The high-resolution G-banded karyotype of Sus scrofa domestica L

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The need for a high-resolution G-banded karyotype of the pig has been demonstrated following the publication by the Committee for a Standardized Karyotype of *Sus scrofa* (CSKSS, 1988) of its standard karyotype which was based on moderately extended G- and R-banded chromosomes. Rønne *et al* (1987) had presented a high-resolution R-banded karyotype at the 541 band level but no corresponding G-banded karyotype has been published to date. To fill this gap, this paper describes a high-resolution GTG-banded pig karyotype at the 539 band level.

To obtain mitotic spreads at late prophase, early and mid-metaphase stages, pig lymphocytes were synchronized with methotrexate (10^{-7} M) for 18 h to block cells at S phase, then subsequently released by leucovorin (3×10^{-4} M) and thymidine (10^{-5} M). Ethidium bromide (2.5×10^{-5} M) and colcemid (5×10^{-7} M) were employed 2 and 0.5 h, respectively, before harvest. Hypotonic treatment, GTG-banding, photography and idiogram construction have been described elsewhere (Yerle *et al*, 1987).

The evolution of G-bands of each of the 38 pig chromosomes was analyzed from photographs of 52 well-spread and banded mitoses at progressive mitotic stages from metaphase (CSKSS standard) to late prophase. The final idiograms of the chromosomes with 4 haploid karyotypes at the 539 band level, shown in figure 1, take into consideration all 160 positive, 278 negative and 101 intermediate bands and subbands, according to their relative positions and staining intensities (Yerle *et al*, 1991). Using standard landmarks and nomenclature of major bands as reference points, the fate of each band was studied. For each chromosome, 3 or 4 intermediate stages were constructed to indicate which bands had subdivided, appeared or were retained in the final elongated stage. In most long chromosomes (*eg*, 1, 4, 6, 8, 9, 13, 14 and X) landmarks established to recognize the chromosomes are no longer evident, for example band q.4.1 on chromosome 13. However, in other chromosomes some bands, *eg*, q.2.1.1 of chromosome 1, are still distinct in the definitive stage (fig 1). The persistence of centromeric dark bands in the telocentric chromosomes

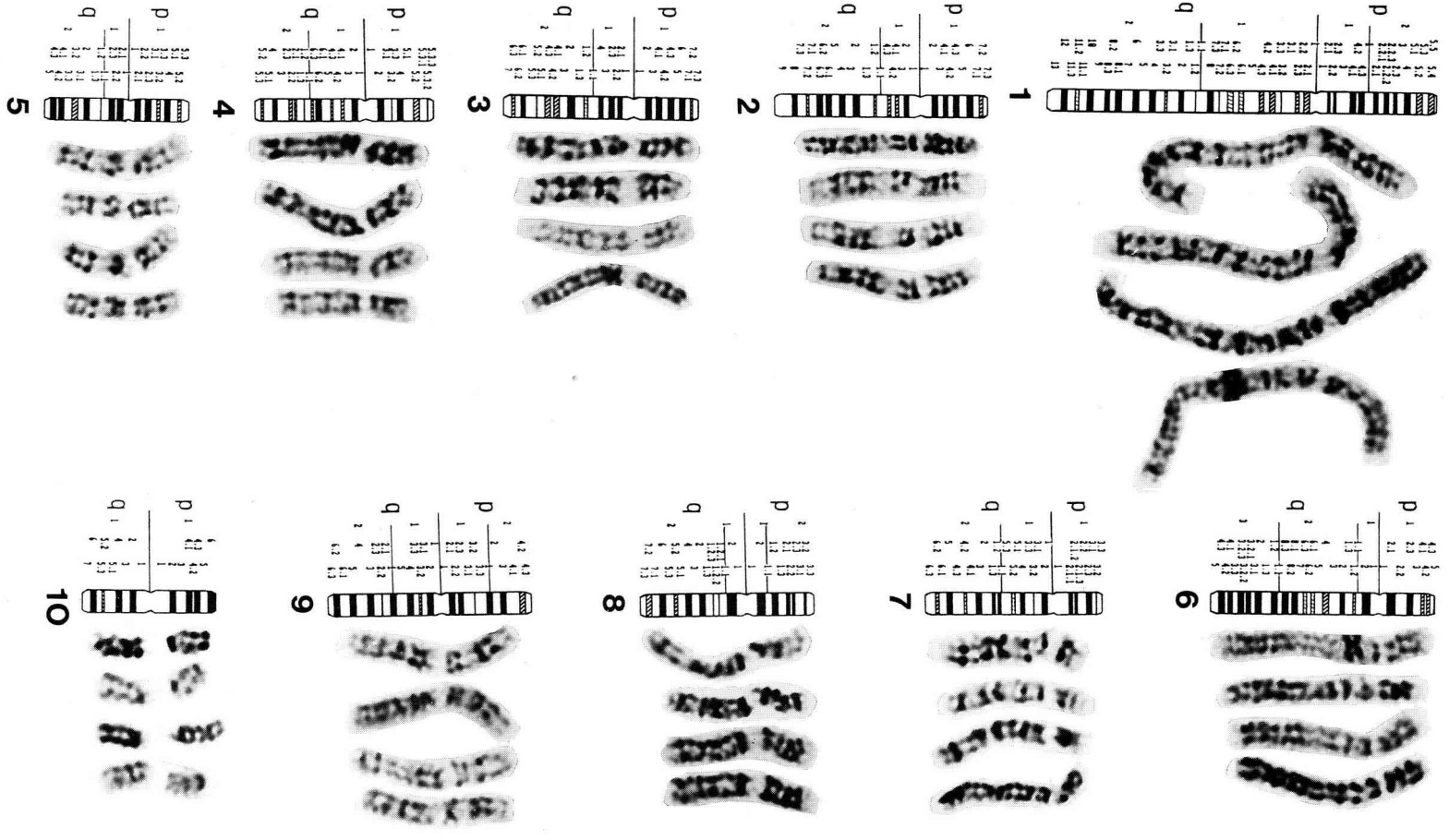

Fig 1. High-resolution GTG-banded chromosomes of the pig and their idiograms in the late prophase stage. The chromosomes represent composite sets from numerous cells. The idiograms, based on band measurements and on relative staining intensities, were made with the aid of an IBM PC computer. The longest horizontal lines indicate the position of the centromere.

Fig 1. Continued

(13–18) from the standard to the final stage should also be noted. These bands, which correspond to (or overlap) the terminal R+ bands (Rønne *et al*, 1987), are likely to be the centromeric heterochromatic C-bands which were also stained during GTG-banding.

The karyotype proposed here can be a useful tool for the study of comparative chromosome organization and the precise mapping of the porcine genome (Yerle *et al*, 1990).

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