# Kaka: Towards a Distributed Genotype Database

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# TOC

- Why?
- How?
- Conclusions and Outview

# Genotype Data in PFR

- Many species: Kiwifruit, Apple, Pear, Potato, Grape, ...
- Divers genotype data: GBS, QTL. ...
- The data is semi structured

# PFR Wetware Distribution

- 14 PFR sites in NZ
- Data exchange across sites challenging
- Analysts distributed as well

# Current way of “Sharing”

- The K-Drive
- Excel Sheets

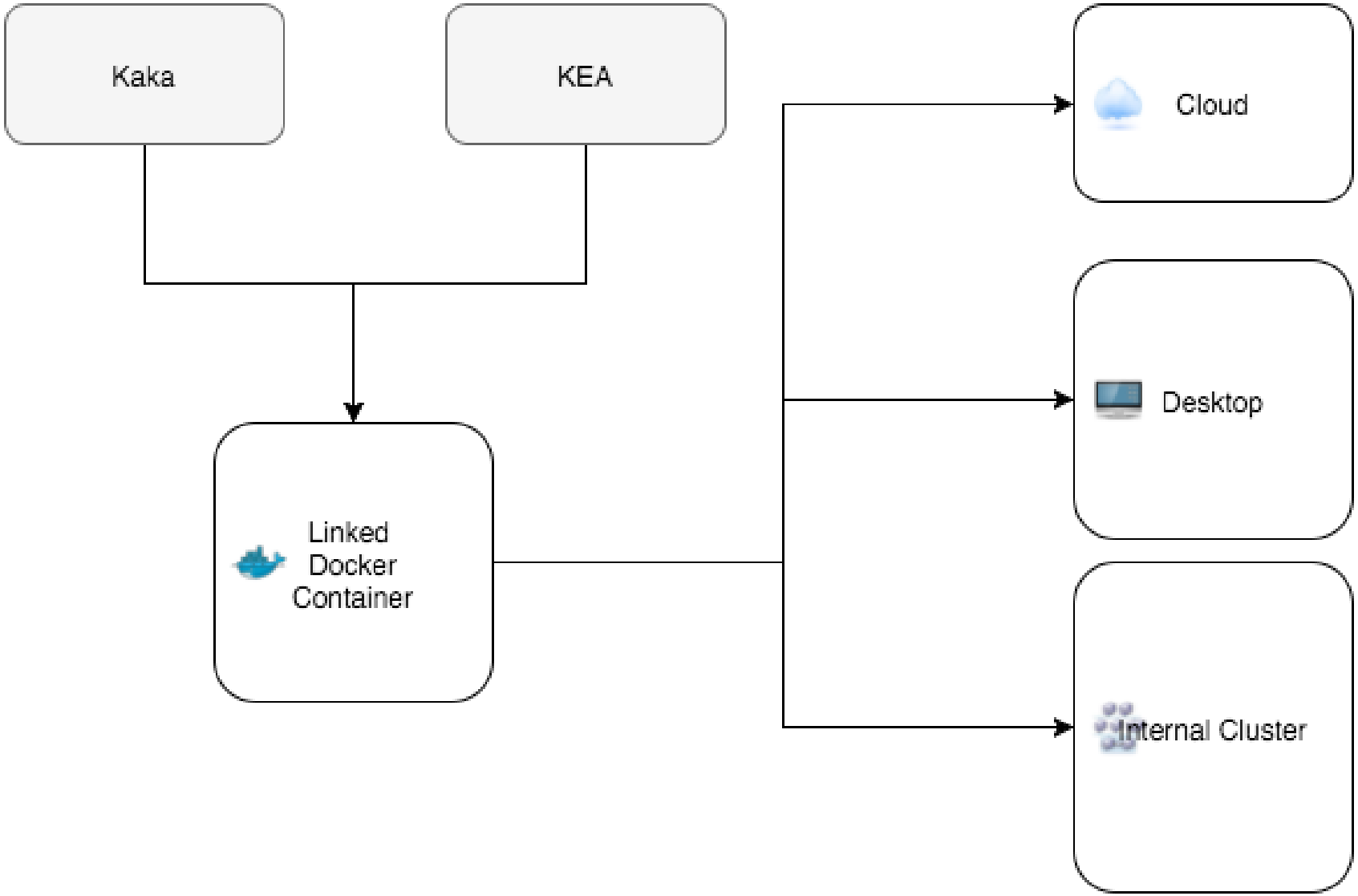
# Database Initiatives in PFR

- EBrida (commercial breeder's DB)
- Kea (inhouse sample tracking)
- Ensembl (Genome Browsing)
- Kaka (Genotypes concentrates on samples)
- Kakapo (Locations)
- ...

