Dec. 3rd 2020

Carlie A. LaLone
CompTox Communities of Practice

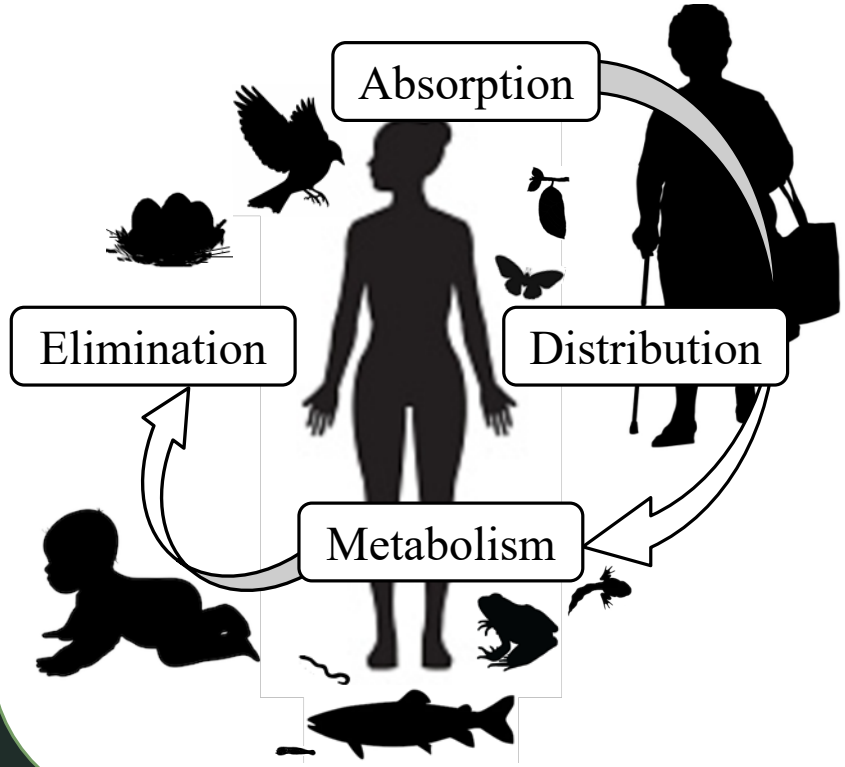
SeqAPASS v5.0

An Emphasis on Rapid Data Synthesis and Interpretation


BuLi
Me
Me
C_6H_{13}

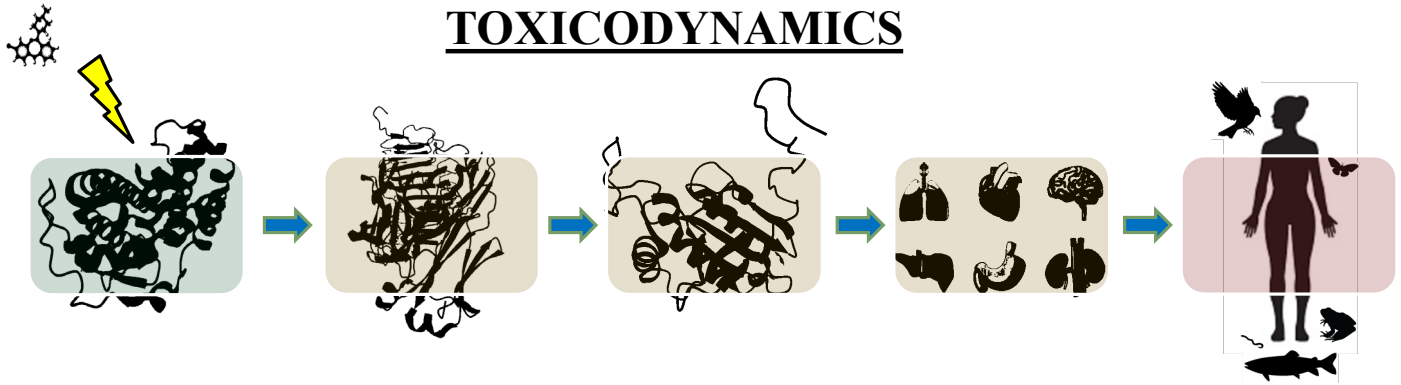
Simplify Complexity

TOXICOKINETICS



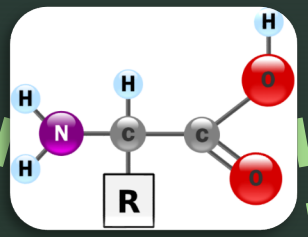
Cross Species Extrapolation

TOXICODYNAMICS



Bioinformatics

Proteins 101:



Valine

Arginine

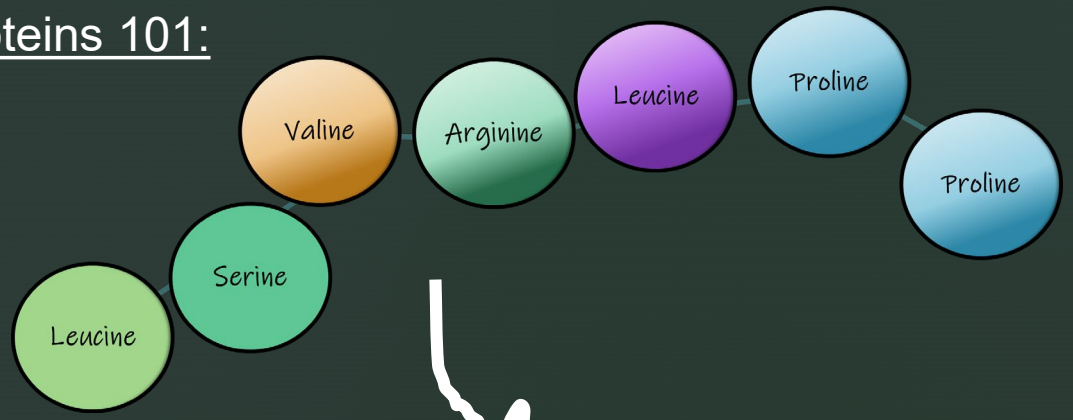
Leucine

Proline

Serine

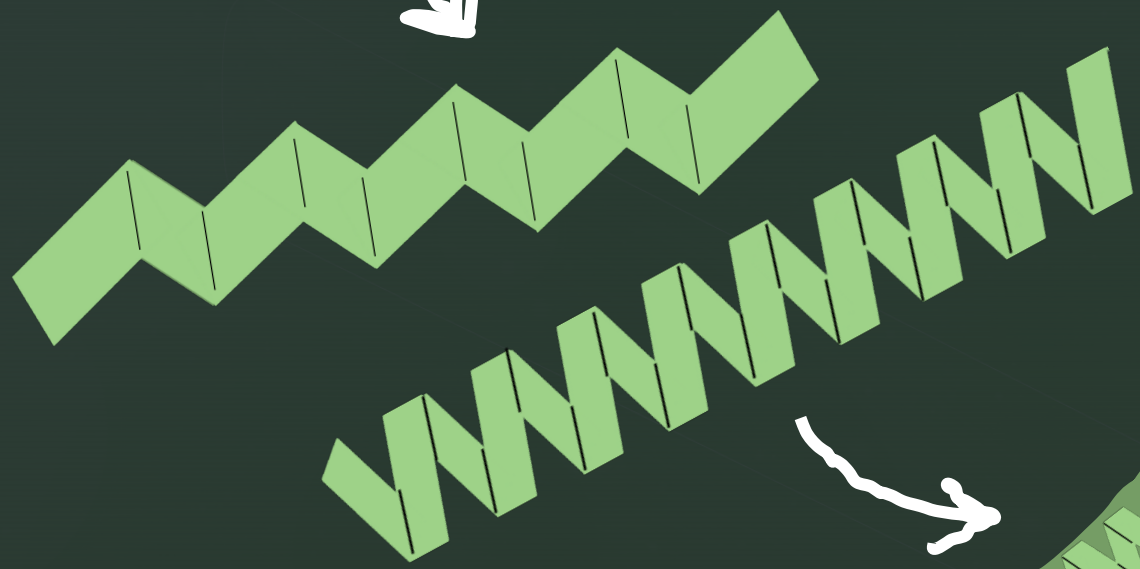
Amino Acids

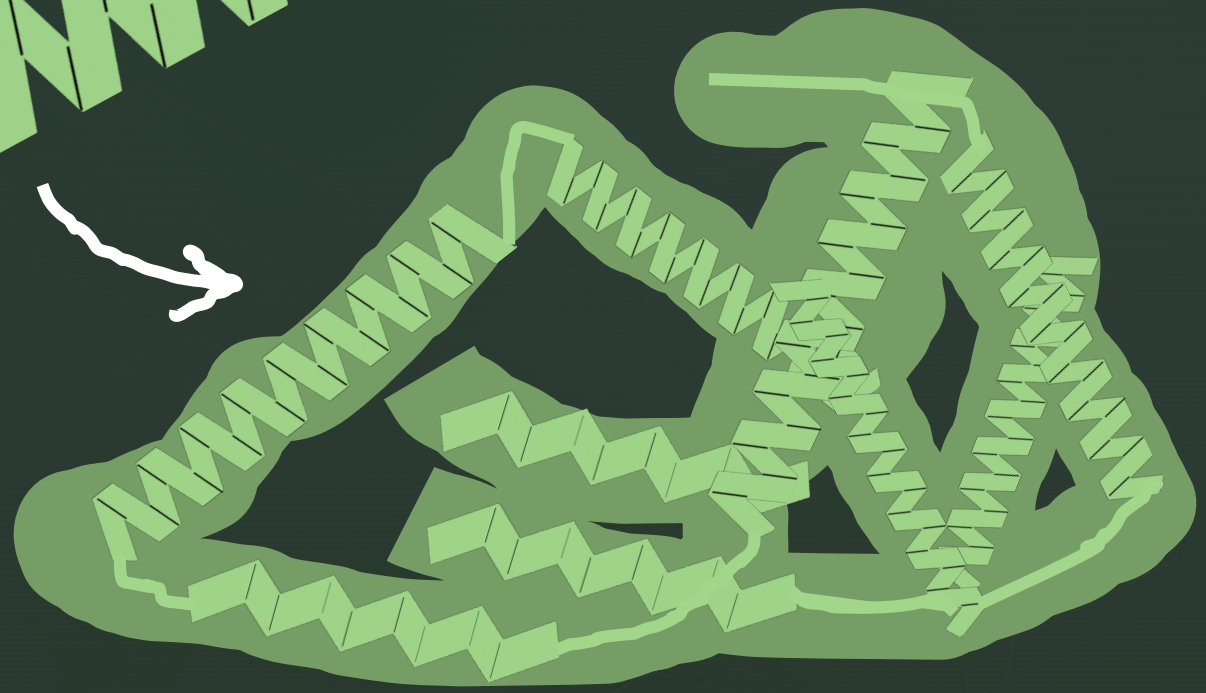
Proteins 101:



