Digital Assets Management via MCZbase at the Harvard Museum of Comparative Zoology
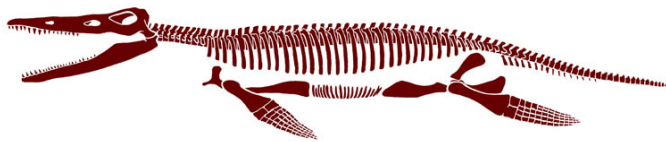
Brendan Haley, Paul Morris, Linda S. Ford & James Hanken

Quick History/Overview of MCZbase

- Installed in 2008 as sole collections data management system for MCZ, including Special Collections; ten collections migrated by 2011.

- Third, originally identical instance of Arctos platform; subsequently managed and enhanced independently at MCZ.

- Data types include primary voucher specimen information (e.g., Darwin core), plus cryo samples, gene sequences, audio and video recordings, primary literature, fieldnotes and images (2D and 3D).

- Links to data aggregators: iDigBio, GBIF, EOL, etc.

- Dynamic linking with GenBank, BHL, special projects and other museum records.

- 2,204,308 records as of 21 January 2020.

MUSEUM OF COMPARATIVE ZOOLOGY

HARVARD UNIVERSITY

Under the Hood

- MCZ storage and MCZbase servers (development and production) maintained by Harvard FAS Research Computing (FASRC).

- Database housed on Dell PowerEdge R440 server running Oracle 11g; web-based front-end application runs in Coldfusion11 on separate virtual machine.

- FASRC storage is "highly available networked storage application" (Lustre Network Storage).

- MCZbase software: GitHub used for collaborative development; Zenodo used for archiving software versions.

- Full DB export archived biweekly on FASRC storage.

- Snapshots of MCZbase dataset (Darwin Core Archives produced by IPT) will be deposited to Harvard Dataverse (Harvard University Library Systems).

- Specimen/occurrence data, media metadata and metadata for discovery are shared through MCZ's IPT instance.

- DB bug reports done via Bugzilla; DB project management done via Redmine.

MUSEUM OF COMPARATIVE ZOOLOGY

HARVARD UNIVERSITY

Operational Assumptions of the MCZ

- Responsible for own material (historical and future)
  - Depository of record for specimens, metadata and augmented data
  - Responsible for tracking specimen usage
- Collaborate robustly with research and specialized projects
  - Encourage enhancement of MCZ data
  - Tether enhanced data back to original specimen data
- Integrate seamlessly among internal, external within Harvard, and external resources
  - Increases discoverability and usability of data
  - Allows dynamic linking with open software as new resources emerge
  - Ensures conservation of original material, plus data consistency and integrity

Search   Enter Data   Manage Data   Manage Arctos   Reports   My Stuff   Help

Invertebrate Zoology 135079 ☒
Cyphophthalmus solentiensis

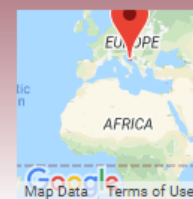Holotype of *Cyphophthalmus solentiensis*

whole animal (95% ethanol)
Report Bad Data

Bratska jama (Cave), Gornje Selo, Šolta Island, Hrvatska; map76CSx
Europe: Croatia
2012 (2012-01-01 - 2012-08-31)
BerkeleyMapper ☒
Use ctrl+scroll wheel on your mouse or double click
to zoom in on the map to see coordinate uncertainty. ℹ

Map Data   Terms of Use

|◀ ◀ | Taxa | Accn | Pick New Coll Event | Locality | Agents | Relations | Parts | Part Locn. | Attributes | Other IDs | Media | Encumbrances | Catalog | ▶ ▶|

Identifications   Edit

Cyphophthalmus solentiensis Dreszer, Radja & Giribet, 2015
Animalia Arthropoda Arachnida Opiliones Cyphophthalmi Sironoidea Sironidae Cyphophthalmus solentiensis
Identified by Gonzalo Giribet
Nature of ID: type ID

Cyphophthalmus
Animalia Arthropoda Arachnida Opiliones Cyphophthalmi Sironoidea Sironidae Cyphophthalmus
Identified by Tone Novak
Nature of ID: expert ID

