Supplementary Table 1

Human hepatocytes for karyotype analysis

ID	Processing	Age (years)	Gender	Disposition	Chemo-therapy	Cold ischemia (h)
H1	Freshly-isolated	1	Male	Anoxia	No	<36
H2	Cryopreserved	3	Male	Maple syrup urine disease	No	<36
H3	Freshly-isolated	11	Male	N/A	N/A	N/A
H4	Freshly-isolated from chimeric mouse	15	Male	Anoxia; motor vehicle accident	No	<36
H5	Freshly-isolated from chimeric mouse	18	Female	Focal nodular hyperplasia	No	<36

Human hepatocytes for interphase FISH anlaysis

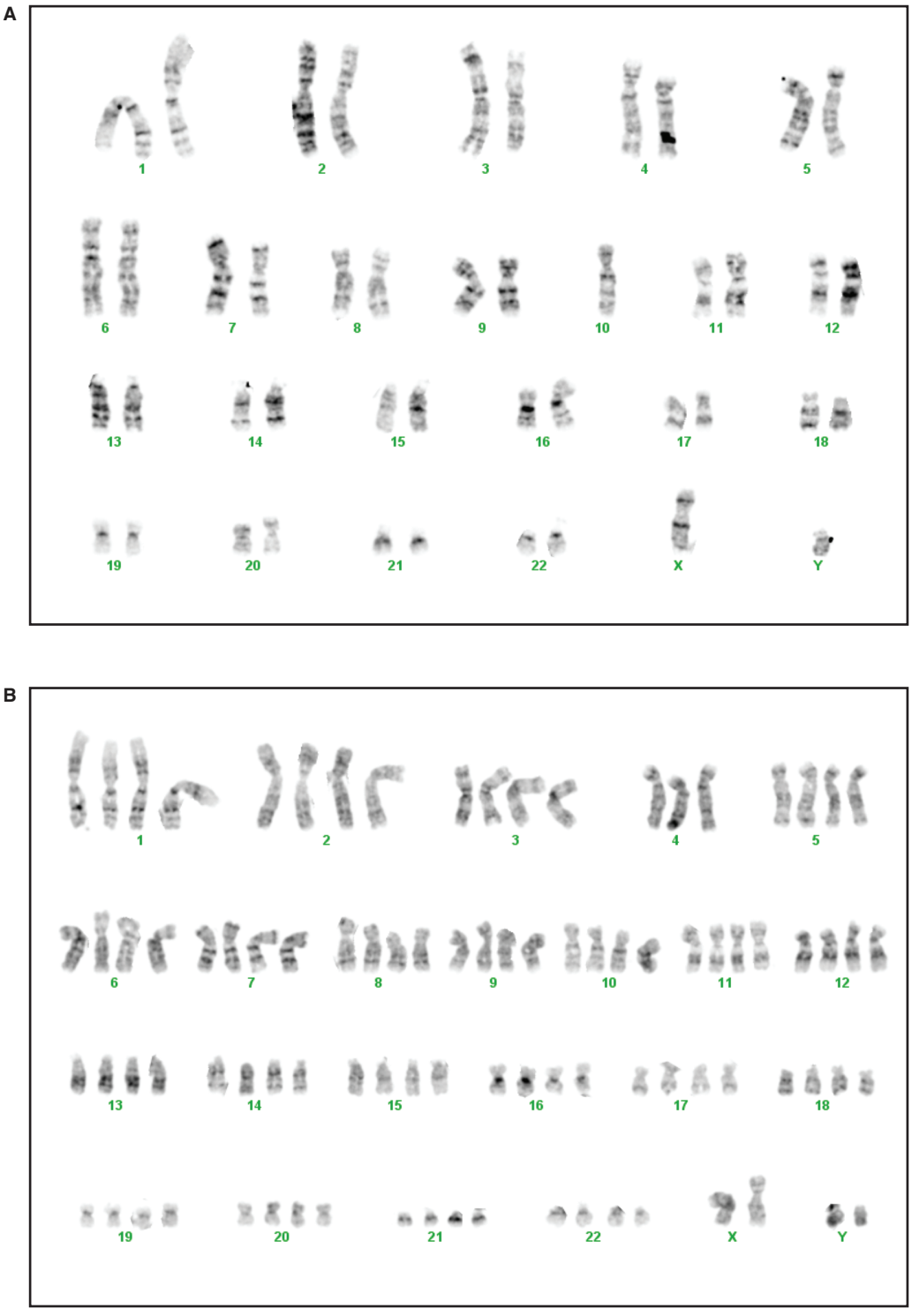
ID	Processing	Age (years)	Gender	Disposition	Chemo-therapy	Cold ischemia (h)
Young donors						
H6	Cryopreserved	2	Female	Anoxia; drowning	No	29
H7	Cryopreserved	5	Female	Anoxia; drowning	No	26
H8	Cryopreserved	7	Female	Meningitis	No	6
H9	Cryopreserved	10	Male	Crigler Najjar Syndrome	No	26
Adult donors						
H10	Cryopreserved	11	Female	Intracranial hemorrhage	No	10
H11	Cryopreserved	23	Male	Gunshot wound to head	No	21
H12	Cryopreserved	26	Female	Intracranial hemorrhage	No	<36
H13	Freshly-isolated	29	Female	Focal nodular hyperplasia	No	<36
H14	Freshly-isolated	30	Female	Hepatocellular adenoma	No	<36
H15	Cryopreserved	30	Male	Intracranial hemorrhage	No	<36
H16	Cryopreserved	35	Male	Intracranial hemorrhage	No	29
Senior donors						
H17	Freshly-isolated	48	Female	Stroke	No	14
H18	Cryopreserved	66	Male	Intracranial hemorrhage	No	24
H19	Cryopreserved	69	Male	Stroke	No	<36
H20	Cryopreserved	69	Female	Closed head injury/fall	No	19
H21	Cryopreserved	72	Female	Stroke	No	9

