CPIC Database+API

Beta Testing with CPIC Informatics Group

Modified from Ryan Whaley 8/17/2020

Background

1. Authors generate data while creating a guideline
2. Authors write data to Excel sheets
3. CPIC staff post these files to guideline pages on cpicpgx.org

For example, the voriconazole guideline

Tables and figures provided in the guideline publication supplement or referenced in the guideline[a]:

Supplemental Table S1. Evidence linking *CYP2C19* genotype to voriconazole phenotype
CYP2C19 allele definition table
CYP2C19 allele functionality table
CYP2C19 frequency table
CYP2C19 diplotype-phenotype table
Gene resource mapping *CYP2C19* gene resource mappings
Drug resource mapping Voriconazole
Clinical decision support:[b] Voriconazole pre- and post-test alerts and flow chart

Goals

What does the DB/API do?

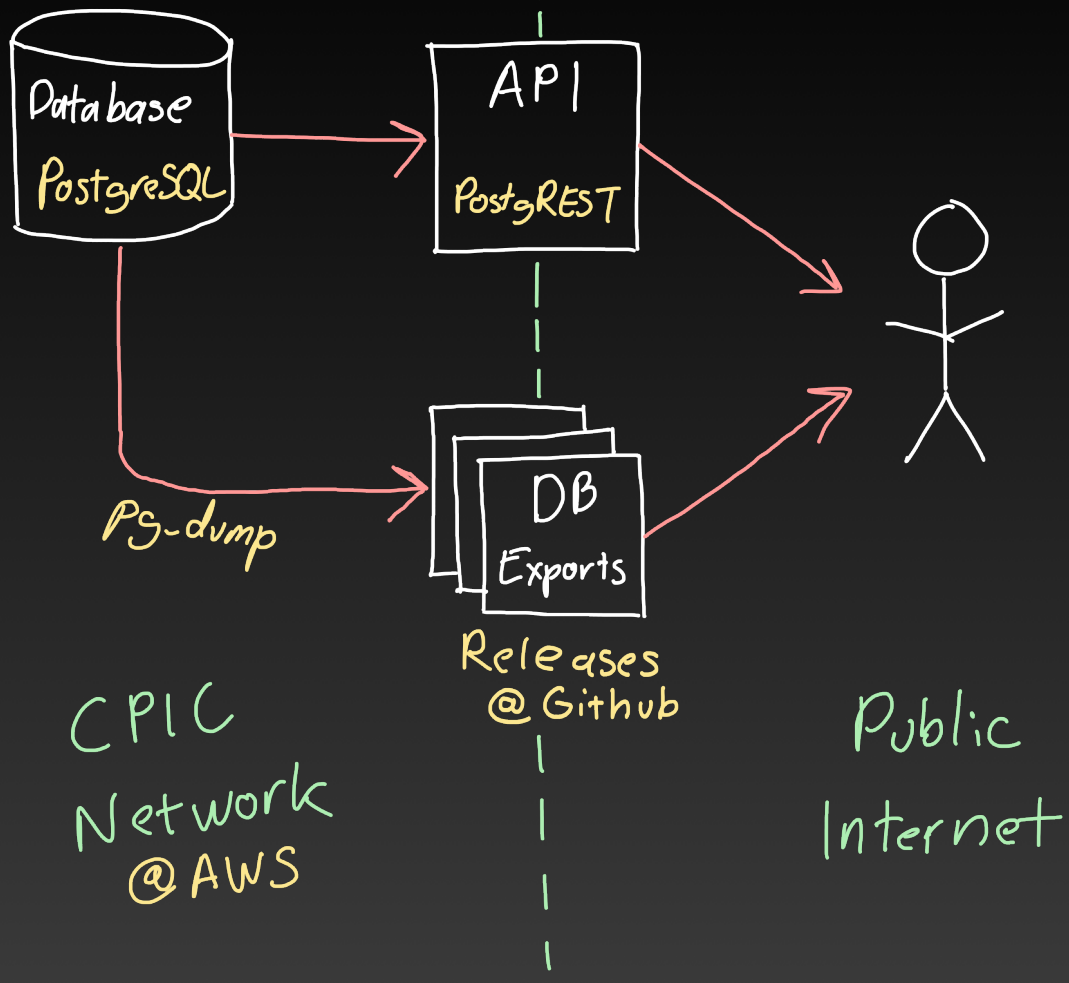
1. Turn existing loosely-defined Excel files into structured, documented data
2. Add guideline table 1 & 2 (Phenotype & Recommendation) data from the manuscript
3. Make data machine-readable in CSV, JSON, and relational DB exports
4. Relate data from different source files to each other
5. Add validation and consistency checks
6. Create a versioning and release system for data

