SCIENCE MEETS LIFE

Increase the findability of your resources

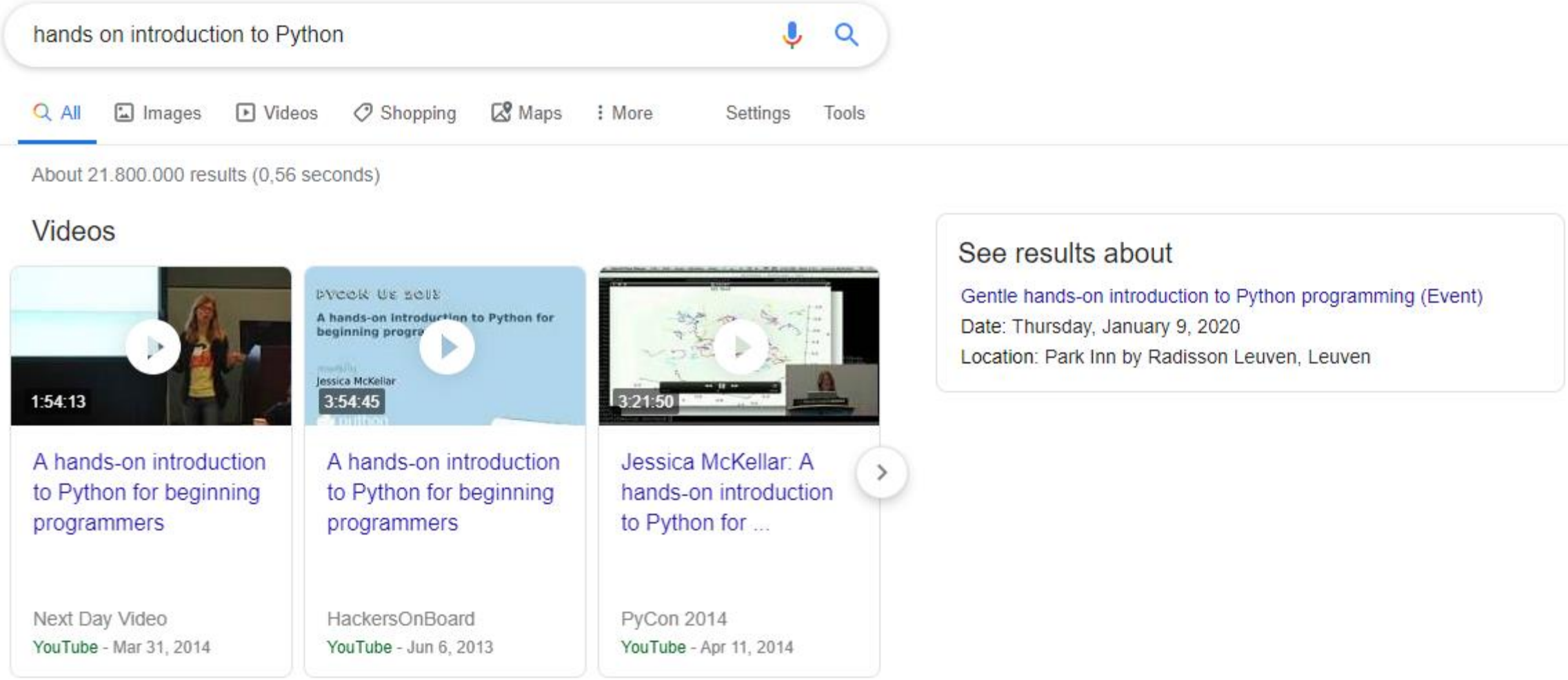
Bioschemas

VIB

February 28th, 2020

Alexander Botzki

Google Search



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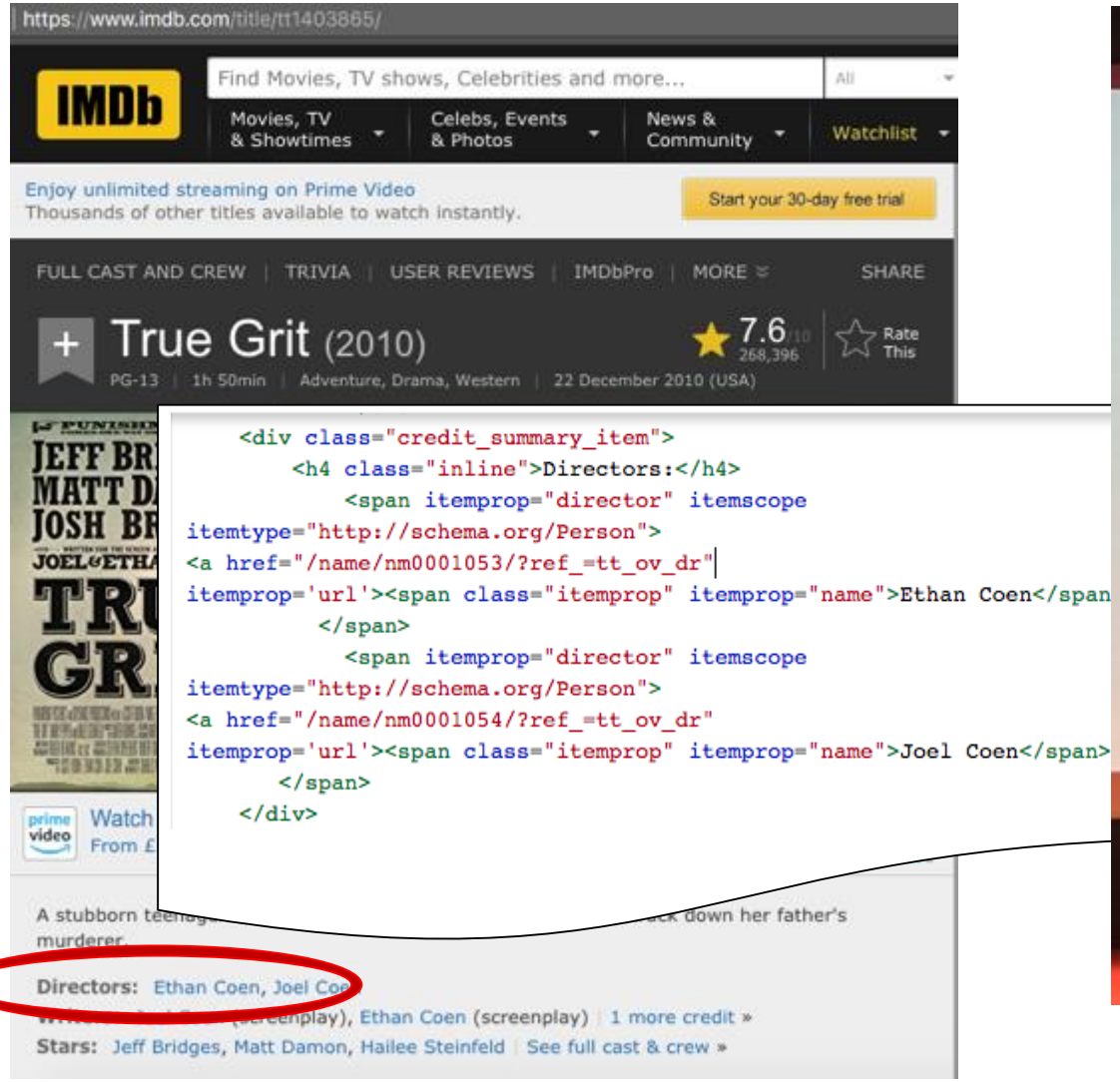
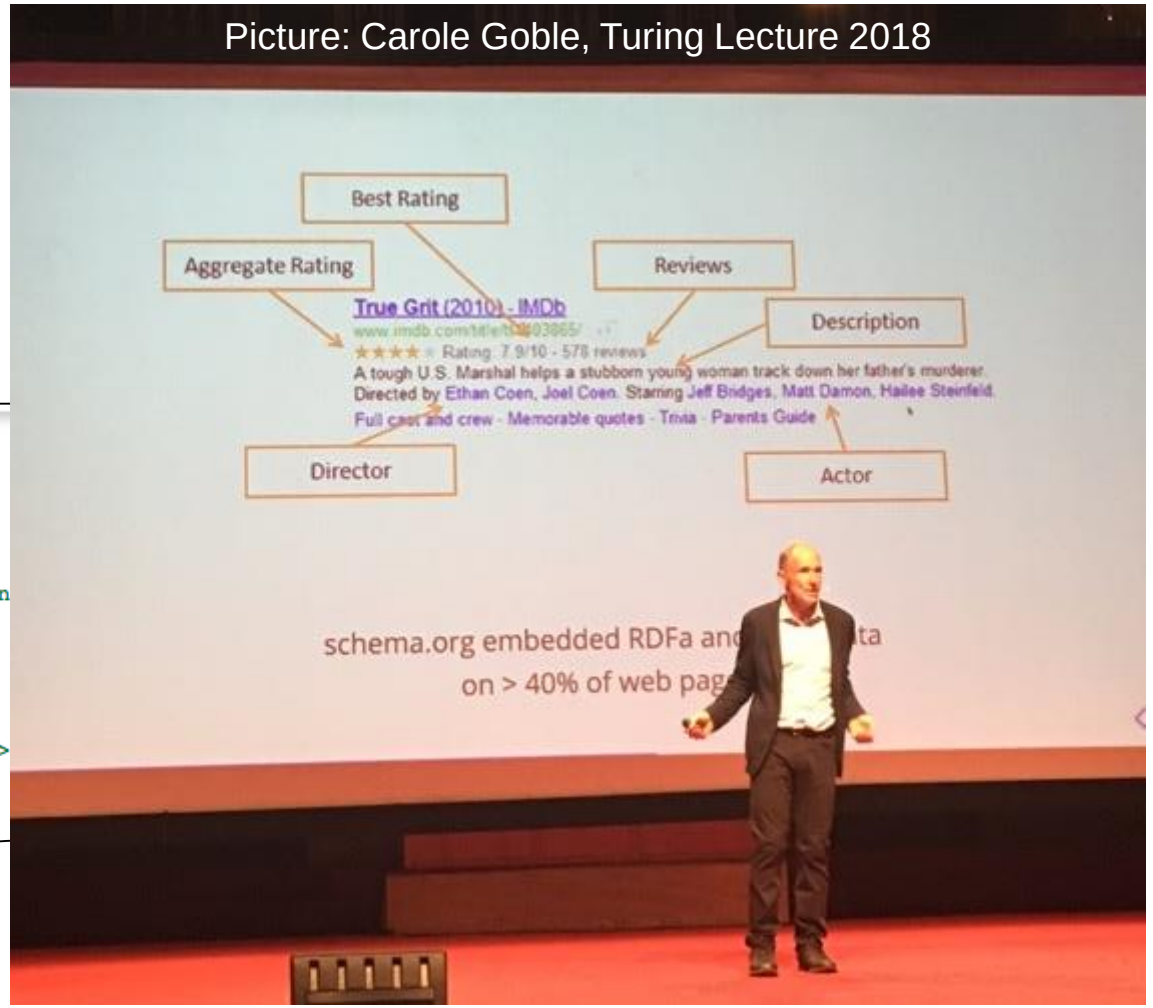
Schema.org: Semantic Markup for the Web




```
    <div class="credit_summary_item">
        <h4 class="inline">Directors:</h4>
            <span itemprop="director" itemscope
itemtype="http://schema.org/Person">
<a href="/name/nm0001053/?ref_=tt_ov_dr"
itemprop='url'><span class="itemprop" itemprop="name">Ethan Coen</span
          </span>
            <span itemprop="director" itemscope
itemtype="http://schema.org/Person">
<a href="/name/nm0001054/?ref_=tt_ov_dr"
itemprop='url'><span class="itemprop" itemprop="name">Joel Coen</span>
        </span>
    </div>
```



