



**BIG
DATA**
ADVANCED ANALYTICS
VISUALIZATIONS

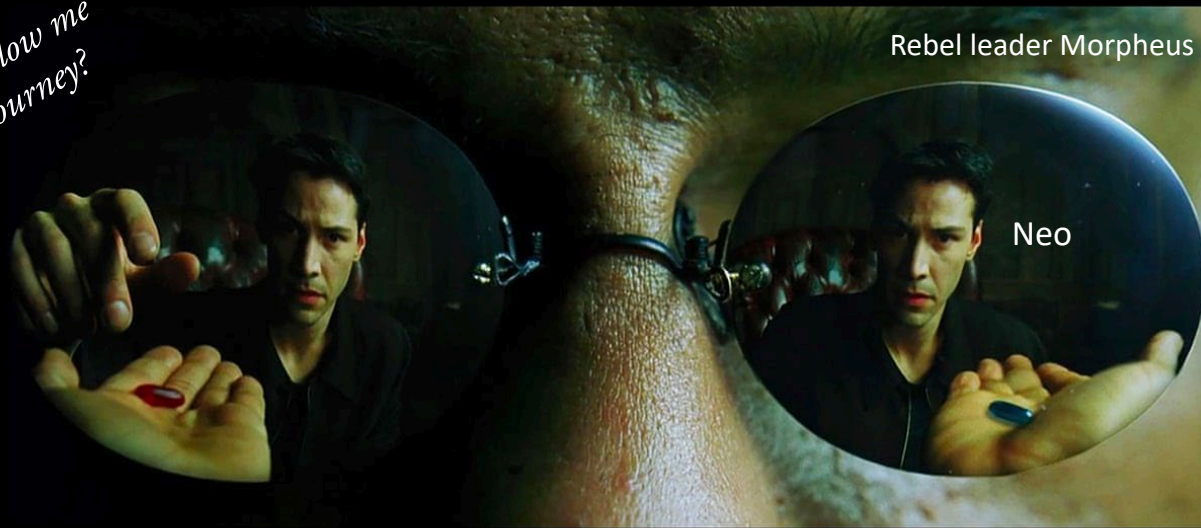
Kevin Salesse, Ph.D.

**Big Data Approaches For Big Pictures:
A Change Of Scale In Isotopic Studies**

● *Point of view*

‘Red and blue pills’ concept

*Do you want to follow me
in this IsoArcH journey?*



The Matrix, 1999

"You take the blue pill... the story ends, you wake up in your bed and believe whatever you want.
You take the red pill... you stay in Wonderland, and I show you how deep the rabbit hole goes."

● *Point of view*

Which circle is larger?

*Who believe that
the red circle is
larger?*



*Who believe that
the blue circle is
larger?*

Despite what you might think, these circles are NOT equal.

● *Point of view*

Which circle is larger?



*Before I said anything about these two circles
what was your first instinct?*

● *Point of view*

What did we learn?



If there is something fishy, your brain is your best asset!

But be careful, it can sometimes be lazy...

It is easy to be manipulated!

© Erik Johansson
www.albanello.com

● *Point of view*

Hold on! Am I manipulating you right now?



Perhaps...

● *Point of view*

Well, if I was manipulating you...



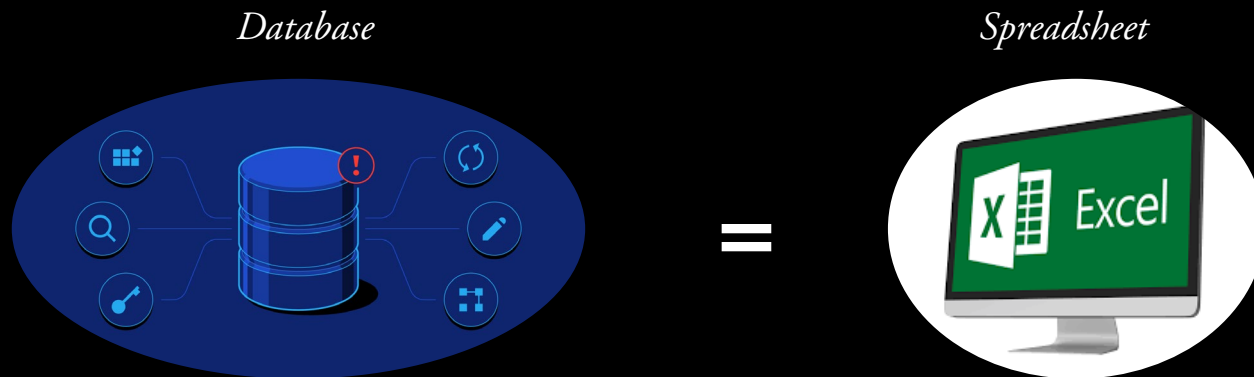
=



... I would say these two cars are the same!

● *Point of view*

Or...



There is a common misconception among non data scientists that data tables, databases, and Excel spreadsheets are one and the same thing!

● Database vs spreadsheet

https://www.youtube.com/watch?v=x4Xt0M1mHbc&ab_channel=365DataScience

365V



VS



DATABASE

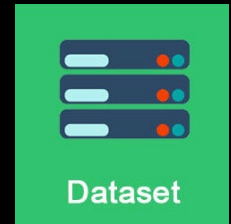
VS SPREADSHEET



● Database vs spreadsheet



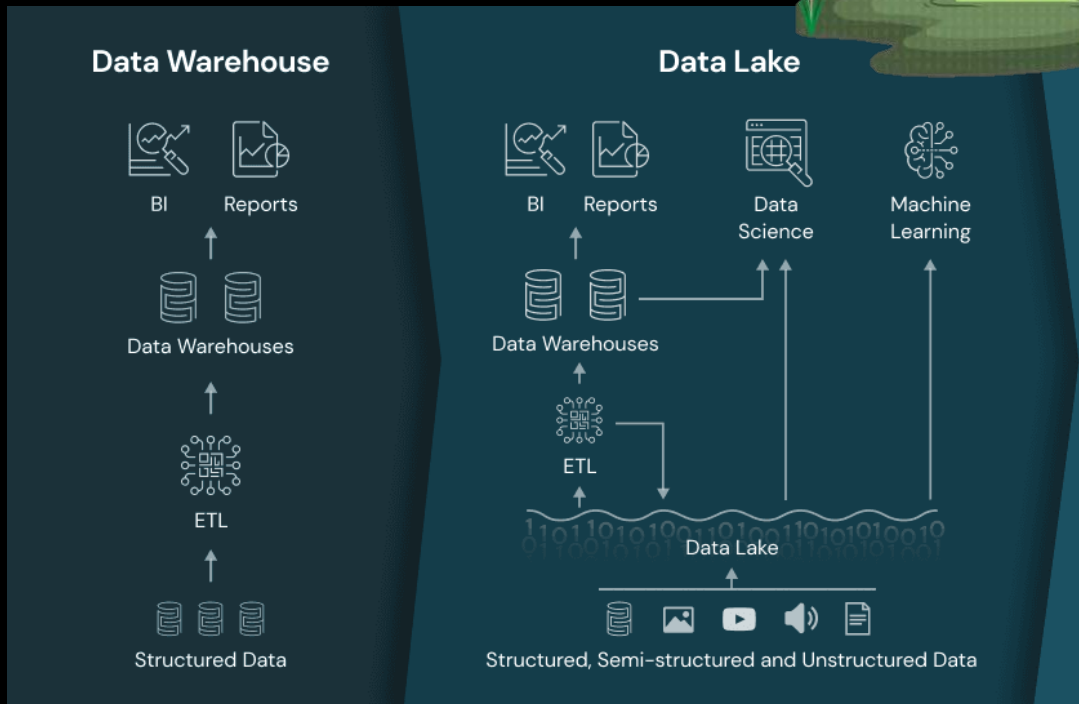
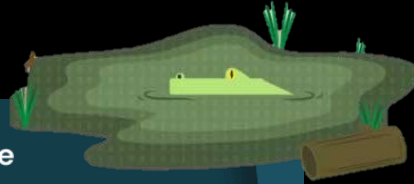
Database	Dataset
A collection of organized data that is stored and accessed electronically	A collection of data that is organized in a specific format
Typically used to store and manage large amounts of data to support the operations of an organization	Typically used for research, data analysis, and machine learning projects
Can store a wide range of data types, including text, numbers, images, or other types of data	Can be stored in a variety of formats, such as a spreadsheet, a CSV file, or a database
Can have multiple datasets and can be used for different applications	Can be a subset of data extracted from a larger database
Typically used as a comprehensive and long-term storage solution	Typically used for specific purpose



And large dataset stored in an Excel spreadsheet is still not a database...

● *Data lake vs data swamp*

*Poorly-managed data lakes have been facetiously called **data swamps**.*



They dangle the benefits of machine learning and artificial intelligence in front of you.

Are Data Lakes Fake News?

We discuss various flaws in the concept on the data lake. The idea of data lakes is fuzzy and the term should be abandoned.

by **Uli Bethke**

August 8, 2017

<https://sonra.io/data-lake/are-data-lakes-fake-news/>

*Data lakes as one of the more controversial ways to manage big data. We see people creating big data **graveyards** and hoping to **do something with it down the road**. But then they just lose track of what's there.*

● *Data standardization*

DATA STANDARDIZATION IMPLEMENTATION



Data standardization is key.

It aids in establishing well-defined elements and attributes, ensuring a comprehensive inventory of your data.

Regardless of the insights you seek or the problems you aim to solve, gaining a proper understanding of your data is an essential initial step.

Achieving this involves converting the data into a uniform format with consistent definitions. These definitions form your metadata, identifying the key aspects of your data.

● *Point of view*

So, are scientists misleading you when it comes to databases?

