

# Onyx

---

*CLIMB-TRE*

*None*

## Table of contents

---

1. Onyx - API for Pathogen Metadata	3
1.1 Introduction	3
1.2 Contents	3
2. Types & Lookups	4
2.1 Types	4
2.2 Lookups	6

# 1. Onyx - API for Pathogen Metadata

---

## 1.1 Introduction

---

This is the documentation for [Onyx](#), a database and API for managing sample metadata, their analyses, and other associated data.

As part of [CLIMB-TRE](#), Onyx serves as the central metadata repository for the following projects:

- [mSCAPE](#) (Metagenomics Surveillance Collaboration and Analysis Programme)

A collaborative initiative led by UKHSA, involving a consortium of NHS and academic partners, to deliver a pilot surveillance network trialling the use of metagenomic data for public health surveillance and pathogen analysis.

- [PATH-SAFE](#) (Pathogen Surveillance in Agriculture, Food and Environment)

Led by the FSA, PATH-SAFE piloted the development of a national surveillance network to improve the detection and tracking of foodborne human pathogens and AMR within agriculture.

- [synthSCAPE](#) (Synthetic dataset for mSCAPE)

- [openMGS](#) (Open Meta-Genomic Surveillance)

## 1.2 Contents

---

### [CLI & Python API](#)

Learn how to use the Onyx command-line interface and Python API.

### [JupyterLab Extension](#)

Learn how to use the Onyx JupyterLab extension and graphical user interface.

### [Types](#)

Learn about the different field types available in Onyx.

### [Lookups](#)

Learn about the different field lookups available in Onyx.

## 2. Types & Lookups

---

### 2.1 Types

*Types* in Onyx define the various categories of data which can be stored.

Each field belongs to a certain type. This dictates what kind of data the field can store (e.g. text, numbers, dates, etc.), as well as what filter operations (i.e. [lookups](#)) can be carried out on values of the field.

#### 2.1.1 text

```
[exact] [ne] [in] [notin] [contains] [startswith] [endswith] [iexact] [icontains] [istartswith] [iendswith] [length]
[length__in] [length__range] [isnull]
```

A string of characters.

**Examples:** "C-1234567890", "Details about something"

#### 2.1.2 choice

```
[exact] [ne] [in] [notin] [isnull]
```

A restricted set of options.

**Examples:** "ENG", "WALES", "SCOT", "NI"

#### 2.1.3 integer

```
[exact] [ne] [in] [notin] [lt] [lte] [gt] [gte] [range] [isnull]
```

A whole number.

**Examples:** 1, -1, 123

#### 2.1.4 decimal

```
[exact] [ne] [in] [notin] [lt] [lte] [gt] [gte] [range] [isnull]
```

A decimal number.

**Examples:** 1.234, 1.0, 23.456

#### 2.1.5 date

```
[exact] [ne] [in] [notin] [lt] [lte] [gt] [gte] [range] [iso_year] [iso_year__in] [iso_year__range] [week] [week__in]
[week__range] [isnull]
```

A date.

**Examples:** "2023-03", "2023-04-05", "2024-01-01"

#### 2.1.6 datetime

```
[exact] [ne] [in] [notin] [lt] [lte] [gt] [gte] [range] [iso_year] [iso_year__in] [iso_year__range] [week] [week__in]
[week__range] [isnull]
```

A date and time.

**Examples:** "2023-01-01 15:30:03", "2024-01-01 09:30:17"

### 2.1.7 bool

---

[exact] [ne] [in] [notin] [isnull]

A true or false value.

**Examples:** True, False

### 2.1.8 relation

---

[isnull]

A link to a row, or multiple rows, in another table.

### 2.1.9 array

---

[exact] [contains] [contained\_by] [overlap] [length] [length\_in] [length\_range] [isnull]

A list of values.

**Examples:** [1, 2, 3], ["hello", "world", "!"]

### 2.1.10 structure

---

[exact] [contains] [contained\_by] [has\_key] [has\_keys] [has\_any\_keys] [isnull]

An arbitrary JSON structure.

