

Beacon Handover

Leveraging the Beacon system for secure data access





This forward looking Beacon interface implements additional, planned features beyond the current GA4GH specifications.

Info

Query

SNV Example

DGV Example

CNV Example

Dataset: arraymap

Reference name*: 9

Genome Assembly*: GRCh36 / hg18

Variant type*: DEL (Deletion)

Start min Position*: 19,500,000

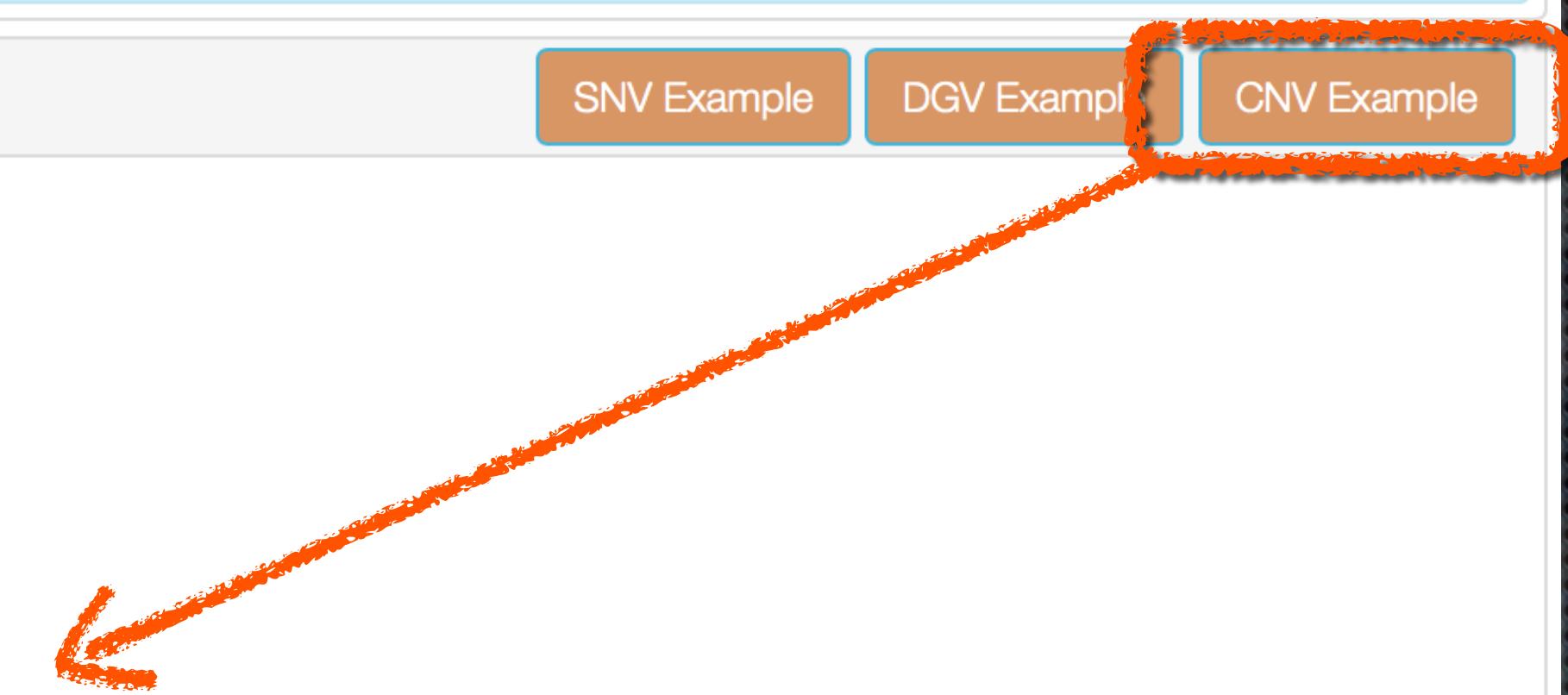
Start max Position: 21,964,826

End min Position: 21,958,228

End max Position: 24,500,000

Bio-ontology: ncit:c3224: Melanoma (1098)

Beacon Query



Beacon⁺: Demonstrating *Handover Concept*

- Query using Beacon interface or API
- Beacon authentication level (e.g. open access w/o specific data access privileges)

Response

There were no previous searches yet. Please, perform a query by using the form above.