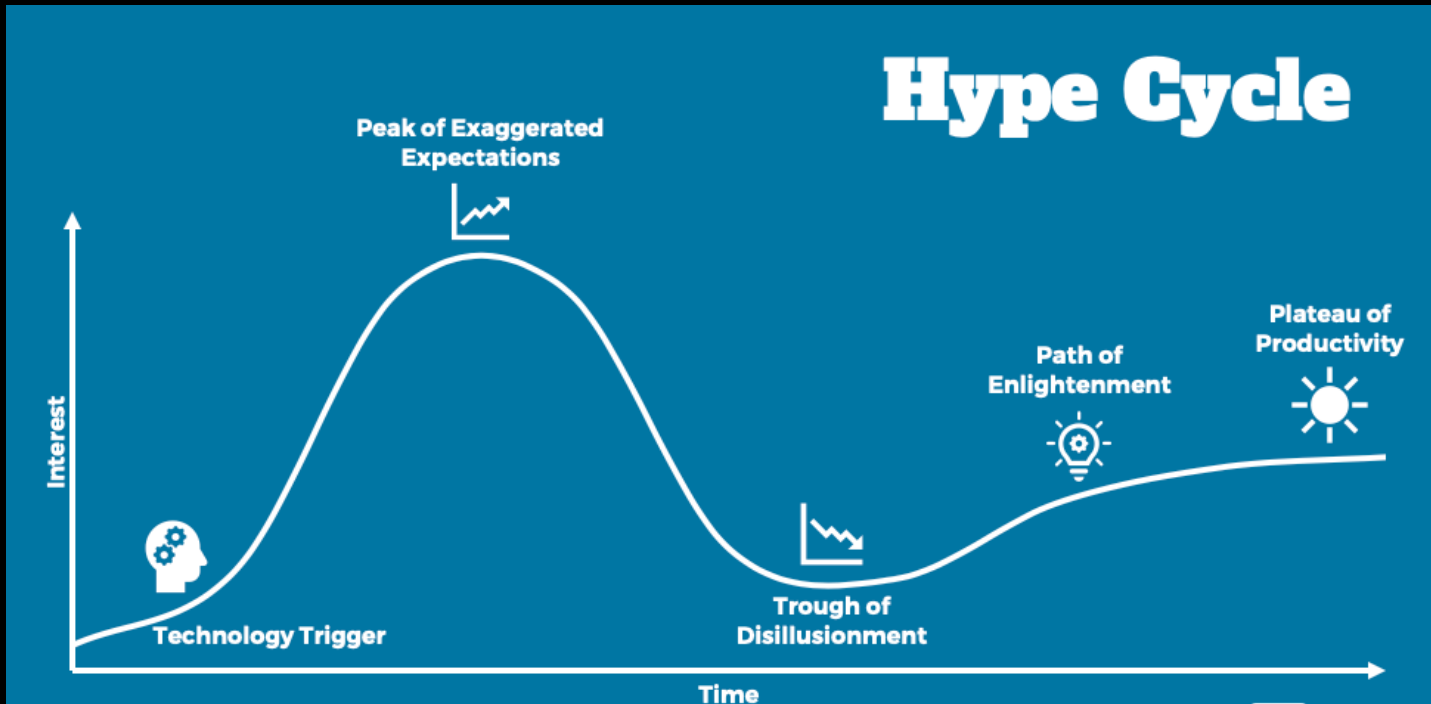


Knowledge is key

*Both Neo and another character, **Cypher**, take the red pill over the blue pill, though later in the film, the latter demonstrates regret for having made that choice, saying that if Morpheus **fully informed** him of the situation, Cypher would have taken the other pill.*

Yes, on purpose or not...

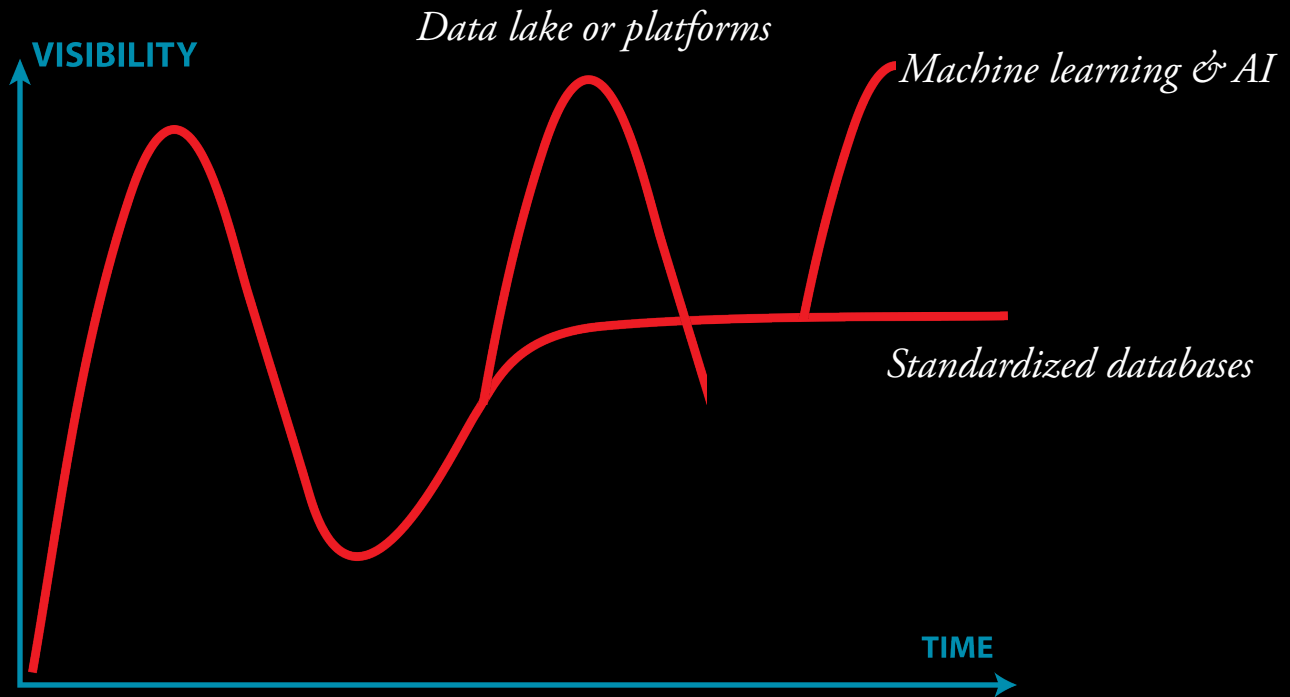
● *Point of view*



The database hype cycle!

● *Point of view*

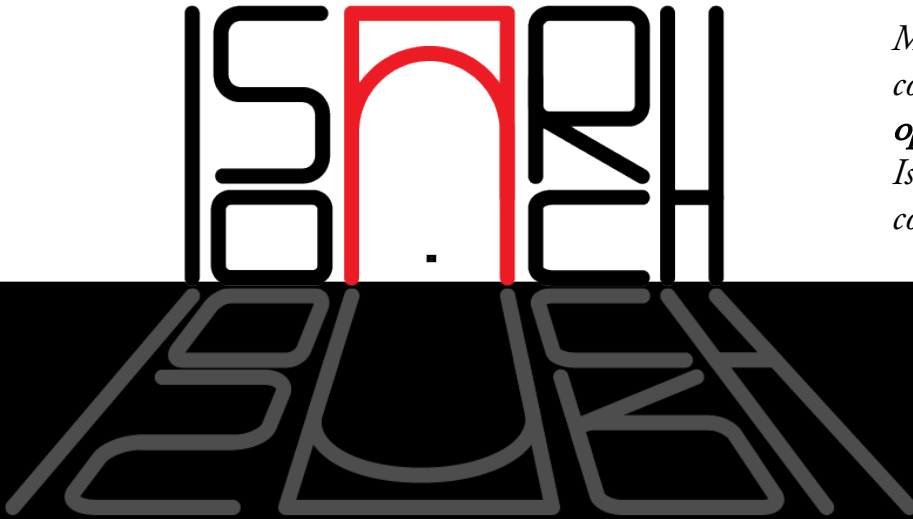
Disclaimer: I do not plan on engaging in ad hominem attacks here... or maybe...



*Arie de Niet who is Senior Data Scientist at Witteveen+Bos (The Netherlands):
"Beyond artificial intelligence, we need **human intelligence.**"*

Welcome to **IsoArcH**— the premier community-driven platform for isotope research in **bioarchaeology** and **forensic sciences**.

More than just a **database**, IsoArcH embodies a collaborative spirit and an unwavering commitment to **open data culture**. By fostering **knowledge-sharing** IsoArcH offers researchers an unparalleled opportunity to connect and collaborate.



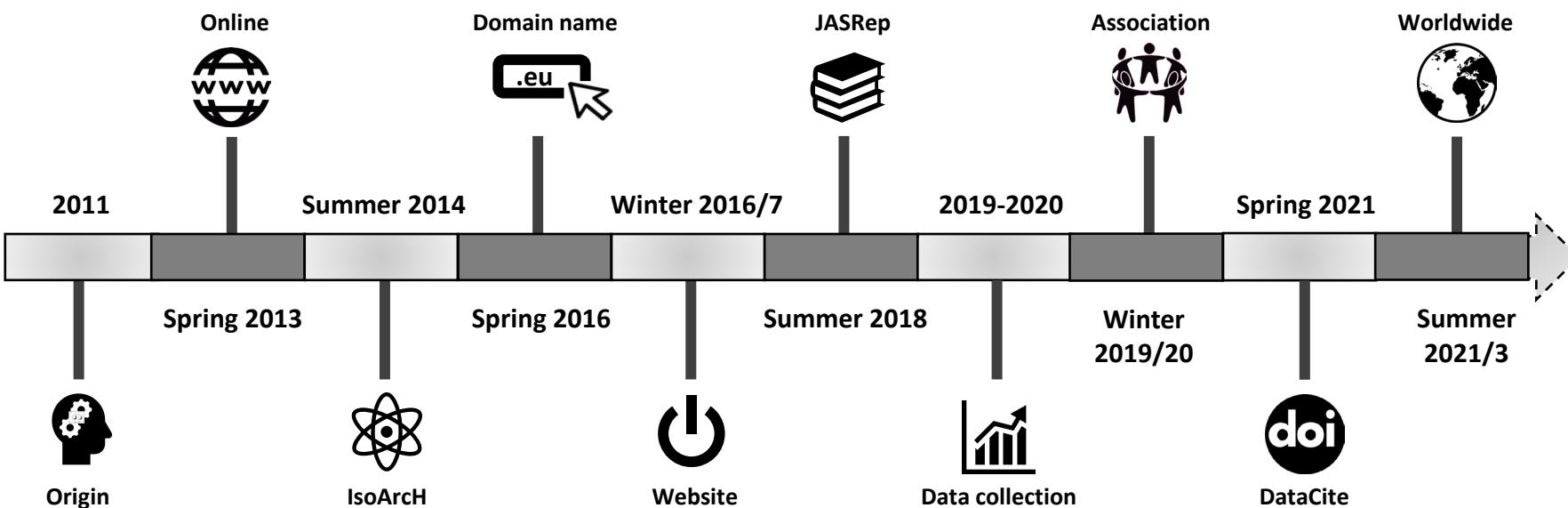


ISOARCH
12 YEARS



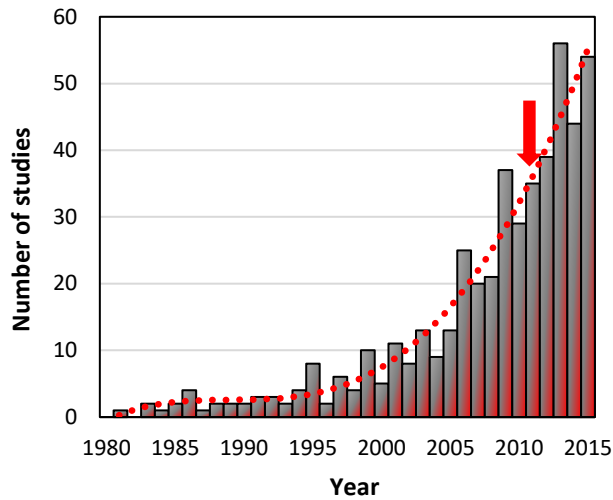
● *Timeline*

Key dates of the IsoArch development

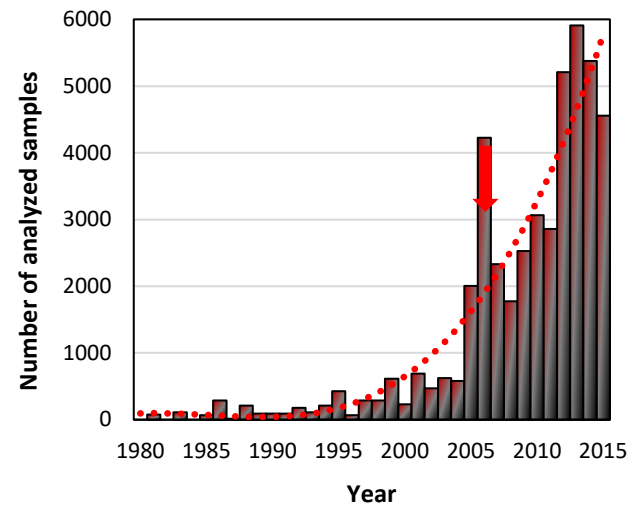


Bibliographic records inventory

From Szpak et al. 2017



Number of studies included in the survey per year



Number of isotopic measurements presented in the papers included in the survey per year

Synthesis of isotopic studies in the field of archeology

● *Inception*

An overview of existing databases in 2011

Isotope databases for modern environmental samples



<http://www.waterisotopes.org>

Bowen and Revenaugh, 2003; Bowen, 2011

Isotope databases for archaeological artefacts

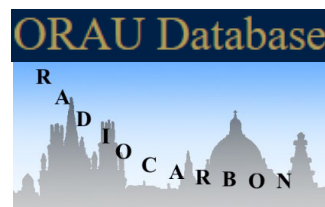


Oxford Archaeological
Lead Isotope Database

<http://oxalid.arch.ox.ac.uk/>

Stos-Gale and Gale, 2009

Radiocarbon databases (all sample types)



Gillepsie et al., 1984



Shreurs, 1968

Van Strydonck and de Roock, 2011

No isotope web-databases for bioarchaeological finds.

