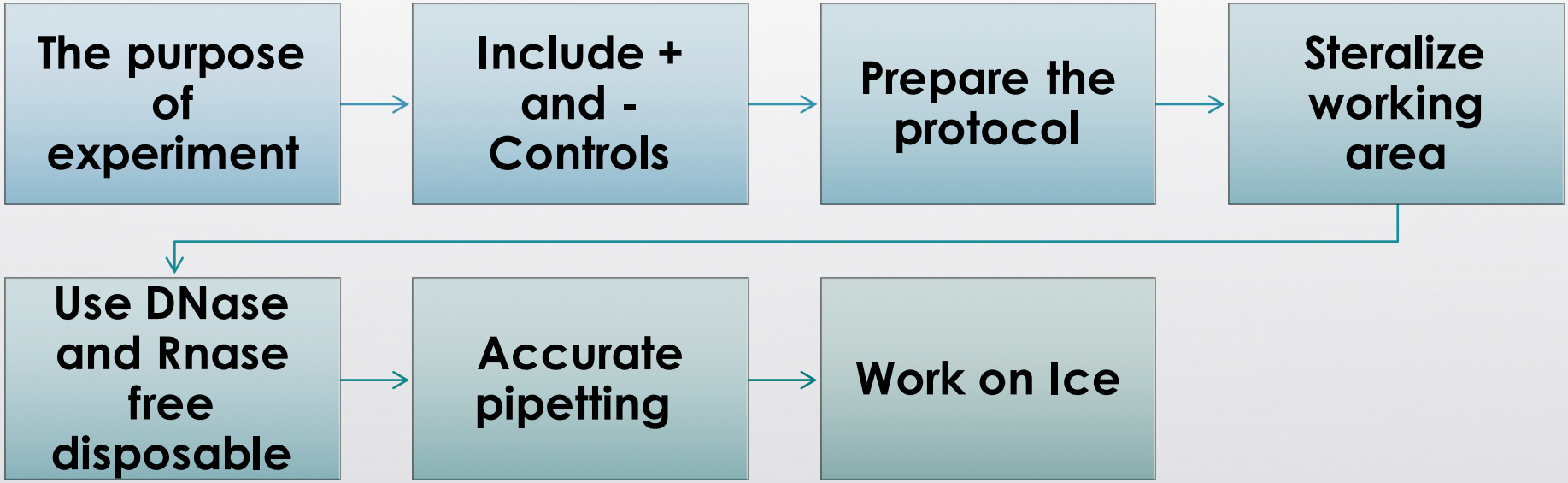
Safety

Before Start Working:



While working :

After the Experiment:


The purpose of experiment
Include + and - Controls
Prepare the protocol
Steralize working area
Use DNase and Rnase free disposable
Accurate pipetting
Work on Ice

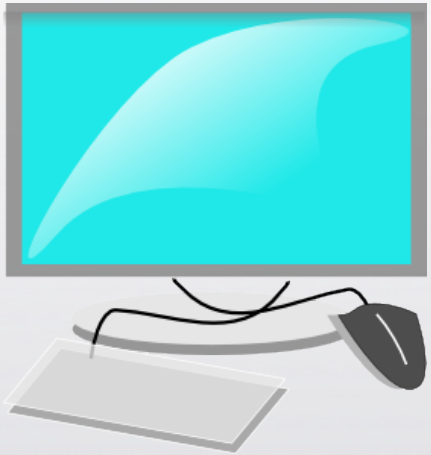
Searching the scientific literature

- The most fundamental skill in bioinformatics is the ability to carry out an efficient and comprehensive search of the scientific literature to find out what is known about a specific subject.

Some academic research tools..

Google scholar

Sweet Search
A Search Engine for Students



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BASE
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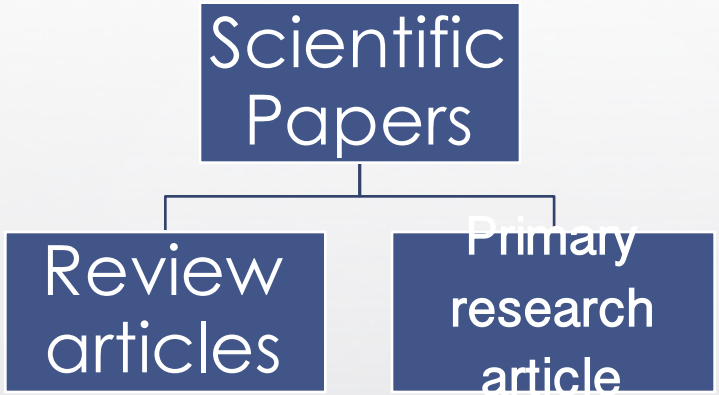
Different types of scientific paper



