EXPERIMENTAL - bloxberg Blockchain ②

Certification of metadata file on the bloxberg blockchain

Internal JSON

External JSON

Dataset:

FRIM - Fruit Integrative Modelling

bloxberg Server URL:

https://certify.bloxberg.org/

Wallet bloxberg:

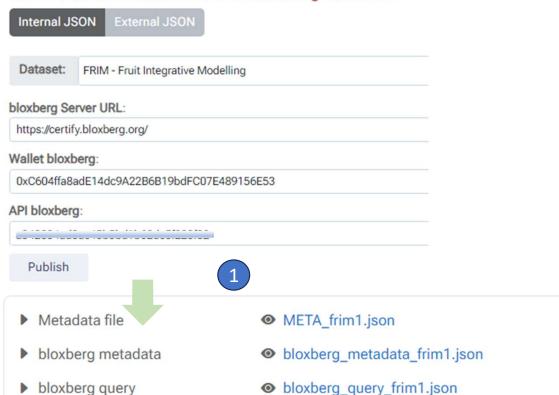
0xC604ffa8adE14dc9A22B6B19bdFC07E489156E53

API bloxberg:

Publish

EXPERIMENTAL - bloxberg Blockchain 2

Certification of metadata file on the bloxberg blockchain



EXPERIMENTAL - bloxberg Blockchain ②

Certification of metadata file on the bloxberg blockchain

Internal JSON

External JSOI

Dataset:

FRIM - Fruit Integrative Modelling

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https://certify.bloxberg.org/

Wallet bloxberg:

0xC604ffa8adE14dc9A22B6B19bdFC07E489156E53

API bloxberg:

Publish

1

- Metadata file
- bloxberg metadata
- bloxberg query

- META_frim1.json
- bloxberg_metadata_frim1.json

],

▼ "producer": [

"Bordeaux Metabolome"

bloxberg_query_frim1.json

```
Metadata File
 "profile": "https://pmb-bordeaux.fr/maggot/conf/maggot-schema.json",
 "title": "frim1",
 "fulltitle": "FRIM - Fruit Integrative Modelling",
 "license": "Etalab V2.0 license",
 "depositor": "Jacob Daniel",
 "publication_idnumber": "10.1104/pp.113.231241",
 "publication_url": "https://doi.org/10.1104/pp.113.231241",
 "description": "The project aimed to build a virtual tomato fruit that enables the prediction of
 metabolite levels given genetic and environmental inputs, by an iterative process between laboratories
 which combine expertise in fruit biology, ecophysiology, theoretical and experimental biochemistry, and
 biotechnology.",
 "publication_citation": "Biais B, Bénard C, Beauvoit B, Colombié S, Prodhomme D, Ménard G, Bernillon S,
 Gehl B, Gautier H, Ballias P, Mazat J-P, Sweetlove L, Génard M, Gibon Y. 2014. Remarkable reproducibility
 of enzyme activity profiles in tomato fruits grown under contrasting environments provides a roadmap for
 studies of fruit metabolism. Plant Physiology 164, 1204-1221",
 "status": "Processed".
 "access rights": "Public",
 "publication_idtype": "doi",
 "contacts": [
     "Gibon Yves"
 ],
 "authors": [
     "Bénard Camille",
     "Biais Benoit",
     "Beauvoit Bertrand",
     "Colombié Sophie"
 "collectors": [
     "Bénard Camille",
     "Biais Benoit",
     "Ballias Patricia",
     "Maucourt Mickaël"
▼ "curators": [
     "Moing Annick",
     "Jacob Daniel"
 ],
"leader": [
     "Gibon Yves"
 ],
"wpleader": [
     "Vercambre Gilles"
```

EXPERIMENTAL - bloxberg Blockchain ② Certification of metadata file on the bloxberg blockchain

Internal JSON External JSON

Dataset: FRIM - Fruit Integrative Modelling

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https://certify.bloxberg.org/

Wallet bloxberg:

0xC604ffa8adE14dc9A22B6B19bdFC07E489156E53

API bloxberg:

Publish

- ▶ Metadata file
- bloxberg metadata
- bloxberg query

META_frim1.json

bloxberg_metadata_frim1.json

bloxberg guery frim1.json

Metadata of the Metadata File

```
"@context": {
     "dc": "http://purl.org/dc/terms/"
 "@type": "Dataset",
 "dc:creator": "https://orcid.org/0000-0001-8161-1089",
 "dc:language": "en",
 "dc:format": "application/json",
 "dc:title": "FRIM - Fruit Integrative Modelling",
 "dc:subject": "https://id.loc.gov/authorities/subjects/sh96000740",
 "dc:date": "2023-11-27T16:17:11.3629640Z",
 "dc:description": "The project aimed to build a virtual tomato fruit that enables
 the prediction of metabolite levels given genetic and environmental inputs, by an
 iterative process between laboratories which combine expertise in fruit biology,
 ecophysiology, theoretical and experimental biochemistry, and biotechnology.",
 "dc:publisher": [
     "https://ror.org/00ccpdp17"
 "dc:rights": "http://spdx.org/licenses/CC-BY-NC-SA-4.0.json",
"dc:identifier": {
     "@value": "https://pmb-bordeaux.fr/maggot/metadata/frim1?format=maggot",
     "@type": "http://purl.org/dc/terms/URI"
```

