

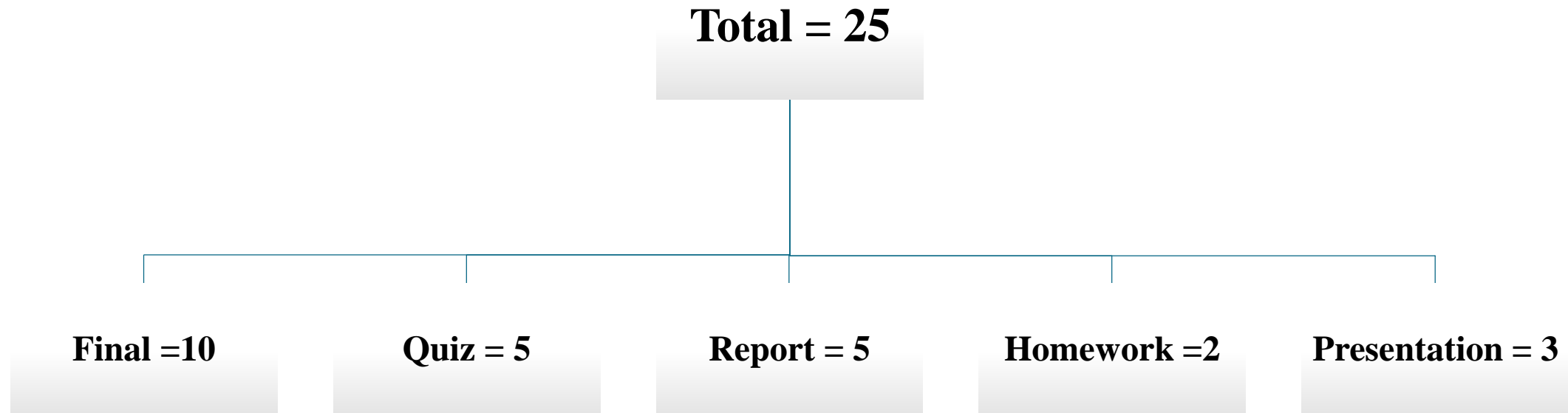


# Introduction to Molecular Biology

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BCH361- Practical

# Marks Distribution



# What is Molecular Biology ?

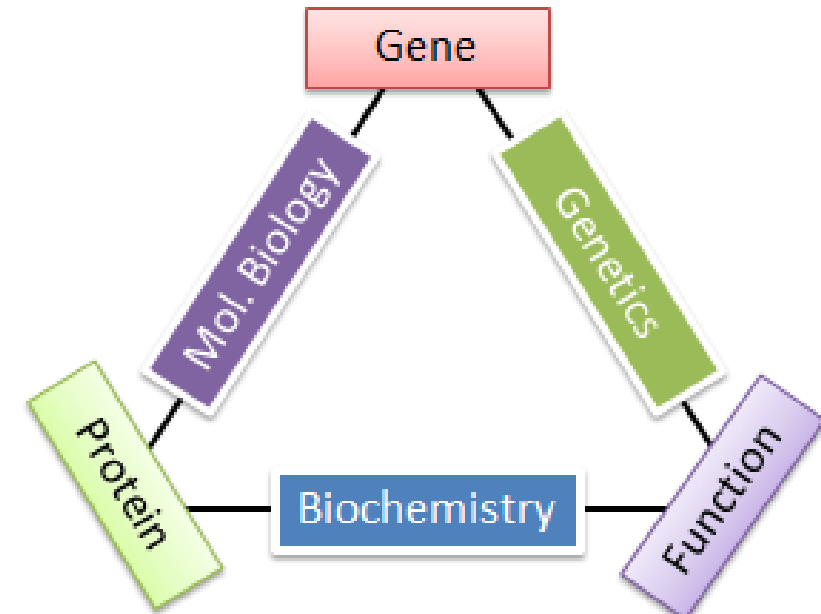
"**Molecular Biology**" is the study of biology at the molecular level.

Molecular biology is the study of essential cellular macromolecules, including **DNA, RNA, and proteins**, and the biological pathways between them (replication, transcription, translation).

Researchers in Molecular Biology field, design and perform **experiments** to gain insight into how these components operate, organization and communicate.

