



Epidemiología Regional e Identificación molecular de *Klebsiella pneumoniae* productora de KPC

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Resistencia a carbapenems

¿Qué saber y para qué?

¿para qué?

¿Qué saber?

¿Qué mecanismo?

¿Se transfiere?

¿Qué microorganismo?



¿Qué mecanismo?

Distintos mecanismos pueden tener distinta expresión fenotípica

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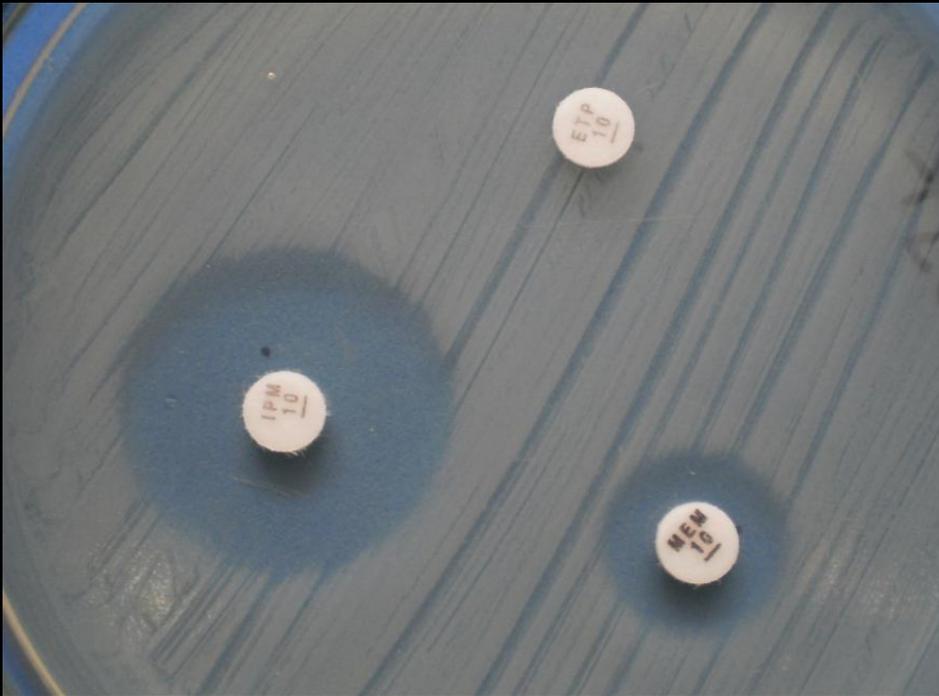
Letter to the Editor

Full Resistance and Decreased Susceptibility to Carbapenems in IMP-13-Producing *Pseudomonas aeruginosa* Isolates from an Outbreak[∇]

