

Discussion of ideas and suggestions for upcoming EURL-AR Training Courses

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Purpose of training courses

- **TO PROVIDE SCIENTIFIC AND TECHNICAL ASSISTANCE TO NRLs**
- coordinating practical arrangements necessary to apply new methods of laboratory analysis, testing or diagnosis, and informing national reference laboratories of advances in this field;
- To organize and facilitate one training course per year for primarily national reference laboratories with the purpose of
 - 1) ensuring harmonization according to the Commission Implementing Decision (2020/1729/EU) but also taking into consideration the EFSA Technical specifications of 30 April 2019 on harmonised monitoring of antimicrobial resistance in zoonotic and indicator bacteria from food-producing animals and food,
 - 2) improving and boosting communication, and
 - 3) addressing knowledge gaps within the area of EURL-AR scope.

Topics of previous training courses

- **On-site courses**
 - Combination of hands-on and theory
 - Both including lab work and computer exercises
 - 2017 - WGS
 - 2018 - NGS for surveillance of AMR
 - 2019 - Enhancing WGS capacity of AMR surveillance

- **Online courses**
 - Including computer exercises and interpretation
 - 2020 - QC, MIC interpretation, genotype to phenotype interpretation
 - 2021 - QC, MIC interpretation, genotype to phenotype interpretation, subtyping and phylogeny

Suggestions and feedback from you!

- What is of main interest or need for your laboratory
- New suggestions
- Are there something we are missing?
- Survey August/September
– Follow up and discussion
- 19 respondents – good suggestions

Rate the topics (0 to 100)

0 indicates no need for training in this topic and

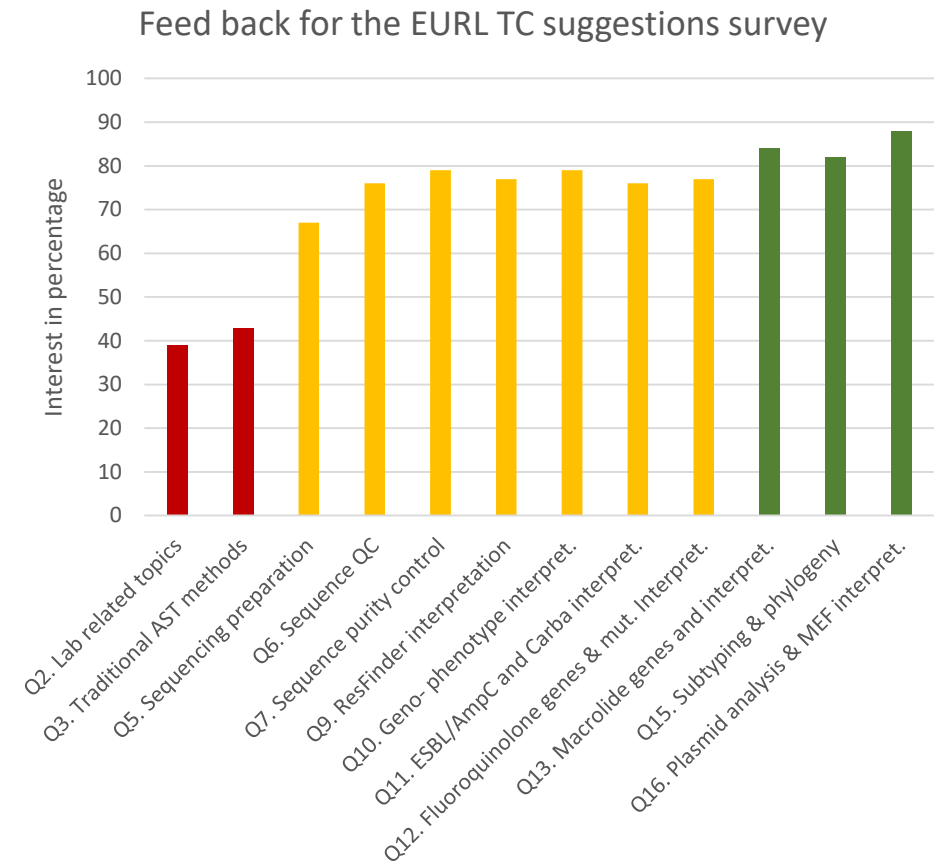
100 indicates a high need for training in this topic.

