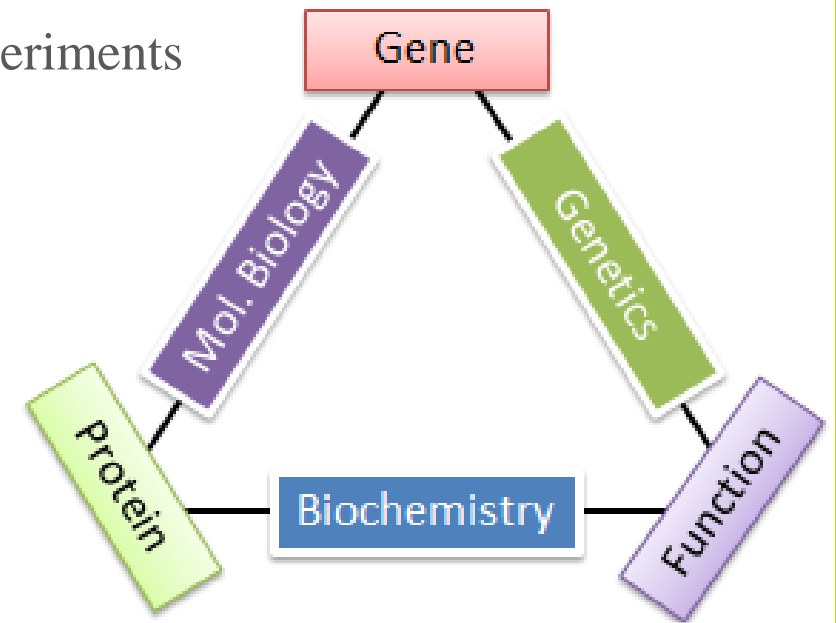


A vertical column of 15 light gray DNA double helix icons is positioned on the left side of the slide, serving as a decorative border. The icons are arranged in three columns of five.

Introduction to Molecular Biology

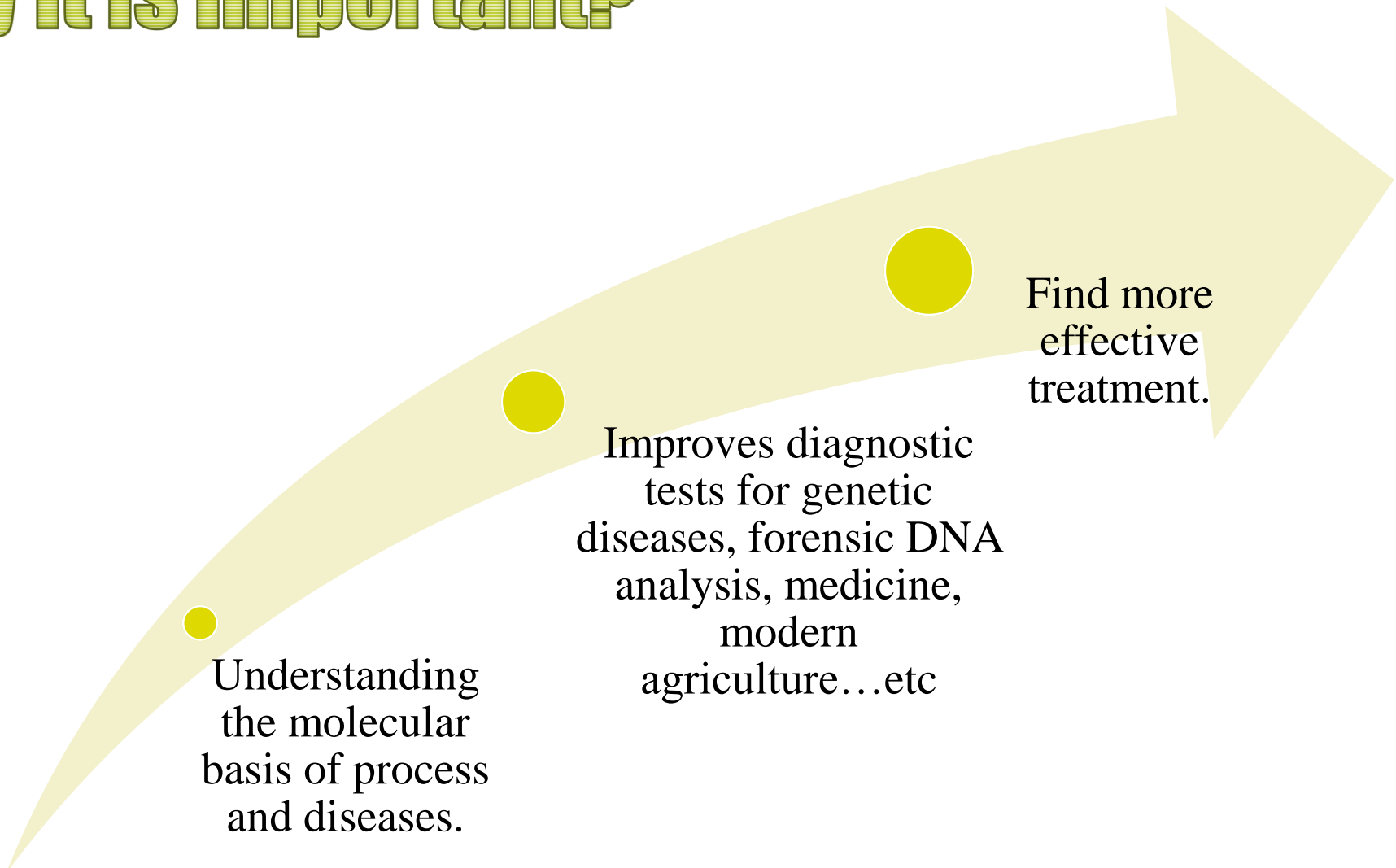
What is Molecular Biology ?