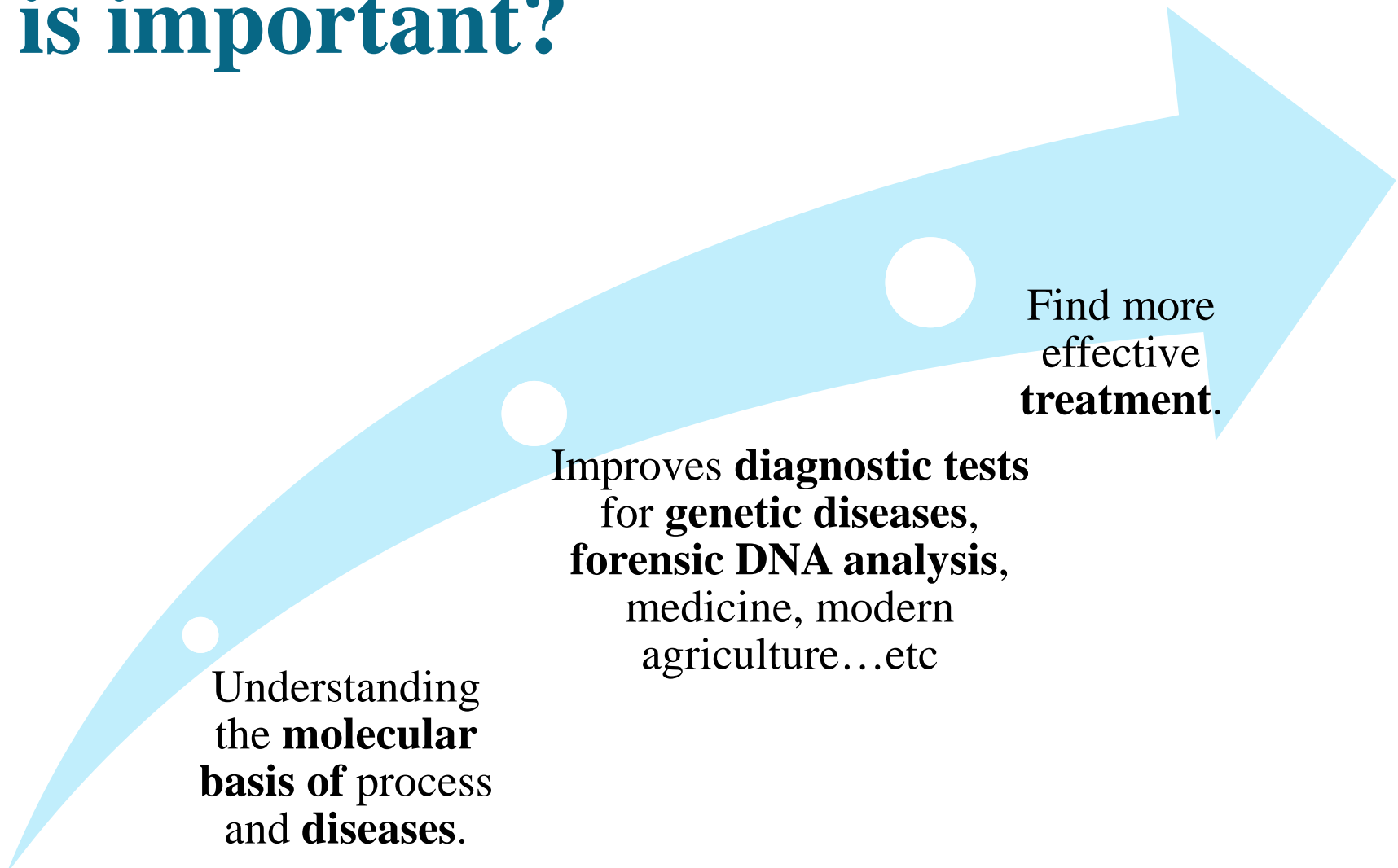
The techniques used for these studies are referred to as:

