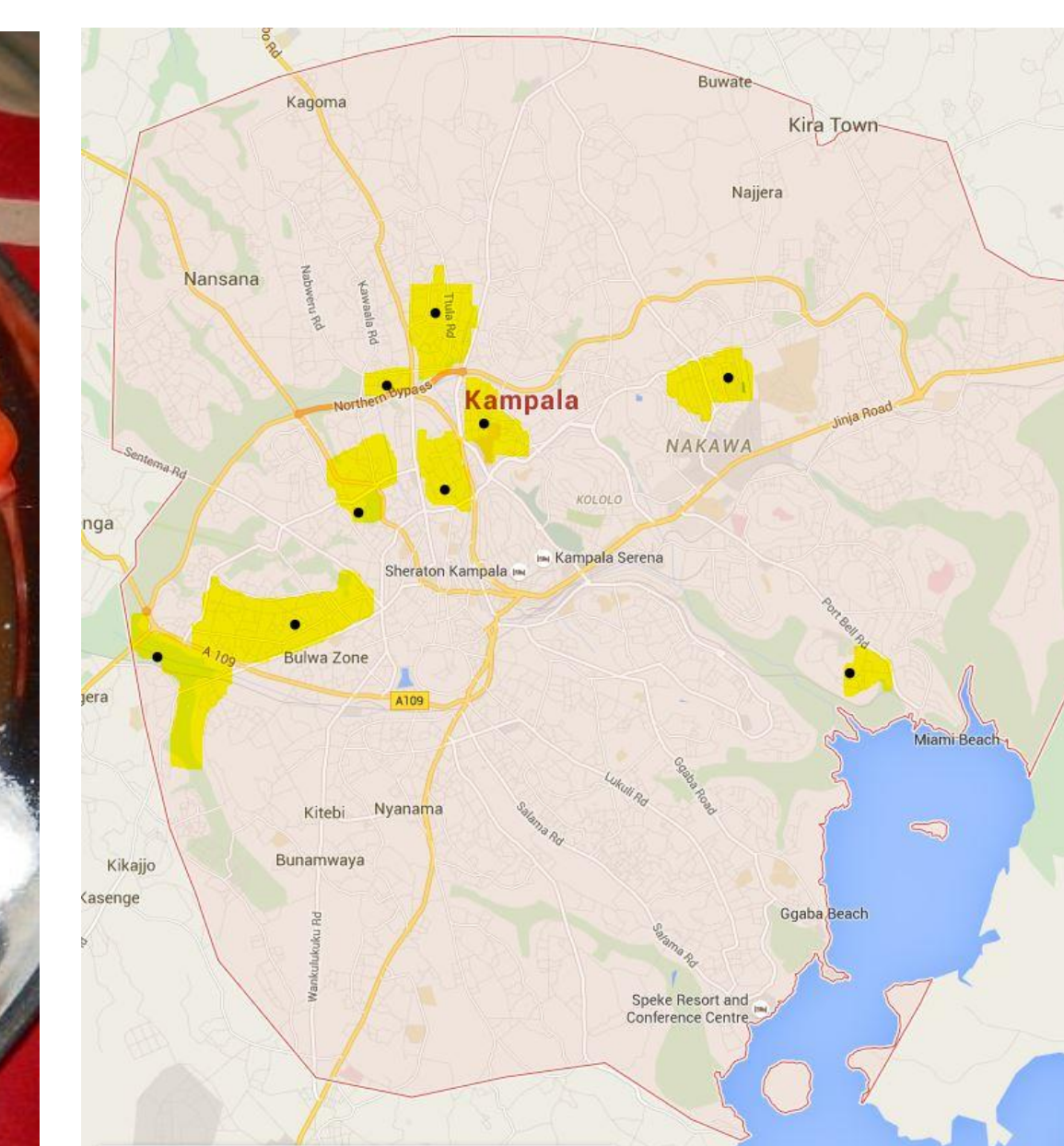


# Antimicrobial resistance of *Salmonella enterica* in pork and vegetable servings at pork joints in Kampala, Uganda



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Photos by Martin Heilmann and Kristina Roesel, ILRI/Freie Universität Berlin



## Rationale & purpose

According to WHO, in 2010, non-typhoidal *Salmonella* were the most important foodborne hazard in terms of overall burden and deaths, especially in Africa.

We examined the occurrence of *Salmonella (S.) enterica* at pork joints in Kampala as well as phenotypic antimicrobial resistance (AMR) patterns and plasmid profiles of the obtained isolates.

## Findings and conclusions

59 isolates of *S. enterica* were obtained from 41 of the 77 pork joints (53.2%). Raw pork and flies' midguts were most frequently contaminated.

Substrate:	Raw pork	Flies' midguts	Water
No. positive (%)	24 (31.2%)	17 (22.1%)	7 (9.1%)

Substrate:	Tomatoes	Cabbage	Onions
No. positive (%)	6 (7.8%)	4 (5.2%)	2 (2.6%)

Substrate:	Roasted pork	Working utensils	Butchers' hands
No. positive (%)	1 (1.3%)	0	0

Heilmann, Martin; Ndoboli, Dickson; Roesel, Kristina; Grace, Delia; Huehn, Stephan; Bauer, Burkhard; Clausen, Peter-Henning (2015). Occurrence of *Salmonella* spp. in flies and foodstuff from pork butcheries in Kampala, Uganda. Paper presented at the Annual expert meeting on parasitology and parasitic diseases at the German Veterinary Association in Stralsund, Germany, 29 June – 1 July 2015.