Interest:

< 50 %

50-80 %

> 80 %



Lab related < 50 %

Q2. Lab related topics

Q3. Traditional AST methods

Suggestions:

- Handling and maintaining of reference collection in line with ISO standards and accreditation requirements.
- Include general discussion rounds where one can ask lab-related questions
- Need for training of new staff - a lot of in-house experience
- No further need for AST training

Rate the topics (0 to 100)

0 indicates no need for training in this topic and 100 indicates a high need for training in this topic



Sequencing, analysis, genotypes

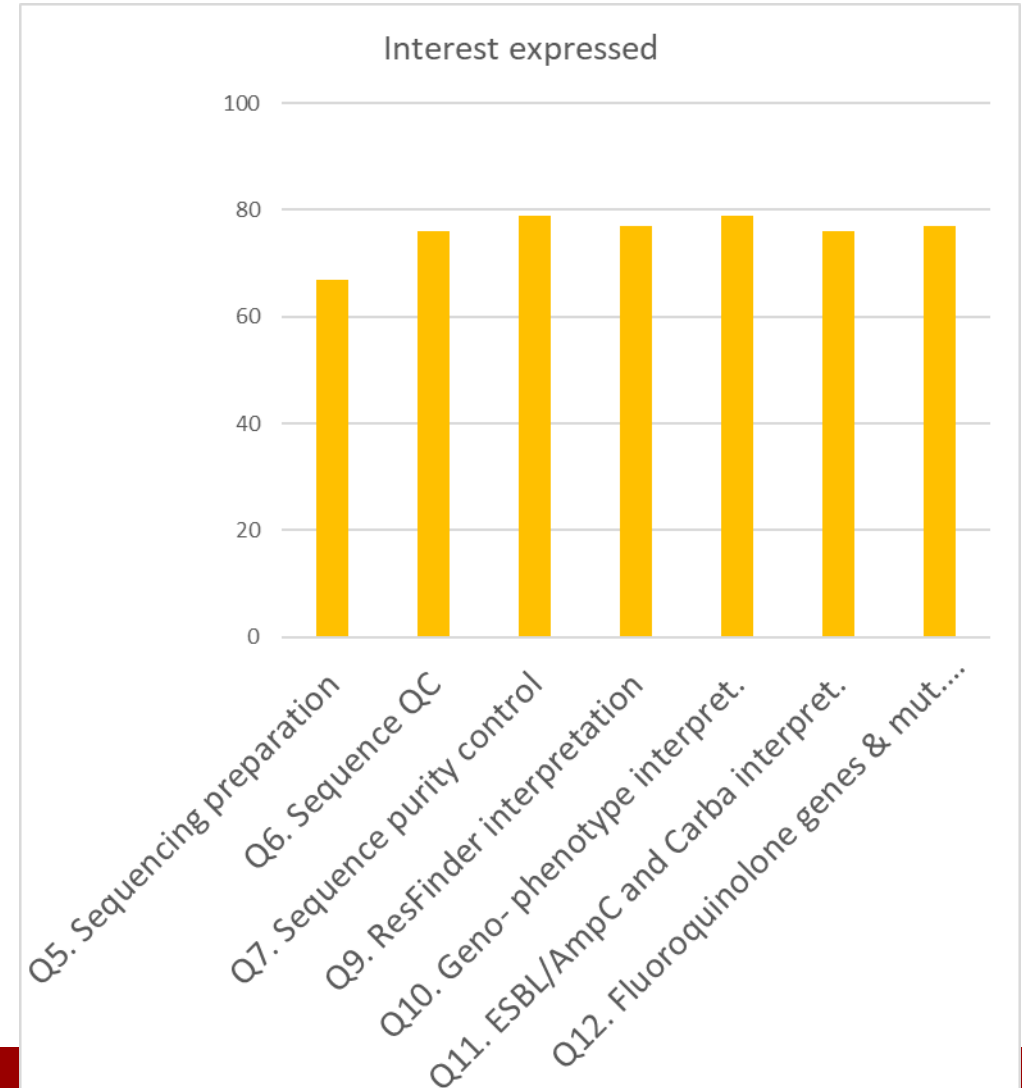
50-80 %

- Least interest/need for the lab work
 - Sequencing preparation (67)
- More interest/need for
 - Sequence purity control (79)
 - Genotype/phenotype interpretation (79)
- **Suggestions:**
 - Sequencing preparation:
 - planning the sequencing experiment/library preparation (Illumina and Minlon)
 - Learn how to use the tools for the quality check for Illumina and Minlon
 - QC metrics and which parameteres to look into

Rate the topics (0 to 100)

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100 indicates a high need for training in this topic



