

Antimicrobial susceptibility testing data submission

A) Account registration:

Data providers should already have an EBI/ENA account and have submitted the read data they want to link with MICs (see tutorial on “Submitting read data”).

B) Antimicrobial susceptibility data format

The accepted format of the file is a tab-delimited file. If you use Excel, please save your file as ‘Tab Delimited Text’ and then submit the saved file.

Please note that all fields should exactly match the template in order to be recognized by the validation script (see under ‘Submission Procedure/Data validation). Please be sure to avoid any typos, additional blank spaces, upper and lower cases differences or other characters. To indicate decimals, you should use a dot [“.”] and not a comma [“,”].

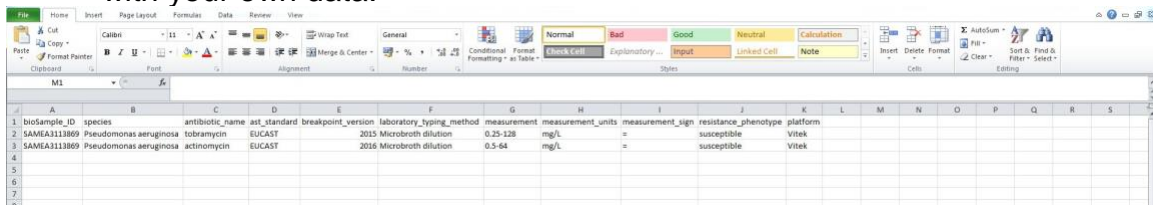
The following are the required fields and some explanations. The first line (header) of the tab file should include the column names and should start with #. Please see the “antibiogram_example.txt” file (provided) if you want an example of correct template.

An example of the header is:

```
bioSample_ID      species      antibiotic_name    ast_standard
breakpoint_version laboratory_typing_method measurement
measurement_units measurement_sign resistance_phenotype
platform
```

Please note that the **Species** shall be unique in the submission file and each file should only represent experiments against one species. If you have tested multiple species, please provide one file per species.

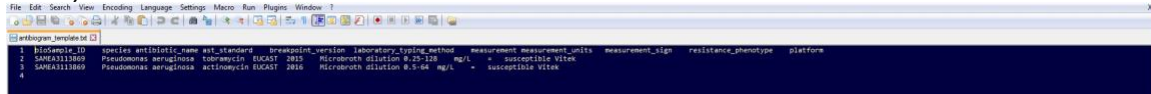
- 1) Prepare an excel file as follows: open the file “antibiogram_template.txt; copy the contents of the file into a blank excel sheet. Complete the form with your own data.



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	bioSample_ID	species	antibiotic_name	ast_standard	breakpoint_version	laboratory_typing_method	measurement	measurement_units	measurement_sign	resistance_phenotype	platform								
2	SAMEA311389	Pseudomonas aeruginosa	tobramycin	EUCAST	2013	Microbroth dilution	0.25-128	mg/L	=	susceptible	Vitek								
3	SAMEA311389	Pseudomonas aeruginosa	actinomycin	EUCAST	2016	Microbroth dilution	0.5-64	mg/L	=	susceptible	Vitek								
4																			
5																			
6																			
7																			
8																			



2) Save the excel file as tab-delimited text. The final file should look like this:



BioSample_ID	species	antibiotic_name	ast_standard	breakpoint_version	laboratory_typing_method	measurement	measurement_units	measurement_sign	resistance_phenotype	platform
SAMEA3113869	Pseudomonas aeruginosa	amikacin	EUCAST	2005	microbroth dilution 0.5-256	mg/L	+	susceptible	VITEK	
SAMEA3113869	Pseudomonas aeruginosa	actinomycin	EUCAST	2005	microbroth dilution 0.5-64	mg/L	+	susceptible	VITEK	

The explanations of the columns are as follows:

1. BioSample_ID (Mandatory)

BioSample ID needs to be provided (SAM accession, e.g. SAMEA3113869). BioSample IDs are attributed to submitted samples, so please submit your raw fastq files first (See the “Submitting data reads” protocol for more information).

2. Species (Mandatory)

3. Antibiotic_name (Mandatory)

4. AST_standard (Mandatory)

Accepted Antimicrobial Susceptibility Testing (AST) standards are: CLSI, EUCAST, CA-SFM, BSAC, DIN, SIR and WRG

5. Breakpoint_version (Mandatory)

Please state the version of AST standard protocol used for your isolates (Free-text).

6. Laboratory_typing_method (Mandatory)

Please indicate here the used antibiotic susceptibility method for your isolates. Choose from the following methods:

- Dilution methods:
 - Broth dilution
 - microbroth dilution
 - Agar dilution
- Diffusion methods:
 - Disc-diffusion
 - Neo-sensitabs
 - Etest

7. Measurement

Can be a fixed number or a range

Ranges for dilution: 0.01 to 2048

Ranges for Diffusion: 6 to 99

8. Measurement_units (Mandatory)

For dilutions methods: mg/L

For diffusion methods: mm

9. Measurement_sign (Mandatory)

>, <, =

10. Resistance_phenotype (Mandatory)

intermediate, susceptible (or sensitive), resistant, non-susceptible, not defined

11. Platform (optional)

free-text

C) Submission Procedure:

[1] Data validation:

You will need to validate your prepared antibiograms (see under B) to make sure they fulfil the required format. We recommend you validate your files locally prior to upload to ENA, specially when testing this for the first time. This will save unnecessary file upload in case there are errors in your antibiogram file. The actual submission step includes a validation step, hence it is best to validate prior to upload, so any errors can be rectified, and your submission goes smoothly.

To validate the files, please use the script available in this [Github](#).

Please follow the guidelines in README.md. You can find the validation and submission package in the '[validator](#)' directory from the main file 'validator.py'. The file has two options (-m validate) and (-m submit), so the same package can be used when submitting.

[1] Data upload:

Once you have validated your antibiogram files successfully, you should start data upload and submission to ENA.

Create a directory called “antibiogram” on your computer and place the files containing your susceptibility data inside it.

Connect to the EBI/ENA website (<http://www.ebi.ac.uk/ena>). Go to the “Submit & Update” tab, then click on “Submit to ENA”. Enter your account information to connect (Webin-NNNN and password).

Go to the “New submission” tab and use the “[Webin File Uploader](#)”. You will then launch the “Webin Java web start”. Enter your Webin identifier (“username”) and Webin password, then connect. Browse the “Upload Directory” containing your files (“antibiogram”). Select the files you want to upload. Tick the boxes “Overwrite” and “Upload Tree” to copy the directory and the files. Click on “Upload” to start the transfer.

Files can also be [uploaded](#) using FTP (file transfer protocol) or Aspera, if you prefer a different method. Note that if you use an FTP client such as FileZilla you will have to create manually a directory called “antibiogram” on the EBI Remote site, in which you will then transfer the susceptibility testing data files.

More information and help on the file transfer can be found at this address:

<https://ena-docs.readthedocs.io/en/latest/fileprep/upload.html>

[2] Data submission:

Once the antibiogram text files have been uploaded, you can use the same script used to validate, and submit the validated files to ENA.

Please read through the README.md which includes all details, including examples of an output after a successful submission and in case of a validation error.

Any issues please contact ENA on: datasubs@ebi.ac.uk and include the subject line 'Antibiogram file submission'