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



Basic
molecular
biology
background



Writing a lab
report

Techniques



**Molecular
Biologist**

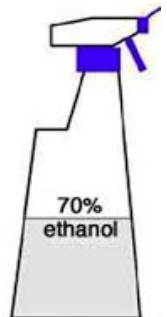
Website
Sources of
information

Lab safety



Safety

Before Start Working



While Working



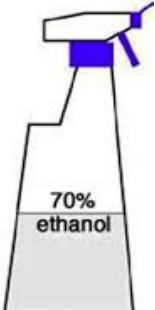
Warning
UV light



Wear eye
protection



After Working



Types of Hazards:

1. Biological hazards.

2. Chemical hazards:

-Ethidium bromide (EtBr).

3. Physical, Electrical and Mechanical hazards:

-Ultraviolet (UV) light.

-Electricity.

-Centrifugation.

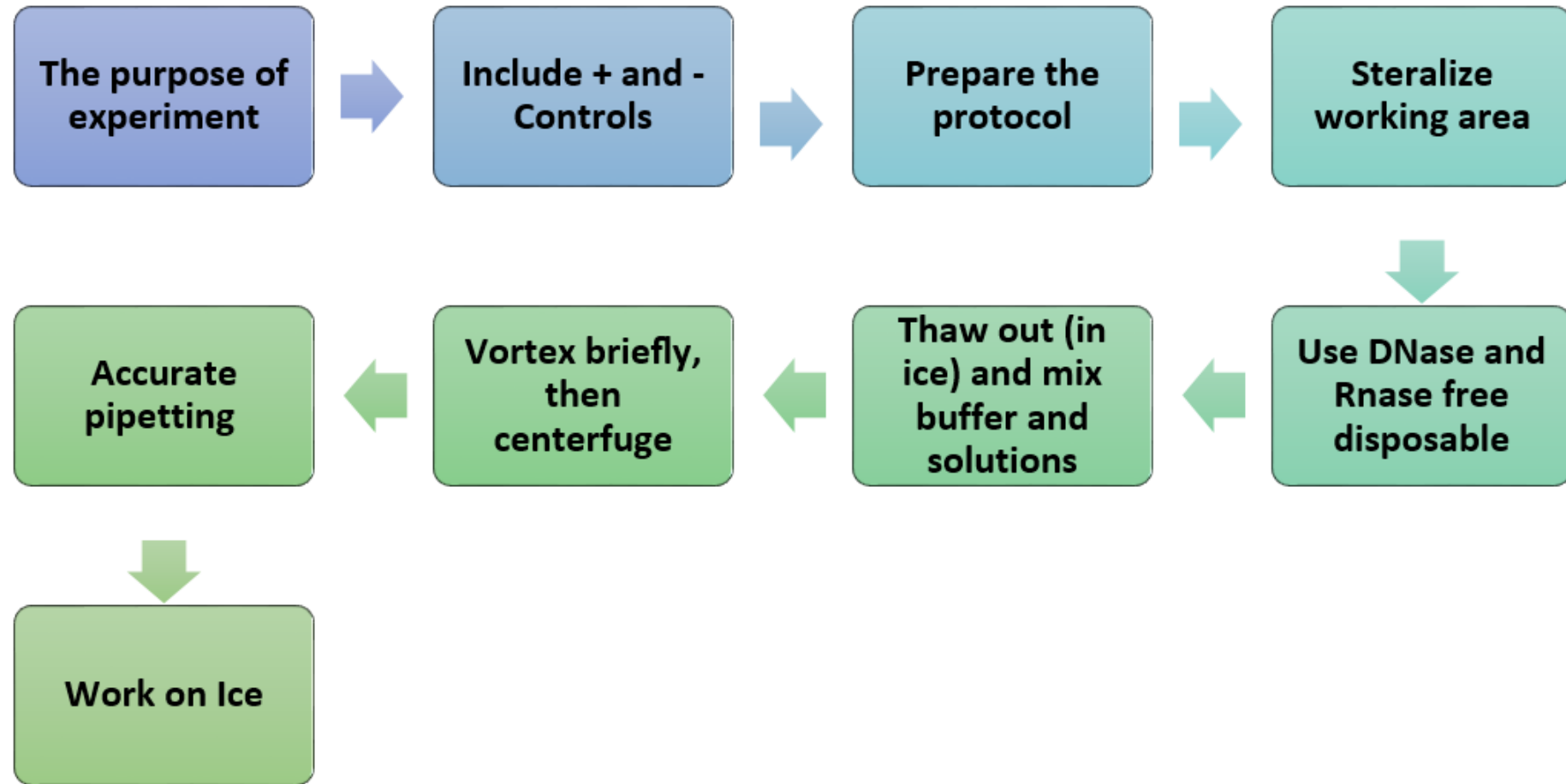


Writing a Report:

1. Cover page.
2. Introduction.
3. Objectives.
4. Materials and method.
5. Principle.
6. Results.
7. Discussion.
8. Questions.
9. References.