**"Techniques of Molecular Biology".**



# Understanding Molecular Biology....

## Why it is important?

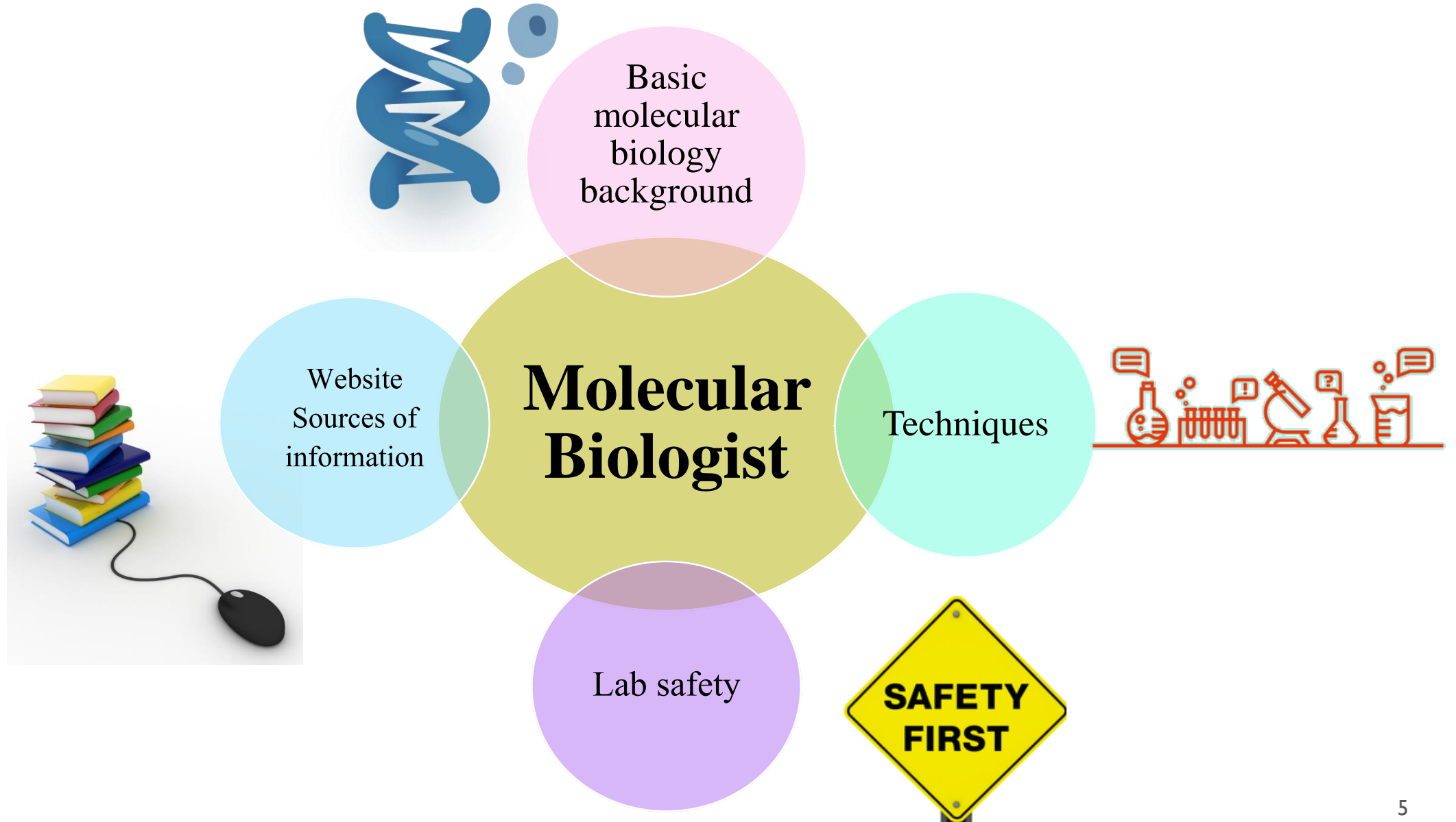


Understanding  
the **molecular**  
**basis of** process  
and **diseases**.

Improves **diagnostic tests**  
for **genetic diseases**,  
**forensic DNA analysis**,  
medicine, modern  
agriculture...etc

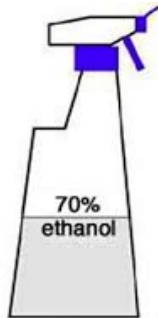
Find more  
effective  
**treatment**.