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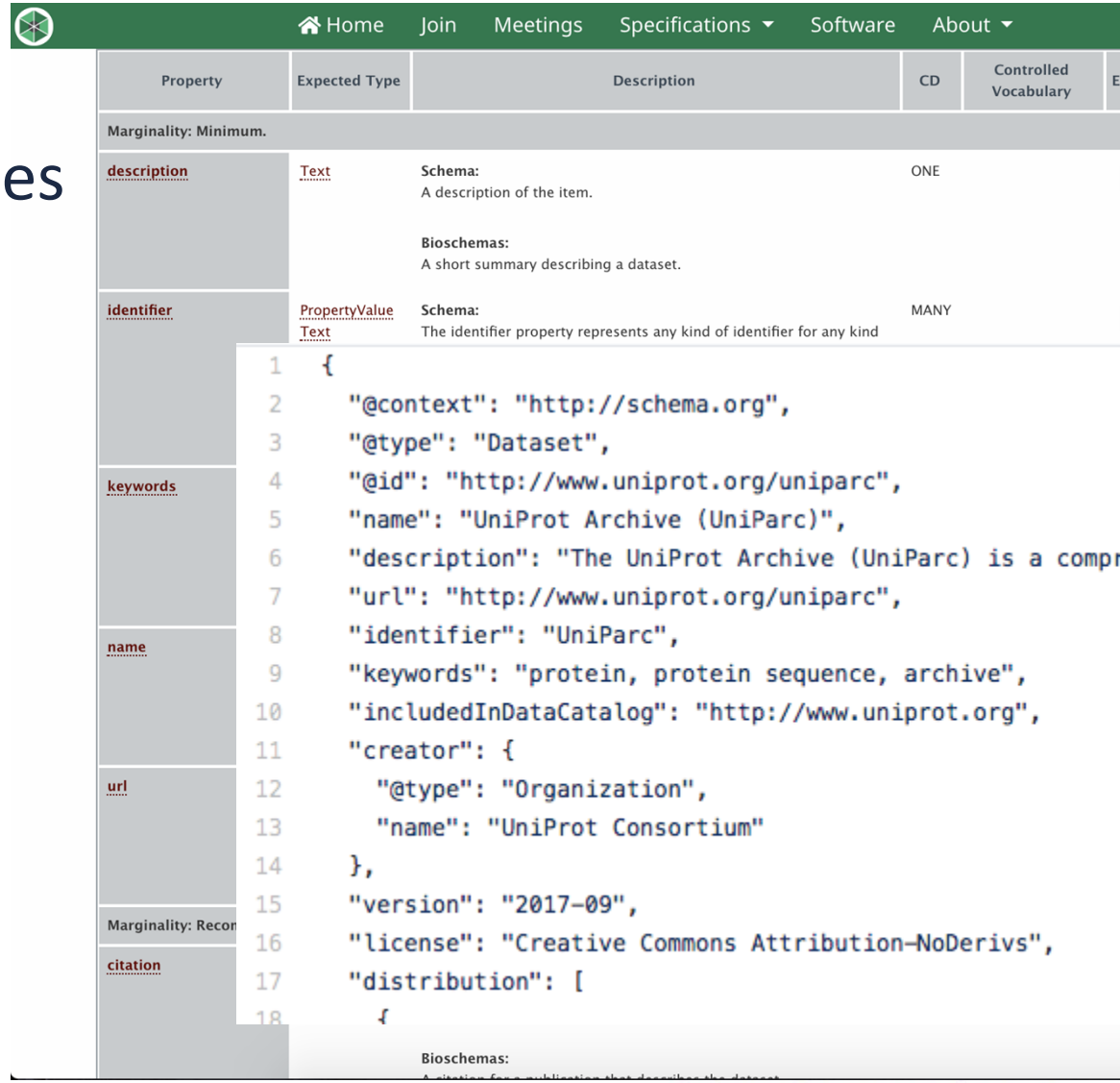
Bioschemas