Primary amino acid sequence

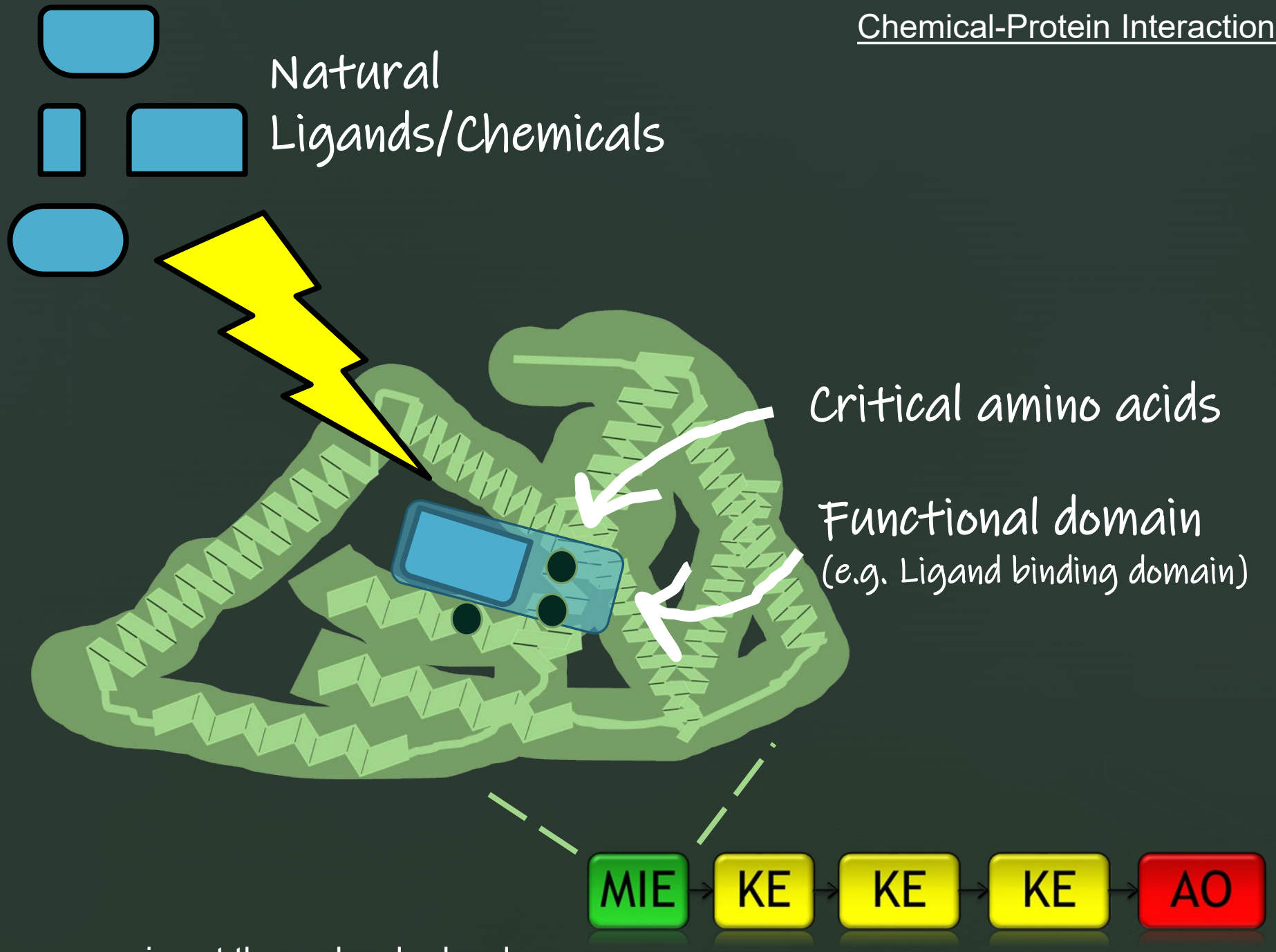
Secondary Structure





Tertiary Structure

Chemical-Protein Interaction:

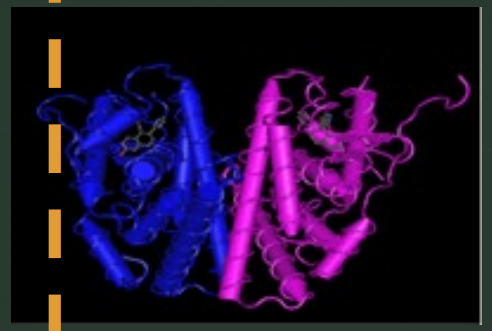


Similarity across species at the molecular level

Sequence

MTMTLHTKASGMALLHQIQGNELEPLNRPQLKIPLERPLGE
VYLDSSKPAVYNYPEGAAYEFNAAAAANAQVYGQTGLPYG
PGSEAAAFGSNGLGGFPPLNSVSPSPLMLLHPPPQLSPFLQ
PHGQQVPYYLENEPSGYTVREAGPPAFYRPNSDNRRQGGR
ERLASTNDKGSMAMESAKETRYCAVCNDYASGYHYGVWSC
EGCKAFFKRSIQGHNDYMCPATNQCTIDKNRRKSCQACRLR
KCYEVGMMKGGIRKDRRGGRMLKHKRQRDDGEGRGEVG
SAGDMRAANLWPSPLMIKRSKKNSLALSLTADQMVSALLA
EPPILYSEYDPTRPFSEASMMGLLTNLADRELVHMINWAKV
PGFVDLTLHDQVHLLECAWLEILMIGLVWRSMEHPGKLLFA
PNLLLDRNQGKCVEGMVEIFDMLLATSSRFRMMNLQGEEF
VCLKSIILLNSGVYTFLSSTLKSLEEKDHIHRVLDKITDTLIHLM

Structure



Function

Protein sequence comparisons:

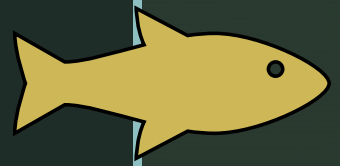
Valine Arginine Leucine Proline Proline

Leucine Serine

Vs.

Valine Arginine Leucine Proline Proline

Leucine Serine



100s - 1000s of species

OXFORD
SOT | Society of Toxicology
www.toxsci.oxfordjournals.org

TOXICOLOGICAL SCIENCES, 153(2), 2016, 228–245

doi: 10.1093/toxsci/kfw119
Advance Access Publication Date: June 30, 2016
Research article

Sequence Alignment to Predict Across Species Susceptibility (SeqAPASS): A Web-Based Tool for Addressing the Challenges of Cross-Species Extrapolation of Chemical Toxicity

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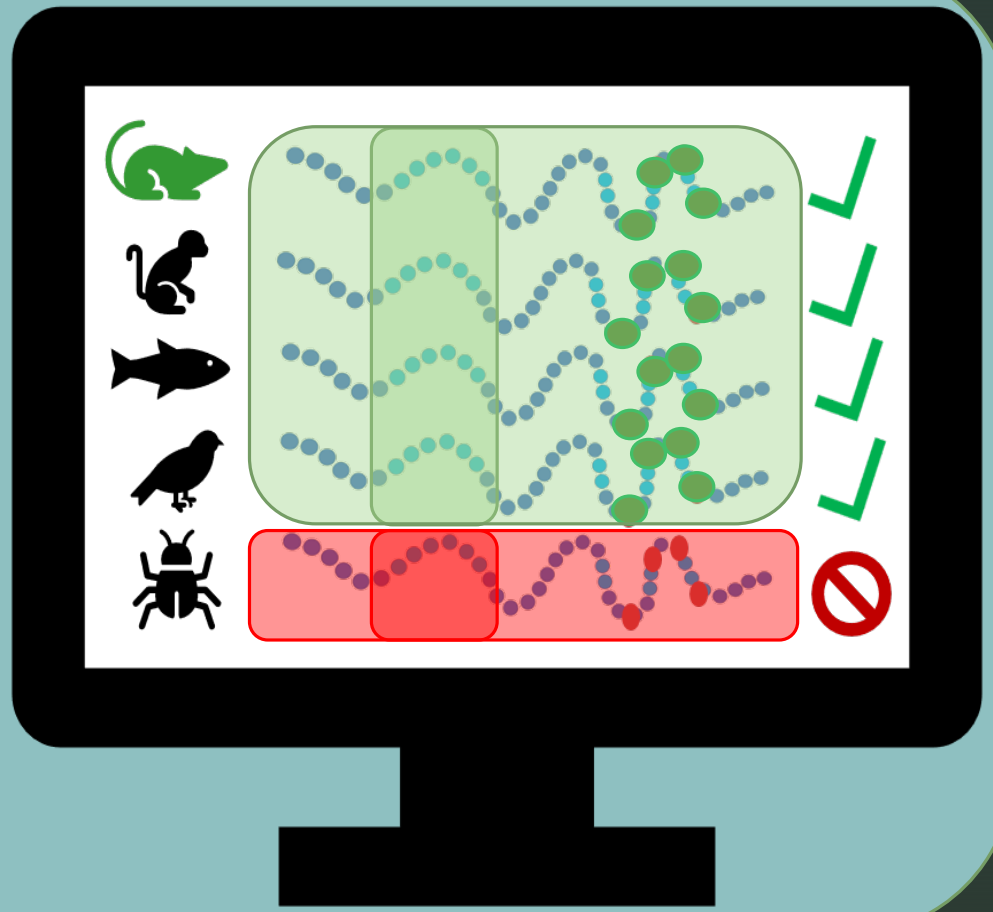
https://seqapass.epa.gov/seqapass/

