

# Alignment-free tools for metagenomics-data analysis

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- 1 Metagenomics
  - Metagenomes
  - NGS and Alignment
- 2 Alignment-based
- 3 Alignment-free methods
- 4 Second Section

- A metagenome is the whole set of transcripts found in a sample.
- Metagenomics is the study of those
- $> 90\%$  unculturable microorganisms
- design of antibiotics, analysis of microorganismal life

- Advances in sequencing made metagenomics possible
- NGS generates comparable reads

## Goals

- insight in microorganismal life
- first evidence of origin and function
- independent from databases and coding regions

# Alignment-based approach

## Advantages

- Align sequences against database
- Profiles can be analyzed
- BLAST > 80% accuracy

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## Advantages

- Align sequences against database
- Profiles can be analyzed
- BLAST > 80% accuracy

## Disadvantages

- Low speed
- Dependent of databases
- Unsequenced transcripts cannot be matched
- Databases mostly consist of coding sequences





# Blocks of Highlighted Text

## Block 1

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer lectus nisl, ultricies in feugiat rutrum, porttitor sit amet augue. Aliquam ut tortor mauris. Sed volutpat ante purus, quis accumsan dolor.

## Block 2

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## Block 3

Suspendisse tincidunt sagittis gravida. Curabitur condimentum, enim sed venenatis rutrum, ipsum neque consectetur orci, sed blandit justo nisi ac lacus.

## Heading

- 1 Statement
- 2 Explanation
- 3 Example

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<b>Treatments</b>	<b>Response 1</b>	<b>Response 2</b>
Treatment 1	0.0003262	0.562
Treatment 2	0.0015681	0.910
Treatment 3	0.0009271	0.296

Table: Table caption

## Theorem (Mass–energy equivalence)

$$E = mc^2$$

## Example (Theorem Slide Code)

```
\begin{frame}  
\frametitle{Theorem}  
\begin{theorem}[Mass--energy equivalence]  
$E = mc^2$  
\end{theorem}  
\end{frame}
```

# Figure

Uncomment the code on this slide to include your own image from the same directory as the template .TeX file.

An example of the `\cite` command to cite within the presentation:

This statement requires citation [Smith, 2012].



John Smith (2012)

Title of the publication

*Journal Name* 12(3), 45 – 678.



# The End