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Exposure assessment of ESBL in meat

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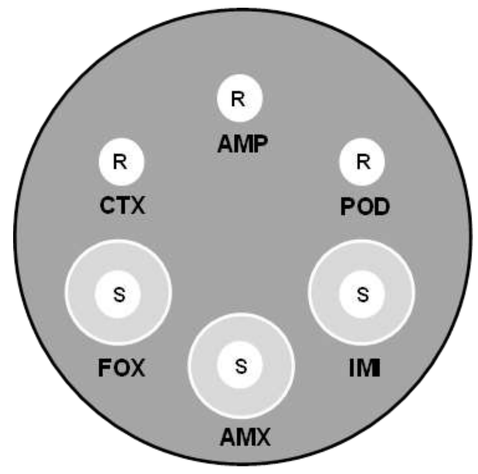
What are ESBL?

- Plasmid-encoded enzymes found in *Enterobacteriaceae*
- Confer resistance to β-lactam antibiotics
  i.e. penicillins, 2nd, 3rd and 4th generation cephalosporins and monobactams
- ESBL cause severe human infections
- The increasing occurrence worldwide is worrying

What is the project objective?

To rank the three major types of meat as ESBL exposure sources

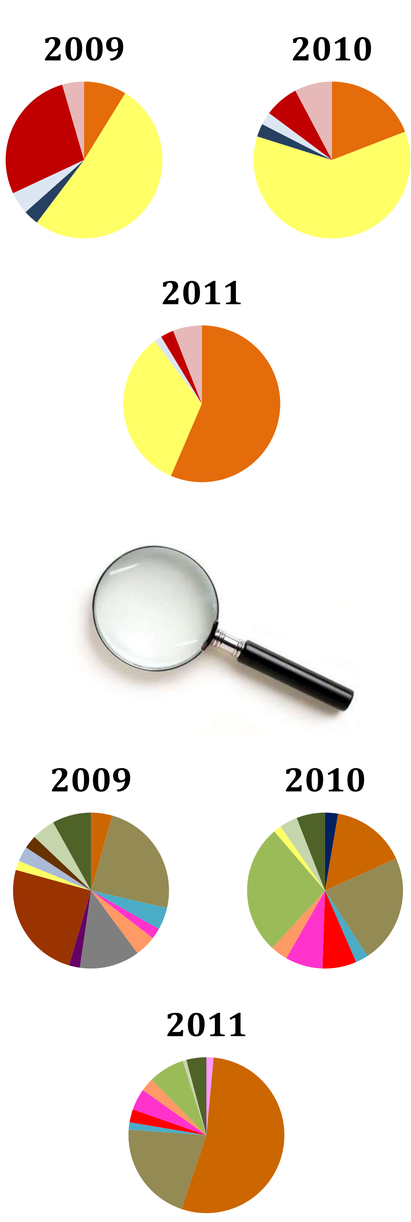
This study is also useful for future risk assessment and source attribution

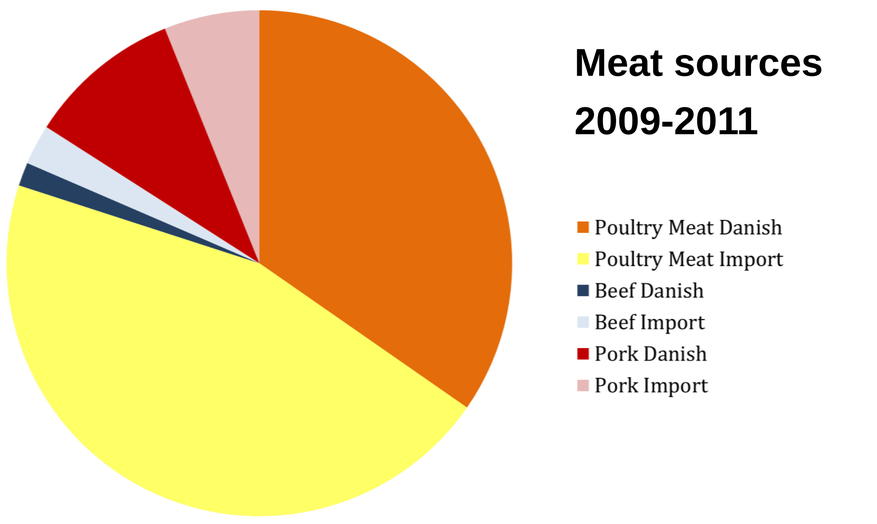


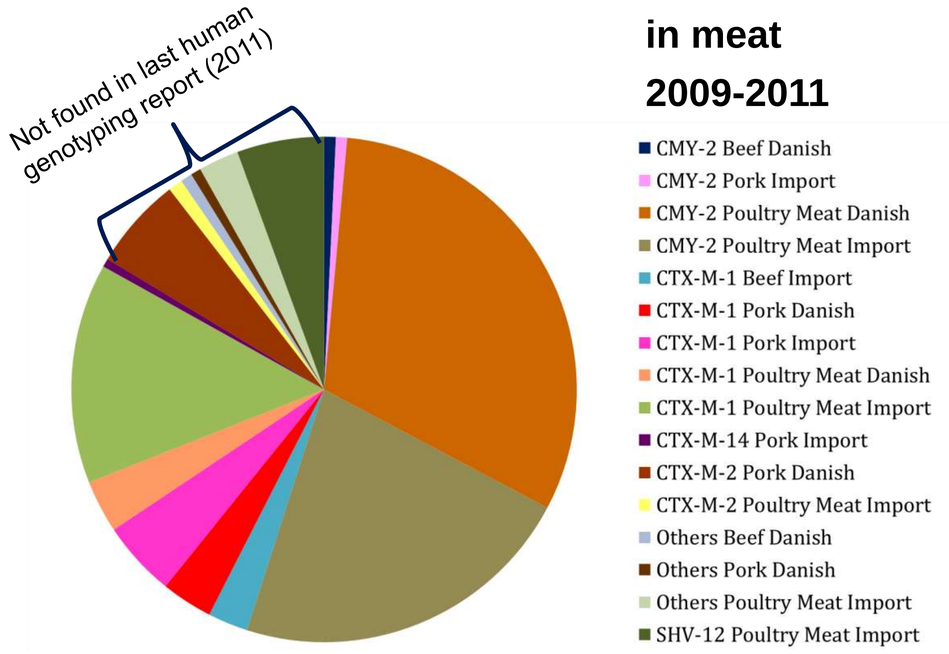
What are the potential ESBL sources?

What is the relative importance of each type of meat?

Exposure assessment performed using data from DANMAP (2009-2011)
The contribution of each meat type to the human exposure was based on identified genes in the ESBL positive samples weighted by the meat consumption patterns in Denmark







What still needs to be done?

- Model the occurrence of different genes taking into account uncertainty related to sampling
- Further studies are needed to reveal the relative importance of several sources of ESBL to humans, such as pets, environment, travel and nosocomial infections, and to develop a source attribution model
- Needs to be investigated if the terminated use of cephalosporins in top of the poultry breeding pyramid will reduce the ESBL occurrence in poultry over the next years and lead to less exposure of humans through poultry meat

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