Citations

Dreszer et al. 2015, Page 6, Holotype of *Cyphophthalmus solentiensis*
also page 3 Table 1

Giribet et al. 2017, Voucher of *Cyphophthalmus solentiensis*
Table 1; Figures 2-4

text (application/pdf)
Media Details
Breviora no. 543

Locality and Collecting Event Details   Edit

Continent/Ocean: Europe
Country: Croatia
Specific Locality: Bratska jama (Cave), Gornje Selo, Šolta Island, Hrvatska; map76CSx
Verbatim Locality: Bratska jama (Cave), Gornje Selo, Šolta Island, Hrvatska, Croatia
Collecting Source: wild caught
Coordinates: 43° 20.685´ N 16° 20.46´ E (Datum: WGS84)   Error: 4 m

Identifiers   Edit

DNA Reference Code: DNA107119
NCBI GenBank number: KJ857519 ☒
NCBI GenBank number: KJ857523 ☒
NCBI GenBank number: KJ857529 ☒
NCBI GenBank number: KJ857533 ☒

Part Details   Edit

Part Name	Condition	Disposition	#	Container Name	Remarks
whole animal (95% ethanol)	unknown	unknown	20	The Museum of Comparative Zoology	1 male for dissected for SEM, 19 Sept. 2012

Remarks: T. Radja; Received: August 2012. 1 male for dissected for SEM, 19 Sept. 2012

Entered By: Laura Leibensperger on 2013-02-12
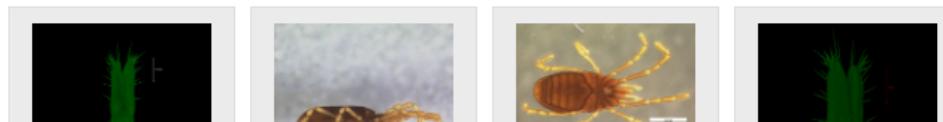
Last Edited By: [no agent data] on 2018-02-28

Accession   Edit

2000083

Media   Edit

Nucleotide   [Nucleotide ▾]   [   ]   [Search]

Advanced   Help

GenBank ▾   Send to: ▾

Cyphophthalmus solentiensis voucher MCZ:IZ:135079 18S ribosomal RNA gene, partial sequence

GenBank: KJ857519.1

FASTA   Graphics   PopSet

Go to: ⊙

```
LOCUS       KJ857519                1763 bp    DNA     linear   INV 19-JAN-2015
DEFINITION  Cyphophthalmus solentiensis voucher MCZ:IZ:135079 18S ribosomal RNA
            gene, partial sequence.
ACCESSION   KJ857519
VERSION     KJ857519.1
KEYWORDS    .
SOURCE      Cyphophthalmus solentiensis
  ORGANISM  Cyphophthalmus solentiensis
            Eukaryota; Metazoa; Ecdysozoa; Arthropoda; Chelicerata; Arachnida;
            Opiliones; Cyphophthalmi; Temperophthalmi; Sironoidea; Sironidae;
            Cyphophthalmus.
REFERENCE   1  (bases 1 to 1763)
  AUTHORS   Dreszer,T.B., Radja,T. and Giribet,G.
  TITLE     Cyphophthalmus solentiensis sp. nov. (Cyphophthalmi, Sironidae), a
            new endogean mite harvestman species from Croatia, with an
            application of confocal laser microscopy to illustrate genitalia in
            Opiliones
  JOURNAL   Breviora 543 (2014) In press
  REMARK    Publication Status: Available-Online prior to print
REFERENCE   2  (bases 1 to 1763)
  AUTHORS   Dreszer,T., Radja,T. and Giribet,G.
  TITLE     Direct Submission
  JOURNAL   Submitted (16-MAY-2014) Musueum of Comparative Zoology, Harvard
            University, 26 Oxford Street, Cambridge, MA 02138, USA
COMMENT     ##Assembly-Data-START##
            Assembly Method       :: Sequencher v. 5
            Sequencing Technology :: Sanger dideoxy sequencing
            ##Assembly-Data-END##
FEATURES             Location/Qualifiers
     source          1..1763
                     /organism="Cyphophthalmus solentiensis"
                     /mol_type="genomic DNA"
                     /specimen_voucher="MCZ:IZ:135079"
                     /type_material="holotype of Cyphophthalmus solentiensis"
                     /db_xref="taxon:1574030"
     rRNA            <1..>1763
                     /product="18S ribosomal RNA"
```

Change region shown ▾

Customize view ▾

Analyze this sequence
Run BLAST
Pick Primers
Highlight Sequence Features
Find in this Sequence

Related information
Taxonomy
BioCollections
PopSet

LinkOut to external resources
SILVA SSU Database
[SILVA]

Recent activity
Turn Off Clear
Cyphophthalmus solentiensis voucher MCZ:IZ:135079 18S ribosomal RNA Nucleotide
See more...