Conducting a Successful Molecular Biology Experiment



Searching the scientific literature:

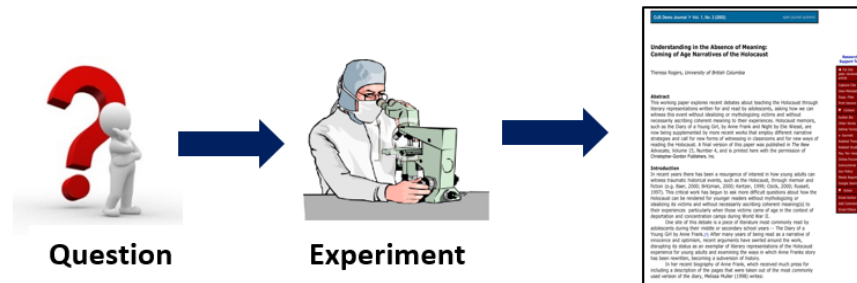
- The most fundamental skill in bioinformatics is the ability to carry out an **efficient** and **comprehensive** search of the scientific literature to find out what is known about a **specific subject**.
- Sources of information:
→ **Books, Articles, Websites.**
- **Some academic research tools:**



Types of scientific articles:

1. Primary research article:

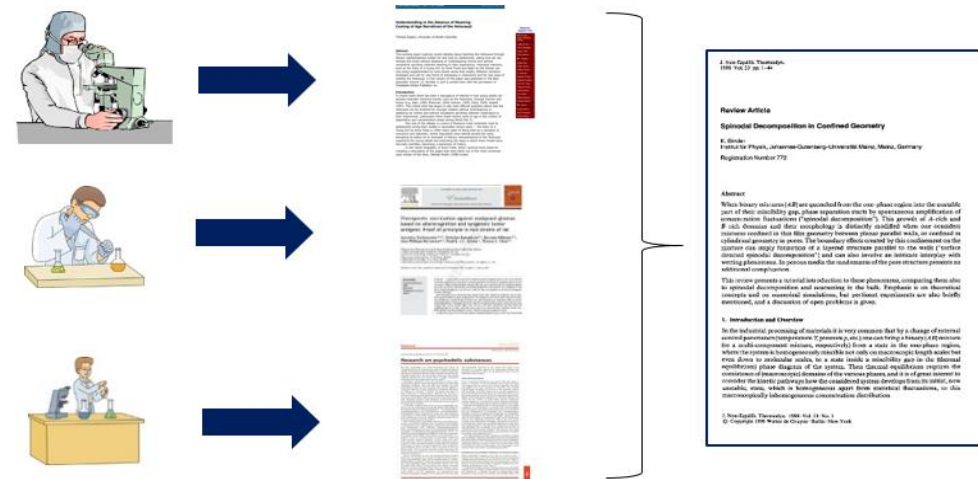
- Peer-reviewed.
- New research.
- Answer a question.



Primary research article that answering Specific question

2. Review article:

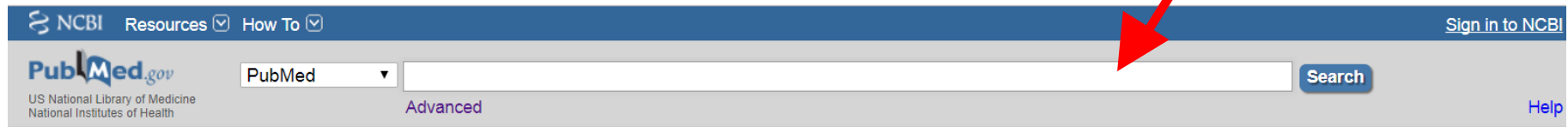
- Peer-reviewed.
- No new information.
- Good to start with.



Review article summarize multiple primary research articles

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(Key Words)



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Cell. 2018.

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

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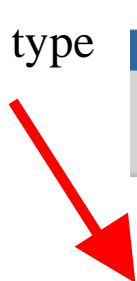
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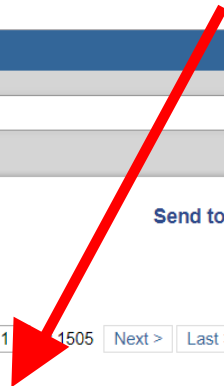
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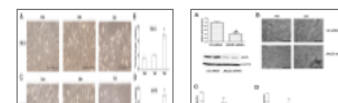
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Publication date





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- 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.
 - The titles of the two articles.