This Beacon implementation is developed by the Computational Oncogenomics Group at the University of Zurich, with support from the SIB Technology group and ELIXIR.



University of
Zurich UZH



elixir





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[Info](#)

Query

[SNV Example](#)

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[CNV Example](#)

Dataset

arraymap

Reference name*

9

Genome Assembly*

GRCh36 / hg18

Variant type*

DEL (Deletion)

Start min Position*

19,500,000

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21,964,826

End min Position

21,958,228

End max Position

24,500,000

Bio-ontology

ncit:c3224: Melanoma (1098)

[Beacon Query](#)

Response

Dataset	Assembly	Chro	Var Type	Start Range	End Range	Pos	Ref Alt	Bio Query
arraymap	hg18	9	DEL	19,500,000 21,964,826	21,958,228 24,500,000			ncit:c3224

Variants	Calls	Samples	f_alleles	Response Context
157				JSON
171				UCSC
171			0.1557	Handover

Beacon Response

- quantitative (counts for variants, callsets and samples)
- *Handover* to authentication system for data retrieval
- **no exposure** of data beyond standard Beacon response and additional pointer to matched data



Beacon Handover Demonstrator

- only exposure of access handle to data stored in secure system
 - here one-step authentication and selection of *handover* action; other scenarios possible / likely
 - *handover* response outside of Beacon protocol / system
- ```
"dataset_allele_responses" : [{ "dataset_id" : "arraymap", "call_count" : "171", "sample_count" : "171", "variant_count" : "157", "error" : null, "exists" : true, "external_url" : "http://beacon.arraymap.org", "frequency" : "0.1557", "info" : { "callset_access_handle" : "d5850347-d411-11e7-8c89-ec436516cb41", "description" : "The query was against database \"arraymap_ga4gh\", variant collection \"variants_cnv_grch36\". 171 matched calls for 157 distinct variants. Out of 62033 biosamples in the database, 1098 matched the biosample query; of those, 171 had the variant.", }, "note" : "", }],
```





This is an implementation of a Beacon "handover" concept, in which a Beacon query response additionally delivers an "accessid" value. This value represents a pointer to an internal representation of the query results (i.e. callsets, biosamples, metadata ...), which can then be accessed after authentication. The "handover" scenario separates the standard qualitative ("yes"|"no") or quantitative ("n matches") Beacon response from a data delivery mechanism.

The current implementation exemplifies some possible scenarios:

- providing a histogram of regional gain/loss frequencies (DUP, DEL) for samples with structural variation data
- returning data of the associated callsets which matched the Beacon query (this is for feature demonstration only...)
- returning the metadata (diagnoses etc.) of the biosamples from which the matching callsets were derived

This demonstrator does not implement authentication procedures yet; login & password fields can be left empty.

**Handover Action**

- Plot DUP/DEL histogram
- Export Callset Data
- Export Biosample Data

**Login****Password****Process Data**

This Beacon implementation is developed by the Computational  
support from the [SIB Technology group](#) and [ELIXIR](#).

## Beacon Handover Demonstrator

- only exposure of access handle to data stored in secure system
- here one-step authentication and selection of *handover* action; other scenarios possible / likely
- *handover* response not managed by Beacon protocol / system => "Discovery" protocol?





This is an implementation of a Beacon "handover" concept, in which a Beacon query response additionally delivers an "accessid" representation of the query results (i.e. callsets, biosamples, metadata ...), which can then be accessed after authentication. The ("yes"|"no") or quantitative ("n matches") Beacon response from a data delivery mechanism.

The current implementation exemplifies some possible scenarios:

- providing a histogram of regional gain/loss frequencies (DUP, DEL) for samples with structural variation data
- returning data of the associated callsets which matched the Beacon query (this is for feature demonstration only...)
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## Handover Action

Plot DUP/DEL hist

Export Callset Dat

Export Biosample

## Login

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