DAM & DB Handling

- Internally through MCZbase
  - Leveraging the media module to track metadata, provenance, file location and integrity (md5/hash)
  - Independent full archival DAM (e.g., Fedora, DSpace) under review to enhance current system
- Fully integrated DAM and collections data management (will not change with enhancement)

Media Handling (2D, 3D, etc.)

- Criteria for handling depends on desired functionality
- May be linked internal, external (w/in Harvard) and external
- 2D
  - Internal: specimen images, x-rays, audio, video and digital microscope images (Keyence)
  - External (w/in Harvard): DRS for ledger scans and fieldnotes; SlideAtlas for microslide scans (open in Girder)
  - External: BHL for publications
- 3D
  - Internal: 3D PDFs of microCT and CT scans
  - External: MorphoSource, Aves 3D

MCZBASE: The Database of the Zoological Collections
Museum of Comparative Zoology - Harvard University

Search   Enter Data   Manage Data   Manage Arctos   Reports   My Stuff   Help

Log out heliumcell   (Last login: 21-Jan-2020)

Ichthyology 28730
Halieutopsis tumifrons
whole animal (70% ethanol)
Report Bad Data

Paralectotype of *Halieutopsis tumifrons*
Syntype of *Halieutopsis tumifrons*

off Galapagos Islands
Pacific Ocean: Pacific, Southeast: Ecuador: Galapagos Islands: Galapagos Archipelago
5/4/1891-5/4/1891 (1891-04-05)
BerkeleyMapper

Use ctrl+scroll wheel on your mouse or double click
to zoom in on the map to see coordinate uncertainty.

Taxa | Accn | Pick New Coll Event | Locality | Agents | Relations | Parts | Part Locn. | Attributes | Other IDs | Media | Encumbrances | Catalog

Identifications   Edit

Halieutopsis tumifrons Garman, 1899
Animalia Ch...
Identified ...   ...phalidae Halieutopsis tumifrons
Nature of ...
Remarks ...

Biodiversity Heritage Library

Citations

Garman 1899, Syntype of *Halieutopsis tumifrons*

Bradbury 1962, Paralectotype of *Halieutopsis tumifrons*

Bradbury 1986, Page 6, Figured of *Halieutopsis tumifrons*
Outline showing body shape and ventral patterns of lateral line; 64 mm SL

text (text/html)   text (text/html)   text (text/html)
Media Details   Media Details   Media Details
MCZ Memoirs Vol. XXIV [TEXT]   MCZ Memoirs Vol. XXIV [PLATES]   MCZ Breviora no. 166

MorphoSource

Locality and Collecting Event Details

Continent/Ocean: Pacific Ocean
Country: Ecuador
State/Province: Galapagos Islands
Island Group: Galapagos Archipelago
Specific Locality: off Galapagos Islands
Verbatim Locality: Off Galapagos Islands; 1360 fms
General Habitat: [TEMP: 36°F (b)][SALINITY: M]
Collecting Method: Large Beam Trawl
Collecting Source: wild caught
Depth: 1360 fms
Coordinates: 2° 34′ 0″ N 92° 6′ 0″ W (Datum: unknown) , Error: 0 m
[no agent data]; 2010-03-19; Source: unknown
Collecting Date: 5/4/1891-5/4/1891 (1891-04-05)
Ich. Field Number: ALBA3413

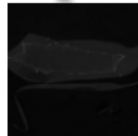**Collectors**   Edit

USFC Steamer Albatross

Identifiers   Edit
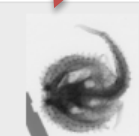
field number: ALBA3413

group number: 298

Part Details   Edit

Part Name	Condition	Disposition	#	Container Name	Remarks
whole animal (70% ethanol)	good	in collection	1	Ich_type-case-15-7	
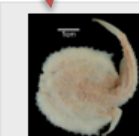
Attributes   Edit

age class: adult

[no agent data]
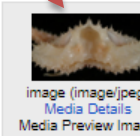
Remarks: In: Mem...   ...Bradbury, 1993 [Breviora, (163) 3] ... available.

