**Automated searches and email notifications.**

**Background**:

This feature is designed to allow users to search once, and then get notifications if any pathogen isolates match their search criteria. Unlike other NCBI databases the updates in the NCBI Pathogen Detection browser may be updated frequently. The email notification system aims to provide accessible information to those who need it the most without having to monitor when new updates to isolates occurs.

**Limitations**:

Searches are triggered for each and every organism group update that is delivered to the Pathogen Browser. An email is sent for each set of hits per organism group. That means if a search, for example for a particular antimicrobial resistance gene is not specific for a certain organism, then search results may be delivered multiple times per day. This is considered a feature and not a bug. There are currently 22 organism groups, and more are expected in the future. Not all searches can currently be done.

**Requirements**:

1. MyNCBI login. Searches are tied to an email address. The only way to do this is to use your MyNCBI login. You will need to be logged in to save searches to receive notifications. You do not need to be logged in to receive the notifications. The notifications will be sent to the MyNCBI email address you used when creating the account. For more information on MyNCBI see this link: <https://www.ncbi.nlm.nih.gov/account/>
2. A search results. To do this a search needs to be performed in the Pathogen Isolates Browser. We recommend starting with narrowly defined searches, otherwise you will be inundated with meaningless and noisy search results by email, which would be better performed in the browser when needed. <https://www.ncbi.nlm.nih.gov/pathogens/isolates#/search/>

The search syntax is not fully documented. Some typical searches are listed here for your convenience.

**Pilot study searches**:

These were done to test the system. The searches specify an organism/taxgroup and a SNP distance = 0 between any clinical and environmental isolate. To recreate those searches enter the following search terms:

taxgroup\_name:"Salmonella enterica" AND new:1 AND mindiff:0

taxgroup\_name:"E.coli and Shigella" AND new:1 AND mindiff:0

taxgroup\_name:"Campylobacter jejuni" AND new:1 AND mindiff:0

taxgroup\_name:"Listeria monocytogenes" AND new:1 AND mindiff:0

Brief search syntax: search syntax is case-specific. Delimiting searches against specific fields SHOULD use the same text as the popup when mousing over the column headers in the browser. Search fields are specified with the colon character “:” to separate the search content. Quotation marks ensure the entire string is searched for, and is particularly important in places such organism name, and AMR gene names that may have special characters. Use asterisk to denote wild-cards. Boolean operators are supported.

**Here are some common search fields**:

1. “taxgroup\_name” – this is used to specify which organism to search again. These are not always full scientific binomials, but approximate colloquial organism names.
2. “new:1” – this is used to specify only newly added isolates.
3. “mindiff” – this specifies the SNP distance to be used to find matches between a clinical and a food/environmental isolate. The number after the colon specifies the actual distances. To search within a range, use square brackets:

Ex: mindiff:[0 TO 4] will return any isolate (either clinical OR food/environmental) that is < 5 SNPs from something of the opposite type. Only isolates that are in SNP clusters will have this value

1. “minsame” – same as above but SNP distances between isolates of the same type
2. “epi\_type” – simplification to one of two types “clinical” or “environmental/other”
3. “geo\_loc\_name” – the geographical location the sample was obtained IF AND ONLY IF the submitter provides this info.
4. “AMR\_genotype” – the AMR genes found encoded within the isolate by the NCBI AMR Finder tool

**Example searches**:

taxgroup\_name:"Salmonella enterica" AND mindiff:[0 TO 3] AND geo\_loc\_name:"USA" AND new:1 AND epi\_type:"clinical"

* Will find any new Salmonella clinical isolates from the USA less than 4 SNPs to a food/environmental isolate

AMR\_genotypes:blaKPC\* AND AMR\_genotypes:blaNDM\*

* Will find ANY isolate that encodes both a blaKPC AND a blaNDM gene

1. Saving the search. Once a search is performed, there will be a save button. Hitting the save button will open a pop-up menu. You will be required to name your search. Search names are used to distinguish different searches and will be used in the automatic email notification and the saved searches dialog.
2. Once a name is entered and the search is saved, then automatic notifications will be sent the next time your search results returns new isolates.

**Saved searches**:

Once you save a search there will also be a saved searches button. Clicking on this link will allow you to modify or delete or rename any searches that you have already saved.

Once you start receiving email notifications you will be able to click on the links in the email to go directly to the Pathogen Browser or directly to the SNP trees containing those isolates returned in your search.