What?

- Exploiting schema.org to make Life Sciences resources more discoverable
  - Search engines will index and understand markup

How?

- Extending schema.org vocabulary for life sciences
  - 7 release candidate types
- Provide guidelines on how to markup resources



★Extensions by bioschemas.org

Findable

★Indexable by search engines

★Community defined enriched metadata

Accessible

★Retrievable

★HTTP

Interoperable

★JSON-LD/RDFa

★Link to controlled vocabularies

★Links to other resources

Reusable

★ License

★ Provenance

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Current Bioschemas Profiles

Profile	Version	Group	Live Deploys	Status notes
DataCatalog	0.2 (Jun 2019)	Data Repos	20	0.2 fixes minor issues
Dataset	0.3 (Jun 2019)	Datasets	23	0.3 fixes minor issues
Event	0.1 (July 2018)	Events	7	Used by TeSS: undergoing revision due to addition of CourseInstance
Sample	0.2 (Nov 2018)	Samples	1	
Taxon	0.3 (Nov 2018)	Biodiversity	0	
Tool	0.1 (Mar 2018)	Tools	5	0.3-DRAFT based on bio.tools profile, needs review
TrainingMaterial	0.2 (July 2018)	Training	0	Used by TeSS: 0.5-DRAFT incorporating changes from Course

BioSchemas - Protein

https://bioschemas.org/specifications/drafts/Protein/

Incognito

Home | Getting Started | Specifications | Deploy & Develop | Community | About

Examples

Property	Expected Type	Description	CD	Controlled Vocabulary	Example
Marginality: Minimum.					
identifier	PropertyValue Text URL	**Schema:** The identifier property represents any kind of identifier for any kind of Thing, such as ISBNs, GTIN codes, UUIDs etc. Schema.org provides dedicated properties for representing many of these, either as textual strings or as URL (URI) links. See background notes for more details.	ONE		
name	Text	**Schema:** The name of the item.	ONE		
Marginality: Recommended.					
associatedDisease	MedicalCondition PropertyValue URL	**Schema:** Disease associated to this BioChemEntity. Such disease can be a MedicalCondition or a URL. If you want to add an evidence supporting the association, please use PropertyValue. **Bioschemas:** Disease associated to this protein, if any.	MANY		
description	Text	**Schema:** A description of the item.	ONE		

Exploiting Bioschemas Markup

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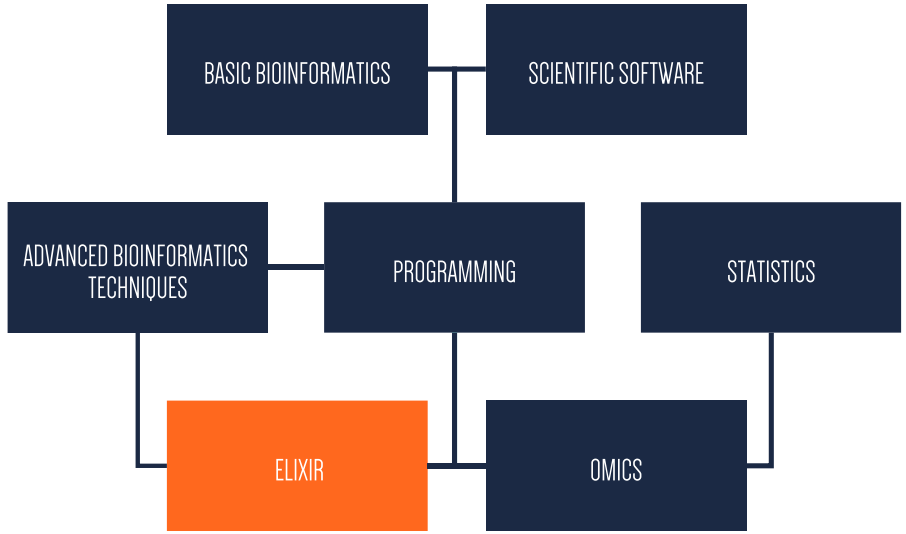
Find training through Search Engines is not always easy