# Kaka

- Supplement to Kea
- Python Django
- PGSQL and JSON (NoSQL)
- Continuous integration
- Containerisation
- Needs location (Chr, location on Chromosome)

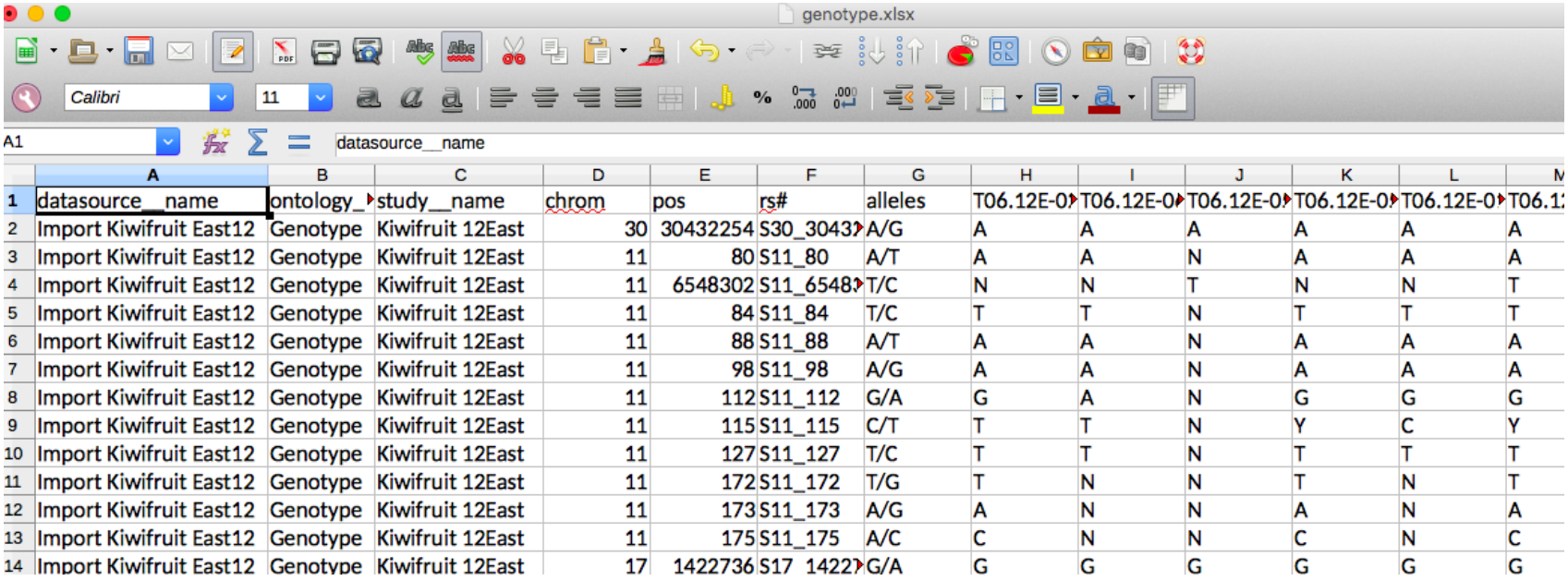
# Distributed DB



# Querying via API

```
http://localhost/report/genotype/xlsx/?experiment=12East
http://localhost/report/genotype/csv/?experiment=12East
http://localhost/gui/genotype/list/
```