TABLE 1. Epidemiological data and antimicrobial resistance profile^a

| Isolate | Age (yr)/sex | Admission date (mo/day/yr) | Underlying condition ^b | Ward ^c | Diagnosis ^d | Culture source ^e | Empirical therapy ^f | Date of isolation (mo/day/yr) | Antibiotic susceptibility interpretation ^g | | | | Therapeutic treatment ^h | Outcome |
|---------|--------------|----------------------------|-----------------------------------|-------------------|------------------------|-----------------------------|--------------------------------|-------------------------------|---|-------------|---------|-------------|------------------------------------|-----------|
| | | | | | | | | | IPM | | MEM | | | |
| | | | | | | | | | DD (mm) | MIC (µg/ml) | DD (mm) | MIC (µg/ml) | | |
| 1 | 65/male | 11/26/04 | — | ICU | ABS | AF | SAM, TZP, CIP, IPM | 12/14/04 | 20 (S) | 4 (S) | 18 (S) | 4 (S) | CST | Died |
| 2 | 69/female | 12/15/04 | AH, SK | ICU | EVS | BL/CAT | VAN, SXT, AMK | 12/31/04 | 21 (S) | 2 (S) | 17 (S) | 4 (S) | CST | Died |
| 3 | 60/male | 12/30/04 | AMI, AH | ICU | Sepsis | BL | SAM, GEN | 1/11/05 | 20 (S) | 2 (S) | 16 (S) | 4 (S) | CIP, SAM, GEN | Died |
| 4 | 57/male | 3/25/05 | SCZ, SK, COL | ICU | VAP | BAL | CRO, CIP, TZP, IPM, SXT | 4/7/05 | 21 (S) | 2 (S) | 21 (S) | 4 (S) | SXT, IPM | Died |
| 6 | 56/female | 2/28/05 | DM, CRF | GW | SSTI, OS | BO | Unknown | 5/16/05 | 21 (S) | 2 (S) | 17 (S) | 4 (S) | Unknown | Favorable |
| 5 | 31/male | 5/11/05 | — | ICU | VAP | BAL | CAZ, VAN | 5/18/05 | 20 (S) | 2 (S) | 16 (S) | 2 (S) | PIP, AMK | Died |
| 7 | 86/female | 5/10/05 | DM | ICU | CAI | CAT | CRO, CAZ, AMK, VAN | 5/26/05 | 21 (S) | 2 (S) | 17 (S) | 4 (S) | IPM | Died |
| 8 | 22/male | 5/28/05 | SK | ICU | VAP | BAL | | 6/3/05 | 21 (S) | 2 (S) | 21 (S) | 4 (S) | CIP, AMK | Favorable |
| 9 | 49/male | 5/27/05 | COPD CRF | ICU | VAP | BAL | SAM, CIP | 7/9/05 | 18 (S) | 2 (S) | 19 (S) | 2 (S) | IPM, CST | Died |
| 10 | 42/male | 7/05/05 | — | ICU | VAP | BAL | CRO, CLI | 7/9/05 | 21 (S) | 2 (S) | 20 (S) | 4 (S) | IPM, CST | Died |
| 11 | 67/male | 7/08/05 | AH | ICU | VAP | BAL | CIP, AMK | 7/15/05 | 21 (S) | 2 (S) | 19 (S) | 4 (S) | IPM | Favorable |
| 12 | 79/male | 7/15/05 | DV, HF | ICU | VAP | BAL | SAM, CIP | 7/23/05 | 18 (S) | 4 (S) | 17 (S) | 8 (I) | IPM, CST | Died |
| 13 | 27/female | 8/14/05 | — | ICU | VAP | BAL | TZP, VAN, CAZ, IPM, SAM | 12/10/05 | 6 (R) | 32 (R) | 6 (R) | 128 (R) | TZP | Favorable |
| 14 | 31/male | 12/5/05 | — | GW/S | SSTI | ST | IPM, VAN | 12/11/05 | 6 (R) | 32 (R) | 6 (R) | 128 (R) | IPM, VAN, CST | Died |
| 15 | 33/male | 12/19/05 | — | GW | SSTI | ST | CFZ, GEN, ERY | 12/21/05 | 7 (R) | 32 (R) | 6 (R) | 128 (R) | IPM, AMK | Favorable |
| 16 | 36/female | 12/19/05 | DM, CRF | GW | CAI | BO/CAT | IPM, VAN | 12/30/05 | 6 (R) | 32 (R) | 6 (R) | 128 (R) | AMK, CST | Died |
| 17 | 33/male | 12/19/05 | — | GW/S | SSTI | ST | CFZ, GEN | 1/2/06 | 20 (S) | 2 (S) | 20 (S) | 2 (S) | IPM, AMK | Favorable |
| 18 | 56/male | 12/9/05 | VL | ICU | PSP | AF | IPM, VAN, SXT, RIF | 1/6/06 | 21 (S) | 2 (S) | 21 (S) | 2 (S) | IPM, VAN | Favorable |