- Small labs, departments and organizations do not typically have as much traffic as larger institutions so are ranked lower in search results
- Harder to find advanced or niche topics. Training about common topics and introductory courses are more visible as they're more popular

- Search engines are not optimal for finding training

VIB & ELIXIR Belgium in TeSS

VIB BIOINFORMATICS CORE



VIB training

elixir BELGIUM

Materials

Events

VIB training

elixir BELGIUM

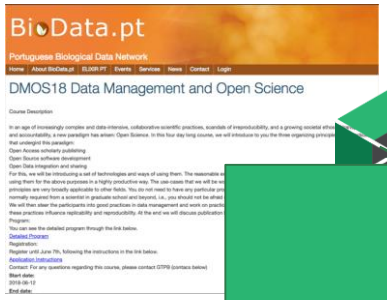
VLAAMS SUPERCOMPUTER CENTRUM

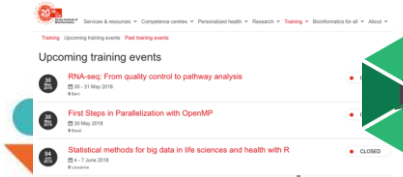
Vlaanderen is supercomputing

elixir TeSS

tess.elixir-europe.org/

TeSS: Specialised Search





Bioschemas Event:

- contact
- description
- endDate
- eventType
- hostInstitution
- location
- name
- startDate
- ...

Organizer

VIB Bioinformatics Core	24
de.NBI	18
University of Cambridge	17
Melbourne Bioinformatics	6
Peers Alley Media	5
Australian BioCommons	4

Country

United Kingdom	87
Switzerland	38
Belgium	20
Australia	18
United States of America	16
Germany	15
France	14
Netherlands	10

VIBes in Biosciences 2020
11 - 13 March 2020

Leuven, Belgium

Basic statistics in R, part II
19 - 27 March 2020

Zwijnaarde, Belgium

Gentle hands-on introduction to Python programming
30 - 31 March 2020

Leuven, Belgium

Basic statistics in R, Leuven
28 May - 18 June 2020

Zwijnaarde, Belgium

FlowSOM for handling cytometry data
8 June 2020

Zwijnaarde, Belgium

Introduction to Git & GitHub
19 June 2020

Ghent, Belgium

Genome Engineering and Synthetic Biology (4th edition)
10 - 11 September 2020

Gent, Belgium

Basic statistics theory, Leuven
13 March 2020

Leuven, Belgium

Basic statistics in R, Leuven
26 March - 10 April 2020

Zwijnaarde, Belgium

Basic statistics theory, Leuven
15 May 2020

Leuven, Belgium

Mass spectrometry data processing
2 - 3 June 2020

Gent, Belgium

Using MOFA for integration of omics data
9 June 2020

Gent, Belgium

A tour of machine learning: classification
31 August - 1 September 2020

Gent, Belgium

Basic statistics theory
17 March 2020

Leuven, Belgium

Translational Immunology
26 - 27 March 2020

Gent, Belgium

Basic statistics in R - Ghent
21 - 28 April 2020

Ghent, Belgium

Introduction to the analysis of NGS data
25 May 2020

Leuven, Belgium

Analyzing flow cytometry data using FlowJo
9 June 2020

Ghent, Belgium

Gentle hands-on introduction to Python programming
22 - 26 June 2020

Leuven, Belgium

Analyzing qPCR data with qbase+
14 September 2020

Adding Bioschemas to a Resource

- Identify metadata fields
- Map metadata to Bioschema properties
- Generate JSON-LD
- Embed generation into web server

