

Onyx

CLIMB-TRE

None

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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.