Progress Loading Data

	Allele Definition Table	Allele Functionality Table	Diplotype to Phenotype Table	Frequency Table	Gene CDS Text	Gene Phenotypes	Gene Resource Table	PharmVar Allele IDs Loaded
CACNA1S	✅	✅	✅	✅	✅	✅	✅	none
CFTR	✅	✅	wasn't created	wasn't created	wasn't created	✅	✅	none
CYP2B6	✅	✅	✅	✅	✅	✅	✅	✅
CYP2C19	✅	✅	✅	✅	✅	✅	✅	✅
CYP2C9	✅	✅	✅	✅	✅	✅	✅	✅
CYP2D6	✅	✅	✅	✅	✅	✅	✅	✅
CYP3A5	✅	✅	✅	✅	✅	✅	✅	✅
CYP4F2	✅	✅	none	✅	none	none	✅	no core alleles
DPYD	✅	✅	✅	✅	✅	✅	✅	not yet
G6PD	✅	✅	wasn't created - will be autogene	wasn't created	wasn't created	✅	✅	none
HLA-A	✅ modified version	n/a	wasn't created - will be autogene	✅	✅	in progress	✅	none
HLA-B	✅ modified version	n/a	wasn't created - will be autogene	✅	✅	in progress	✅	none
IFNL3	✅	wasn't created	wasn't created	wasn't created	wasn't created	wasn't created	✅	none
MT-RNR1	✅ in progress	✅ in progress	in progress	in progress	in progress	in progress	✅	none
NUDT15	✅	✅	✅	✅	✅	✅	✅	no core alleles
RYR1	✅	✅	✅	✅	✅	✅	✅	none
SLCO1B1	✅	✅	✅	✅	✅	✅	✅	none
TPMT	✅	✅	✅	✅	✅	✅	✅	none
UGT1A1	✅	✅	✅	✅	✅	✅	✅	none
VKORC1	✅	none	none	✅	none	none	✅	none
Totals	20	15	12	16	14	14	20	4

	Drug Test Alerts	Flowcharts	Guideline	Table 2 Recommendations
abacavir	✅	✅	✅	✅
aceclofenac	wasn't created	wasn't created	✅	no recommendation
allopurinol	✅	✅	✅	✅
amitriptyline	✅	✅	✅	✅
aspirin	wasn't created	wasn't created	✅	no recommendation
atazanavir	✅	✅	✅	✅
atomoxetine	✅	✅	✅	✅
azathioprine	✅	✅	✅	✅
capecitabine	✅	✅	✅	✅
carbamazepine	✅	✅	✅	✅
celecoxib	✅	✅	✅	✅
citalopram	✅	✅	✅	✅
clomipramine	✅	✅	✅	✅
clopidogrel	wasn't created - up	✅	✅	✅
codeine	update in progress	✅	✅	update in progress
desflurane	✅	✅	✅	✅
desipramine	✅	✅	✅	✅
dexlansoprazole	✅	✅	will process	will process
diclofenac	wasn't created	wasn't created	✅	no recommendation
doxepin	✅	✅	✅	✅
efavirenz	✅	✅	✅	✅
enflurane	✅	✅	✅	✅
escitalopram	✅	✅	✅	✅
fluorouracil	✅	✅	✅	✅
flurbiprofen	✅	✅	✅	✅
fluvoxamine	✅	✅	✅	✅
halothane	✅	✅	✅	✅
ibuprofen	✅	✅	✅	✅
imipramine	✅	✅	✅	✅
indomethacin	wasn't created	wasn't created	✅	no recommendation
isoflurane	✅	✅	✅	✅
ivacaftor	wasn't created	wasn't created	✅	✅
lansoprazole	✅	✅	will process	will process
lornoxicam	✅	✅	✅	✅
lumiracoxib	wasn't created	wasn't created	✅	no recommendation
meloxicam	✅	✅	✅	✅

How can the DB be used?



- Database will be made available through GitHub
  - Much documentation, instructions on how to access the data and some information about the individual data models themselves
- postgREST API
  - Exhaustive list of all API endpoints, data models, and properties generated by the database itself
- CPIC API examples on Postman
  - can read through documentation about each type of data and see specific examples

Remember:
Beta Testing = Changes

(Watch the Releases)

Next Steps:

Beta testing with CPIC membership for those interested

More information will be sent out in the next month

Thank you!