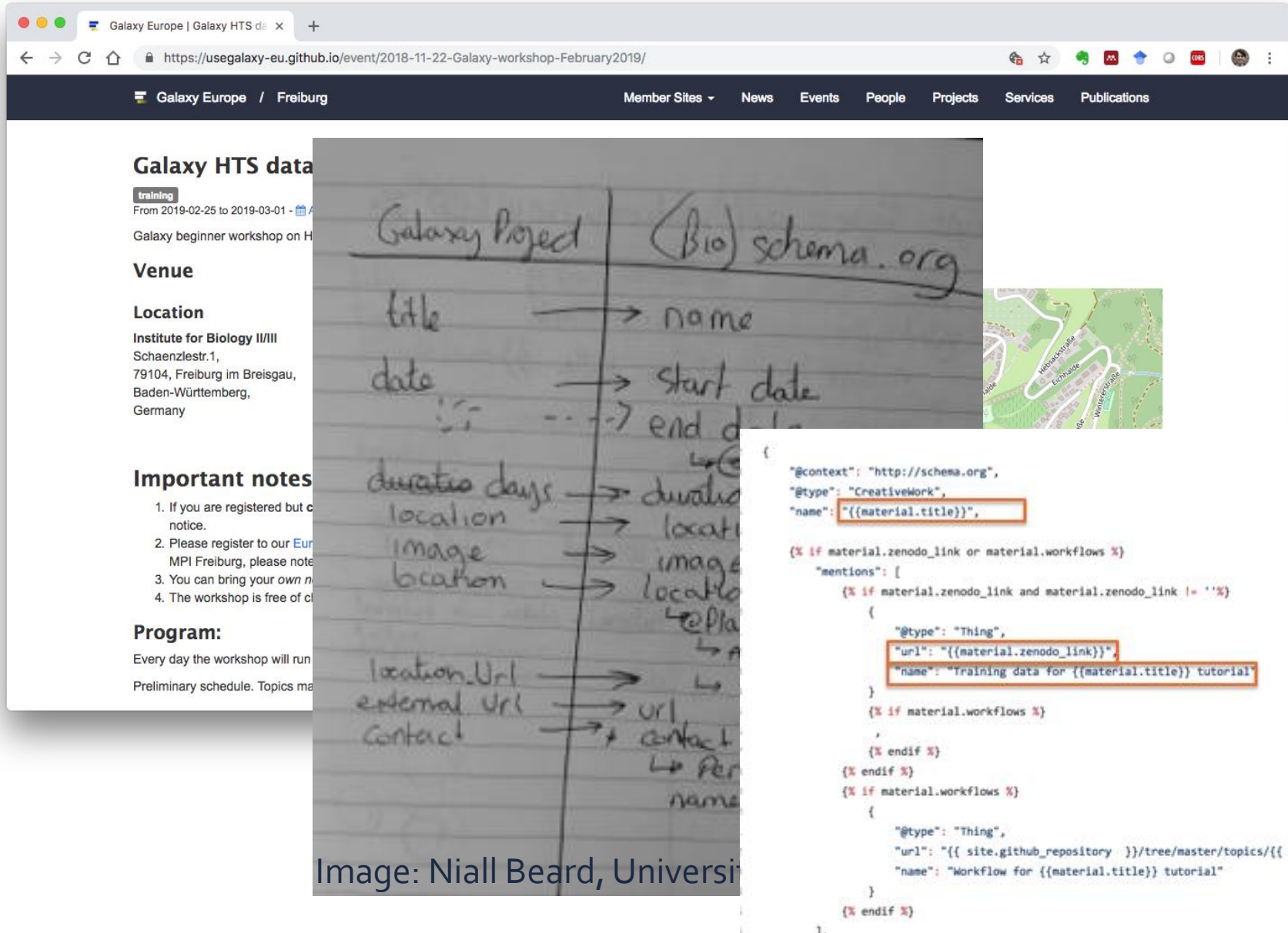


Image: Niall Beard, Universi

Validate markup with Google tool

Google Structured Data Testing Tool

https://training.vib.be/research-data-management-data-stewardship-much-more-fairytale