IsoArch showcased as a preview in 2015



université
de **BORDEAUX**

THÈSE PRÉSENTÉE
POUR OBTENIR LE GRADE DE

**DOCTEUR DE
L'UNIVERSITÉ DE BORDEAUX**

ÉCOLE DOCTORALE SCIENCES ET ENVIRONNEMENTS
SPÉCIALITÉ ANTHROPOLOGIE BIOLOGIQUE

Par Kevin SALESSE

**ARCHÉO-BIOGÉOCHIMIE ISOTOPIQUE, RECONSTITUTIONS DES
RÉGIMES ALIMENTAIRES ET DES SCHÉMAS DE MOBILITÉ,
ET INTERACTIONS BIO-CULTURELLES**

**LES SÉPULTURES PLURIELLES DE LA RÉGION X DE LA CATACOMBE
DES SAINTS PIERRE-ET-MARCELLIN (ROME, I^{ER}-III^E S. AP. J.-C.)**

Sous la direction de : Dominique CASTEX
et la codirection de : Élise DUFOUR

Soutenance le 17/12/2015

Membres du jury :

M. Oliver CRAIG, Maître de Conférences, University of York, York, Royaume-Uni
Mme Eugénia CUNHA, Professeur, Universidade de Coimbra, Coimbra, Portugal
Mme Dominique CASTEX, Directrice de Recherche, CNRS, Bordeaux
Mme Élise DUFOUR, Maître de Conférences, Muséum national d'Histoire naturelle, Paris
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Mme Raffaella GIULIANI, Inspectrice, Pontificia Commissione di Archeologia Sacra, Rome, Italie
Mme Estelle HERRSCHER, Chargée de Recherche, Aix-Marseille Université, Aix-en-Provence

Rapporteur
Rapporteur
Directrice
Co-Directrice
Examinateur
Examinatrice
Examinatrice

Calls for the creation of isotope data repositories in 2015-18

● OPINION

Why we need a centralized repository for isotopic data

Jonathan N. Pauli^{a,1}, Seth D. Newsome^b, Joseph A. Cook^c, Chris Harrod^d, Shawn A. Steffan^{e,f}, Christopher J. O. Baker^g, Merav Ben-David^h, David Bloomⁱ, Gabriel J. Bowen^j, Thure E. Cerling^j, Carla Cicero^k, Craig Cook^l, Michelle Dohm^l, Prarthana S. Dharampal^l, Gary Graves^{m,n}, Robert Gropp^o, Keith A. Hobson^p, Chris Jordan^q, Bruce MacFadden^r, Suzanne Pilaar Birch^{s,t}, Jorrit Poelen^u, Sujeewan Ratnasingham^v, Laura Russell^l, Craig A. Stricker^w, Mark D. Uhen^x, Christopher T. Yarnes^y, and Brian Hayden^z

Pauli et al., *Opinion: Why we need a centralized repository for isotopic data*. Proc Natl Acad Sci U S A. **2017**; 114(12):2997-3001.

Stansbie et al., *Big, bad (?) data. New approaches to the study of food, identity and landscape in early medieval England*. Medieval Settlement Res. **2015**; 30:16-24.

Grupe et al., *The concept of isotopic landscapes: Modern ecogeochemistry versus bioarchaeology*. In: Grupe G, Grigat A, McGlynn GC, eds. *Across the Alps in Prehistory*. The Netherlands: Springer International Publishing; **2017**:27-48.

Roberts et al., *Calling all archaeologists: guidelines for terminology, methodology, data handling, and reporting when undertaking and reviewing stable isotope applications in archaeology*. Rapid Commun Mass Spectrom. **2018**; 32:361-372.



IsoArcH is a timely endeavor in the era of 'Big Data'.

● Inception

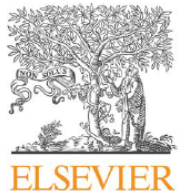
Wait, what the 'Big Data' era is?



Big Data refers to the vast amounts of data that are collected, stored, and analyzed for insights that can lead to better decision-making and strategic actions in various fields such as business, science, and technology.

First publication about IsoArch in 2018

Journal of Archaeological Science: Reports 19 (2018) 1050–1055



Contents lists available at [ScienceDirect](#)

Journal of Archaeological Science: Reports

journal homepage: www.elsevier.com/locate/jasrep



IsoArch.eu: An open-access and collaborative isotope database for bioarchaeological samples from the Graeco-Roman world and its margins

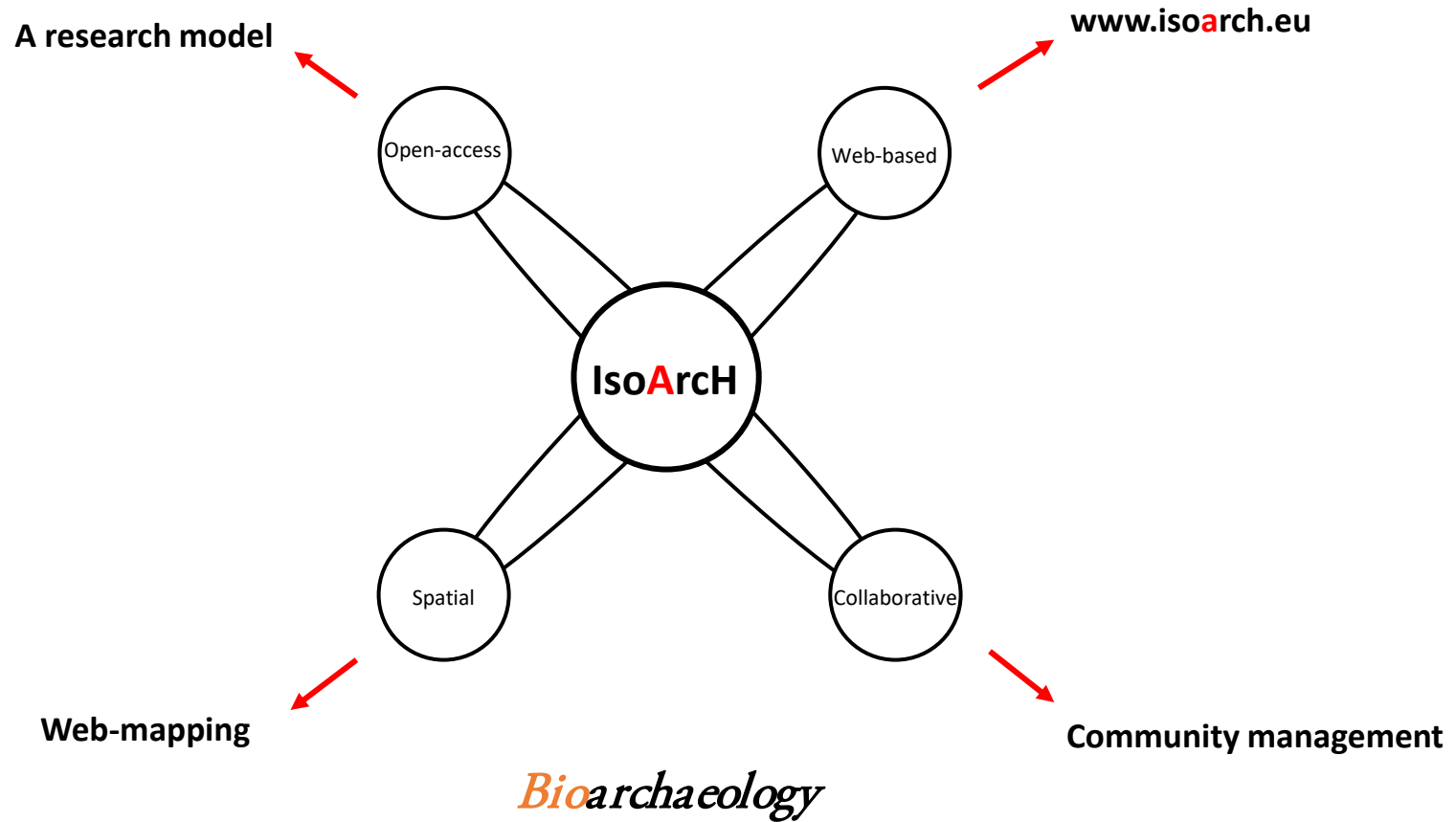
Kevin Salesse^{a,b,*}, Ricardo Fernandes^{c,d,*}, Xavier de Rochefort^e, Jaroslav Brůžek^{b,f},
Dominique Castex^b, Élise Dufour^g



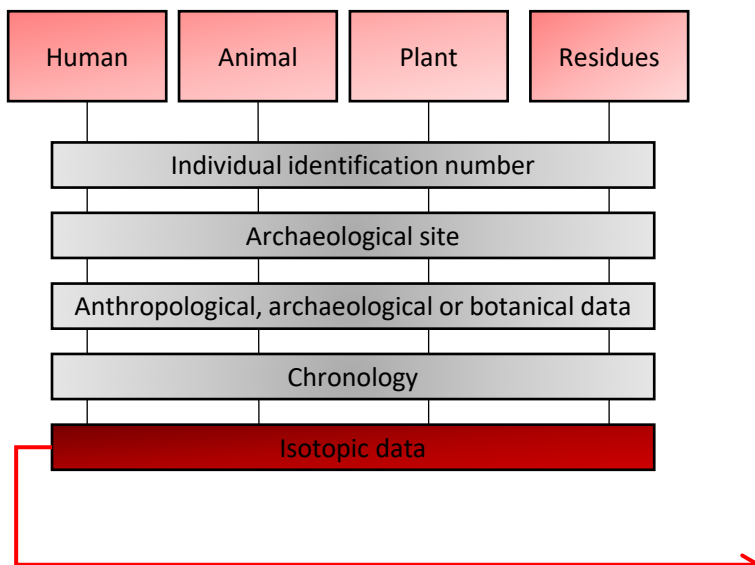
<https://doi.org/10.1016/j.jasrep.2017.07.030>

● *IsoArch* database

Initial aims



Initial data organisation

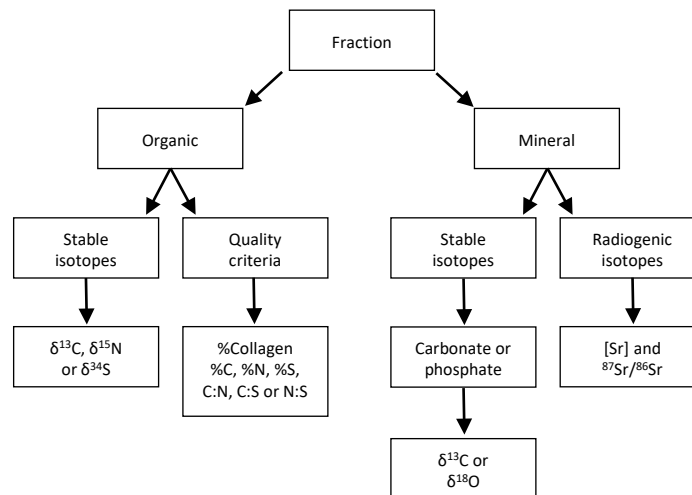


Ready for all kind of isotopic proxies on bulk samples.