**Examples:** {"hello" : "world", "goodbye" : "!"}, {"numbers" : [1, 2, {"more\_numbers" : [3, 4, 5]}]}

## 2.2 Lookups

---

*Lookups* can be used to specify more complex conditions that fields must match when filtering.

Different [types](#) have different lookups available to them.

### 2.2.1 exact

---

`[text] [choice] [integer] [decimal] [date] [datetime] [bool] [array] [structure]`

Return values equal to the search value.

### 2.2.2 ne

---

`[text] [choice] [integer] [decimal] [date] [datetime] [bool]`

Return values not equal to the search value.

### 2.2.3 in

---

`[text] [choice] [integer] [decimal] [date] [datetime] [bool]`

Return values that are within the set of search values.

### 2.2.4 notin

---

`[text] [choice] [integer] [decimal] [date] [datetime] [bool]`

Return values that are not within the set of search values.

### 2.2.5 contains

---

`[text] [array] [structure]`

Return values that contain the search value.

### 2.2.6 startswith

---

`[text]`

Return values that start with the search value.

### 2.2.7 endswith

---

`[text]`

Return values that end with the search value.

### 2.2.8 iexact

---

`[text]`

Return values case-insensitively equal to the search value.

### 2.2.9 icontains

---

`[text]`

Return values that case-insensitively contain the search value.

## 2.2.10 istartswith

---

`[text]`

Return values that case-insensitively start with the search value.

## 2.2.11 iendswith

---

`[text]`

Return values that case-insensitively end with the search value.

## 2.2.12 length

---

`[text] [array]`

Return values with a length equal to the search value.

## 2.2.13 length\_in

---

`[text] [array]`

Return values with a length that is within the set of search values.

## 2.2.14 length\_range

---

`[text] [array]`

Return values with a length that is within an inclusive range of search values.

## 2.2.15 lt

---

`[integer] [decimal] [date] [datetime]`

Return values less than the search value.

## 2.2.16 lte

---

`[integer] [decimal] [date] [datetime]`

Return values less than or equal to the search value.

## 2.2.17 gt

---

`[integer] [decimal] [date] [datetime]`

Return values greater than the search value.

## 2.2.18 gte

---

`[integer] [decimal] [date] [datetime]`

Return values greater than or equal to the search value.

---

2.2.19 range

`[integer] [decimal] [date] [datetime]`

Return values within an inclusive range of search values.

---

2.2.20 iso\_year

`[date] [datetime]`

Return values with an ISO 8601 week-numbering year equal to the search year.

---

2.2.21 iso\_year\_in

`[date] [datetime]`

Return values with an ISO 8601 week-numbering year that is within the set of search years.

---

2.2.22 iso\_year\_range

`[date] [datetime]`

Return values with an ISO 8601 week-numbering year that is within an inclusive range of search years.

---

2.2.23 week

`[date] [datetime]`

Return values with an ISO 8601 week number equal to the search number.

---

2.2.24 week\_in

`[date] [datetime]`

Return values with an ISO 8601 week number that is within the set of search numbers.

---

2.2.25 week\_range

`[date] [datetime]`

Return values with an ISO 8601 week number that is within an inclusive range of search numbers.

---

2.2.26 isnull

`[text] [choice] [integer] [decimal] [date] [datetime] [bool] [relation] [array] [structure]`

Return values that are empty (`isnull = True`) or non-empty (`isnull = False`).

- For `text` and `choice` types, 'empty' is defined as the empty string `""`.
- For the `relation` type, 'empty' is defined as there being zero items linked to the record being evaluated.
- For the `array` type, 'empty' is defined as the empty array `[]`.
- For the `structure` type, 'empty' is defined as the empty structure `{}`.
- For all other types, 'empty' is the SQL `null` value.

---

2.2.27 contained\_by

`[array] [structure]`

Return values that are equal to, or a subset of, the search value.

## 2.2.28 overlap

---

[array]

Return values that overlap with the search value.

## 2.2.29 has\_key

---

[structure]

Return values that have a top-level key which contains the search value.

## 2.2.30 has\_keys

---

[structure]

Return values that have top-level keys which contains all of the search values.

## 2.2.31 has\_any\_keys

---

[structure]

Return values that have top-level keys which contains any of the search values.