Table 2. Examples of the code used to describe banding techniques. In this one-, two-, or three-letter code, the first letter denotes the type of banding, the second letter the general technique, and the third letter the stain.

Q	Q-bands
QF	Q-bands by fluorescence
QFQ	Q-bands by fluorescence using quinacrine
QFH	Q-bands by fluorescence using Hoechst 33258
G	G-bands
GT	G-bands by trypsin
GTG	G-bands by trypsin using Giemsa
GTL	G-bands by trypsin using Leishman
GTW	G-bands by trypsin using Wright
GAG	G-bands by acetic saline using Giemsa
C	C-bands
CB	C-bands by barium hydroxide
CBG	C-bands by barium hydroxide using Giemsa
R	R-bands
RF	R-bands by fluorescence
RFA	R-bands by fluorescence using acridine orange
RH	R-bands by heating
RHG	R-bands by heating using Giemsa
RB	R-bands by BrdU
RBG	R-bands by BrdU using Giemsa
RBA	R-bands by BrdU using acridine orange
DA-DAPI	DAPI-bands by Distamycin A and 4′,6-diamidino-2-phenylindole

based on measurements. Banded structures can be seen within the variable regions, in particular in 1q12, 9q12 and Yq12, but since they are variable they have not been detailed in the idiograms. Normal chromosome variants are discussed in more detail in Chapter 7.

The lowest band number of 10 is assigned to the centromere (not shown on idiograms). The adjacent heterochromatic regions carry band designations of 11, 11.1 or 11.11 depending on the level of resolution.

One problem in assigning numbers to euchromatic sub-bands is that in G-banded preparations new G-bands appear to arise by subdivision of darkly stained G-bands on less extended chromosomes, while in R-staining preparations the dark R-bands appear to split. These interpretations of band to sub-band relationships would lead to different number assignments. Therefore, in assigning sub-band numbers, arbitrary decisions were made for the purposes of nomenclature only that should not be interpreted as statements about chromosome physiology. Examples of G- and R-banded chromosomes at successive stages of resolution are shown in Fig. 6a and b. In addition, G- and R-banded metaphase chromosomes at approximately the 550-band level and their diagrammatic representation (modified from ISCN 1985) are illustrated in a detachable foldout on the inside of the backcover.

2.5 Molecular Basis of Banding

Chromosome bands reflect the functional organization of the genome that regulates DNA replication, repair, transcription, and genetic recombination. The bands are large structures, each approximately 5 to 10 megabases of DNA that may include hundreds of genes. The molecular basis of banding methods is known to involve nucleotide base composition, associated proteins, and genome functional organization. In general, Giemsa-positive bands (G-dark