IsoArch is designed for:

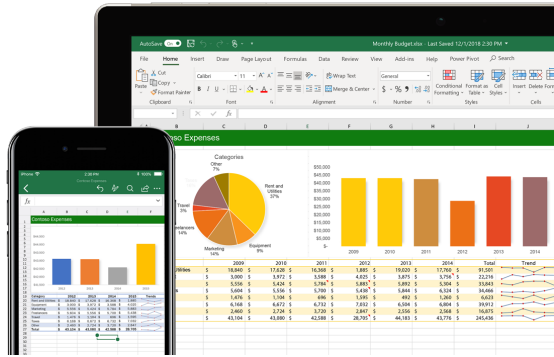
- *Archaeothanatology*
- *Zooarchaeology*
- *Archaeobotany*

Isotopic proxies and associated sample quality criteria measured on the organic and mineral fractions of human and non-human remains.



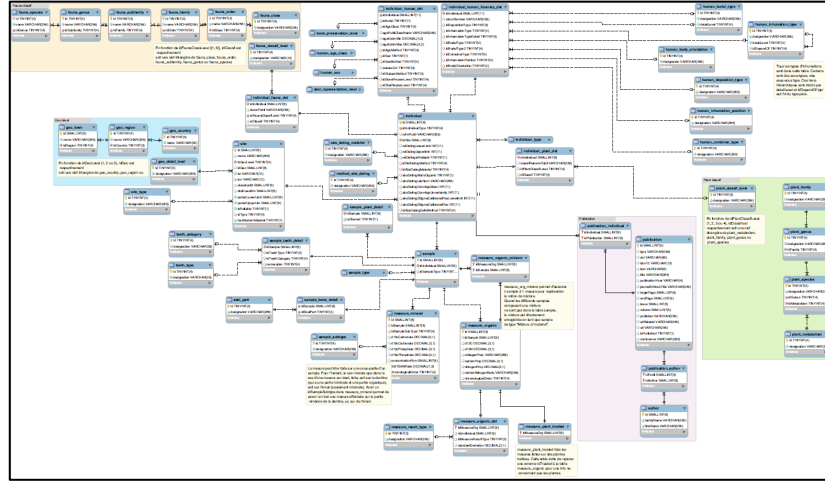
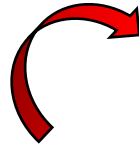
● IsoArch database

Architecture evolution

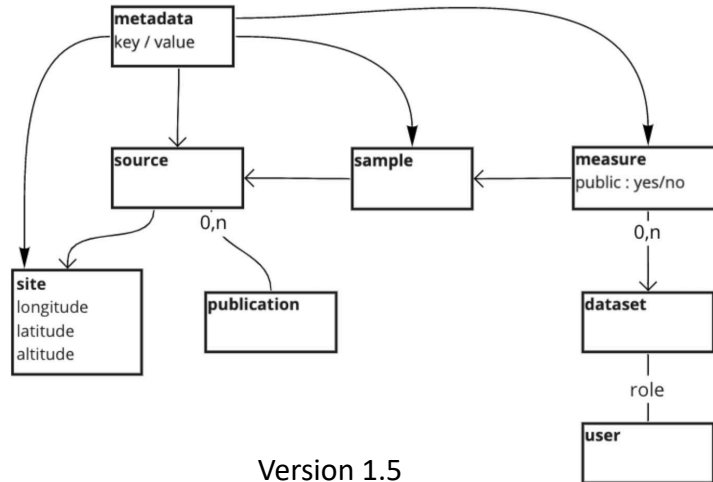


Version 0

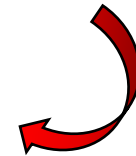
From Excel to a **relational** database model



Version 1



Version 1.5

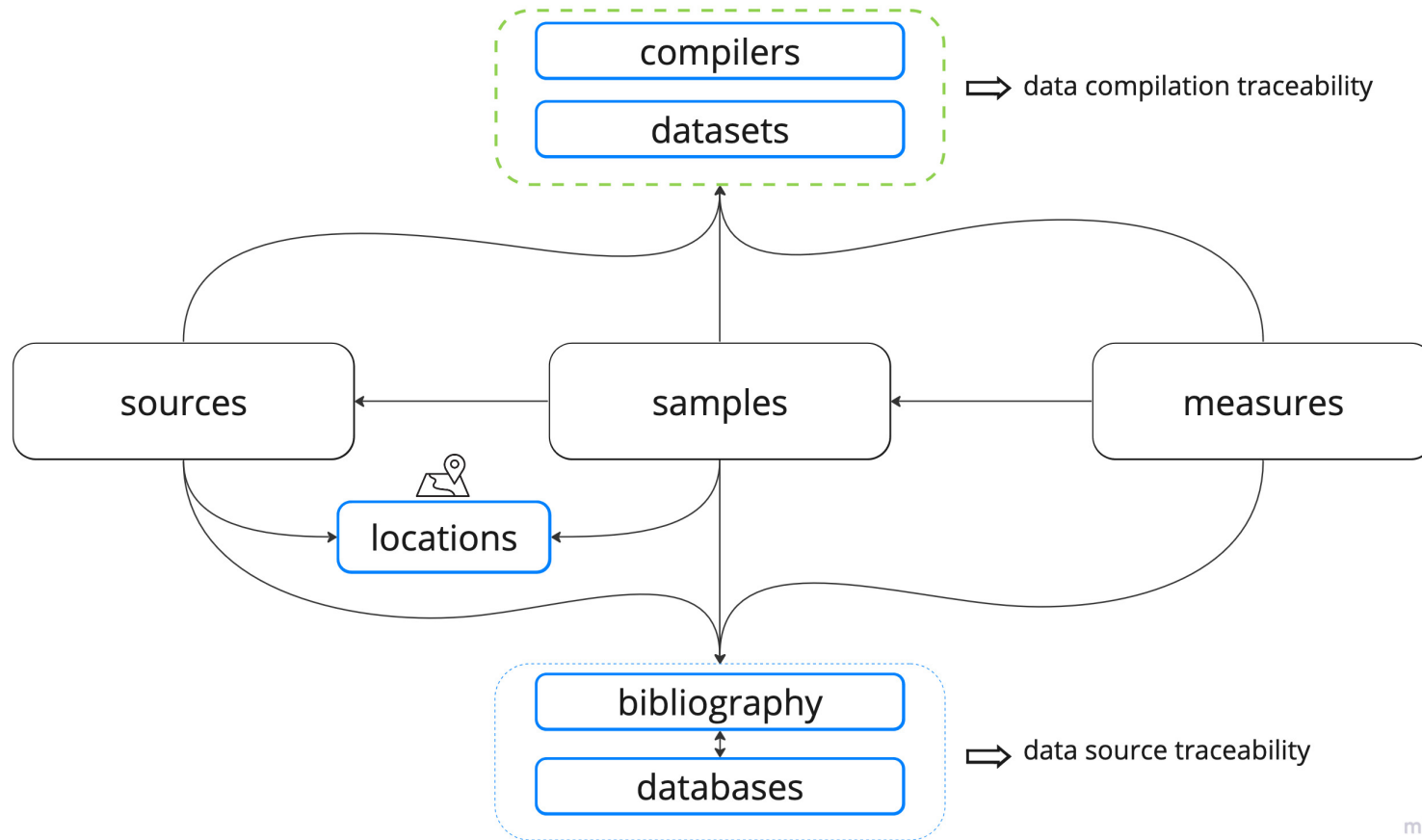


● IsoArch database

Simplification = maturation process

Architecture evolution

Version 2



Database option

Grist is a relational spreadsheet-database, used as a community data management zone.

isoarch v

home / database / locations

Add New

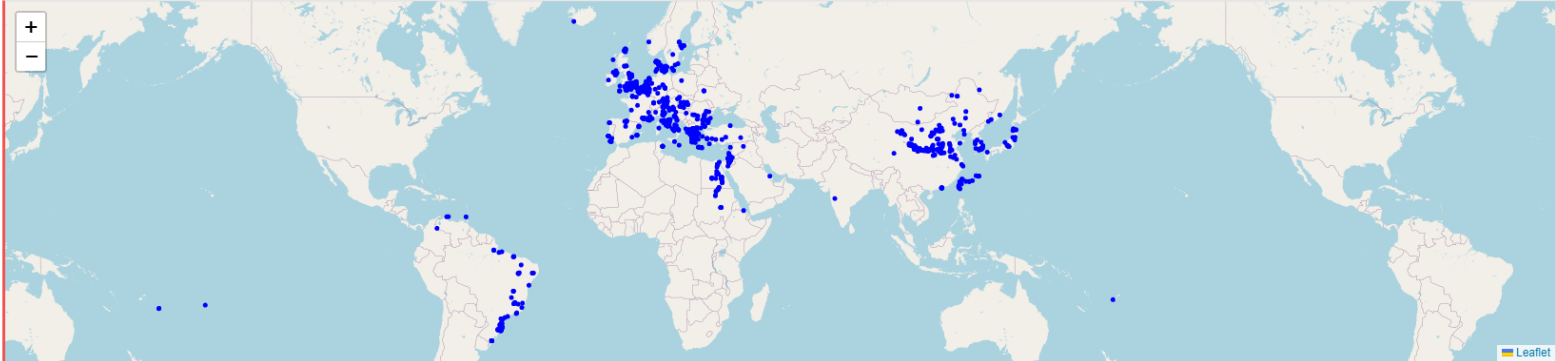
locations

- globals
- compilers
- biblio
- taxonomy
- datasets
- sources
- human
 - human_bio
 - animals
 - plants
- samples
- measures
- documentation