# Things you need to Know :



# Safety

## Before Start Working



## While Working



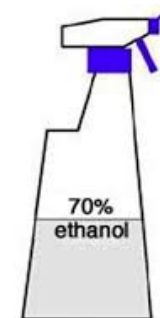
Warning  
UV light



Wear eye  
protection



## After Working



# Types of Hazards:

**Biological hazards.**

**Chemical hazards:**

-Ethidium bromide (EtBr).

**Physical, Electrical and Mechanical hazards:**

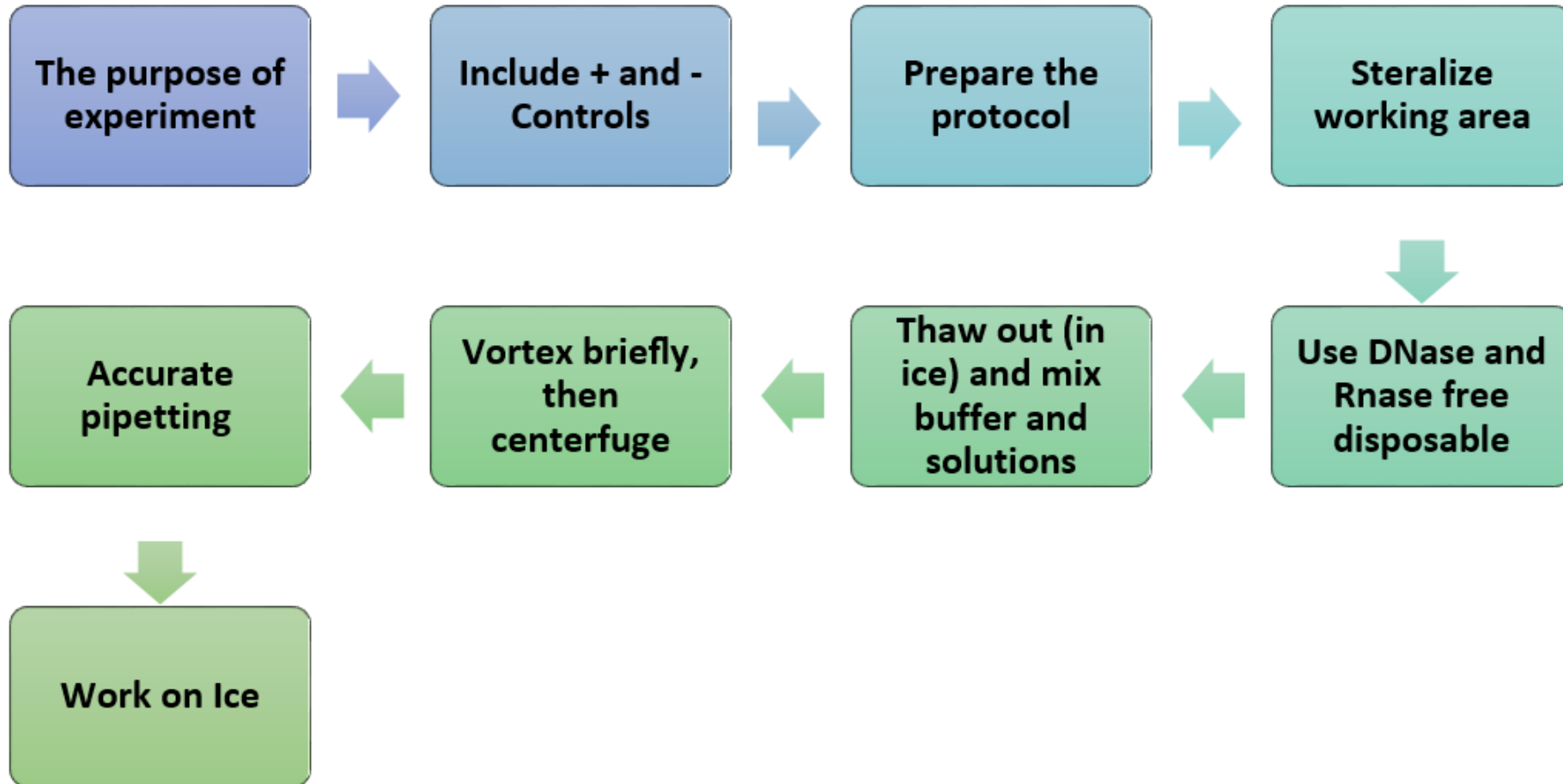
-Ultraviolet (UV) light.

