

*Neque porro quisquam est qui dolorem ipsum quia dolor sit amet, consectetur, adipisci velit...*

*There is no one who loves pain itself, who seeks after it and wants to have it, simply because it is pain...*

# 1

## Materials and Methods

### 1.1 Chemicals

### 1.2 E. coli strains

### 1.3 Media and Buffers

Some buffer content is now stored here.

## 1.4 Molecular Biology Methods

### 1.4.1 Plasmid Constructs

### 1.4.2 Plasmid Transformations

### 1.4.3 Plasmid propagation and purification

### 1.4.4 Amplified DNA via PCR

### 1.4.5 Restriction Enzyme Digests

### 1.4.6 DNA Gel Extraction

### 1.4.7 DNA Ligation

### 1.4.8 Sequencing

## 1.5 Protein Biochemical Methods

### 1.5.1 SDS PAGE Gel

Here is a brief introduction to using *R Markdown*. *Markdown* is a simple formatting syntax for authoring HTML, PDF, and MS Word documents and much, much more. *R Markdown* provides the flexibility of *Markdown* with the implementation of **R** input and output. For more details on using *R Markdown* see <http://rmarkdown.rstudio.com>.

Be careful with your spacing in *Markdown* documents. While whitespace largely is ignored, it does at times give *Markdown* signals as to how to proceed. As a habit, try to keep everything left aligned whenever possible, especially as you type a new paragraph. In other words, there is no need to indent basic text in the Rmd document (in fact, it might cause your text to do funny things if you do).

## 1.6 Markdown basic syntax

### 1.6.1 Italics and bold

- *Italics* are done like *\*this\** or *\_\_this\_\_*
- **Bold** is done like **\*\*this\*\*** or **\_\_\_this\_\_\_**

- ***Bold and italics*** is done like `***this***`, `____this____`, or (the most transparent solution, in my opinion) `**_this_**`

### 1.6.2 Inline code

- Inline code is created with backticks like ``this``

### 1.6.3 Sub and superscript

Sub<sub>2</sub> and super<sup>2</sup> script is created like `this~2~` and `this^2^`

### 1.6.4 Strikethrough

- Strikethrough is done `~~like this~~`

### 1.6.5 ‘Escaping’ (aka “What if I need an actual asterisk?”)

- To include an actual `*`, `_` or `\`, add another `\` in front of them: `\*`, `\_`, `\\`

### 1.6.6 Endash (—), emdash (—)

- `–` and `—` with `--` and `---`

### 1.6.7 Blockquotes

Do like this:

Put a `>` in front of the line.

### 1.6.8 Headings

- are done with `#`’s of increasing number, i.e.
  - `#` First-level heading
  - `##` Second-level heading
  - `###` Etc.

In PDF output, a level-five heading will turn into a paragraph heading, i.e. `\paragraph{My level-five heading}`, which appears as bold text on the same line as the subsequent paragraph.

### 1.6.9 Lists

Unordered list by starting a line with an `*` or a `-`:

- Item 1
- Item 2

Ordered lists by starting a line with a number:

1. Item 1
2. Item 2

Notice that you can mislabel the numbers and *Markdown* will still make the order right in the output.

To create a sublist, indent the values a bit (at least four spaces or a tab):

1. Item 1
2. Item 2
3. Item 3
  - Item 3a
  - Item 3b

### 1.6.10 Line breaks

The official *Markdown* way to create line breaks is by ending a line with more than two spaces.

Roses are red. Violets are blue.

This appears on the same line in the output, because we didn't add spaces after red.

Roses are red.

Violets are blue.

This appears with a line break because I added spaces after red.

I find this is confusing, so I recommend the alternative way: Ending a line with a backslash will also create a linebreak:

Roses are red.

Violets are blue.

To create a new paragraph, you put a blank line.

Therefore, this line starts its own paragraph.

### 1.6.11 Hyperlinks

- This is a hyperlink created by writing the text you want turned into a clickable link in [square brackets followed by a](https://hyperlink-in-parentheses)

### 1.6.12 Footnotes

- Are created<sup>1</sup> by writing either `^[my footnote text]` for supplying the footnote content inline, or something like `[^a-random-footnote-label]` and supplying the text elsewhere in the format shown below:<sup>2</sup>

`[^a-random-footnote-label]: This is a random test.`

### 1.6.13 Comments

To write comments within your text that won't actually be included in the output, use the same syntax as for writing comments in HTML. That is, `<!-- this will not be included in the output -->`.

### 1.6.14 Math

The syntax for writing math is stolen from LaTeX. To write a math expression that will be shown **inline**, enclose it in dollar signs. - This: `$A = \pi*r^{2}$` Becomes:  $A = \pi * r^2$

To write a math expression that will be shown in a block, enclose it in two dollar signs.

This: `$$A = \pi*r^{2}$$`

Becomes:

$$A = \pi * r^2$$

---

<sup>1</sup>my footnote text

<sup>2</sup>This is a random test.

To create numbered equations, put them in an ‘equation’ environment and give them a label with the syntax (`\#eq:label`), like this:

```
\begin{equation}
  f\left(k\right) = \binom{n}{k} p^k \left(1-p\right)^{n-k}
  (\#eq:binom)
\end{equation}
```

Becomes:

$$f(k) = \binom{n}{k} p^k (1-p)^{n-k} \quad (1.1)$$

For more (e.g. how to theorems), see e.g. the documentation on [bookdown.org](https://bookdown.org)

## 1.7 Additional resources

- *R Markdown: The Definitive Guide* - <https://bookdown.org/yihui/rmarkdown/>
- *R for Data Science* - <https://r4ds.had.co.nz>