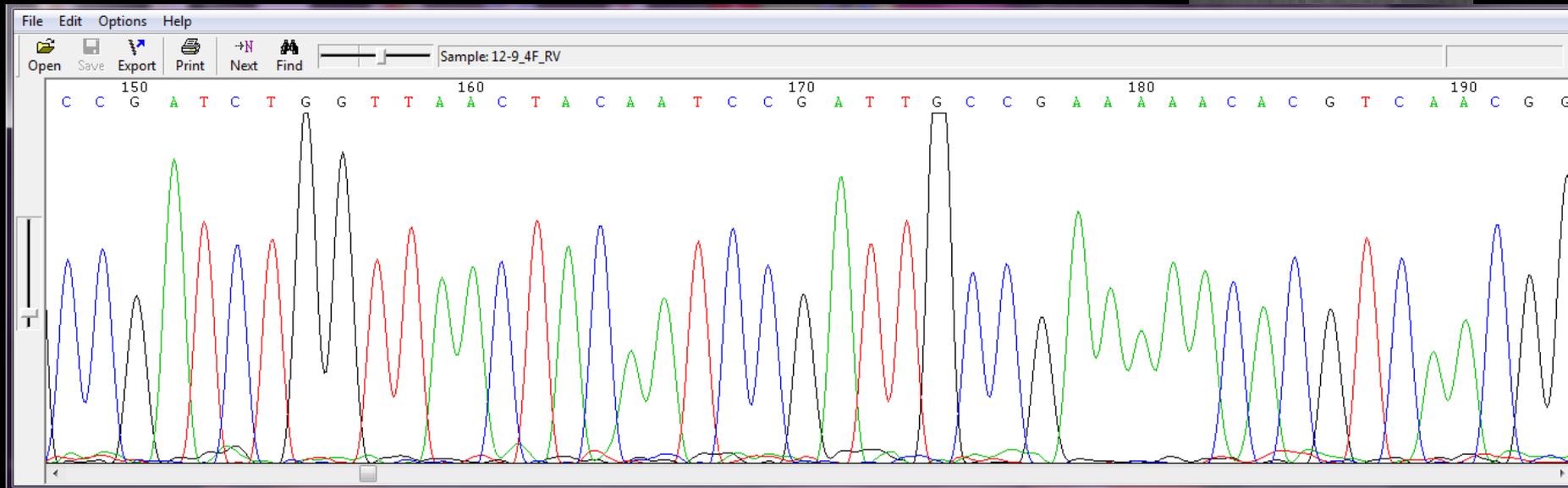
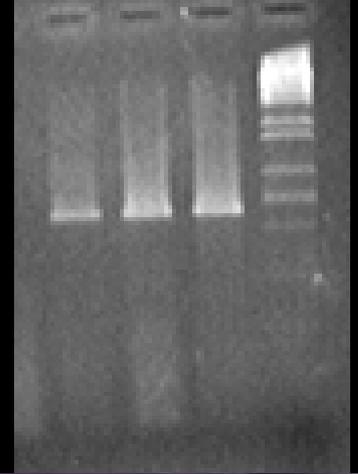
Escalera Fenotípica