Sequence Alignment to Predict Across Species Susceptibility (SeqAPASS)

Flexible Analysis Based On Available Data

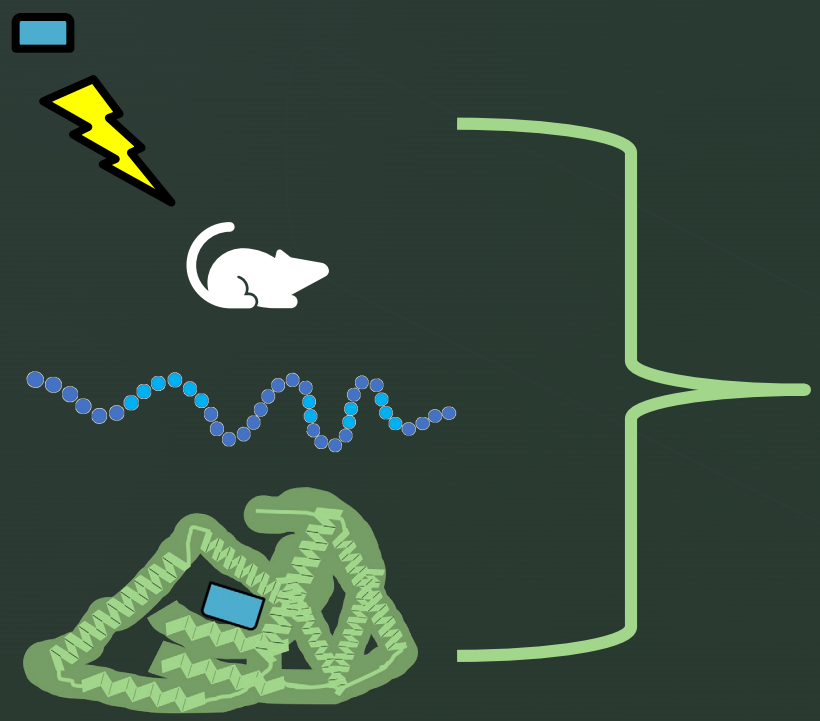
Level 1	Primary Amino Acid Sequence Alignments
Level 2	Conserved Functional Domain Alignments
Level 3	Critical (Close Contact) Amino Acid Conservation

seqapass.epa.gov/seqapass/

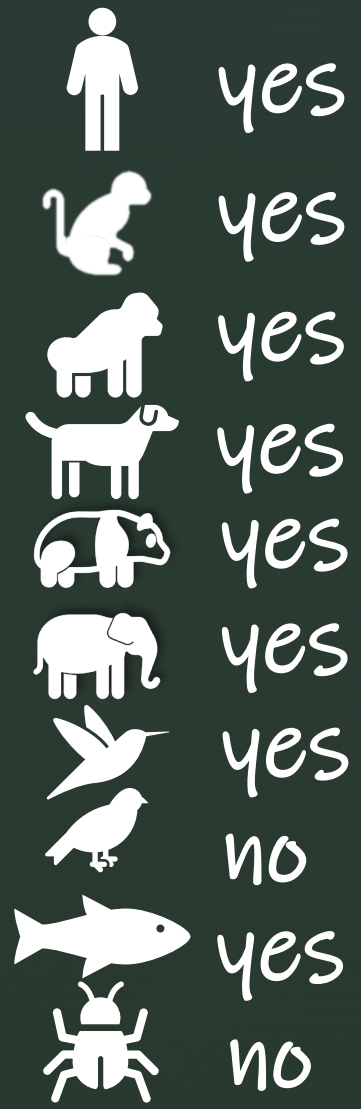


Gather Lines of Evidence Toward Protein Conservation

SeqAPASS Predicts Likelihood of Similar Susceptibility based on Sequence Conservation:



yes

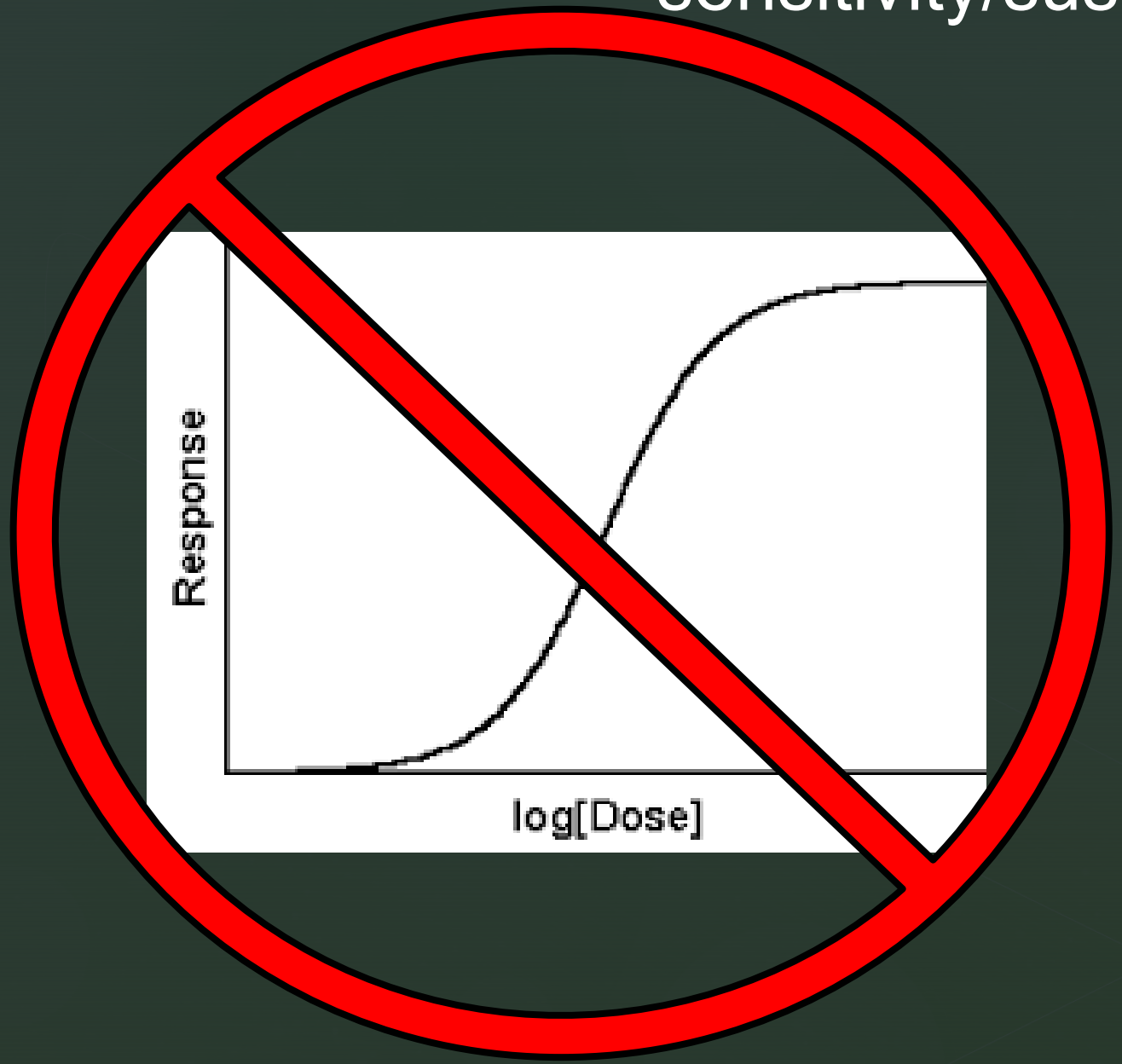


yes
yes
yes
yes
yes
yes
yes
no
yes
no

Line(s) of evidence indicate

- The protein is conserved
- The protein is NOT conserved

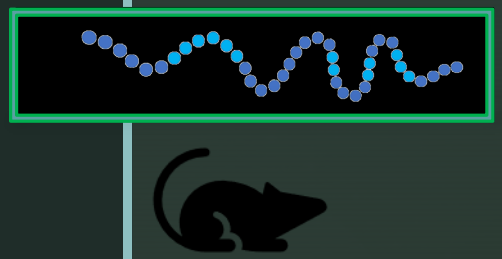
SeqAPASS DOES NOT Predicts the degree of sensitivity/susceptibility:

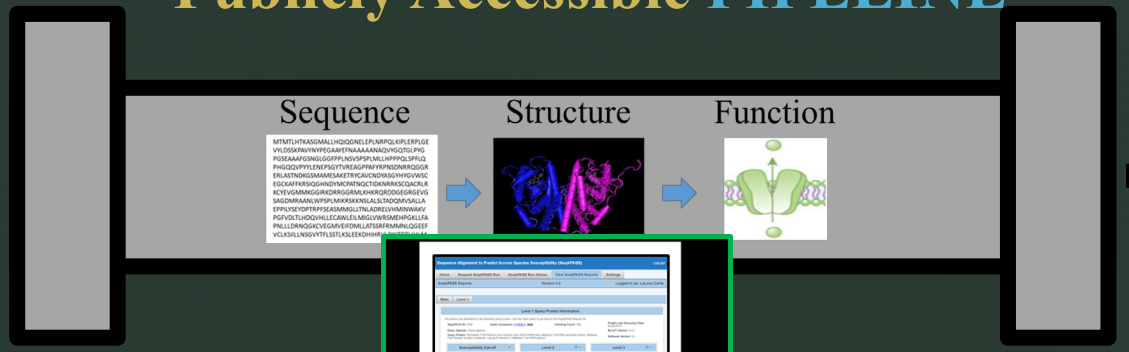


Rolling SeqAPASS out to the Public

Science-based, Streamlined, Transparent, Publicly Accessible PIPELINE

Available Knowledge



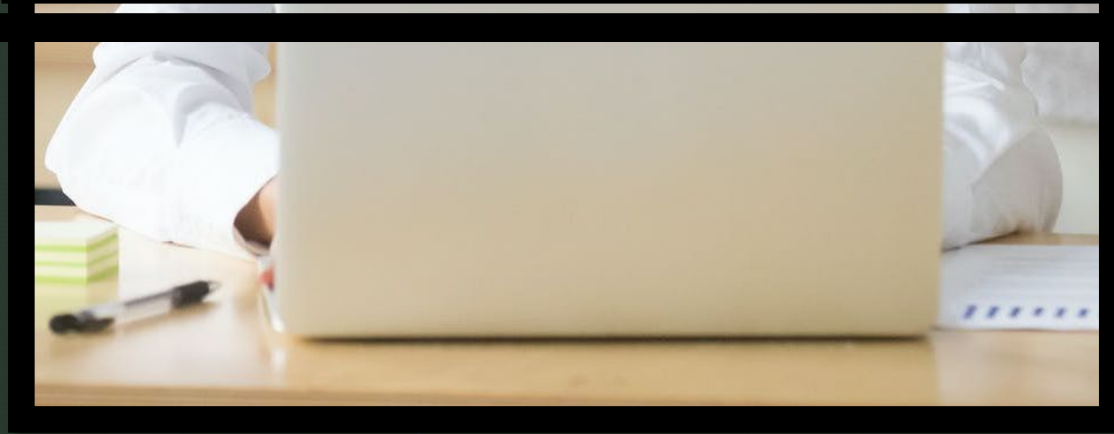


Predict Susceptibility

TIME/CHAMPIONS

CONFIDENCE TRAINING SUPPORT

Level 1
Level 2
Level 3



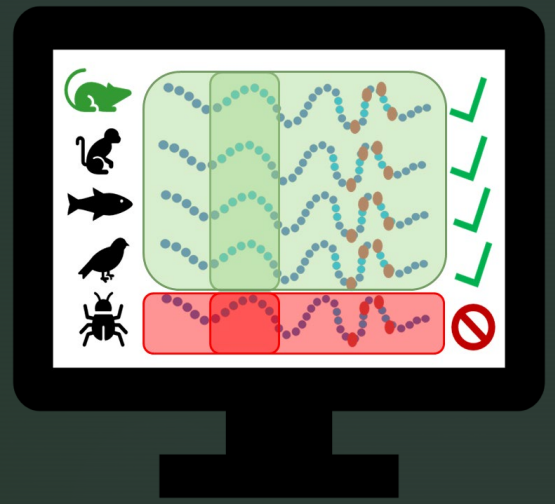
Focus on Rapid Data Interpretation

Data Visualization Summary Reports Customizable Transparency

SeqAPASS Results: Tables

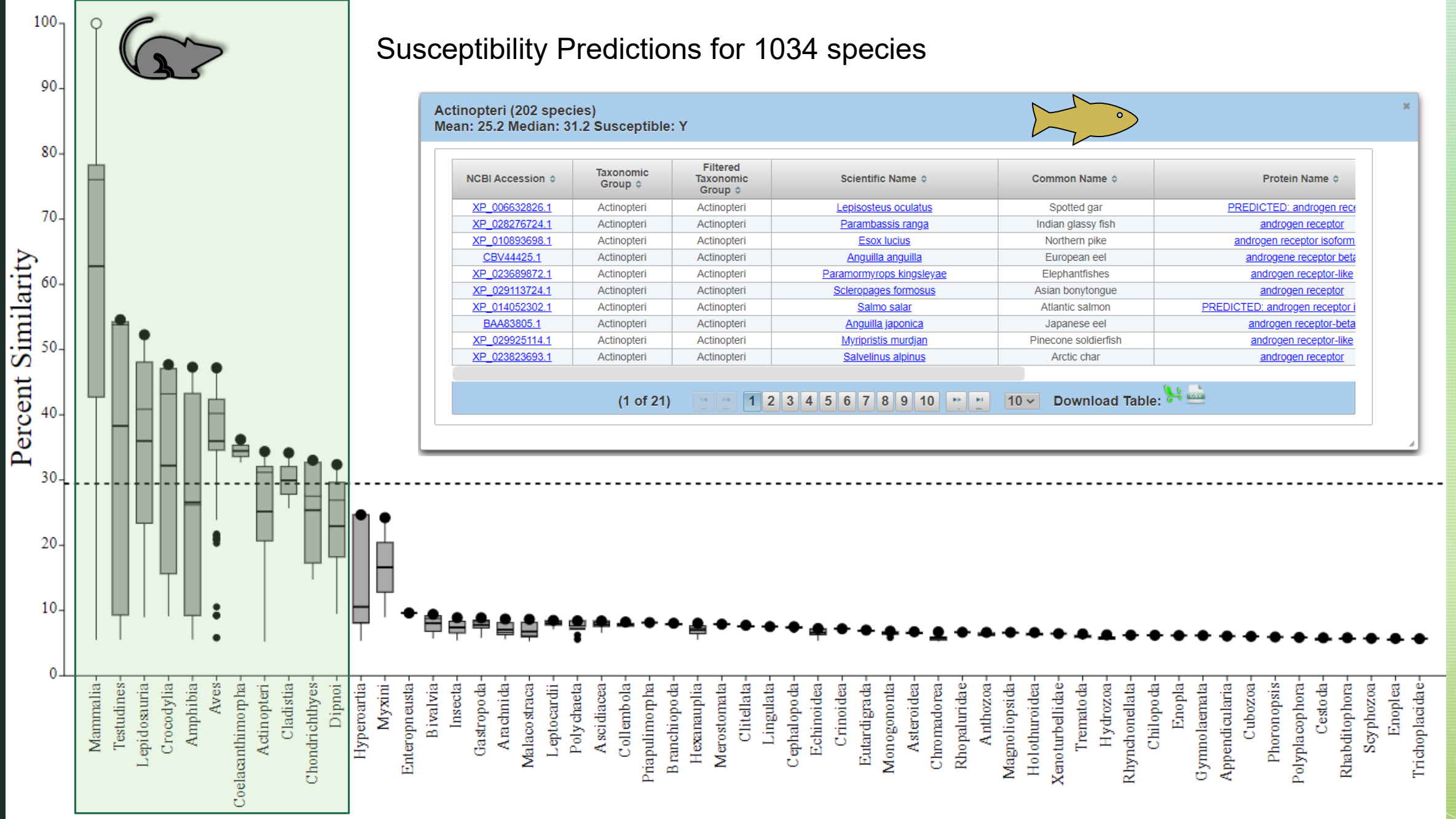
Flexible Analysis Based On Available Data

- **Level 1** Primary Amino Acid Sequence Alignments
- **Level 2** Conserved Functional Domain Alignments
- **Level 3** Critical (Close Contact) Amino Acid Conservation