TOOLS

- Access Rules BETA
- Raw Data
- Document History
- Code View

LOCATIONS MAP



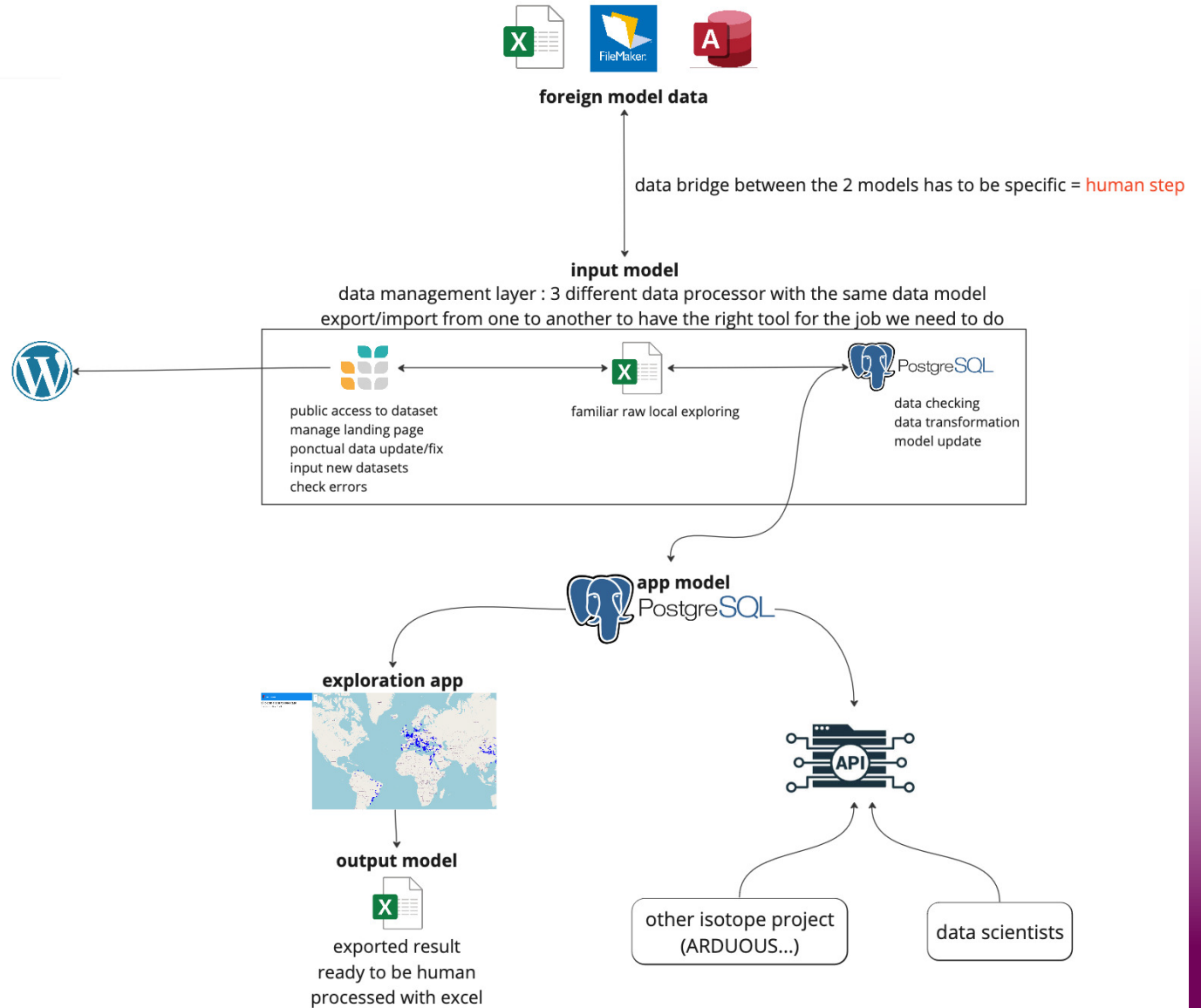
LOCATIONS

	ref	name	alternative_name	country	region	closest_town	latitude	longitude	coordinates_type	altitude	distance_to_co...
1	1 Poultry	1 Poultry		United Kingdom	London	London	51.51328	-0.09076	exact	31	37
2	10-W-4	10-W-4		Sudan	Central Sudan	Khartoum	15.42439	32.36972	approximate	400	659
3	12-15 Finsbury Circus	12-15 Finsbury Circus		United Kingdom	London	London	51.51842	-0.08622	exact	33	36
4	120-122 London Road	120-122 London Road		United Kingdom	Gloucestershire	Gloucester	51.86685	-2.24394	exact	20	47
5	13 Haydon Street	13 Haydon Street		United Kingdom	London	London	51.51257	-0.07465	exact	23	36
6	16-D-6	16-D-6		Sudan	Central Sudan	Khartoum	15.42439	32.36972	approximate	400	659
7	165 Great Dover Street	165 Great Dover Street		United Kingdom	London	London	51.49852	-0.08994	exact	10	37
8	18-31 Eldon Street, 16-18 Finsbury Circus	18-31 Eldon Street, 16-18 Finsbur...		United Kingdom	London	London	51.51826	-0.08524	exact	35	36
9	24-30 West Smithfield, 1-4 Giltspur Street...	24-30 West Smithfield, 1-4 Giltspu...		United Kingdom	London	London	51.51742	-0.10198	exact	25	36
10	2413	2413		Sudan	Northern	Wadi Halfa	21.78333	31.36667	exact	179	461
11	28-30 Trinity Street	28-30 Trinity Street		United Kingdom	London	London	51.49803	-0.09327	exact	5	37
12	31-43 Mansell Street, 1-7 Alie Street	31-43 Mansell Street, 1-7 Alie Street		United Kingdom	London	London	51.51339	-0.07293	exact	28	36
13	49-55 Mansell Street	49-55 Mansell Street		United Kingdom	London	London	51.51304	-0.07292	exact	28	36
14	52-56 Lant Street	52-56 Lant Street		United Kingdom	London	London	51.50077	-0.09604	exact	10	37
15	6 Broad Street Place	6 Broad Street Place		United Kingdom	London	London	51.51812	-0.08451	exact	36	36

● IsoArch database

Data model

isotope data that lives/exists outside of isoarch
archived databases, private teams repository, other databases



A query interface and a web-mapping tool

*Explore available data online
Download data from IsoArch
Upload data in IsoArch*

New query

SAMPLE

Category of sample

Type of remains

CHRONOLOGY

min ex : -100 max ex : 100

SITE

Country

Region

Site

Distance to coast (km)

Elevation (m)

BIOLOGICAL INFORMATION

Age

Sex

FUNERARY STRUCTURE

Burial

ISOTOPIC DATA ON ORGANIC FRACTION

Isotopic proxies

$\delta^{13}\text{C}$ yes

$\delta^{15}\text{N}$ yes

$\delta^{34}\text{S}$ yes



Example of map generated through IsoArch showing the distribution of Roman archaeological sites where isotopic data for human and non-human samples are available.



Submission:
contact@isoarch.eu

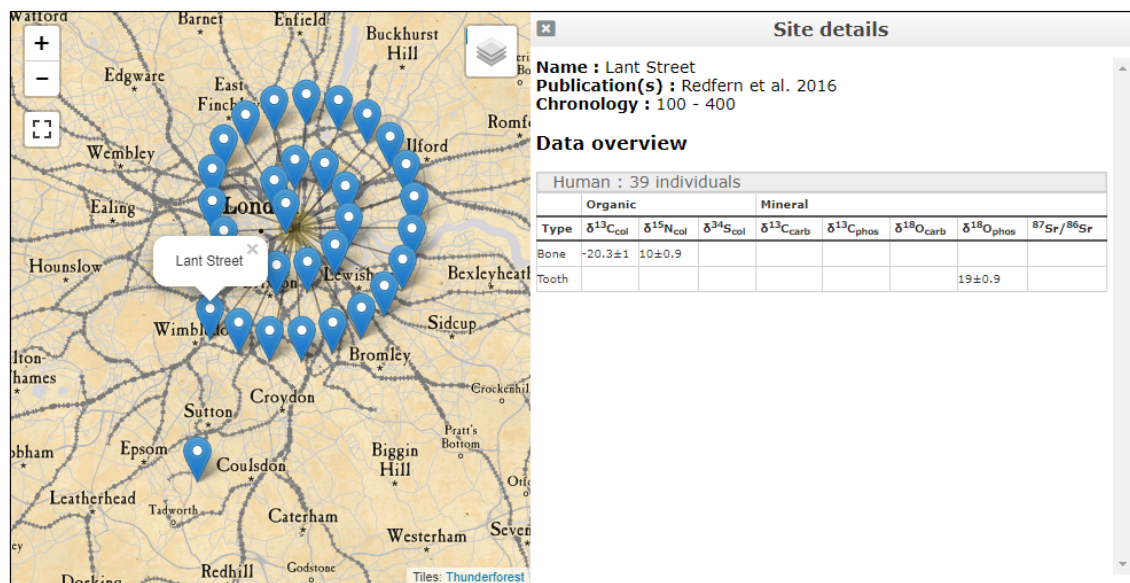
Form to be downloaded online and filled on the user computer before to be submitted to IsoArch

An online form to query the IsoArch database

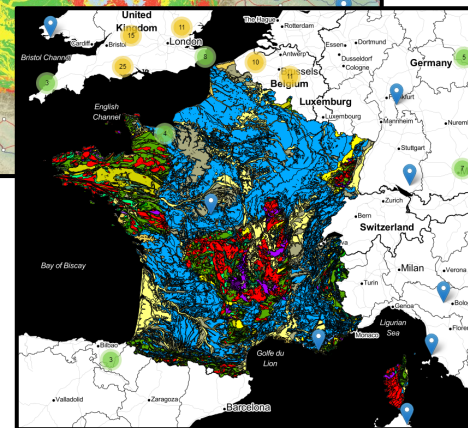
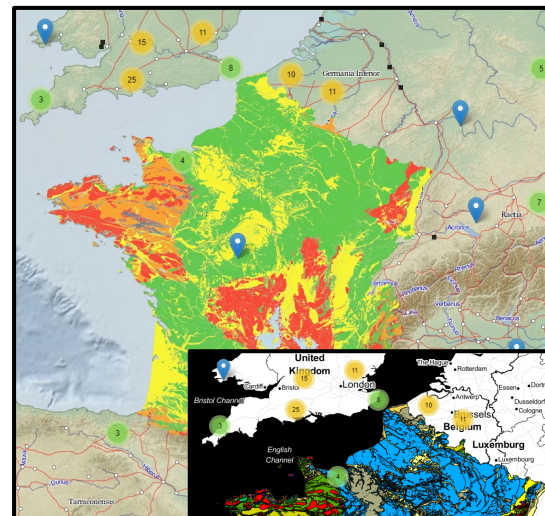
Data exploration

The layer provides the mean $^{87}\text{Sr}/^{86}\text{Sr}$ isotope values for the lithological units of France. The strontium isotope data comes from the IRHUM database

Map



A web-mapping tool still in development



The surface geologic map of France is from the OneGeology Europe Project

IsoArch database

Content

THE COLLABORATIVE AND OPEN-ACCESS ISOTOPE DATABASE

IsoArch is an **open and collaborative** database of **georeferenced** isotopic measures of bioarcheological samples from all time periods and all around the world.

We help members of the community to **share** their data in a **consistent** and **persistent** way, by providing them a safe home and encouraging discussions about common ways to organise them to ease **data exploration**.