BLEE + Impermeabilidad

Diagnóstico

Sospecha fenotípica/ Confirmación molecular



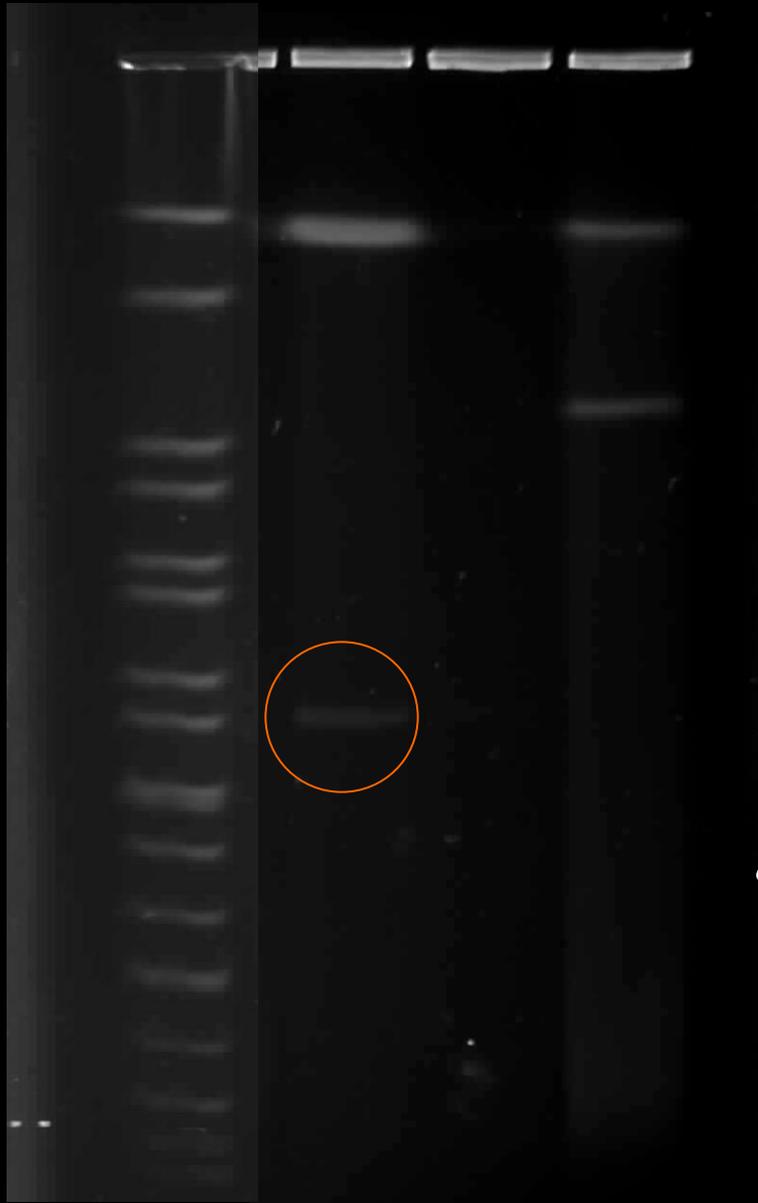
KPC-2

Dissemination of *bla*_{KPC-2} by the Spread of *Klebsiella pneumoniae* Clonal Complex 258 Clones (ST258, ST11, ST437) and Plasmids (IncFII, IncN, IncL/M) among *Enterobacteriaceae* Species in Brazil[∇]

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FIG. 1. Geographic distribution of KPC-2-producing *Enterobacteriaceae* in Brazil. Abbreviations: ES, Espírito Santo; GO, Goiás; DF, Distrito Federal; MG, Minas Gerais; PE, Pernambuco; RJ, Rio de Janeiro; RS, Rio Grande do Sul; SP, São Paulo; ND, not determined. States where KPC producers were isolated appear shaded in gray. *K. pneumoniae* isolates are represented by circles, *E. cloacae* isolates by squares, *S. marcescens* by a triangle, *C. freundii* by a hexagon, and *E. coli* isolates by a rhombus. Bold circles represent STs belonging to CC258 (ST258, ST11, and ST437). Clones analyzed in this study are indicated by arrows. ST25 and ST327 are double-locus variants of each other.



220kb

¿No conjugativo?

¿Qué microorganismo?



REVIEW ARTICLE

Multiresistant Gram-negative bacteria: the role of high-risk clones in the dissemination of antibiotic resistance

Neil Woodford, Jane F. Turton & David M. Livermore

FEMS Microbiol Rev ■ (2011) 1–20

Los clones exitosos y por lo tanto prevalentes

¿Reciben la resistencia porque son los mas prevalentes?

¿Se hacen prevalentes por ganar la resistencia?

Estos clones son exitosos en la diseminación de la resistencia

Por diseminación clonal

Por transferencia

Los primeros aislamientos europeos de *K. pneumoniae* KPC+ obtenidos de pacientes provenientes de zonas endémicas

A tener en cuenta viajes y atención sanitaria o turismo sanitario en Argentina y Brasil o zonas endémicas de carbapenemasas

¿Cómo identificar los clones?