# Screenshots




| | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | datasource__name | ontology_ | study__name | chrom | pos | rs# | alleles | T06.12E-0 | T06.12E-0 | T06.12E-0 | T06.12E-0 | T06.12E-0 | T06.1 |
| 2 | Import Kiwifruit East12 | Genotype | Kiwifruit 12East | 30 | 30432254 | S30_30432 | A/G | A | A | A | A | A | A |
| 3 | Import Kiwifruit East12 | Genotype | Kiwifruit 12East | 11 | 80 | S11_80 | A/T | A | A | N | A | A | A |
| 4 | Import Kiwifruit East12 | Genotype | Kiwifruit 12East | 11 | 6548302 | S11_6548 | T/C | N | N | T | N | N | T |
| 5 | Import Kiwifruit East12 | Genotype | Kiwifruit 12East | 11 | 84 | S11_84 | T/C | T | T | N | T | T | T |
| 6 | Import Kiwifruit East12 | Genotype | Kiwifruit 12East | 11 | 88 | S11_88 | A/T | A | A | N | A | A | A |
| 7 | Import Kiwifruit East12 | Genotype | Kiwifruit 12East | 11 | 98 | S11_98 | A/G | A | A | N | A | A | A |
| 8 | Import Kiwifruit East12 | Genotype | Kiwifruit 12East | 11 | 112 | S11_112 | G/A | G | A | N | G | G | G |
| 9 | Import Kiwifruit East12 | Genotype | Kiwifruit 12East | 11 | 115 | S11_115 | C/T | T | T | N | Y | C | Y |
| 10 | Import Kiwifruit East12 | Genotype | Kiwifruit 12East | 11 | 127 | S11_127 | T/C | T | T | N | T | T | T |
| 11 | Import Kiwifruit East12 | Genotype | Kiwifruit 12East | 11 | 172 | S11_172 | T/G | T | N | N | T | N | T |
| 12 | Import Kiwifruit East12 | Genotype | Kiwifruit 12East | 11 | 173 | S11_173 | A/G | A | N | N | A | N | A |
| 13 | Import Kiwifruit East12 | Genotype | Kiwifruit 12East | 11 | 175 | S11_175 | A/C | C | N | N | C | N | C |
| 14 | Import Kiwifruit East12 | Genotype | Kiwifruit 12East | 17 | 1422736 | S17_1422 | G/A | G | G | G | G | G | G |

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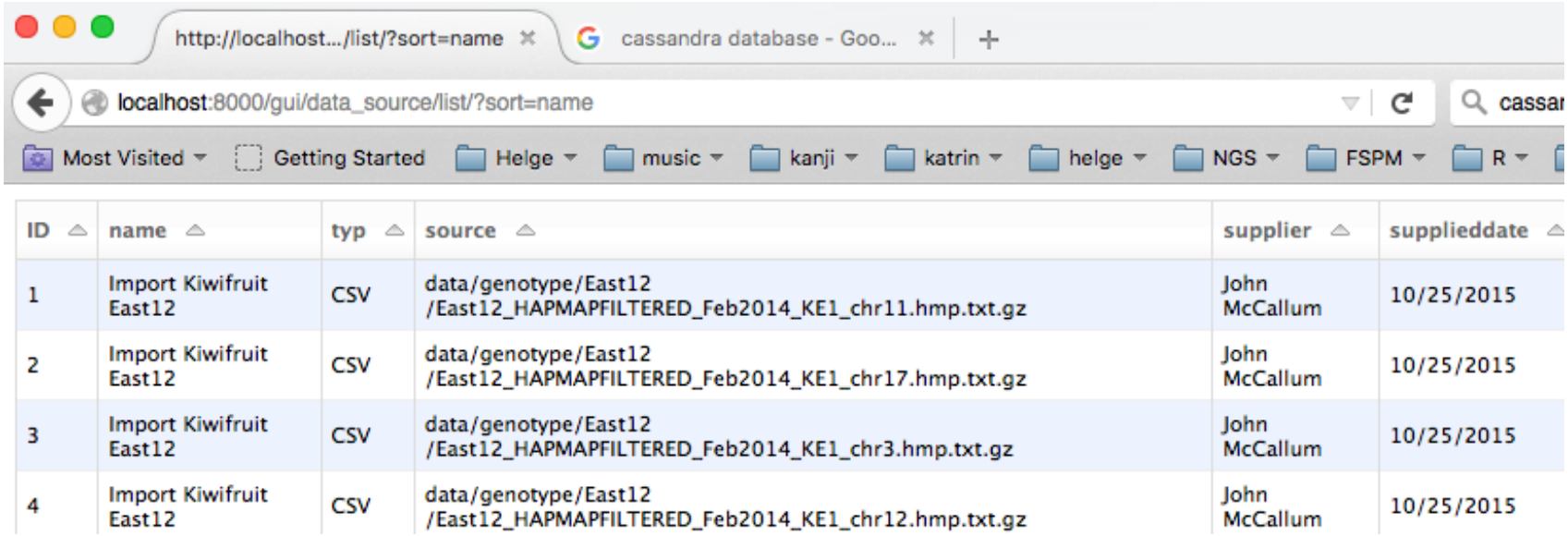