EXPERIMENTAL - bloxberg Blockchain 2

Certification of metadata file on the bloxberg blockchain

Internal JSON

External JSOI

Dataset:

FRIM - Fruit Integrative Modelling

bloxberg Server URL:

https://certify.bloxberg.org/

Wallet bloxberg:

0xC604ffa8adE14dc9A22B6B19bdFC07E489156E53

API bloxberg:

Publish

1

- Metadata file
- bloxberg metadata
- bloxberg query

- META_frim1.json
- bloxberg_metadata_frim1.json
- bloxberg_query_frim1.json

```
"@context": {
    "dc": "http://purl.org/dc/terms/"
},

"@type": "Dataset",
"dc:creator": "https://orcid.org/0000-0001-8161-1089",
"dc:language": "en",
"dc:format": "application/json",
"dc:title": "FRIM - Fruit Integrative Modelling",
"dc:subject": "https://id.loc.gov/authorities/subjects/sh96000740",
"dc:date": "2023-11-27T16:17:11.3629640Z",
"dc:description": "The project aimed to build a virtual tomato fruit that enables
```

the prediction of metabolite levels given genetic and environmental inputs, by an iterative process between laboratories which combine expertise in fruit biology,

ecophysiology, theoretical and experimental biochemistry, and biotechnology.",

"dc:publisher": [
 "https://ror.org/00ccpdp17"
],
"dc:rights": "http://spdx.org/licenses/CC-BY-NC-SA-4.0.json",
"dc:identifier": {
 "@value": "https://pmb-bordeaux.fr/maggot/metadata/frim1?format=maggot",
 "@type": "http://purl.org/dc/terms/URI"

Request

Metadata of the

```
"publicKey": "0xC604ffa8adE14dc9A22B6B19bdFC07E489156E53",
    "ae008cc8ebd20834befa9442db0e59d53effe5ba6cbb8612f9544f8be2fec2b0"
],
"cridType": "sha2-256",
"enableIPFS": false,
"metadataJson": "{ \"@context\": { \"dc\": \"http://purl.org/dc/terms/\" }, \"@type\": \"Dataset\",
\"dc:creator\": \"https://orcid.org/0000-0001-8161-1089\", \"dc:language\": \"en\", \"dc:format\":
\"application/json\", \"dc:title\": \"FRIM - Fruit Integrative Modelling\", \"dc:subject\":
\"https://id.loc.gov/authorities/subjects/sh96000740\", \"dc:date\": \"2023-11-
27T16:17:11.3629640Z\", \"dc:description\": \"The project aimed to build a virtual tomato fruit
that enables the prediction of metabolite levels given genetic and environmental inputs, by an
iterative process between laboratories which combine expertise in fruit biology, ecophysiology,
theoretical and experimental biochemistry, and biotechnology.\", \"dc:publisher\":
[\"https://ror.org/00ccpdp17\"], \"dc:rights\":\"http://spdx.org/licenses/CC-BY-NC-SA-4.0.json\",
\"dc:identifier\": { \"@value\": \"https://pmb-bordeaux.fr/maggot/metadata/frim1?format=maggot\",
\"@type\": \"http://purl.org/dc/terms/URI\" }}"
```

Certification of metadata file on the bloxberg blockchain Internal JSON External JSON Dataset: FRIM - Fruit Integrative Modelling bloxberg Server URL: https://certify.bloxberg.org/ Wallet bloxberg: 0xC604ffa8adE14dc9A22B6B19bdFC07E489156E53 API bloxberg:

Publish

Metadata file

bloxberg query

bloxberg metadata

● META_frim1.json ← Hash sha256

bloxberg_metadata_frim1.json

bloxberg_query_frim1.json

Metadata of the Metadata File

```
"dc": "http://purl.org/dc/terms/"
"@type": "Dataset",
"dc:creator": "https://orcid.org/0000-0001-8161-1089",
"dc:language": "en",
"dc:format": "application/json",
"dc:title": "FRIM - Fruit Integrative Modelling",
"dc:subject": "https://id.loc.gov/authorities/subjects/sh96000740",
"dc:date": "2023-11-27T16:17:11.3629640Z",
"dc:description": "The project aimed to build a virtual tomato fruit that enables
the prediction of metabolite levels given genetic and environmental inputs, by an
iterative process between laboratories which combine expertise in fruit biology,
ecophysiology, theoretical and experimental biochemistry, and biotechnology.",
"dc:publisher": [
   "https://ror.org/00ccpdp17"
"dc:rights": "http://spdx.org/licenses/CC-BY-NC-SA-4.0.json",
"dc:identifier": {
 "@value": "https://pmb-bordeaux.fr/maggot/metadata/frim1?format=maggot",
   "@type": "http://purl.org/dc/terms/URI"
```