Entered By: Horacio Higuchi on 1993-03-01

Edited By: Andrew D. Williston on 2019-03-14

FASRC storage

Harvard DRS

...55

Usage

Loan History: Loans that include this cataloged item (1). 2018-29-Ich (returnable open)

Media   Edit

3D model (text/html)   image (image/jpeg)   image (image/jpeg)   image (image/jpeg)   image (image/jpeg)   text (text/html)
Media Details   Media Details   Media Details   Media Details   Media Details   Media Details
Media Preview Image   Media Preview Image   Media Preview Image   Media Preview Image   Media Preview Image   MCZ Ichthyology Fish 027801-031800, pg.38
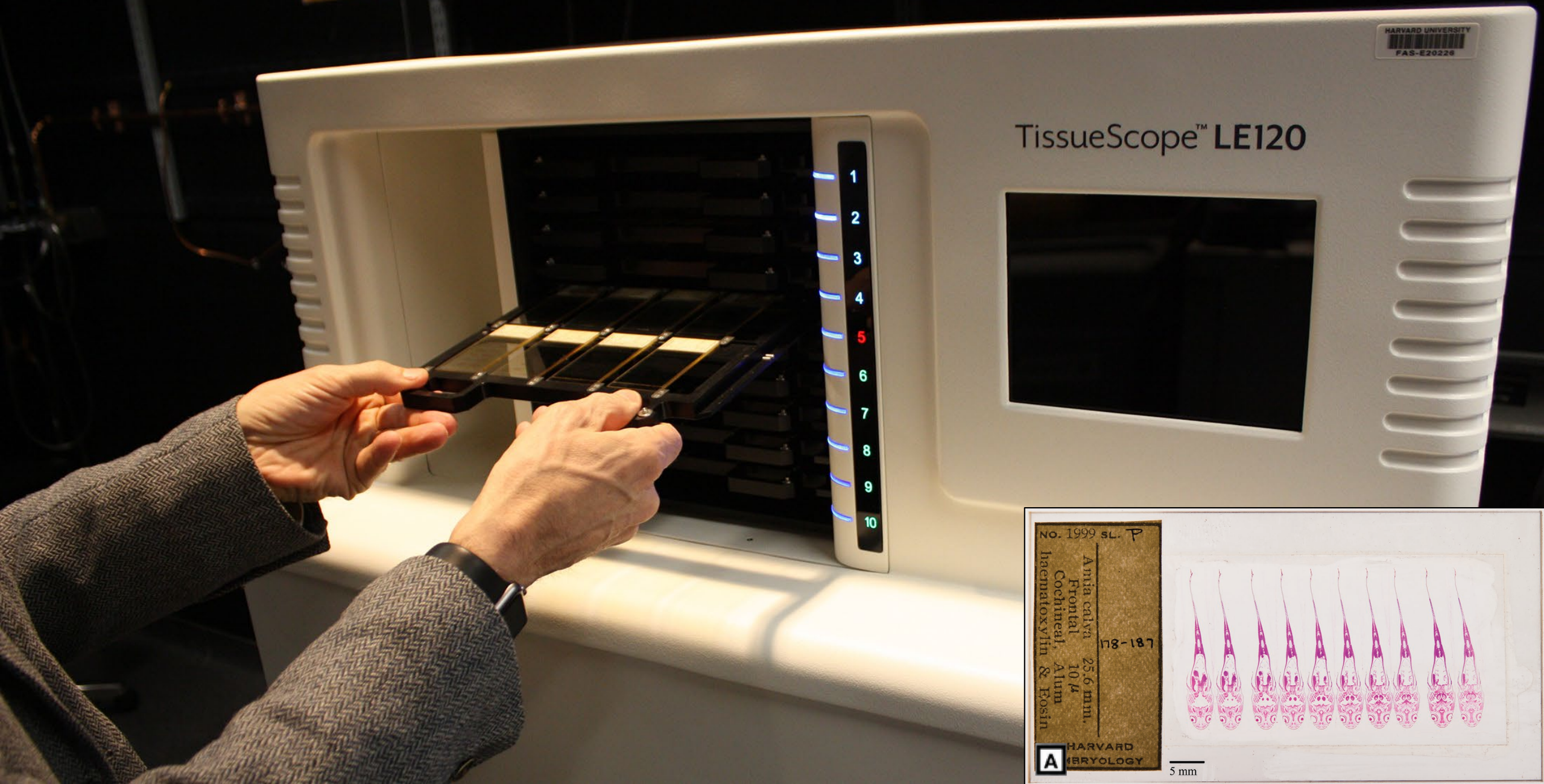
Collection/Department Handling