NEW TEST

```
<!DOCTYPE html>
<html lang="en" dir="ltr" prefix="content: http://purl.org/rss/1.0/modules/content/  dc: http://purl.org/dc/terms/  foaf: http
    <head>
        <meta charset="utf-8" />
<meta name="title" content="Research Data Management &amp;amp; Data Stewardship: much more than a FAIRytale" />
<meta name="twitter:card" content="summary_large_image" />
<link rel="canonical" href="https://training.vib.be/research-data-management-data-stewardship-much-more-fairytale" />
<meta name="twitter:title" content="Research Data Management &amp;amp; Data Stewardship: much more than a FAIRytale #VIBCourses" />
<meta name="twitter:description" content="Visit our site to view the available courses." />
<meta name="description" content="The location of this event has changed to the Park Inn by Radisson Brussels Midi hotel! Pleas
This community event is kindly provided to you by the ELIXIR Belgium team and aims to gather all relevant players in the field
Full program details &amp;amp; speakers can be found below!" />
<meta name="abstract" content="" />
<link rel="image_src" href="bioinformatics_wit-purple-no-border.jpg" />
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<meta name="twitter:url" content="/research-data-management-data-stewardship-much-more-fairytale" />
<meta name="twitter:image" content="https://training.vib.bebioinformatics_wit-purple-no-border.jpg" />
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<meta name="MobileOptimized" content="width" />
<meta name="HandheldFriendly" content="true" />
<meta name="viewport" content="width=device-width, initial-scale=1.0" />
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    "@graph": [
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            "name": "Research Data Management \u0026 Data Stewardship: much more than a FAIRytale",
            "description": "The location of this event has changed to the Park Inn by Radisson Brussels Midi hotel! Please find
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            },
