Practical
CARD Curation

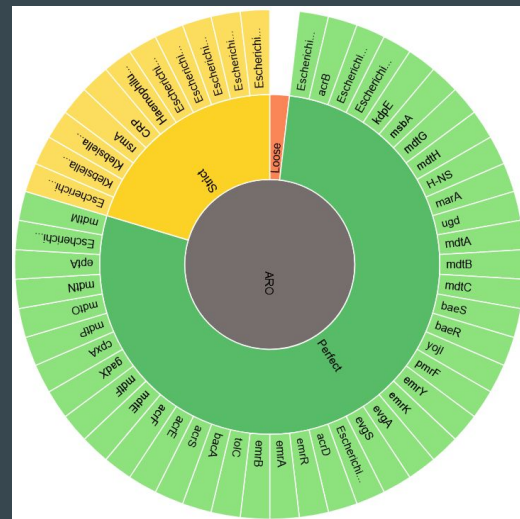• • •

Keaton Smith

About me

- Co-op student

- Honours Biology and Pharmacology Co-op Program (B.H.Sc McMaster 2019-2024)
    - 1st Year: Life Science Gateway
    - 2nd Year: Honours Biochemistry
    - 3rd Year - present: BioPharm Co-op

- Developer assistant: CARD Junior Curator & Help Desk

CARD Curation

- Managing database content

  - Adding terms
  - Updating terms
  - Maintaining consistency across other platforms (NCBI, etc.)

- Provide central resource for information on antibiotic resistance

  - Keep information up-to-date & accurate

- Reference data for RGI

- Almost all CARD curation is done by hand

Curation workflow

- Information comes from peer-reviewed papers

- CARD*Shark text-mining

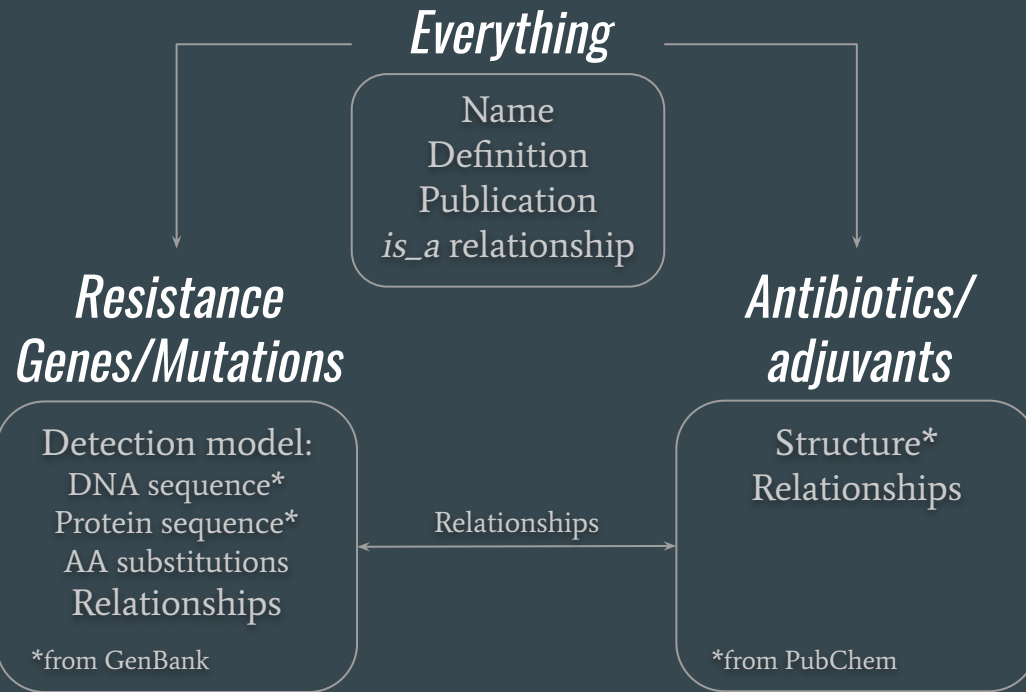- Manual filtering & collection

- Hand curation

Text-mining

CARD*Shark literature pool

Curation

Resistance genes, antibiotics, adjuvants, etc.

Information needed for curation 99% of the time

Everything

> Name
> Definition
> Publication
> *is_a* relationship

Resistance Genes/Mutations

> Detection model:
> DNA sequence*
> Protein sequence*
> AA substitutions
> Relationships
>
> *from GenBank

Relationships

Antibiotics/ adjuvants

> Structure*
> Relationships
>
> *from PubChem

Poorly detailed literature makes curation difficult...

Curation demo

KPC-93

General

name: KPC-93

definition: KPC-93 is a KPC beta-lactamase.

publication: 35416703

Relationships

KPC-93 *is_a* KPC beta-lactamase (36198)

KPC-93 *confers_resistance_to_antibiotic* ceftazidime-avibactam (45634)

Model

model: protein homolog model

DNA accession: MZ569034.1

start - stop: 1 - 897

protein accession: QYZ75849.1

Bitscore cutoffs for RGI...

Thank you!
Questions?