PFGE VS MLST

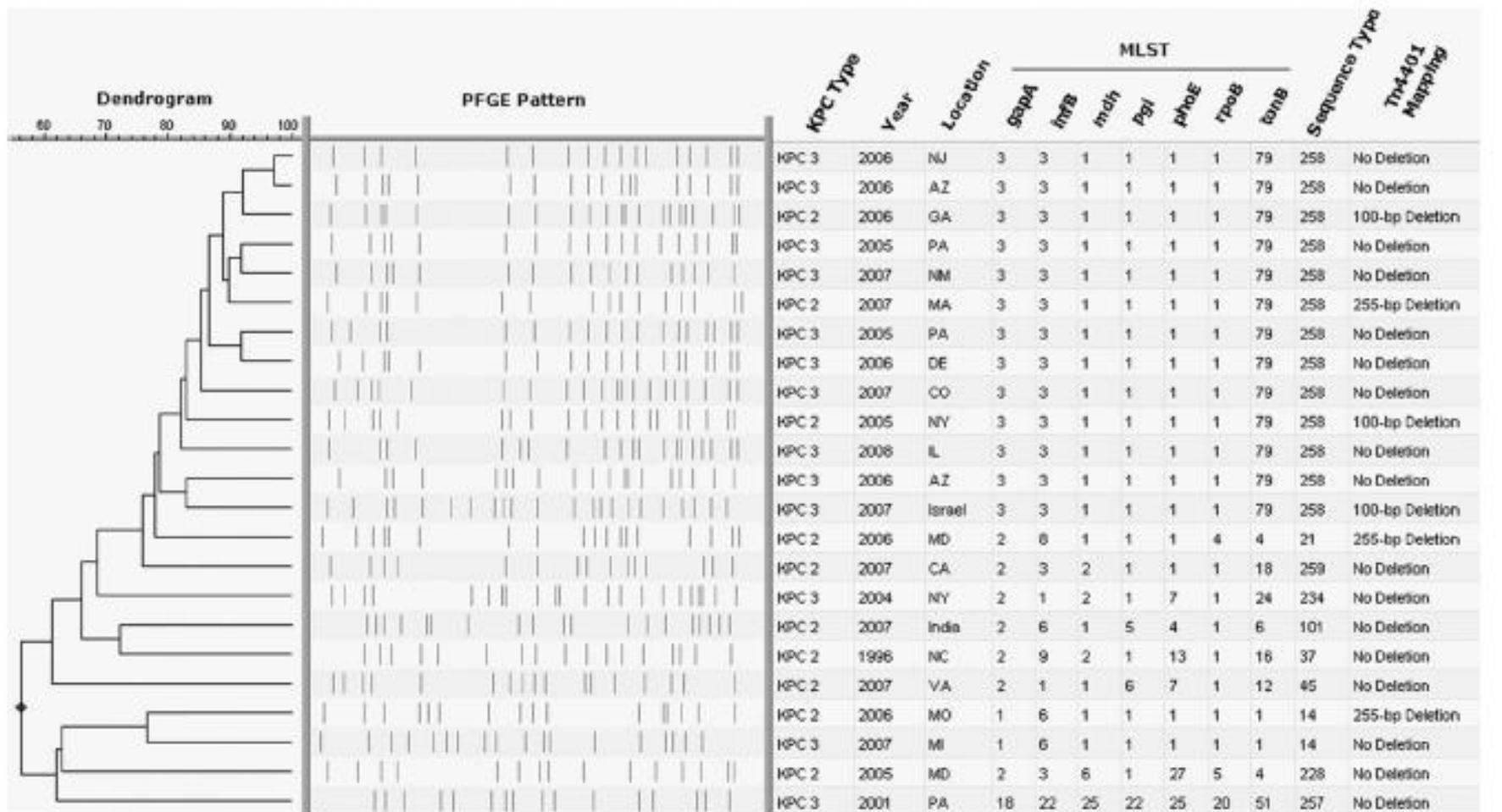
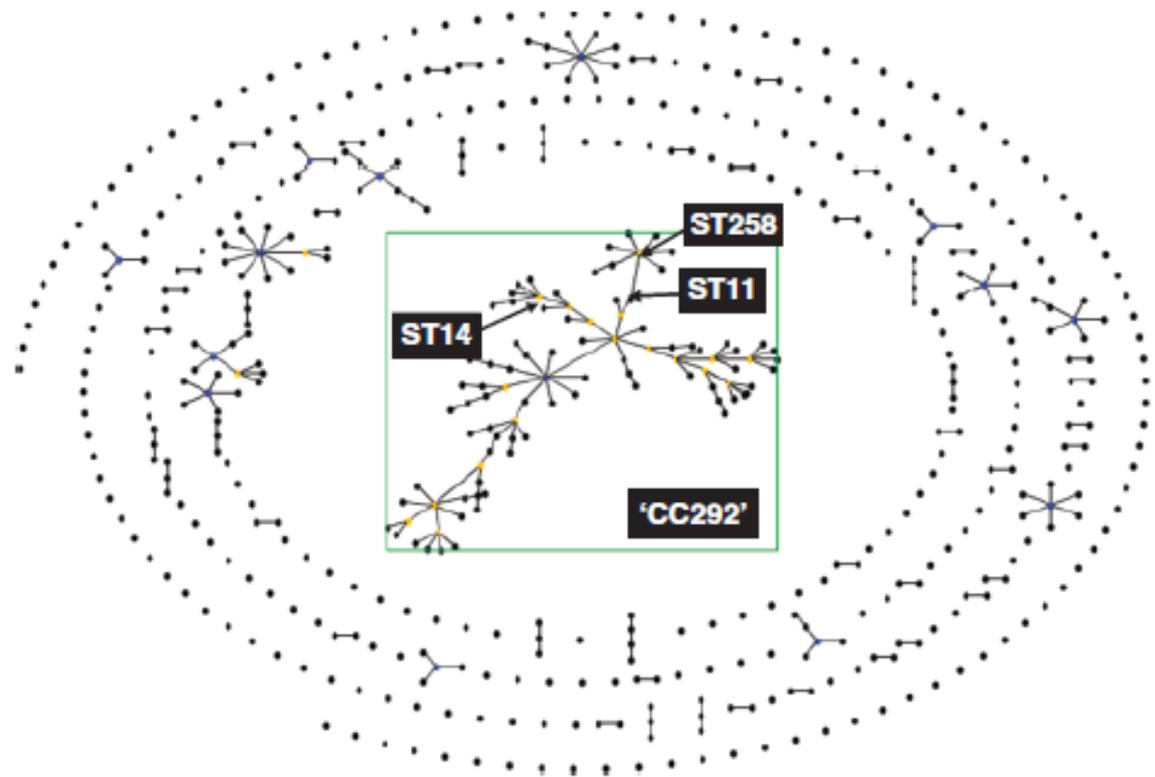


FIG. 2. The dendrogram is based on similarity of PFGE patterns from 23 representative *K. pneumoniae* isolates. The table to the right illustrates results from *bla*_{KPC} sequence analysis and MLST, along with PCR and sequence analysis of the nonconserved region of the Tn4401 element (16).

Fig. 2. 'Population Snapshot' determined by eBURST analysis (<http://eburst.mlst.net>) showing the clusters of linked STs and unlinked STs in the entire *Klebsiella pneumoniae* MLST database (542 STs; <http://www.pasteur.fr/recherche/genopole/PF8/mlst/>; last accessed 30 December 2010). ST labels have been removed. There is a large CC comprising 96 STs ('CC292'; green box) and with ST292 as the predicted founder. This CC includes many internationally prevalent and multiresistant STs, including STs 11, 14 and 258.



Klebsiella pneumoniae

KPC-2 +

ST 258

