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## Poster Session 2 – Workshop Rodent-Borne Diseases

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### **72 Resistance to last-resort human antimicrobial agents among gram-negative bacteria recovered from Barcelona Norway rats (*Rattus norvegicus*)**

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Gram-negative pathogenic bacteria are shared between humans and animals but also the intra- and the inter-species exchange of genetic determinants of resistance are common between bacterial pathogens. Recent reports have identified multidrug-resistant bacteria from sewage samples in different parts of the world but there is no data regarding the potential role of urban rats as reservoirs and source of antimicrobial resistant bacteria that are relevant to human health. From January through November 2017, two hundred and twelve Norway rats (*Rattus norvegicus*) were captured with kill traps in different sections of the Barcelona sewers. Intra-rectal samples from captured animals were cultured on selective media for the isolation of ESBL and/or carbapenem resistant gram-negative bacteria. Species identification was performed by MALDI-TOF/MS and antimicrobial susceptibility was determined by disc diffusion, and Etest and microdilution when necessary, following EUCAST guidelines. Detection of genes encoding ESBL and carbapenemases was performed by PCR and Sanger sequencing. Pulsed-field gel electrophoresis was used to study the clonal relatedness of all isolates and MLST analysis was performed on selected isolates. Overall, 229 isolates were recovered and identified, in order of abundance, as either *Escherichia coli*, *Klebsiella pneumoniae*, *Enterobacter* spp., *Raoultella ornithinolytica*, *Serratia* spp., *Citrobacter* spp., and *Pseudomonas* spp. Resistance to extended-spectrum cephalosporins was high among *Escherichia coli*, *Klebsiella pneumoniae* and *Enterobacter* spp (>50%) associated with carriage of ESBL. Resistance to carbapenems was identified in roughly 10% of the isolates, mostly associated with carriage of KPC and NDM carbapenemases. Isolates with the same mechanism of resistance were clonally related but overall there was high clonal diversity. Our results show alarming levels of antimicrobial resistance to clinically relevant antibiotics among gram-negative bacteria colonizing the intestinal tract of Barcelona rats. Additional studies to analyze transmission of resistance mechanisms and bacterial strains between humans and urban rats are ongoing.

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# Julius-Kühn-Archiv

Jens Jacob, Jana Eccard (Editors)

6<sup>th</sup> International Conference of Rodent  
Biology and Management  
and  
16<sup>th</sup> Rodens et Spatium

Potsdam, Germany, 3-7 September 2018

Book of Abstracts



Julius Kühn-Institut  
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