

# Package ‘MINTplates’

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**Title** Encode ``License-Plates" from Sequences and Decode Them Back

**Version** 1.0.1

**Description** It can be used to create/encode molecular ``license-plates" from sequences and to also decode the ``license-plates" back to sequences. While initially created for transfer RNA-derived small fragments (tRFs), this tool can be used for any genomic sequences including but not limited to: tRFs, microRNAs, etc. The detailed information can reference to Pliatsika V, Loher P, Telonis AG, Rigoutsos I (2016) <[doi:10.1093/bioinformatics/btw194](https://doi.org/10.1093/bioinformatics/btw194)>. It can also be used to annotate tRFs. The detailed information can reference to Loher P, Telonis AG, Rigoutsos I (2017) <[doi:10.1038/srep41184](https://doi.org/10.1038/srep41184)>.

**Depends** R (>= 3.2.3)

**License** GPL (>= 2)

**RoxygenNote** 7.1.1

**URL** <http://www.bio-inf.cn/>

**NeedsCompilation** no

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annotate_tRF	<i>Annotate a tRF sequence</i>
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**Description**

Obtain tRF ID, type, whether exclusive to tRNA space, and tRNA sources of the tRF with its sequence.

**Usage**

```
annotate_tRF(sequence)
```

**Arguments**

sequence            tRF sequence.

**Value**

tRF ID, type, whether exclusive to tRNA space, and tRNA sources of the tRF.

**References**

Loher P, Telonis AG, Rigoutsos I. Sci Rep (2017) <doi: 10.1038/srep41184>

**Examples**

```
sequence='TCCCTGGTGGTCTAGTGGTTAGGATTCGGC'  
annotate_tRF(sequence)
```

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deseqs	<i>Decode license-plates</i>
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**Description**

Decode the license-plates using the lookup table.

**Usage**

```
deseqs(plates)
```

**Arguments**

plates            The license plates being decoded.

**Value**

The sequences they decodes to.

## References

Pliatsika V, Loher P, Telonis AG, Rigoutsos I. Bioinformatics (2016) <doi: 10.1093/bioinformatics/btw194>

## Examples

```
plates=c('tRF-18-BS6PDFD2', 'tRF-20-51K36D26')
deseqs(plates)
```

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enseqs	<i>Encode sequences</i>
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## Description

Encode the sequences into their corresponding license plates with given prefix (if given one).

## Usage

```
enseqs(sequences, prefix = "")
```

## Arguments

sequences	The sequences being encoded.
prefix	The prefix to use for the license plate.

## Value

The license plates they encode to.

## References

Pliatsika V, Loher P, Telonis AG, Rigoutsos I. Bioinformatics (2016) <doi: 10.1093/bioinformatics/btw194>

## Examples

```
seqs=c('AACCGGCAGAACACCA', 'GAGCCCCAGTGAACACCA')
enseqs(seqs, 'tRF')
```

---

exclusive

*Determine whether the tRFs are exclusive to tRNA space*

---

**Description**

Determine whether the tRFs are exclusive to tRNA space with the tRF sequences.

**Usage**

```
exclusive(sequences)
```

**Arguments**

sequences      tRF sequences.

**Value**

Whether the tRFs are exclusive to tRNA space.

**References**

Loher P, Telonis AG, Rigoutsos I. Sci Rep (2017) <doi: 10.1038/srep41184>

**Examples**

```
sequences=c('TCCCTGGTGGTCTAGTGGTTAGGATTCGGC', 'TCCCTGGTGGTCTAGTGGTTAGGATTCGGCG')
exclusive(sequences)
```

---

source\_tRNA

*Obtain the tRNA source of a tRF*

---

**Description**

Obtain the tRNA source of a tRF with the tRF sequence.

**Usage**

```
source_tRNA(sequence)
```

**Arguments**

sequence      tRF sequence.

**Value**

Sources of the tRF.

**References**

Loher P, Telonis AG, Rigoutsos I. Sci Rep (2017) <doi: 10.1038/srep41184>

**Examples**

```
sequence='TCCCTGGTGGTCTAGTGGTTAGGATTCGGC'  
source_tRNA(sequence)
```

---

source_tRNA2	<i>Obtain the tRNA sources of tRFs</i>
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**Description**

Obtain the tRNA sources of tRFs with the tRF sequences.

**Usage**

```
source_tRNA2(sequences)
```

**Arguments**

sequences      tRF sequences.

**Value**

Sources of the tRFs.

**References**

Loher P, Telonis AG, Rigoutsos I. Sci Rep (2017) <doi: 10.1038/srep41184>

**Examples**

```
sequences=c('TCCCTGGTGGTCTAGTGGTTAGGATTCGGC', 'TCCCTGGTGGTCTAGTGGCT', 'TCCCTGGTGGTCTAATGGTTA')  
source_tRNA2(sequences)
```

---

tRFtype                      *Obtain the type of tRFs*

---

**Description**

Obtain the type of tRFs with the tRF sequences.

**Usage**

```
tRFtype(sequences)
```

**Arguments**

sequences            tRF sequences.

**Value**

The type of tRFs.

**References**

Loher P, Telonis AG, Rigoutsos I. Sci Rep (2017) <doi: 10.1038/srep41184>

**Examples**

```
sequences=c('TCCCTGGTGGTCTAGTGGTTAGGATTCGGC', 'AAAAATTTTGGTGCAACTCAAATAAAA')
tRFtype(sequences)
```

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