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	Data Version	NCBI Accession	Protein Count	Species Tax ID	Taxonomic	Filtered Ta	Scientific Name	Common Name	Protein Name	BLASTp Bi	Ortholog	Ortholog Coun	Cut-off	Percent Si	Susceptibilit	Analysis Complete	Eukaryote	ECOTOX
2	5	P15207.1	149629	10116	Mammalia	Mammalia	Rattus norvegicus	Norway rat	RecName: Full=Andr	1862.43	Y	223	29.45	100	Y	2020 08 27 09:15:52	Y	Explore in ECOTOX
3	5	XP_032745817.1	36127	10117	Mammalia	Mammalia	Rattus rattus	Black rat	LOW QUALITY PROTE	1826.22	N	223	29.45	98.06	Y	2020 08 27 09:15:52	Y	Explore in ECOTOX
4	5	XP_034341416.1	41654	61156	Mammalia	Mammalia	Arvicanthis niloticus	African grass rat	androgen receptor	1812.74	N	223	29.45	97.33	Y	2020 08 27 09:15:52	Y	Explore in ECOTOX
5	5	XP_021043964.1	42343	10093	Mammalia	Mammalia	Mus pahari	Shrew mouse	androgen receptor	1810.42	N	223	29.45	97.21	Y	2020 08 27 09:15:52	Y	Explore in ECOTOX
6	5	AAA37234.1	2813	10092	Mammalia	Mammalia	Mus musculus domesticus	Western European house mouse	androgen receptor	1808.11	N	223	29.45	97.08	Y	2020 08 27 09:15:52	Y	Explore in ECOTOX
7	5	AAB19916.1	1375	10095	Mammalia	Mammalia	Mus sp.	Mice	AR	1808.11	N	223	29.45	97.08	Y	2020 08 27 09:15:52	Y	Explore in ECOTOX
8	5	NP_038504.1	307398	10090	Mammalia	Mammalia	Mus musculus	House mouse	androgen receptor	1808.11	N	223	29.45	97.08	Y	2020 08 27 09:15:52	Y	Explore in ECOTOX
9	5	XP_028625865.1	38191	491861	Mammalia	Mammalia	Grammomys surdaster	African thicket rats	androgen receptor	1801.95	N	223	29.45	96.75	Y	2020 08 27 09:15:52	Y	Explore in ECOTOX
10	5	XP_005081209.1	38160	10036	Mammalia	Mammalia	Mesocricetus auratus	Golden hamster	androgen receptor	1797.33	N	223	29.45	96.5	Y	2020 08 27 09:15:52	Y	Explore in ECOTOX
11	5	XP_027287560.1	162681	10029	Mammalia	Mammalia	Cricetulus griseus	Chinese hamster	androgen receptor is	1796.56	N	223	29.45	96.46	Y	2020 08 27 09:15:52	Y	Explore in ECOTOX
12	5	XP_021009144.1	47700	10089	Mammalia	Mammalia	Mus caroli	Ryukyu mouse	androgen receptor	1795.4	N	223	29.45	96.4	Y	2020 08 27 09:15:52	Y	Explore in ECOTOX
13	5	XP_028739721.1	42166	10041	Mammalia	Mammalia	Peromyscus leucopus	White-footed mouse	androgen receptor	1780.38	N	223	29.45	95.59	Y	2020 08 27 09:15:52	Y	Explore in ECOTOX
14	5	XP_006981237.1	45652	230844	Mammalia	Mammalia	Peromyscus maniculatus baird	Prairie deer mouse	PREDICTED: androger	1775.37	N	223	29.45	95.33	Y	2020 08 27 09:15:52	Y	Explore in ECOTOX
15	5	XP_026640574.1	37992	79684	Mammalia	Mammalia	Microtus ochrogaster	Prairie vole	androgen receptor is	1574.3	N	223	29.45	84.53	Y	2020 08 27 09:15:52	Y	Explore in ECOTOX
16	5	XP_008842588.1	49227	1026970	Mammalia	Mammalia	Nannospalax galili	Upper Galilee mountains blind mole	androgen receptor	1546.95	N	223	29.45	83.06	Y	2020 08 27 09:15:52	Y	Explore in ECOTOX
17	5	XP_004416958.1	31381	9708	Mammalia	Mammalia	Odobenus rosmarus divergens	Pacific walrus	PREDICTED: androger	1499.18	N	223	29.45	80.5	Y	2020 08 27 09:15:52	Y	Explore in ECOTOX
18	5	BCD56309.1	67524	9615	Mammalia	Mammalia	Canis lupus familiaris	Dog	canine androgen rece	1491.48	N	223	29.45	80.08	Y	2020 08 27 09:15:52	Y	Explore in ECOTOX
19	5	XP_025321850.1	62990	286419	Mammalia	Mammalia	Canis lupus dingo	Dingo	androgen receptor	1490.32	N	223	29.45	80.02	Y	2020 08 27 09:15:52	Y	Explore in ECOTOX
20	5	XP_012499360.1	28331	379532	Mammalia	Mammalia	Propithecus coquereli	Coquerel's sifaka	PREDICTED: androger	1490.32	N	223	29.45	80.02	Y	2020 08 27 09:15:52	Y	Explore in ECOTOX
21	5	XP_027464601.1	59271	9704	Mammalia	Mammalia	Zalophus californianus	California sea lion	androgen receptor	1488.01	N	223	29.45	79.9	Y	2020 08 27 09:15:52	Y	Explore in ECOTOX

Susceptibility Predictions for 1034 species



Actinopteri (202 species)
Mean: 25.2 Median: 31.2 Susceptible: Y

NCBI Accession	Taxonomic Group	Filtered Taxonomic Group	Scientific Name	Common Name	Protein Name
XP_006632826.1	Actinopteri	Actinopteri	Lepisosteus oculatus	Spotted gar	PREDICTED: androgen rec
XP_028276724.1	Actinopteri	Actinopteri	Parambassis ranga	Indian glassy fish	androgen receptor
XP_010893698.1	Actinopteri	Actinopteri	Esox lucius	Northern pike	androgen receptor isoform
CBV44425.1	Actinopteri	Actinopteri	Anguilla anguilla	European eel	androgene receptor beta
XP_023689872.1	Actinopteri	Actinopteri	Paramormyrops kingsleyae	Elephantfishes	androgen receptor-like
XP_029113724.1	Actinopteri	Actinopteri	Scleropages formosus	Asian bonytongue	androgen receptor
XP_014052302.1	Actinopteri	Actinopteri	Salmo salar	Atlantic salmon	PREDICTED: androgen receptor i
BAA83805.1	Actinopteri	Actinopteri	Anguilla japonica	Japanese eel	androgen receptor-beta
XP_029925114.1	Actinopteri	Actinopteri	Myripristis murdjan	Pinecone soldierfish	androgen receptor-like
XP_023823693.1	Actinopteri	Actinopteri	Salvelinus alpinus	Arctic char	androgen receptor

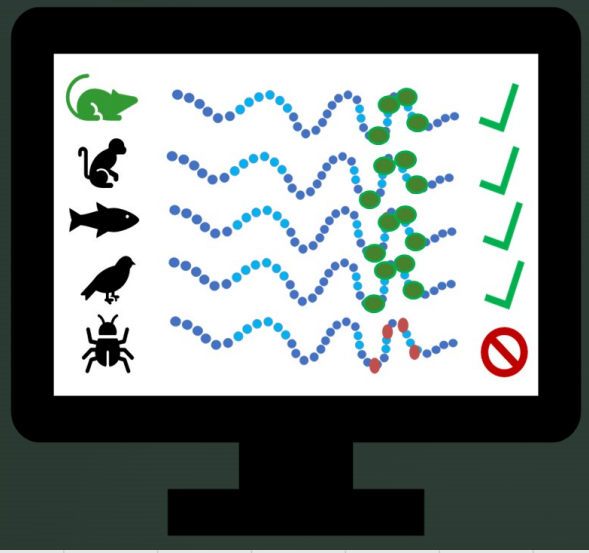
(1 of 21) 1 2 3 4 5 6 7 8 9 10 10 Download Table:

SeqAPASS L1 and L2 Results: Visualization

SeqAPASS L3 Results: Tables

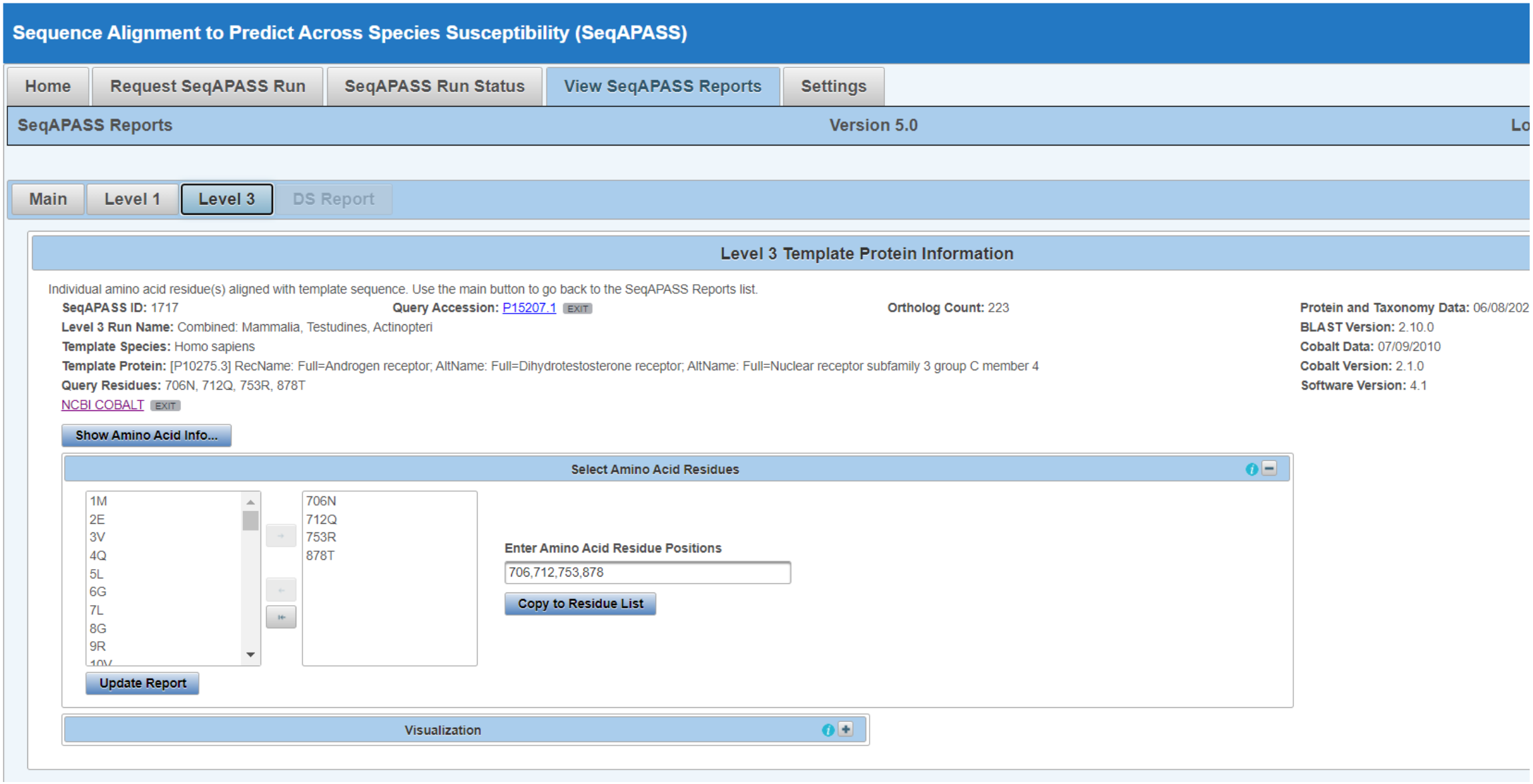
Flexible Analysis Based On Available Data