As of now, we reference

15654

humans

6335

animals

501

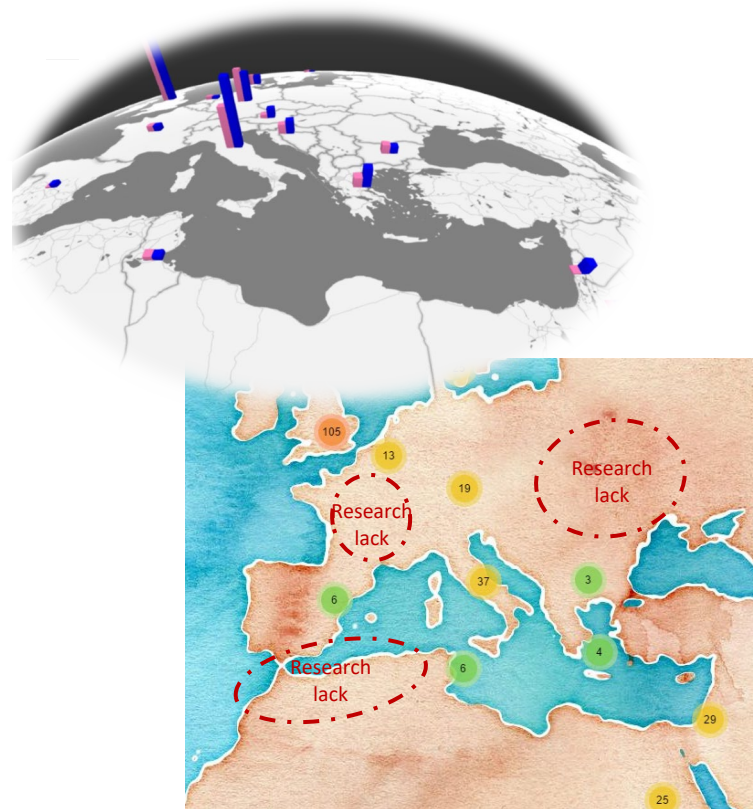
publications

995

geolocations

57251

isotopic measures



A lack of interest for some regions
(e.g. North Africa, Central Europe, France)

IsoArch is the world's largest repositories with standardized isotopic data and metadata deriving from archaeological contexts.

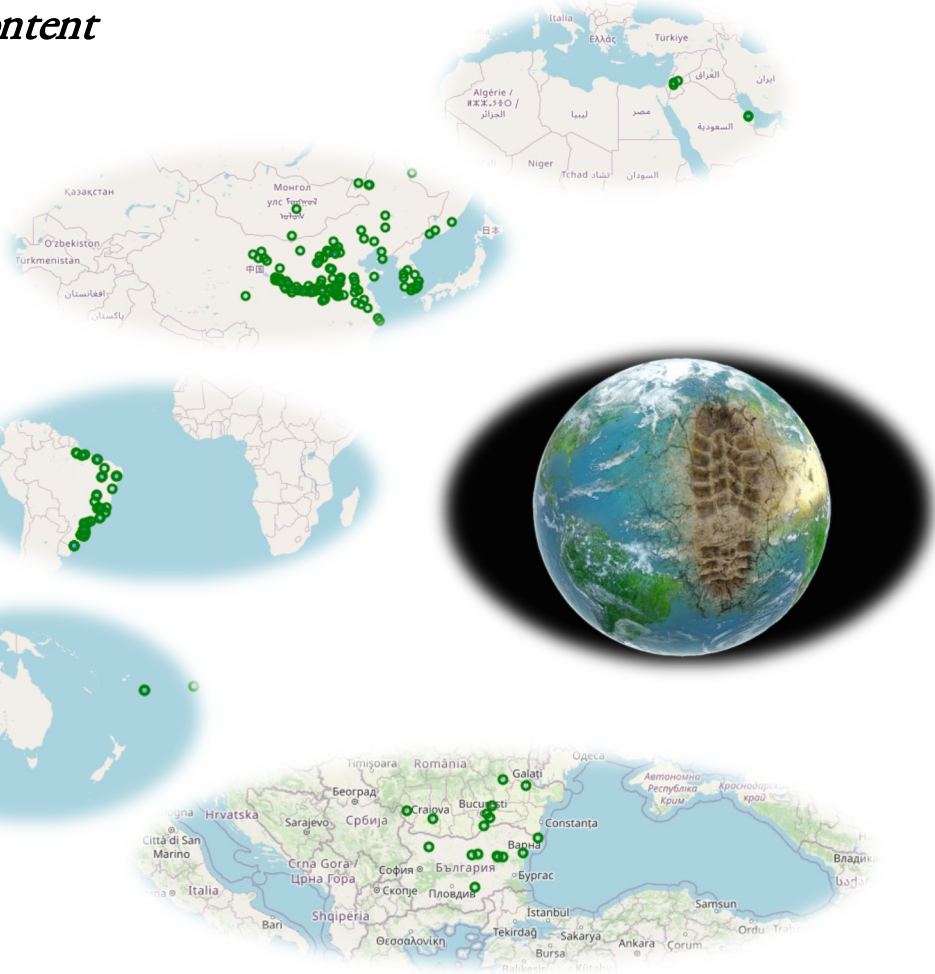
● *IsoArch* database

Content

%N	12724		$\delta^{13}\text{C}$ collagen	24496
N:S	561		$\delta^{13}\text{C}$ carbonate	4887
Nd concentration	23		$\delta^{18}\text{O}$ carbonate	4337
C:N	22778		$\delta^{18}\text{O}$ phosphate	1041
Sr concentration	1376		$\delta^{34}\text{S}$	702
%C	12936		$^{143}\text{Nd}/^{144}\text{Nd}$	40
C:S	647		$\delta^{15}\text{N}$	23683
%S	733		$^{87}\text{Sr}/^{86}\text{Sr}$	3568
Collagen yield	12344		^{14}C	894
ϵNd	40			
				63648
	64162			
TOTAL				
127810				

● IsoArch database

Content



No more temporal and geographical limits

Some recent examples:

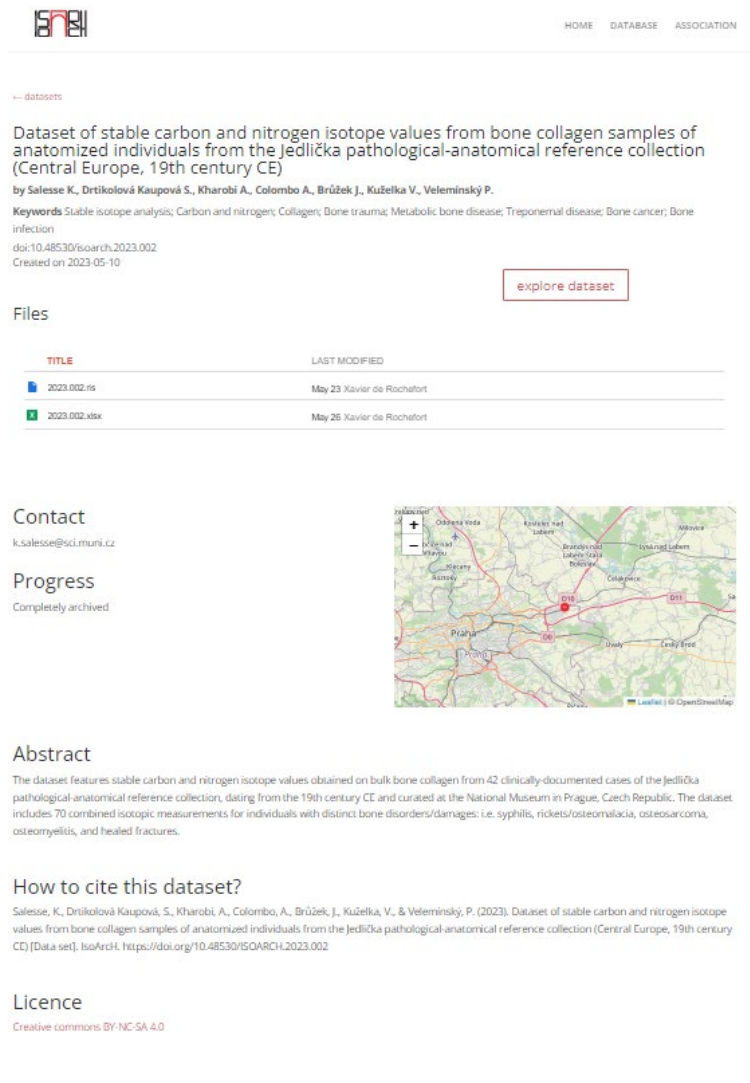
- *Eastern Asia (China, Korea, Japan, etc.)*
- *Polynesia*
- *South America (Brazil)*

Digital object identifier for IsoArch datasets



Divi Builder + premium WordPress

57 IsoArch datasets with DOIs so far



Dataset of stable carbon and nitrogen isotope values from bone collagen samples of anatomized individuals from the Jedlička pathological-anatomical reference collection (Central Europe, 19th century CE)

by Salese K, Drtíková Kaupová S, Kharobí A, Colombo A, Brůžek J, Kuželka V, Velemínský P.

Keywords Stable isotope analysis; Carbon and nitrogen; Collagen; Bone trauma; Metabolic bone disease; Treponemal disease; Bone cancer; Bone infection


doi:10.48530/isoarch.2023.002
Created on 2023-05-10

[explore dataset](#)

TITLE	LAST MODIFIED
2023.002.ris	May 23 Xavier de Rochafort
2023.002.xlsx	May 26 Xavier de Rochafort

Contact: k.salese@sci.muni.cz

Progress: Completely archived



Abstract: The dataset features stable carbon and nitrogen isotope values obtained on bulk bone collagen from 42 clinically-documented cases of the Jedlička pathological-anatomical reference collection, dating from the 19th century CE and curated at the National Museum in Prague, Czech Republic. The dataset includes 70 combined isotopic measurements for individuals with distinct bone disorders/damages: i.e. syphilis, rickets/osteomalacia, osteosarcoma, osteomyelitis, and healed fractures.

How to cite this dataset?
Salese, K, Drtíková Kaupová, S, Kharobí, A, Colombo, A, Brůžek, J, Kuželka, V., & Velemínský, P. (2023). Dataset of stable carbon and nitrogen isotope values from bone collagen samples of anatomized individuals from the Jedlička pathological-anatomical reference collection (Central Europe, 19th century CE) [Data set]. IsoArch. <https://doi.org/10.48530/ISOARCH.2023.002>

Licence: Creative commons BY-NC-SA 4.0

● *IsoArch database*

Reference management software

Zotero is a free and open-source reference management software

Managing bibliographic data and related research materials

All references included in IsoArch Available online

*Public, Closed Membership
Anyone can view
Only members can edit*



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IsoArch

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References included in IsoArch

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After the earthquake: dietary resource Use during the Hellen...	kevin.salesse	18/02/2018 à 22:40:12
A Bioarchaeological Approach to Prehistoric Cemetery Populat...	kevin.salesse	18/02/2018 à 22:39:23
Isotopic (13C, 15N) Investigation of diet and social structu...	kevin.salesse	18/02/2018 à 22:27:28
Dietary reconstruction at the Geometric-period burial site o...	kevin.salesse	18/02/2018 à 22:20:33
Inferences from the human skeletal material of the Early Iro...	kevin.salesse	18/02/2018 à 22:17:37
Residential mobility in the rural Greek past: A strontium is...	kevin.salesse	18/02/2018 à 22:09:00
Bread, oil, wine, and milk: feeding infants and adults in By...	kevin.salesse	18/02/2018 à 22:03:09

Members (20)

<http://www.zotero.org/groups/2114446/isoarch>

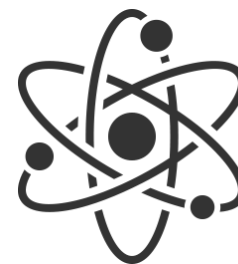
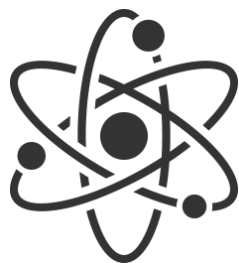
● *IsoArcH database*

License

The utilization of the IsoArcH database comes at no cost.