Genotype to phenotype

- **Suggestions:**

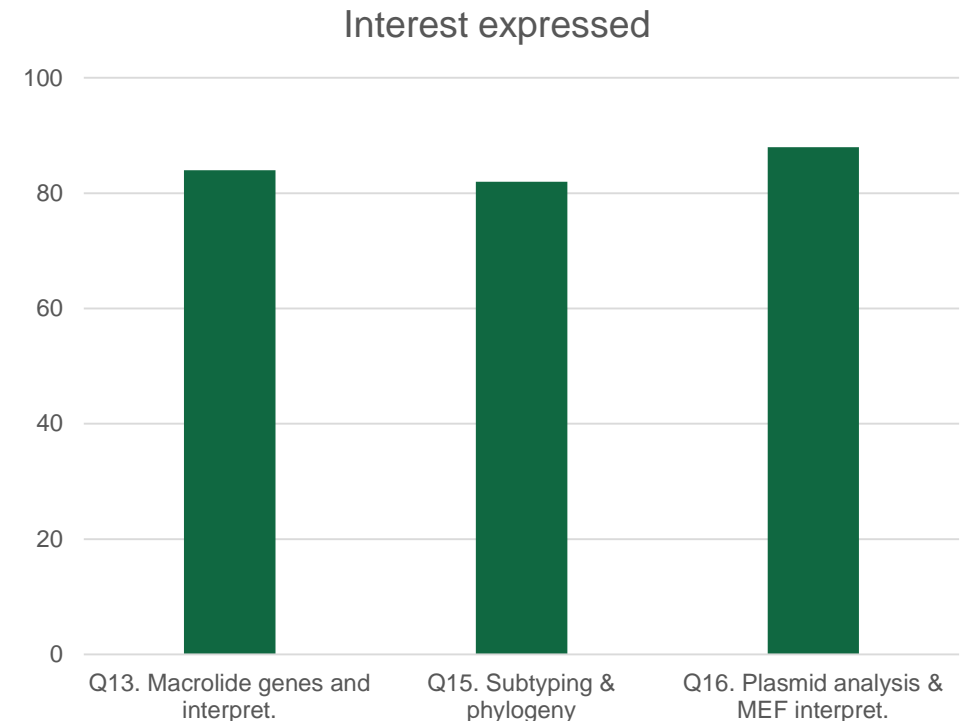
- Besides macrolides, please consider other antimicrobials used against gram-positive bacteria. One of the weakness of previous trainings is that it was mainly focused on Gram-negative bacteria with only a very few consideration on Gram-positive bacteria, while both are important for AMR
- AmpC chromosomal mutation; chromosomal point mutation
- Reporting of genes/mutations to EFSA via mapping tool
- If the question is about alternatives to ResFinder: score 20. If the question is about combinations of genes: score 100

WGS analysis topics > 80 %

- **Suggestions:**
- Plasmid analysis and assembly; plasmid incompatibility interpretation; Clade interpretation
- Some theory on hybrid assemblies
- We would like to know more about combination effects on resistance genes.

Rate the topics (0 to 100)

0 indicates no need for training in this topic and 100 indicates a high need for training in this topic



Final comments or suggestions about future training courses?

- Please include also Gram-positive bacteria in the examples of the course and discuss about specificities of related AMR
 - Both Gram positive and Gram negative bacteria are important
- Training on the "trailing endpoints" interpretation of MIC in Gram positive bacteria would be very useful/helpful
- Another important field is the analysis of virulence factors and mainly the interpretation of the huge list of virulence genes retrieved from virulenceFinder or other tools
- A practical course on how to use the bioinformatics tools for the quality check, trimming, assembly, mapping...

Final comments or suggestions about future training courses?

- The courses are extremely important to confirm the competences of NRL. The reason for rating <100 of any topic is not because it is less important. They are equally relevant for competence building and confirmation
- NRL-AMR would very much appreciate a training in verification techniques of the MIC method according to new standards of ISO 16140-3:2021
- We would like to get informed about new ESBL variants and new interpretations of known variants.
- Training in presence for two to three days would be excellent, ideally in conjunction with the annual workshop (save travel expenses)
- On-site training would be nice again!

Conclusions

- Less need for further training in AST – laboratory work
 - Reference strains and MIC related to ISO standards and accreditation
 - Include more gram positive examples (trailing end points)
 - Include discussion rounds where one can ask lab-related questions
- Interest in planning and library preparation for both Illumina and Minlon
 - Likewise for QC – which tools and parameters
- More interest for genomic analysis
 - Genotype to phenotype
 - Include Gram positive
 - Combinations of genes
 - Plasmid analysis
 - Hybrid assemblies



Thank you
for feed
back and
suggestions!

DTU



Looking
forward to
meet on-site
in 2022!!