            "doorTime": "13:00",
            "startDate": "2019-12-12",
            "@id": "/research-data-management-data-stewardship-much-more-fairytale",
            "endDate": "2019-12-12",
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Event

All (1)

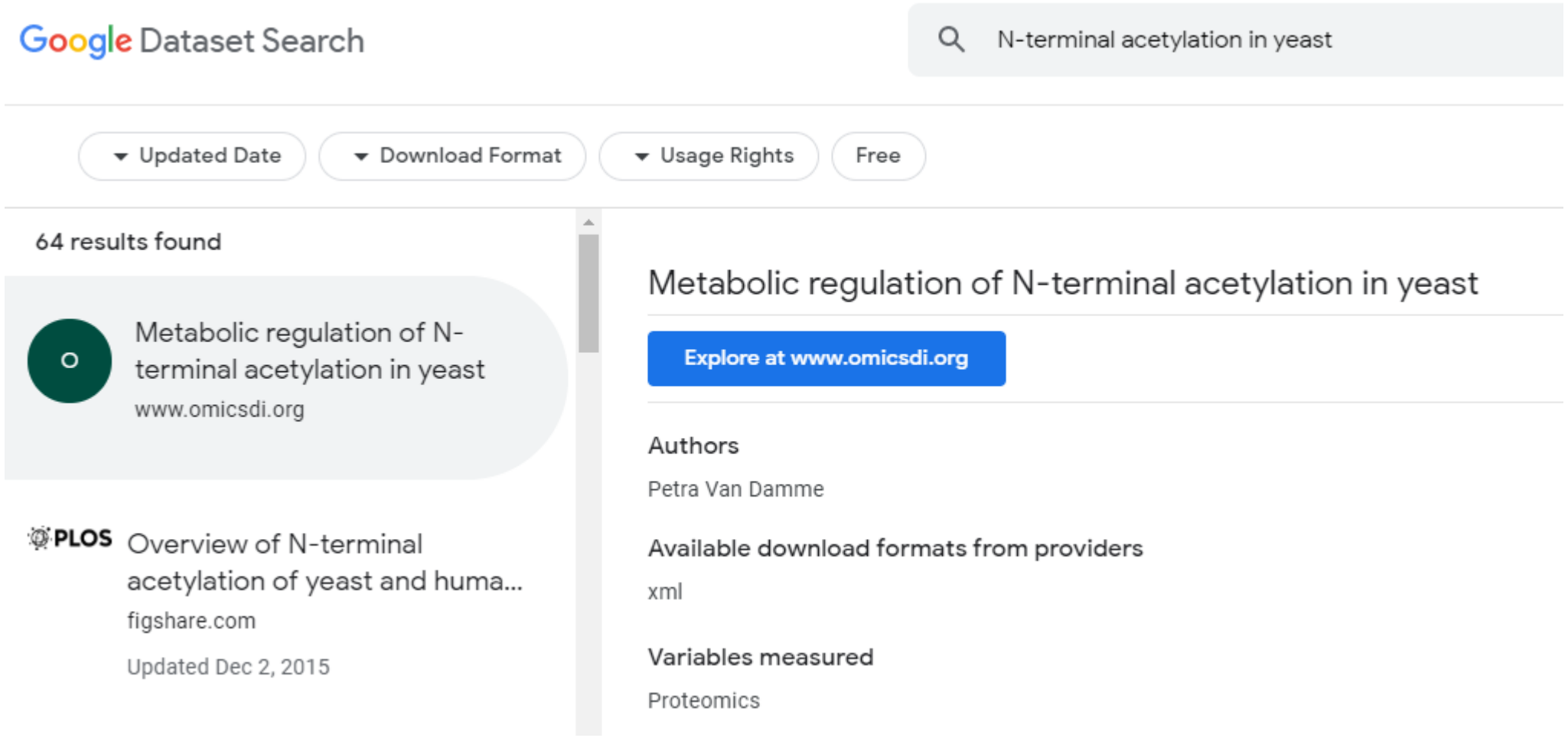
Event

PREVIEW 2 ERRORS 2 WARNINGS

ID: https://training.vib.be/research-data-management-data-stewardship-much-more-fairytale

@type	Event
@id	https://training.vib.be/research-data-management-data-stewardship-much-more-fairytale
url	https://training.vib.be/research-data-management-data-stewardship-much-more-fairytale
name	Research Data Management & Data Stewardship: much more than a FAIRytale
description	The location of this event has changed to the Park Inn by Radisson Brussels Midi hotel! Please find the location below. This community event is kindly provided to you by the ELIXIR Belgium team and aims to gather all relevant players in the field of Research Data Management from Belgium. During the morning session you will get insights in all different topics of the DMP life cycle with several speakers elaborating on the topics mentioned here below. In the afternoon there will be a practical use-case session for a smaller group where we will dive into some tools and workflows that follow the FAIR principles and are currently used. During the whole day there will be possibilities to network. Full program details & speakers can be found below!
doorTime	13:00
startDate	2019-12-12

From Google Dataset search to OmicsDI.org



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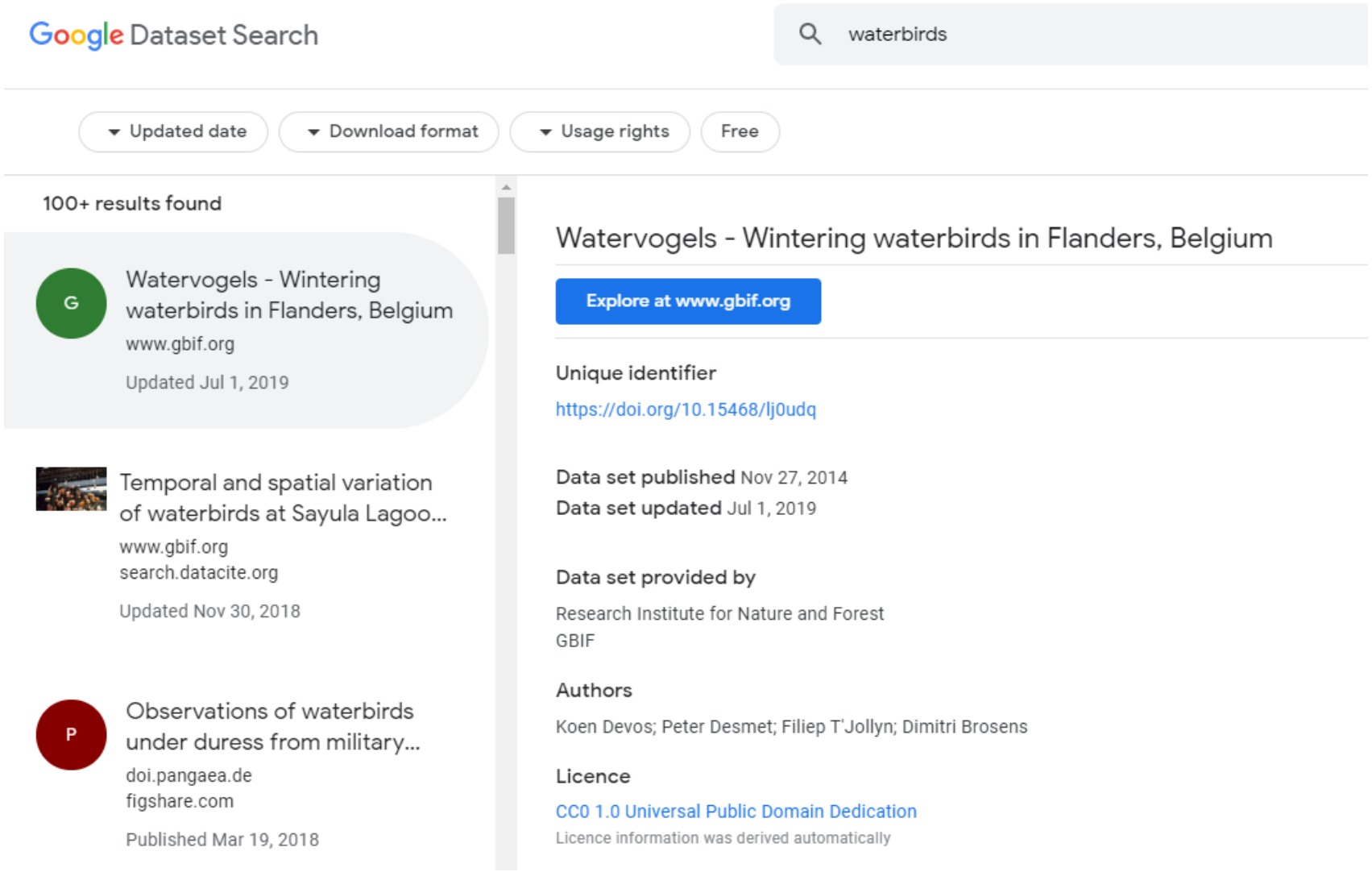
From Google Dataset search to gbif.org



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Thanks to

Alasdair J.G. Gray
Bioschemas Leadership Team Chair
Heriot-Watt University/Elixir-UK

Niall Beard

Bioschemas Community
30
Profiles
80
Sites
http://bioschemas.org/liveDeploys
17
Types
20M+
Pages
http://bioschemas.org/liveDeploys
300+
People