- **Primary research article:** It's a peer-reviewed report of new research on a specific question (or questions)
- **Review articles** are also peer-reviewed, and don't present **new information**, but summarizes multiple primary research articles, to give a sense of the consensus, debates, and unanswered questions within a field.
- (**It is better to start with it for reading new topic**)


OJS Demo Journal > Vol. 1, No. 2 (2002)

Understanding in the Absence of Meaning: Coming of Age Narratives of the Holocaust

Theresa Rogers, *University of British Columbia*

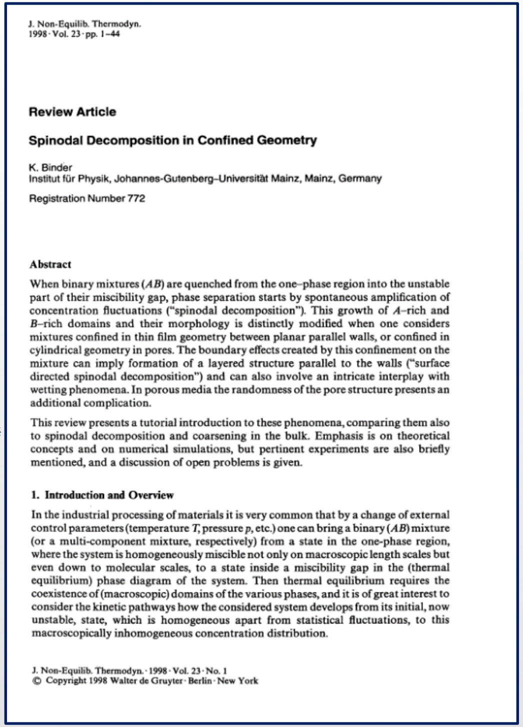

ScienceDirect

Therapeutic vaccination against malignant gliomas based on allorecognition and syngeneic tumor antigens: Proof of principle in two strains of rat

Apostolos Stathopoulos, Christian Samuelson, Germain Milbouw, Jean Philippe Hermanne, Virgil E. J.C. Schijns, Thomas C. Chen


Editorial

Research on psychedelic substances


J. Non-Equilib. Thermodyn.
1998 · Vol. 23 · pp. 1–44

Review Article

Spinodal Decomposition in Confined Geometry

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Abstract

When binary mixtures (AB) are quenched from the one–phase region into the unstable part of their miscibility gap, phase separation starts by spontaneous amplification of concentration fluctuations ("spinodal decomposition"). This growth of A–rich and B–rich domains and their morphology is distinctly modified when one considers mixtures confined in thin film geometry between planar parallel walls, or confined in cylindrical geometry in pores. The boundary effects created by this confinement on the mixture can imply formation of a layered structure parallel to the walls ("surface directed spinodal decomposition") and can also involve an intricate interplay with wetting phenomena. In porous media the randomness of the pore structure presents an additional complication.

This review presents a tutorial introduction to these phenomena, comparing them also to spinodal decomposition and coarsening in the bulk. Emphasis is on theoretical concepts and on numerical simulations, but pertinent experiments are also briefly mentioned, and a discussion of open problems is given.

1. Introduction and Overview

In the industrial processing of materials it is very common that by a change of external control parameters (temperature T, pressure p, etc.) one can bring a binary (AB) mixture (or a multi-component mixture, respectively) from a state in the one-phase region, where the system is homogeneously miscible not only on macroscopic length scales but even down to molecular scales, to a state inside a miscibility gap in the (thermal equilibrium) phase diagram of the system. Then thermal equilibrium requires the coexistence of (macroscopic) domains of the various phases, and it is of great interest to consider the kinetic pathways how the considered system develops from its initial, now unstable, state, which is homogeneous apart from statistical fluctuations, to this macroscopically inhomogeneous concentration distribution.

J. Non-Equilib. Thermodyn. · 1998 · Vol. 23 · No. 1

Review article

Peer research articl

Home Work#1