The data stored is subject to a licensing agreement.



THE ISOARCH COMMUNITY

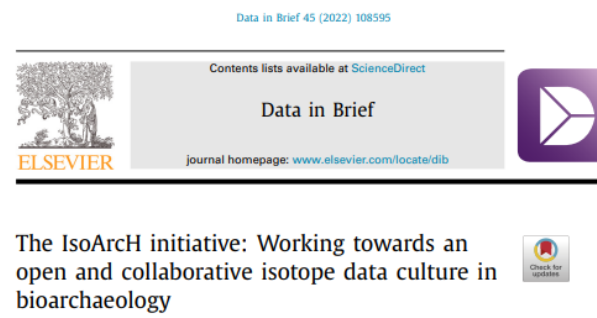


Towards an open and collaborative isotope data culture

*From its inception in 2011, the IsoArch initiative has been an **altruistic effort** to benefit and engage as many people as possible in the field of bioarchaeological science and beyond.*

*The initiative quickly evolved from a **small community** to a **multidimensional one of like-minded individuals** promoting, in addition to their common scientific interests, best practices in data accessibility and ethics, collaborative knowledge, open research practices, reproducibility, transparency, scientific innovation, inclusion, and/or public awareness.*

<https://doi.org/10.1016/j.dib.2022.108595>



1. Introduction

From its inception in 2011, the IsoArch initiative (<https://isoarch.eu> [1]) has been an altruistic effort to benefit and engage as many people as possible in the field of bioarchaeological science and beyond. The initiative quickly evolved from a small community to a multidimensional one of like-minded individuals promoting, in addition to their common scientific interests, best practices in data accessibility and ethics, collaborative knowledge, open research practices, reproducibility, transparency, scientific innovation, inclusion, and/or public awareness.

The cornerstone of the IsoArch initiative is the IsoArch database. The IsoArch database is an isotope bioarchaeology database with samples (human, animal, plant materials) from all archaeological time periods and regions of the world. The isotopic data are complemented by detailed archaeological metadata, whenever available. Because of its collaborative nature and open access model, the IsoArch database has brought together a variety of stakeholders interested in its services and results.

The IsoArch initiative contribute to a more open and collaborative research culture in isotope bioarchaeology field. In this paper, we present the community structure of the IsoArch initiative. We also reiterate the CARE (Collective benefit, Authority to control, Responsibility, and Ethics [2,3]) and FAIR (Findable, Accessible, Interoperable, Reusable [4,5]) principles and explain how they impact the IsoArch community. Lastly, we argue that an open and collaborative culture within the scope of isotopic data in bioarchaeology is possible and that the IsoArch initiative can help to move towards a more equitable and resilient isotope research culture in bioarchaeology.

2. The IsoArch Community

The IsoArch community is composed of five different, but not mutually exclusive, types of engaged members: 1) adherents, 2) contributors, 3) users, 4) followers, and 5) sponsors (Fig. 1). Together, they constantly reshape the semantics and dynamics of the IsoArch initiative.

2.1. Adherents

Adherents are experts in isotope bioarchaeology; they advocate for scientific cooperation and openness, knowledge sharing and transfer, as well as public outreach in their research areas

● IsoArch community

A community with principles

*The principles of FAIR and CARE form the **bedrock** of the isotope data culture we are fostering.*

OVERLAP BETWEEN		
FAIR and CARE Principles		Open Data Charter Principles
FAIR	<u>F</u> indable <u>A</u> ccessible <u>I</u> nteroperable <u>R</u> eusable	Timely and Comprehensive Accessible and Usable Comparable and Interoperable
CARE	<u>C</u> ollective Benefit <u>R</u> esponsibility <u>A</u> uthority to Control <u>E</u> thics	For Improved Governance & Citizen Engagement For Inclusive Development and Innovation Open By Default

Russo Carroll et al. (2020): “While centering data in the FAIR Principles complements other efforts to inform responsibilities for data producers and repositories, the CARE Principles extend that work to actions that align with the ‘people’ and ‘purpose’ for which data exist and are used.”

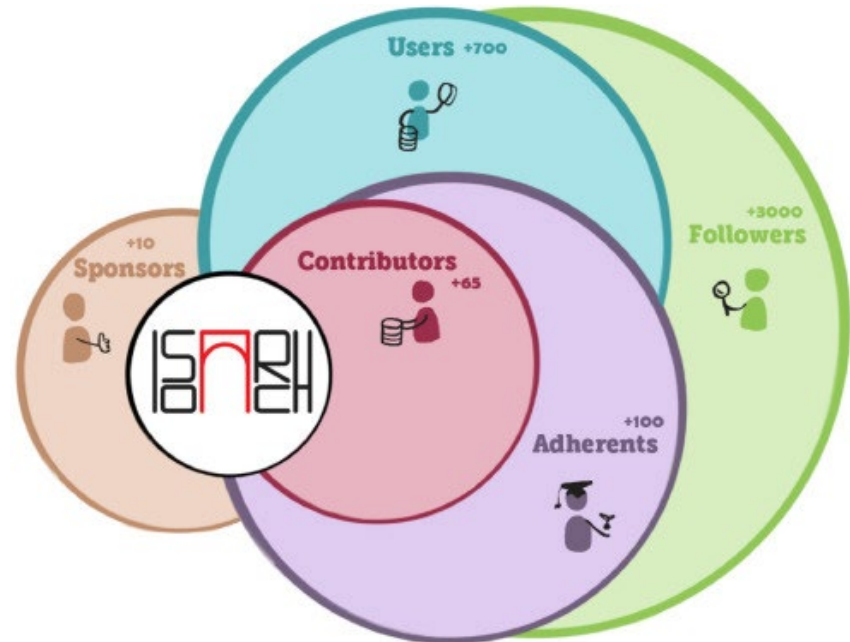
● *IsoArcH community*

The IsoArcH circles

The IsoArcH community is composed of five different, but not mutually exclusive, types of engaged members:

- 1) *adherents,*
- 2) *contributors,*
- 3) *users,*
- 4) *followers, and*
- 5) *sponsors.*

Together, they constantly reshape the semantics and dynamics of the IsoArcH initiative.



● *IsoArcH community*

More than a database: an association

The objects of the Association are: 1. the study of humans, their activities, their cultures and their environment by biogeochemical and, in particular, isotopic analyses; 2. the scientific and technical support of a free online database, entitled « IsoArcH Database » and accessible at www.isoarch.eu; 3. facilitating access to analytical platforms or tools, and the transfer of knowledge and technical knowledge related to archaeological sciences; 4. the organization of study days and cultural events to work towards scientific emulation and ensure the promotion and dissemination of results in these areas of research.

President: Dr. Kevin Salesse

Vice-President: Dr. Lisette Kootker

General Secretary: Dr. Esther Plomp

Treasurer: Dr. Francesca Fulminante

Communication Officer: Dr. Chris Stantis

Membership

Over 100 members

Memberships:

25€/calendar year (Individual)

500 €/calendar year (Institutional)

*Crucial financial and
scientific support*

An active community

Benefits available



JOIN US 🙌

The IsoArcH association is open to all, without distinction of any kind. By signing up for membership, a member agrees to adhere to the articles of the Association. The membership is per calendar year and is non-refundable except for technical issues.

The annual fee subscription is fixed at 25€. It can be paid by bank transfer to the Euro bank account of the association :

- Beneficiary : **IsoArcH Association**
- IBAN / BIC: **FR76 1679 8000 0100 0017 2082 486 / TRZOFR21XXX**
- Payment details: "IsoArcH - Membership ____ (include year) for ____ (give your name)"
- Bank address : **41 Rue de Prony, 75017 Paris, France**

Or by PayPal or TransferWise instant money transfer using the following email address: **contact@isoarch.eu**.

The registration request will be automatically approved and publicly announced on social media (Twitter and Facebook).

[Read legal articles](#)

[Membership form](#)



UNIVERSIDADE
FEDERAL
DE PERNAMBUCO



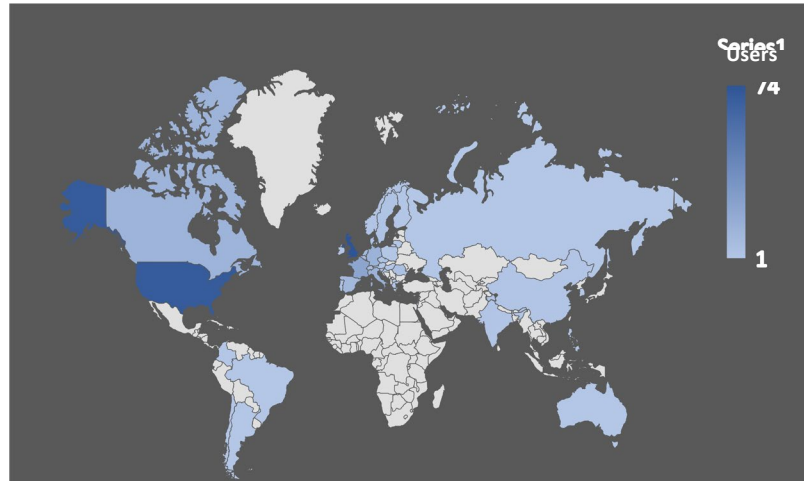
● *IsoArch* community

IsoArch users through the world

Follow their example and join us!

A tool designed for you!

700+ registered users on IsoArch



Distribution of IsoArch users all around the world



Follow us on Twitter:

@isoarch_eu

1659 followers



Follow us on Facebook:

@isoarch

1362 followers

Highlights on sponsors

A 4-year agreement with the Elsevier's journal Data in Brief

Article processing charge (APC) waiver for IsoArch members willing to publish a data article!



\$530 ⓘ

Article Publishing Charge
for open access

10 weeks

Review Time

0.8 weeks

Publication Time

45%

Acceptance Rate



View all insights

Editors-in-Chief | [View full Editorial Board](#)



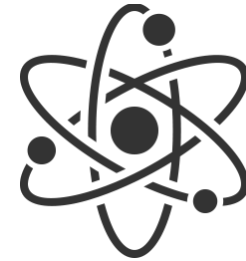
Nicholas Pullen, PhD

University of Northern Colorado, Greeley, Colorado, United States of America



Noemi Sinkovics, PhD

University of Glasgow Adam Smith Business School, Glasgow, United Kingdom



WHAT'S NEXT?



● *Future directions*

Need to develop backup & recovery solutions



https://fr.wikipedia.org/wiki/Incendie_du_centre_de_donn%C3%A9es_d%27OVHcloud_%C3%A0_Strasbourg



A dark year: 2021...