| ID | name | typ | source | supplier | suppliedate |
|---|---|---|---|---|---|
| 1 | Import Kiwifruit East12 | CSV | data/genotype/East12 /East12_HAPMAPFILTERED_Feb2014_KE1_chr11.hmp.txt.gz | John McCallum | 10/25/2015 |
| 2 | Import Kiwifruit East12 | CSV | data/genotype/East12 /East12_HAPMAPFILTERED_Feb2014_KE1_chr17.hmp.txt.gz | John McCallum | 10/25/2015 |
| 3 | Import Kiwifruit East12 | CSV | data/genotype/East12 /East12_HAPMAPFILTERED_Feb2014_KE1_chr3.hmp.txt.gz | John McCallum | 10/25/2015 |
| 4 | Import Kiwifruit East12 | CSV | data/genotype/East12 /East12_HAPMAPFILTERED_Feb2014_KE1_chr12.hmp.txt.gz | John McCallum | 10/25/2015 |

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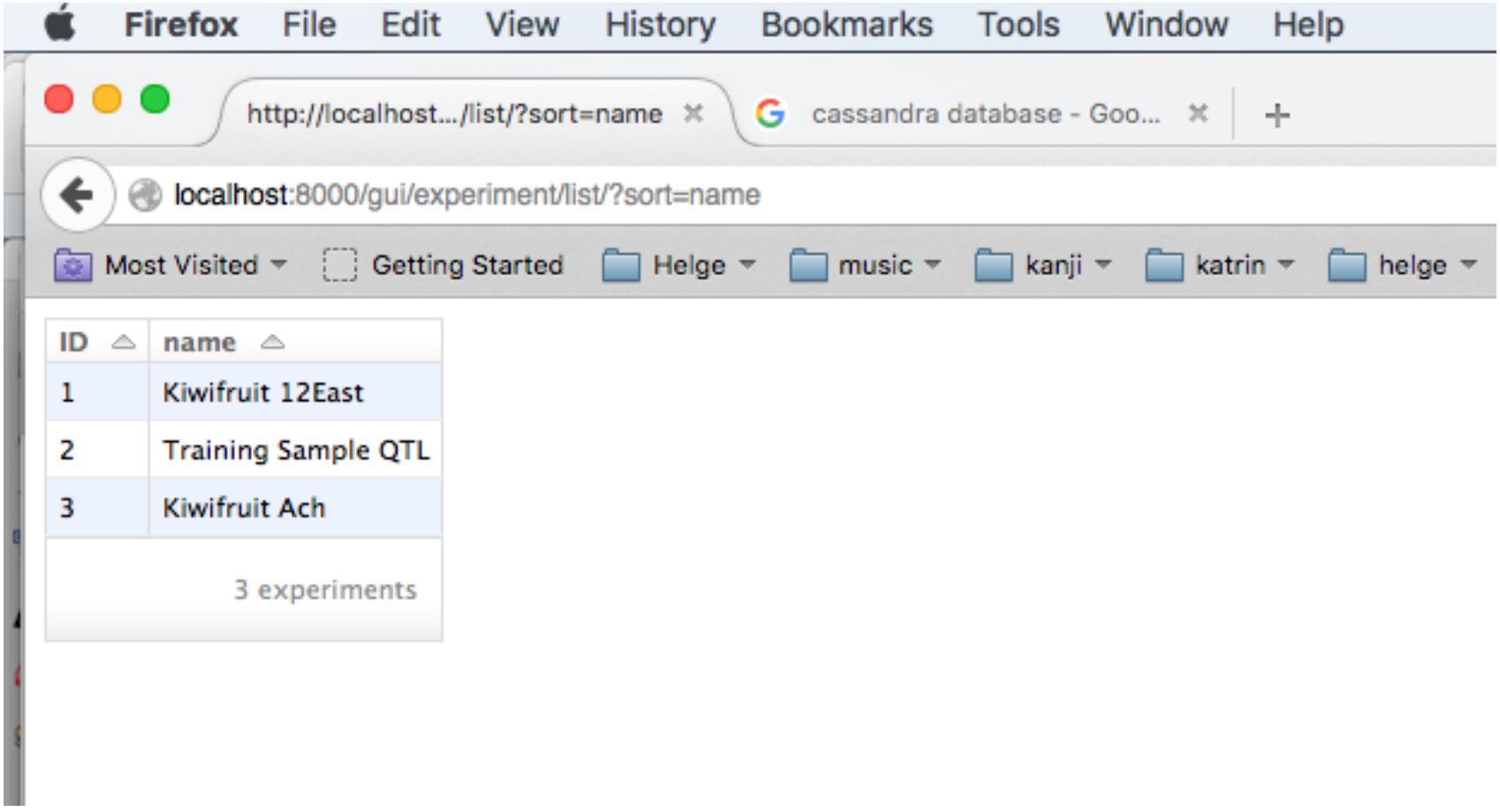