-Electricity.

-Centrifugation.



# Conducting a Successful Molecular Biology Experiment





# 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**.

Sources of information:

**Books, Articles, Websites.**

**Some academic research tools:**



# Types of scientific articles:

## 1. Primary research article:

- ➔ Peer-reviewed.
- ➔ New research.
- ➔ Answer a question.



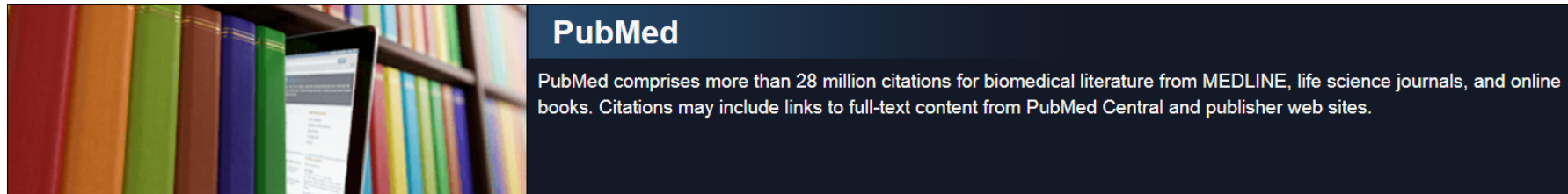
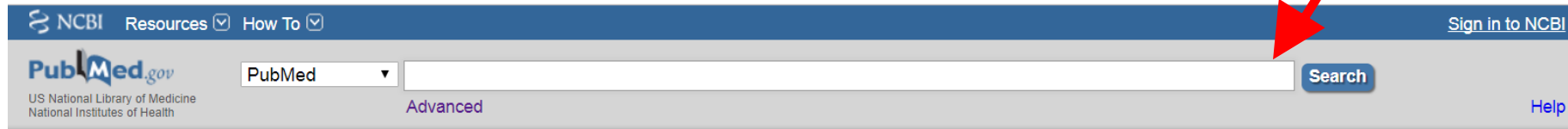
## 2. Review article:

- ➔ Peer-reviewed.
- ➔ No new information.
- ➔ Good to start with.



# How to search in PubMed:

Search box  
(Key Words)



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## Latest Literature

New articles from highly accessed journals

[Ann N Y Acad Sci \(23\)](#)

[Cochrane Database Syst Rev \(5\)](#)

[Gastroenterology \(2\)](#)

[J Clin Invest \(6\)](#)

## Trending Articles

PubMed records with recent increases in activity

[Context-Dependent and Disease-Specific Diversity in Protein Interactions within Stress Granules.](#)  
Cell. 2018.

[CRISPR/Cas9 genome editing in human hematopoietic stem cells.](#)  
Mol Cell. 2018.

## PubMed Commons

Featured comments

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Jan 30

[Psychotherapy trials: D Berger and author E Turner \(@eturnermd1\) discuss the implications of \(non\)blinding](#)  
PLoS ONE. 2018.

Article type



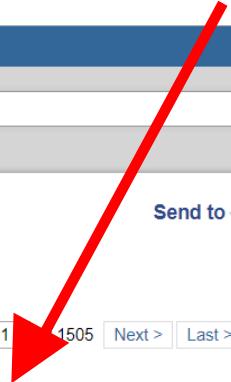
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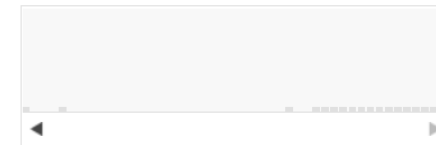
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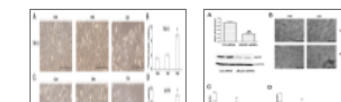
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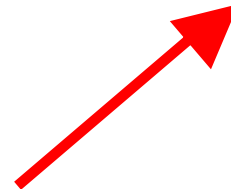
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# Home Work:

Using some of the academic research tools that you learn them today, search for a primary research article and a review article for the same topic.

Mention the research tool and the titles of the two articles.