- Centralized collection DB structure
- Museum-wide protocols recognize idiosyncrasies of different disciplines
  - Facilitate management and unified addressing
  - Ensure scalability
- Internal consistency allows for common-point connection
  - Increases efficiency, response time, unified data sharing (e.g., IPT) and shared goals and initiatives

Loading slide holder into 10-capacity autoloader of Huron scanner

Search   Enter Data   Manage Data   Manage Arctos   Reports   My Stuff   Help   Log out hanken (Last login: 01-Jan-2018)

Special Collections 1995
Chaerephon plicatus
histological serial section (histo
Report Bad Data   Return to results

Java
ral Java Province: Java
1910-02-01 - 1910-02-28)

Identifications

Chaerephon plicatus (Buch
Animalia Chordata Mammalia C
Identified by [no agent da
Nature of ID: legacy
Remarks: Choerophon pl

Locality and Collecting Event Detail

Continent/Ocean: Asia
Country: Indones
State/Province: Central
Island: Java
Specific Locality: Java
Verbatim Locality: Java.
Collecting Method: unknow
Collecting Source: unknow
Collecting Date: Prepare

Collectors

Owen F. Bryant

Media   Edit

image (text/html)
Media Details
HEC-1606 slide A

image (text/html)
Media Details
HEC-1606 slide C

image (text/html)
Media Details
HEC-1606 slide D

image (text/html)
Media Details
HEC-1606 slide E

image (text/html)
Media Details
HEC-1606 slide F

image (text/html)
Media Details
HEC-1606 slide G

image (text/html)
Media Details
HEC-1606 slide H

image (text/html)
Media Details
HEC-1606 slide J

HEC 16
- *Chae*