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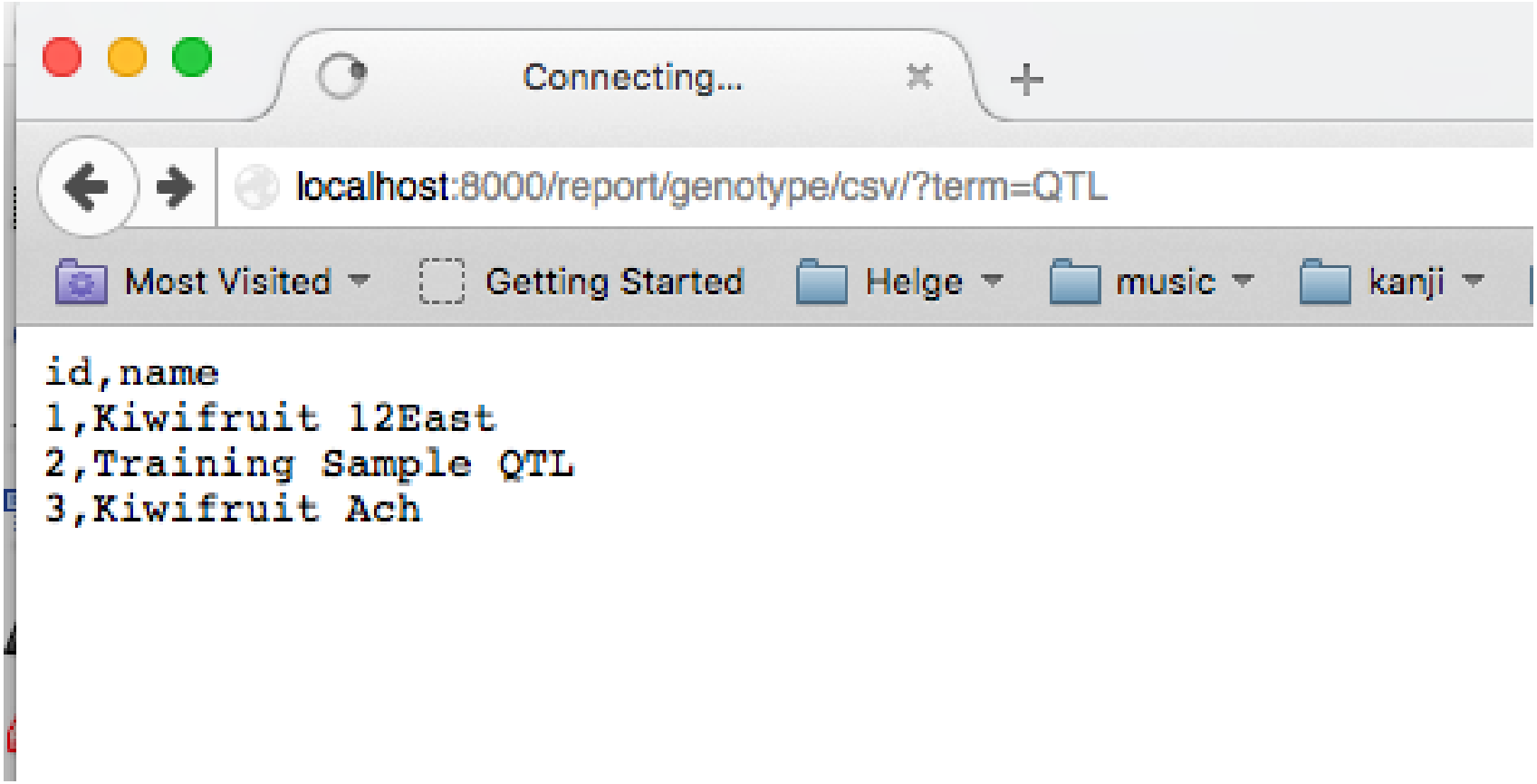

# Conclusions

- Genotype and phenotype information in one database
- It is a great tool already but needs a nerd
- It needs some input from the research community
- Kea needs to be attached as a docker container
- The data input is very manual
- It needs an interface to Ensembl

# Thank you! Questions?