- **Level 1** Primary Amino Acid Sequence Alignments
- **Level 2** Conserved Functional Domain Alignments
- **Level 3** Critical (Close Contact) Amino Acid Conservation



	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1	NCBI Acce	Protein Co	Species Ta	Taxonomic C	Scientific	Common	Protein Na	Analysis	Similar Su	Position 1	Amino Ac	Direct Ma	Side Chair	Side Chair	MW 1	MW Matc	Total Mat	Position 2	Amino Ac	Direct Ma	Side Chair	Side Chair	MW 2	MW Matc	Total Mat
2	P10275.3	1797018	9606	Mammalia	Homo sap	human	RecName:	2020 11	Y	706	N	Y	Amidic	Y	132.119	Y	Y	712	Q	Y	Amidic	Y	146.146	Y	Y
3	P15207.1	149629	10116	Mammalia	Rattus no	Norway ra	RecName:	2020 11	Y	688	N	Y	Amidic	Y	132.119	Y	Y	694	Q	Y	Amidic	Y	146.146	Y	Y
4	XP_03434	41654	61156	Mammalia	Arvicanth	African gr	androgen	2020 11	Y	687	N	Y	Amidic	Y	132.119	Y	Y	693	Q	Y	Amidic	Y	146.146	Y	Y
5	XP_02104	42343	10093	Mammalia	Mus paha	Shrew mo	androgen	2020 11	Y	683	N	Y	Amidic	Y	132.119	Y	Y	689	Q	Y	Amidic	Y	146.146	Y	Y
6	AAA3723	2813	10092	Mammalia	Mus musc	Western E	androgen	2020 11	Y	685	N	Y	Amidic	Y	132.119	Y	Y	691	Q	Y	Amidic	Y	146.146	Y	Y
7	AAB1991	1375	10095	Mammalia	Mus sp.	Mice	AR	2020 11	Y	685	N	Y	Amidic	Y	132.119	Y	Y	691	Q	Y	Amidic	Y	146.146	Y	Y
8	NP_0385	307398	10090	Mammalia	Mus musc	House mo	androgen	2020 11	Y	685	N	Y	Amidic	Y	132.119	Y	Y	691	Q	Y	Amidic	Y	146.146	Y	Y
9	XP_02862	38191	491861	Mammalia	Grammor	African th	androgen	2020 11	Y	685	N	Y	Amidic	Y	132.119	Y	Y	691	Q	Y	Amidic	Y	146.146	Y	Y
10	XP_00508	38160	10036	Mammalia	Mesocrice	Golden ha	androgen	2020 11	Y	686	N	Y	Amidic	Y	132.119	Y	Y	692	Q	Y	Amidic	Y	146.146	Y	Y
11	XP_02728	162681	10029	Mammalia	Cricetulus	Chinese h	androgen	2020 11	Y	695	N	Y	Amidic	Y	132.119	Y	Y	701	Q	Y	Amidic	Y	146.146	Y	Y
12	XP_0210(	47700	10089	Mammalia	Mus carol	Ryukyu m	androgen	2020 11	Y	680	N	Y	Amidic	Y	132.119	Y	Y	686	Q	Y	Amidic	Y	146.146	Y	Y
13	XP_02873	42166	10041	Mammalia	Peromysc	White-foo	androgen	2020 11	Y	683	N	Y	Amidic	Y	132.119	Y	Y	689	Q	Y	Amidic	Y	146.146	Y	Y
14	XP_00698	45652	230844	Mammalia	Peromysc	Prairie de	PREDICTEI	2020 11	Y	679	N	Y	Amidic	Y	132.119	Y	Y	685	Q	Y	Amidic	Y	146.146	Y	Y
15	XP_02664	37992	79684	Mammalia	Microtus	Prairie vol	androgen	2020 11	Y	702	N	Y	Amidic	Y	132.119	Y	Y	708	Q	Y	Amidic	Y	146.146	Y	Y
16	XP_00884	49227	1026970	Mammalia	Nannospa	Upper Gal	androgen	2020 11	Y	689	N	Y	Amidic	Y	132.119	Y	Y	695	Q	Y	Amidic	Y	146.146	Y	Y
17	XP_00441	31381	9708	Mammalia	Odobenus	Pacific wa	PREDICTEI	2020 11	Y	672	N	Y	Amidic	Y	132.119	Y	Y	678	Q	Y	Amidic	Y	146.146	Y	Y
18	BCD5630	67524	9615	Mammalia	Canis lupu	Dog	canine an	2020 11	Y	693	N	Y	Amidic	Y	132.119	Y	Y	699	Q	Y	Amidic	Y	146.146	Y	Y
19	XP_02532	62990	286419	Mammalia	Canis lupu	Dingo	androgen	2020 11	Y	696	N	Y	Amidic	Y	132.119	Y	Y	702	Q	Y	Amidic	Y	146.146	Y	Y
20	XP_0124	28331	379532	Mammalia	Propithec	Coquerel's	PREDICTEI	2020 11	Y	672	N	Y	Amidic	Y	132.119	Y	Y	678	Q	Y	Amidic	Y	146.146	Y	Y
21	XP_0274(	59271	9704	Mammalia	Zalophus	California	androgen	2020 11	Y	673	N	Y	Amidic	Y	132.119	Y	Y	679	Q	Y	Amidic	Y	146.146	Y	Y
22	XP_02584	38428	9627	Mammalia	Vulpes vu	Red fox	androgen	2020 11	Y	686	N	Y	Amidic	Y	132.119	Y	Y	692	Q	Y	Amidic	Y	146.146	Y	Y

SeqAPASS L3 Set Up Alignment of Amino Acids



SeqAPASS L3 Accessing the HeatMap Visualization

Sequence Alignment to Predict Across Species Susceptibility (SeqAPASS)

Level Three Visualization - Primary Report

Level 1 Query Protein Information

SeqAPASS ID: 1717
Query Species: Rattus norvegicus
Ortholog Count: 223
Query Accession: P15207.1

Select to Open Information or Data Visualization

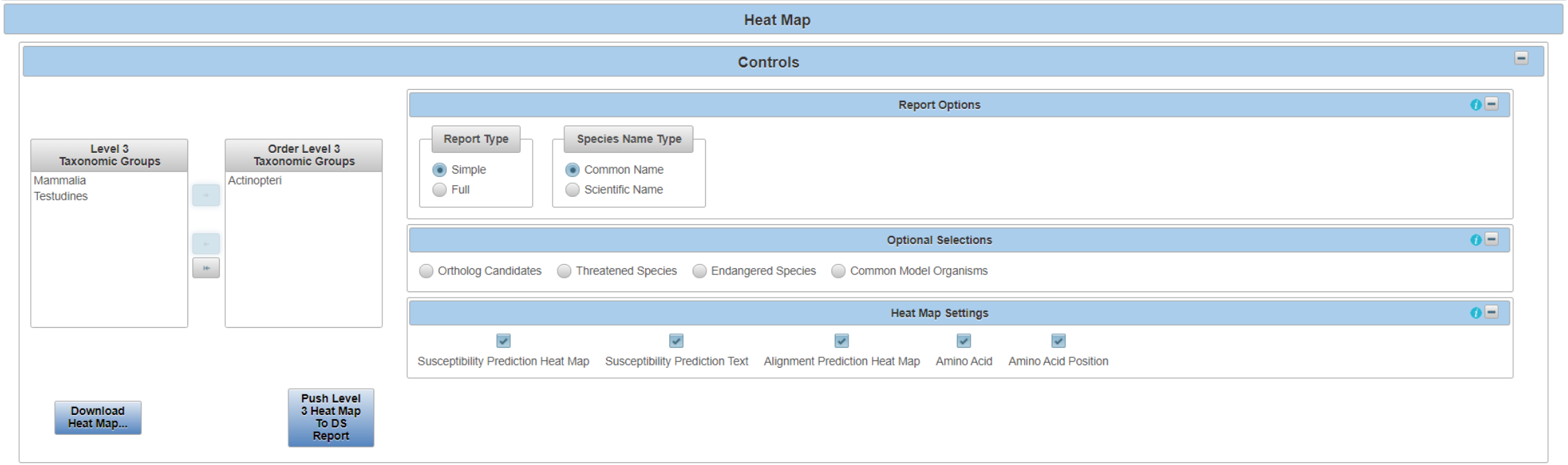
Info

Visualization Info

The following data visualization is available for Level 3 data:

- **HeatMap -** Heat Maps depicting SeqAPASS data illustrating the comparison between the template species and the user selected species allows for a summary of species' protein sequence comparisons.
  - The similarity between species compared to the template species and the user selected amino acids is denoted with either a (Y)-yes, or (N)-no. The color green is associated with "yes" and red is associated with "no".
  - Similarities between amino acids are determined by comparing the species specific amino acids against the template species. The amino acids can be either a Total Match, Partial Match, or Not a Match.
  - The user has the ability to add or remove five settings (Susceptibility Prediction, Susceptibility Prediction Text, Alignment Prediction Heat Map, Amino Acid, and Amino Acid Position) to allow for a customizable Heat Map.
  - Selecting one of the Optional Selections will highlight the species names that are associated with that selection.