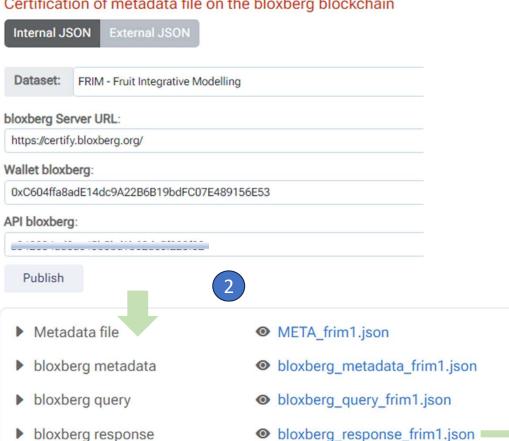
"@context": {

Request

Damei Jacob - Iviaggot - HVIAL 2023

EXPERIMENTAL - bloxberg Blockchain @

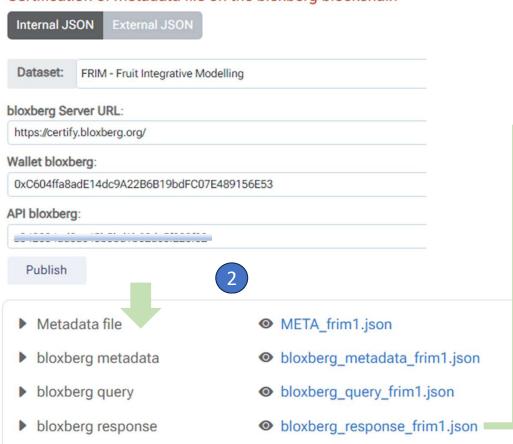
Certification of metadata file on the bloxberg blockchain



```
"@context": [
   "https://www.w3.org/2018/credentials/v1",
   "https://w3id.org/bloxberg/schema/research_object_certificate_v1"
"type": [
   "VerifiableCredential",
   "BloxbergCredential"
"proof": {
   "type": "MerkleProof2019",
  "created": "2023-10-31T08:18:52.993006",
  "proofValue": "z7veGu1qoKR3AS5A6VJKrNwcowzhzPvSz9MSMz8661R7iJ1FtnmVUbSJLwna4b9f4MNsJ634P7m51PW
  KYmUhEowJFpyuYDBmx3AT8bFYP3cQ22kDea7gTYiLRdPtVApgUDwDg86MWozSE4o76FhfDWKUKnTetca5f63Gebifrk8S9
  C9JHxmrJfkuXJvL15aJEHWW2XhE86zYuKHuSPmUrCm8",
   "proofPurpose": "assertionMethod",
  "verificationMethod": "ecdsa-koblitz-pubkey:0xD748BF41264b906093460923169643f45BDbC32e",
   "ens_name": "mpdl.berg"
```

EXPERIMENTAL - bloxberg Blockchain @

Certification of metadata file on the bloxberg blockchain



```
"@context": [
    "https://www.w3.org/2018/credentials/v1",
    "https://w3id.org/bloxberg/schema/research_object_certificate_v1"
"type": [
    "VerifiableCredential",
    "BloxbergCredential"
                                                            Proof of Authority
"proof": {
    "type": "MerkleProof2019",
   "created": "2023-10-31T08:18:52.993006",
   "proofValue": "z7veGu1qoKR3AS5A6VJKrNwcowzhzPvSz9MSMz8661R7iJ1FtnmVUbSJLwna4b9f4MNsJ634P7m51PW
   KYmUhEowJFpyuYDBmx3AT8bFYP3cQ22kDea7gTYiLRdPtVApgUDwDg86MWozSE4o76FhfDWKUKnTetca5f63Gebifrk8S9
   Ro1B4yN4QxF7PRqTPESaiUadffofXiwbxtTiQ7ipTQPuk5auhJbt1Sz4wCj3ELAfL4pYozYBUPVrNJgFWiVQxeTHR1NBqh
   C9JHxmrJfkuXJvL15aJEHWW2XhE86zYuKHuSPmUrCm8",
   "proofPurpose": "assertionMethod",
   "verificationMethod": "ecdsa-koblitz-pubkey:0xD748BF41264b906093460923169643f45BDbC32e",
   "ens name": "mpdl.berg"
```

Transactions and blocks are validated by approved accounts, known as validators.

However the process is automated and does not require validators to be constantly monitoring their computers.

https://en.wikipedia.org/wiki/Proof_of_authority

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Wallet bloxberg:

0xC604ffa8adE14dc9A22B6B19bdFC07E489156E53

API bloxberg:

Publish

3

- Metadata file
- bloxberg metadata
- bloxberg query
- bloxberg response
- bloxberg certificate

- META_frim1.json
- bloxberg_metadata_frim1.json
- bloxberg_query_frim1.json
- bloxberg_response_frim1.json
- bloxberg_certificate_frim1.zip

Success: the metadata file has been certified on the bloxberg blockchain Download the ZIP which contains the corresponding certificate as a PDF file