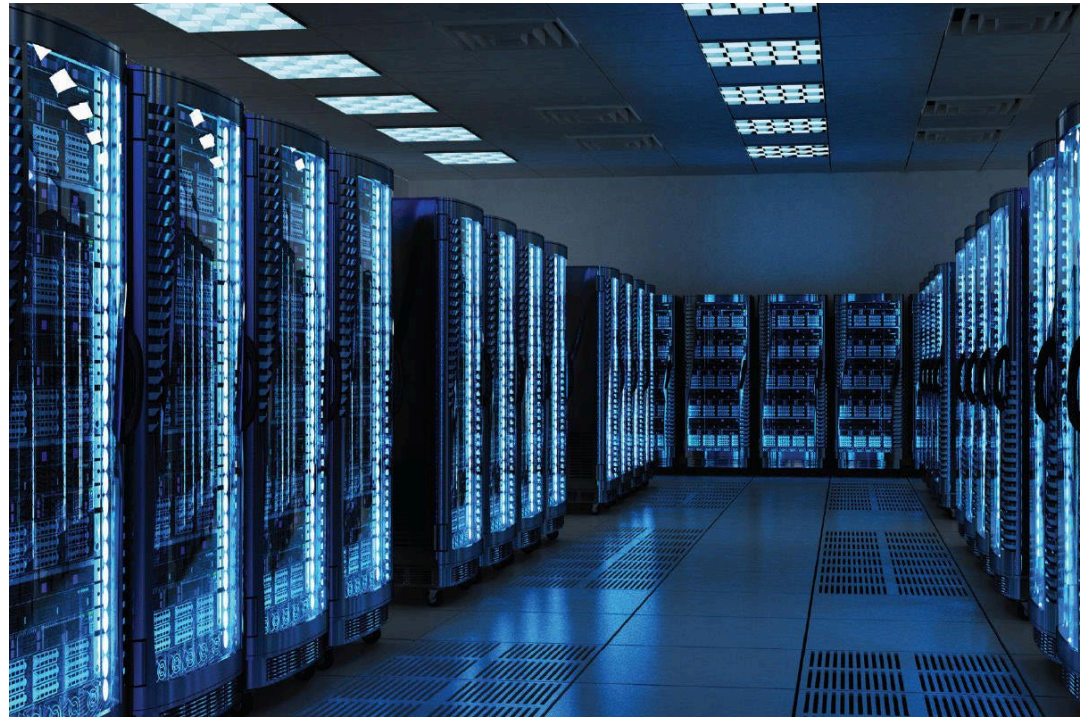
● *Future directions*

Transfer to MUNI servers

M U N I Masaryk
University

*The involvement of academic institutions adds credibility to the initiative, as researchers tend to place higher **trust** in academic institutions compared to the broader "web" sources.*

IsoArcH will be included in the roster of databases approved by MUNI.



● *Future directions*

Making use

The tip is still growing...



THE DATA INSIGHTS ICEBERG

TURN THE DATA INTO USEFUL INFORMATION:

- Insights
- Dashboards
- Share blended data sets – removing some of the below steps for others

BLEND THE DIFFERENT DATA SETS FOR USE IN PRODUCING INSIGHTS:

- Joining / blending data sets – ETL
- Checking blended data sets for accuracy & suitability
- Automation

SOURCE AND ANALYSE THE DATA:

- Sourcing the required data – often multiple iterations
- Analysing and understanding the data sets

WHAT DO USERS WANT AND WHERE CAN IT BE FOUND?

- Gathering and understanding user requirements
- Investigating source systems / navigating the IT organisation to find the data to meet requirements

● *Future directions*

Bolstering the community

Journal of Archaeological Science: Reports 33 (2020) 102513



Contents lists available at [ScienceDirect](#)

Journal of Archaeological Science: Reports

journal homepage: www.elsevier.com/locate/jasrep



Ancient Mediterranean isotopic studies



JASRep special issue (2020)
By R. Fernandes & K. Salesse



Contents lists available at [ScienceDirect](#)

Data in Brief

journal homepage: www.elsevier.com/locate/dib



Data Article

DiB special Issue (2021-2022)
“IsoArch best practices for managing and sharing data”
By K. Salesse

More initiatives to come...

● *Future directions*

Bolstering the community



Gamification is about improving the actual user engagement in the database logic system, by encouraging users to spend more time and resources than expected, by rewarding them through the Status-Access-Power-Stuff (SAPS) model.

● *Future directions*

Becoming a trusted repository



ELSEVIER

IsoArch is in the Elsevier list of trusted databases

2021

FAIRsharing.org
standards, databases, policies

<https://fairsharing.org/bio/dbcore-001834/>

2022

re3data.org
REGISTRY OF RESEARCH DATA REPOSITORIES

2023



Global Directory of Open Access Repositories



IsoArch could work to obtain a CoreTrustSeal certification

● *Best practices*

Data accessibility

Manuscript:

“When you publish a research paper, you are also simultaneously publishing the data that supports your work. **The readers of your article have equal rights to see both the words and the numbers – they are inseparable.**”

“**We need the numbers** – all the numbers – behind the published figures, graphs, contour plots etc. And these need to be specific; that is not averages within regions and so on. Your readers may well wish to re-plot these data to test a pet theory, or to assign them as a class problem, or to combine the results in a major review article.”

Peter Brewer, Editor-in-Chief of *JGR: Oceans* and Monterey Bay Aquarium Research Institute
<https://eos.org/editors-vox/do-you-expect-me-to-just-give-away-my-data>

Why should I share my data with IsoArcH when it is included in my article?

Supplementary files:

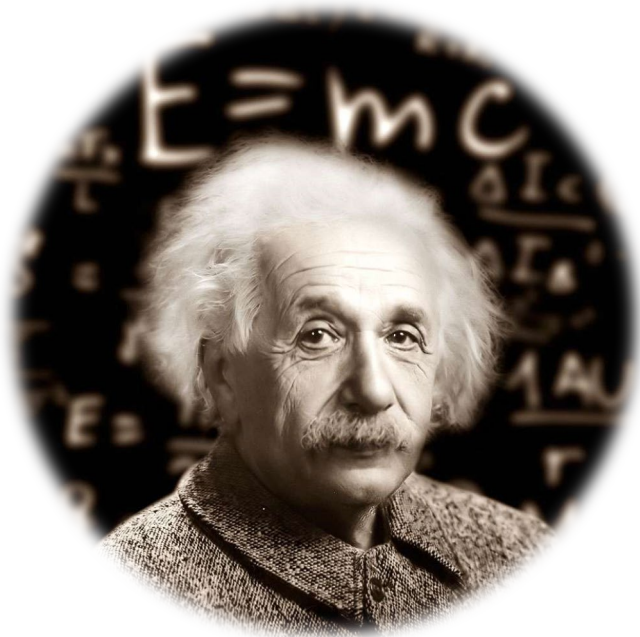
Supplementary material is a ubiquitous feature of scientific articles, particularly in journals that limit the length of the articles. While the judicious use of supplementary material can improve the readability of scientific articles, its excessive use threatens the scientific review process and by extension the integrity of the scientific literature. In many cases supplementary material today is so extensive that it is **reviewed superficially or not at all**. Furthermore, citations **buried within supplementary** files rob other scientists of recognition of their contribution to the scientific record.

Pop & Salzberg, 2015
(BMC Bioinformatics)
10.1186/s12859-015-0668-z

● *Best practices*

Openness

Openness is one of the most important principles in scientific inquiry, but there are many good reasons for maintaining secrecy in research.



“By academic freedom I understand the right to search for the truth and to publish and teach what one holds to be true. This right also implies a duty; one must not conceal any part of what one has recognized to be true. It is evident that **any restriction of academic freedom serves to restrain the dissemination of knowledge**, thereby impeding rational judgment and action.”

Albert Einstein, quotation inscribed on his statute in front of the National Academy of Sciences, Washington, DC.

● *Best practices*

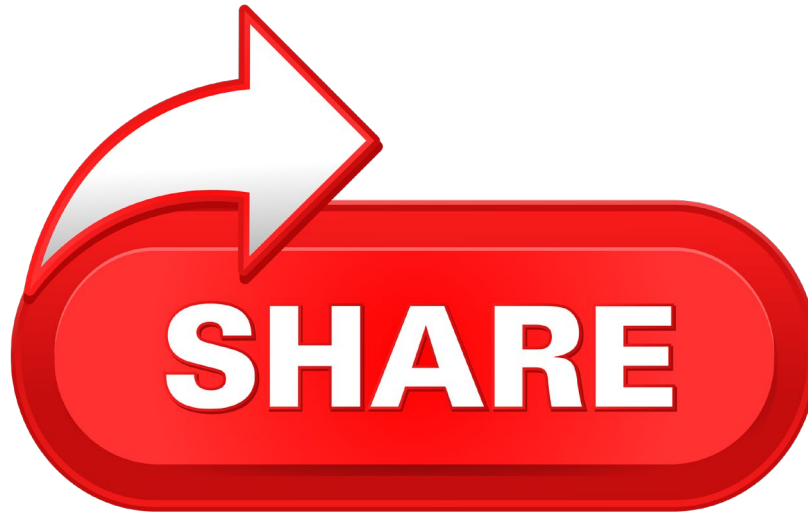
Moving forward

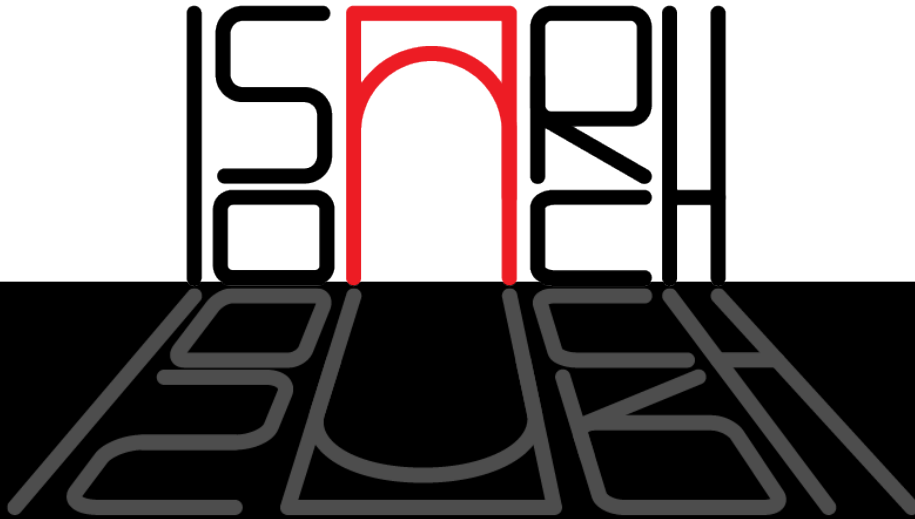
Data access is critical to empirical research, but past work on open access is largely restricted to the life sciences and has not directly analyzed the impact of data access restrictions. We analyze the impact of improved data access on the quantity, quality, and diversity of scientific research. [...] **Our results suggest that improved access to scientific data can lead to a large increase in the quantity and quality of scientific research. Further, better data access disproportionately enables the entry of scientists with fewer resources, and it promotes diversity of scientific research.**

Nagaraj et al., 2020 (PNAS)
doi.org/10.1073/pnas.2001682117

● *Best practices*

A keyword





Thank You

Dr. Kevin Salesse