  free-
- Colle
- Slides prepared in February 1910

Welcome to SlideAtlas

Users: Sign in Register Guest
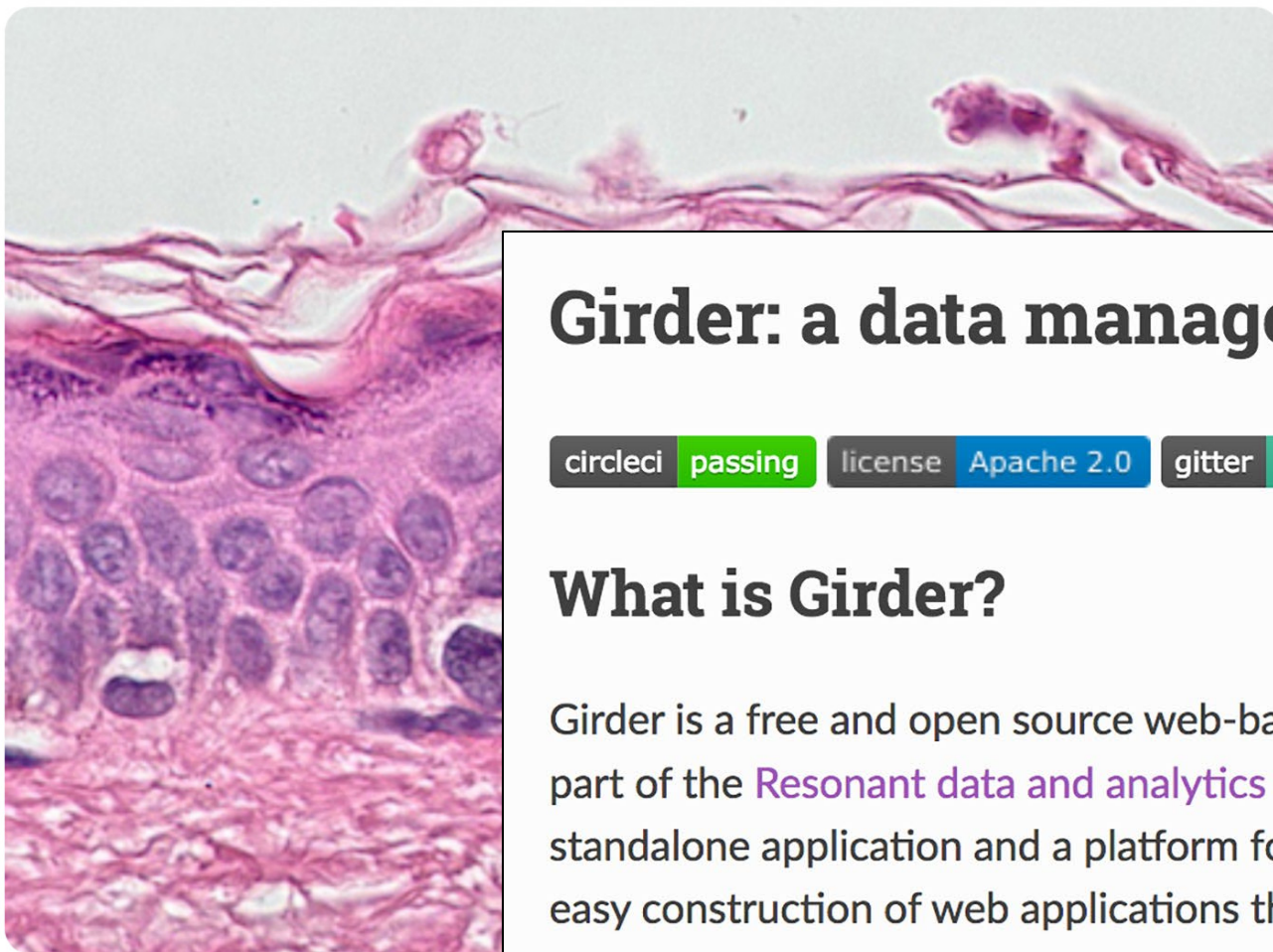
Girder: a data management platform

circleci passing   license Apache 2.0   gitter join chat   discourse forum   coverage 90%   ⬡ GitHub 161

What is Girder?

Girder is a free and open source web-based **data management platform** developed by Kitware as part of the Resonant data and analytics ecosystem. What does that mean? Girder is both a standalone application and a platform for building new web services. It's meant to enable quick and easy construction of web applications that have some or all of the following requirements:

Girder

- 🖧 Collections
- 👤 Users
- 👥 Groups

MCZ / MCZ SC-1995 / HEC-1606 (free-tailed bat)   ⬆

M   ▤ Actions ▾

ℹ Info

🖴 865.0 MB (907040710 bytes)

🕐 Created on March 9, 2017 at 15:22:20

🕐 Updated on March 10, 2017 at 8:53:13

🖼 Image Viewer   SlideAtlas ▾

🏷 Metadata

⎘ Files & links

📄 HEC1606_9_S04.tif 👁 ℹ | 865.0 MB

About   Contact   Web API   Report a bug

© Kitware, Inc.

? Choerophon plicatus (Blythe)

1606 A

"Palaboean Ratoe"

Bat #1.

Bat, Java Exp. #325.

13.4 mm trans.

× 7½

Plane of section.

Bat, Java Exp. 325

1606 B   13.4 mm. trans.

HARVARD EMBRYOLOGICAL COLLECTION

EMBRYO— Free tail bat
(Choerophon plicatus?)   **DATE,** II,1910   **NO.** 1606

LENGTH— 13.4 mm

AGE—

FIXATION— Formaline

SECTIONS— Transverse   10 μ.

STAIN— Alum cochineal and
orange G.

HISTORY—

REMARKS— Drawings 1606 A, B.
Coll. Owen Bryant #325, Java.

PUBLICATIONS—