High levels of phenotypic resistance and high levels of multi-drug resistance were observed.

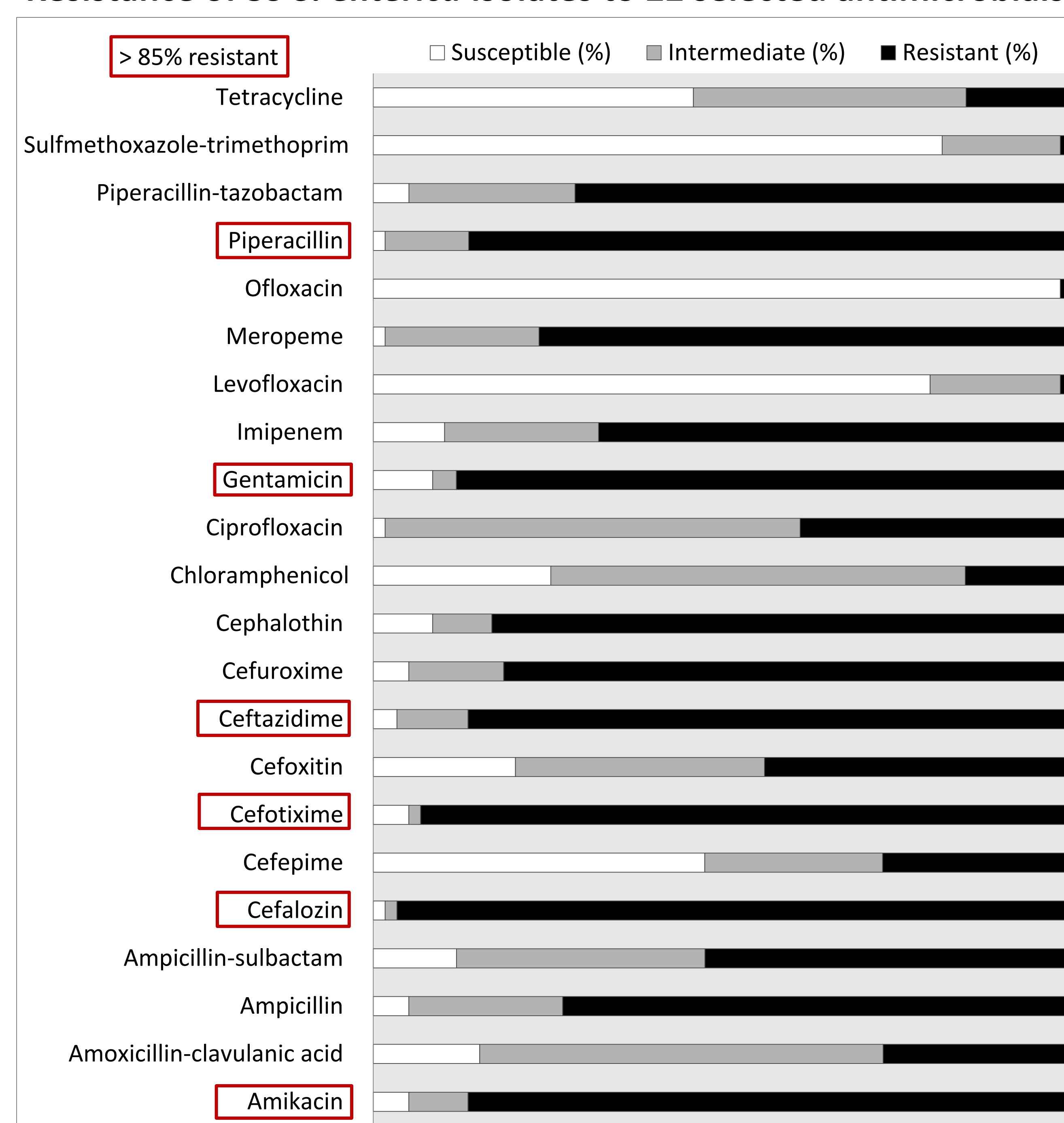
Six incompatibility groups were detected: FIA, FIB, FIC, P, W, and Y. The average number was low (2.4) suggesting that resistance is encoded in *S. enterica* chromosomes or plasmids not tested.

## Methods

As part of a prevalence survey (Heilmann et al., 2015), *S. enterica* was obtained from 693 samples at 77 randomly selected pork joints in three divisions of Kampala. At each pork joint, nine different substrates were examined: raw pork, roasted pork, raw vegetables, water, flies, working utensils, butchers' hands.

1. Isolation of *S. enterica* according to ISO 6579:2002
2. Disc diffusion test with 22 antimicrobials using Luria-Bertani agar
3. PCR-based replicon typing recognizing 18 plasmid-coded incompatibility groups: A/C, B/O, F, FIA, FIB, FIC, HI1, HI2, I1-1<sup>y</sup>, K, L/M, N, P, Q, T, W, X, and Y.

## Resistance of 59 *S. enterica* isolates to 22 selected antimicrobials



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