SeqAPASS L3 Customize the HeatMap Visualization



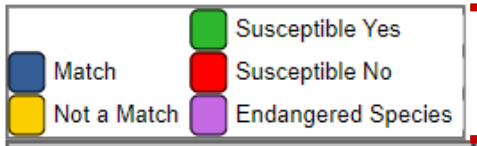
SeqAPASS L3 View the HeatMap Visualization

Match | Susceptible Yes | Not a Match | Susceptible No

Common Name	Similar Susceptibility	Amino Acid 1	Side Chain 1	MW 1	Total Match 1	Amino Acid 2	Side Chain 2	MW 2	Total Match 2	Amino Acid 3	Side Chain 3
Norway rat	Y	688N	Amidic	132.119	Y	694Q	Amidic	146.146	Y	735R	Basic
Spotted gar	Y	644N	Amidic	132.119	Y	650Q	Amidic	146.146	Y	691R	Basic
Indian glassy fish	Y	544N	Amidic	132.119	Y	550Q	Amidic	146.146	Y	591R	Basic
Northern pike	Y	636N	Amidic	132.119	Y	642Q	Amidic	146.146	Y	683R	Basic
European eel	Y	584N	Amidic	132.119	Y	590Q	Amidic	146.146	Y	631R	Basic
Elephantfishes	Y	630N	Amidic	132.119	Y	636Q	Amidic	146.146	Y	677R	Basic
Asian bonytongue	Y	614N	Amidic	132.119	Y	620Q	Amidic	146.146	Y	661R	Basic
Atlantic salmon	Y	640N	Amidic	132.119	Y	646Q	Amidic	146.146	Y	687R	Basic
Japanese eel	Y	584N	Amidic	132.119	Y	590Q	Amidic	146.146	Y	631R	Basic
Pinecone soldierfish	Y	564N	Amidic	132.119	Y	570Q	Amidic	146.146	Y	611R	Basic
Arctic char	Y	640N	Amidic	132.119	Y	646Q	Amidic	146.146	Y	687R	Basic
Chinook salmon	Y	641N	Amidic	132.119	Y	647Q	Amidic	146.146	Y	688R	Basic
Rainbow trout	Y	640N	Amidic	132.119	Y	646Q	Amidic	146.146	Y	687R	Basic
Sockeye salmon	Y	640N	Amidic	132.119	Y	646Q	Amidic	146.146	Y	687R	Basic
Coho salmon	Y	640N	Amidic	132.119	Y	646Q	Amidic	146.146	Y	687R	Basic
River trout	Y	640N	Amidic	132.119	Y	646Q	Amidic	146.146	Y	687R	Basic
Silver crucian carp	Y	639N	Amidic	132.119	Y	645Q	Amidic	146.146	Y	686R	Basic
Milkfish	Y	654N	Amidic	132.119	Y	660Q	Amidic	146.146	Y	701R	Basic
Plateau loaches	Y	651N	Amidic	132.119	Y	657Q	Amidic	146.146	Y	698R	Basic
Sterlet	Y	628N	Amidic	132.119	Y	634Q	Amidic	146.146	Y	675R	Basic
Denticle herring	Y	516N	Amidic	132.119	Y	522Q	Amidic	146.146	Y	563R	Basic
European seabass	Y	554N	Amidic	132.119	Y	560Q	Amidic	146.146	Y	601R	Basic
Pengze crucian carp	Y	623N	Amidic	132.119	Y	629Q	Amidic	146.146	Y	670R	Basic
Large yellow croaker	Y	537N	Amidic	132.119	Y	543Q	Amidic	146.146	Y	584R	Basic
Atlantic herring	Y	628N	Amidic	132.119	Y	634H	Basic	155.156	Y	675R	Basic
Fathead minnow	Y	626N	Amidic	132.119	Y	632Q	Amidic	146.146	Y	673R	Basic
Spiny chromis	Y	514N	Amidic	132.119	Y	520Q	Amidic	146.146	Y	561R	Basic

Rapidly identify differences in the amino acid comparisons

SeqAPASS L3 View Specialty Groups in the HeatMap Visualization



Highlight Endangered Species

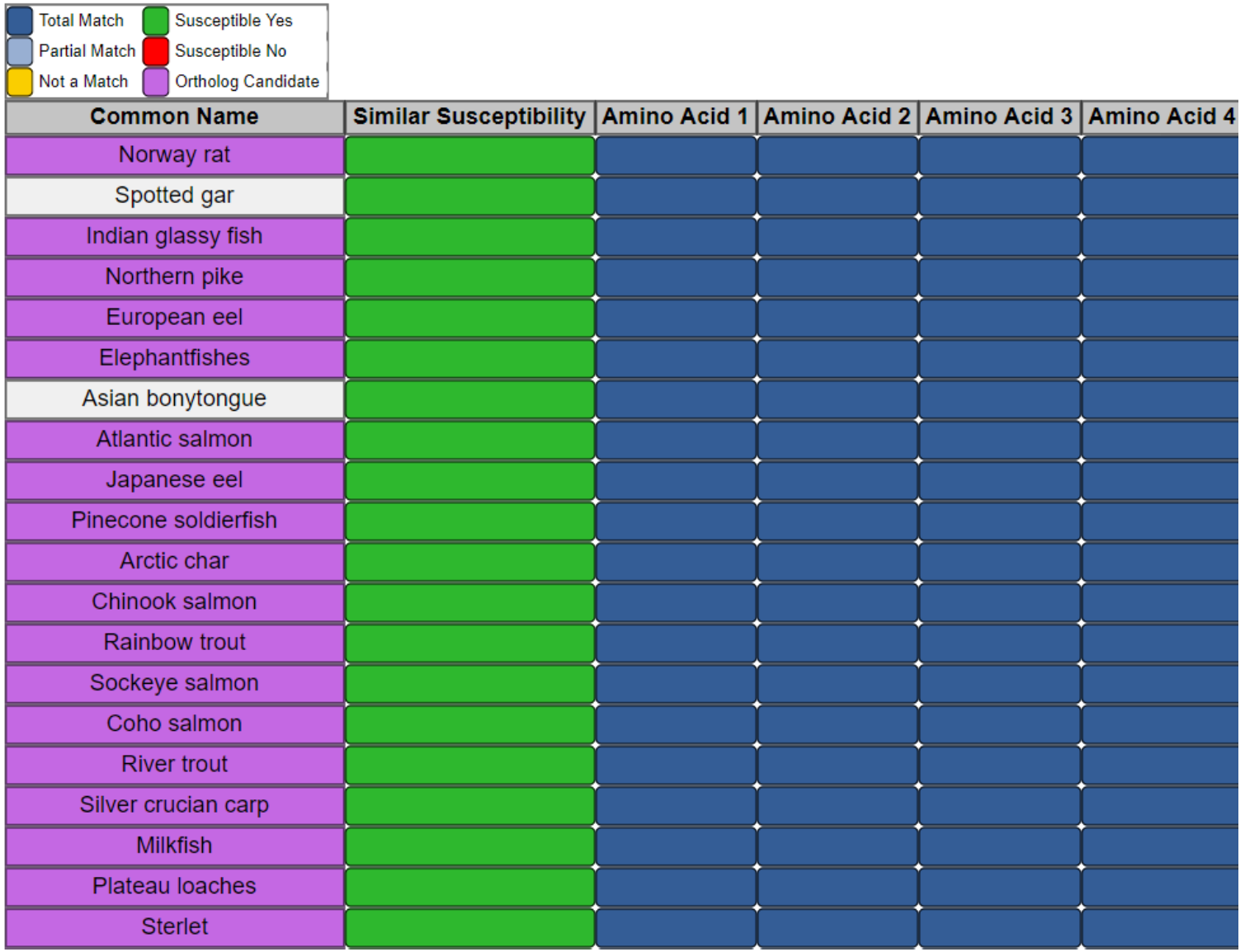
Common Name	Similar Susceptibility	Amino Acid 1	Side Chain 1	MW 1	Total Match 1	Amino Aci
Norway rat	Y	688N	Amidic	132.119	Y	694Q
Spotted gar	Y	644N	Amidic	132.119	Y	650Q
Indian glassy fish	Y	544N	Amidic	132.119	Y	550Q
Northern pike	Y	636N	Amidic	132.119	Y	642Q
European eel	Y	584N	Amidic	132.119	Y	590Q
Elephantfishes	Y	630N	Amidic	132.119	Y	636Q
Asian bonytongue	Y	614N	Amidic	132.119	Y	620Q
Atlantic salmon	Y	640N	Amidic	132.119	Y	646Q
Japanese eel						
Pinecone soldierfish						
Arctic char						
Chinook salmon						
Rainbow trout						
Sockeye salmon						
Coho salmon						
River trout						
Silver crucian carp						

NCBI Accession	XP_014052302.1
Protein Name	PREDICTED: androgen receptor isoform X1
Scientific Name	Salmo salar
Taxonomic Group	Actinopteri

Ortholog Candidate
Endangered Species
Common Model Organism

Hover over feature for more information

SeqAPASS L3 View Specialty Groups in the HeatMap Visualization

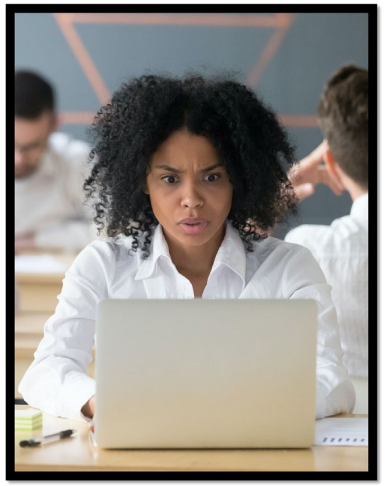


Customize
By removing
text from the
visualization

Check out Level 3 Visualization new to SeqAPASS (https://seqapass.epa.gov/seqapass/)

Match | Susceptible Yes | Not a Match | Susceptible No

Common Name	Similar Susceptibility	Amino Acid 1	Side Chain 1	MW 1	Total Match 1	Amino Acid 2	Side Chain 2	MW 2	Total Match 2	Amino Acid 3	Side Chain 3	MW 3	Total Match 3	Amino Acid 4	Side Chain 4	MW 4	Total Match 4
Norway rat	Y	688N	Amidic	132.119	Y	694Q	Amidic	146.146	Y	735R	Basic	174.203	Y	360T	Hydroxylic	119.119	Y
Abingdon island giant tortoise	Y	576N	Amidic	132.119	Y	582Q	Amidic	146.146	Y	623R	Basic	174.203	Y	748T	Hydroxylic	119.119	Y
Goodes thornscrub tortoise	Y	576N	Amidic	132.119	Y	582Q	Amidic	146.146	Y	623R	Basic	174.203	Y	748T	Hydroxylic	119.119	Y
Terrapins	Y	576N	Amidic	132.119	Y	582Q	Amidic	146.146	Y	623R	Basic	174.203	Y	748T	Hydroxylic	119.119	Y
Western painted turtle	Y	576N	Amidic	132.119	Y	582Q	Amidic	146.146	Y	623R	Basic	174.203	Y	748T	Hydroxylic	119.119	Y
Three-toed box turtle	Y	576N	Amidic	132.119	Y	582Q	Amidic	146.146	Y	623R	Basic	174.203	Y	748T	Hydroxylic	119.119	Y
Painted turtle	Y	341T	Hydroxylic	119.119	Y	347E	Acidic	147.131	Y	388R	Basic	174.203	Y	519L	Aliphatic	131.175	Y
Loggerhead turtle	N	--	-	-	N	--	-	-	N	--	-	-	N	--	-	-	N

From  to 

SeqAPASS Results: Decision Summary Report

Create a Custom Decision Summary Report

Level 1 Options

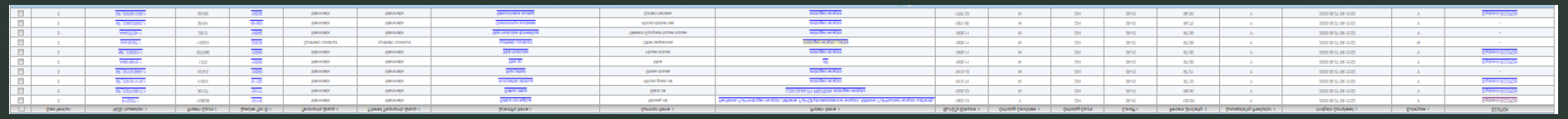
Level 2 Options

Level 3 Options

Push Level 1 To DS Report

Push Level 2 To DS Report

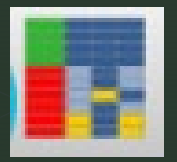
Push Level 3 To DS Report



Push Level 1 Boxplot To DS Report

Push Level 2 Boxplot To DS Report

Push Level 3 Heat Map To DS Report



Main | Level 1 | Level 2 | Level 3 | DS Report

Decision Summary Report

Level 1 Report

Select Taxonomic Groups (CLASS)	
Select All	Taxonomic Group
☑	Mammalia
☑	Testudines
☑	Lepidosauria
☑	Crocodylia
☑	Amphibia
☑	Aves
☑	Coelacanthimorpha
☑	Actinopteri
☑	Cladistia
☑	Chondrichthyes
☑	Dipnoi
☑	Hyperoartia

Select Species	
Select All	Species
☑	Norway rat
☑	Black rat
☑	African grass rat
☑	Shrew mouse
☑	Mice
☑	House mouse
☑	Western European house mouse
☑	African thicket rats
☑	Golden hamster
☑	Chinese hamster
☑	Ryukyu mouse
☑	White-footed mouse

◉ Common Name
○ Scientific Name

Level 1 Info

Level 1 Query Protein Information

SeqAPASS ID: 1717
Query Species: Rattus norvegicus
Query Protein: RecName: Full=Androgen receptor; AltName: Full=Dihydrotestosterone receptor; AltName: Full=Nuclear receptor subfamily 3 group C member 4
Query Accession: P15207.1 EXIT
Ortholog Count: 223
Protein and Taxonomy Data: 06/08/2020
BLAST Version: 2.10.0
Software Version: 4.1

Report Settings

Report Type: Primary
E-Value: 0.01
Sorted By Taxonomic Group: CLASS
Common Domains: 1
Species Read-Across: Y
Cut-off %:29.45
Show Only Eukaryotes: Y

Optional Components

Component	Add to Report
Level 1 Info	☑
Level 1 Visualization	☑

Level 2 Report

Select Level 2 Domains

Domain	Optional Components: Add To Report Table	Add Info to Report	Add Visualization to Report
(655) cd07073, NR_LBD_AR, Ligand binding domain of the nuclear receptor androgen receptor, ligand activated transcription regulator	☑	☑	☑

Level 3 Report

Level 3 Info

SeqAPASS ID: 1717
Template Species: Homo sapiens
Template Protein: [P10275.3] RecName: Full=Androgen receptor; AltName: Full=Dihydrotestosterone receptor; AltName: Full=Nuclear receptor subfamily 3 group C member 4
Protein and Taxonomy Data: 06/08/2020
BLAST Version: 2.10.0
Software Version: 4.1

Selected Amino Acids

706N, 712Q, 753R, 878T

Optional Components

Component	Add to Report
Level 3 Report	☑
Level 3 Info	☑
Level 3 Visualization	☑

SeqAPASS Results: Decision Summary Report

Final Decision Summary Report

Search: Enter keyword

Data Version	NCBI Accession	Filtered Taxonomic Group	Species	Protein	Level 1 Susceptible (Y/N)	(655) cd07073, NR_LBD_AR, Ligand binding domain of the nuclear receptor androgen receptor, ligand activated transcription regulator	Level 3 Template	Level 3 Amino Acids (Y/N)
5	P15207.1	Mammalia	Norway rat	RecName: Full=Androgen receptor; AltName: Full=Dihydrotestosterone receptor; AltName: Full=Nuclear receptor subfamily 3 group C member 4	Y	Y	Homo sapiens	Y
5	XP_032745817.1	Mammalia	Black rat	LOW QUALITY PROTEIN: androgen receptor	Y	Y	Homo sapiens	NA
5	XP_034341416.1	Mammalia	African grass rat	androgen receptor	Y	Y	Homo sapiens	Y
5	XP_021043964.1	Mammalia	Shrew mouse	androgen receptor	Y	Y	Homo sapiens	Y
5	AAB19916.1	Mammalia	Mice	AR	Y	Y	Homo sapiens	Y
5	NP_038504.1	Mammalia	House mouse	androgen receptor	Y	Y	Homo sapiens	Y
5	AAA37234.1	Mammalia	Western European house mouse	androgen receptor	Y	Y	Homo sapiens	Y
5	XP_028625865.1	Mammalia	African thicket rats	androgen receptor	Y	Y	Homo sapiens	Y
5	XP_005081209.1	Mammalia	Golden hamster	androgen receptor	Y	Y	Homo sapiens	Y
5	XP_027287560.1	Mammalia	Chinese hamster	androgen receptor isoform X3	Y	Y	Homo sapiens	Y

(1 of 104) 1 2 3 4 5 6 7 8 9 10 10 Download Table:

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Decision Summary Report

Evolution of the SeqAPASS tool

- V5.0 (2020): Develop visualization (Level 3), Develop Decision Summary Report
- v4.0 (2019): Improve visualization, user guidance, summary tables, interoperability
- v3.0 (2018): Develop visualization (Level 1 & 2), automate Level 3 Susceptibility Predictions
- v2.0 (2017): develop Level 3 Susceptibility Predictions
- v1.0 (2016): Develop interface Level 1 & 2 and integrate essential functionality

Acknowledgements

U.S. EPA, ORD

Donovan Blatz (ORISE)
Sara Vliet (ORISE)
Sally Mayasich (ORISE)
Marissa Jensen (Univ. Minnesota Duluth)

GDIT

Thomas Transue
Cody Simmons
Audrey Wilkinson

SeqAPASS v5.0

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https://seqapass.epa.gov/seqapass/