Human T lymphocytes for interphase FISH anlaysis

ID	Processing	Age (years)	Gender	Disposition
Control-1	Cryopreserved; FACS-isolated	N/A	Male	Healthy donor
Control-2	Cryopreserved; FACS-isolated	N/A	Female	Healthy donor
Control-3	Cryopreserved; FACS-isolated	N/A	Female	Healthy donor

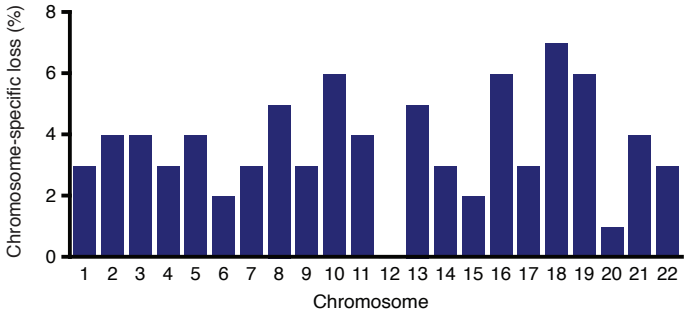
Human hepatocytes used for karyotypes and interphase FISH analysis were isolated from either primary donors (samples H1-H3 and H6-H21) or chimeric mice with livers repopulated by primary human hepatocytes (samples H4 and H5). Hepatocytes were isolated from healthy liver tissue; cold ischemia time ranged from 6h to <36h. All patients were negative for Hepatitis B, Hepatitis C and HIV. None of the patients suffered from autoimmune disease. None of the patients received chemotherapeutic agents (with the possible exception of H3 where this information was not available). T lymphocytes were isolated from mobilized peripheral blood obtained from healthy donors.

Supplementary Figure 1



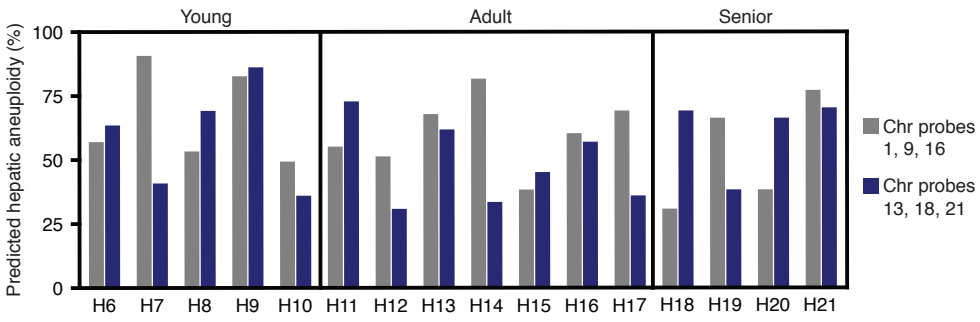
Karyotypes of aneuploid hepatocytes. A, This karyotype of a diploid hepatocyte from a male donor illustrates monosomy of chromosome 10. B, This karyotype of a male tetraploid hepatocyte illustrates loss of a single homologue of chromosome 4.

Supplementary Figure 2



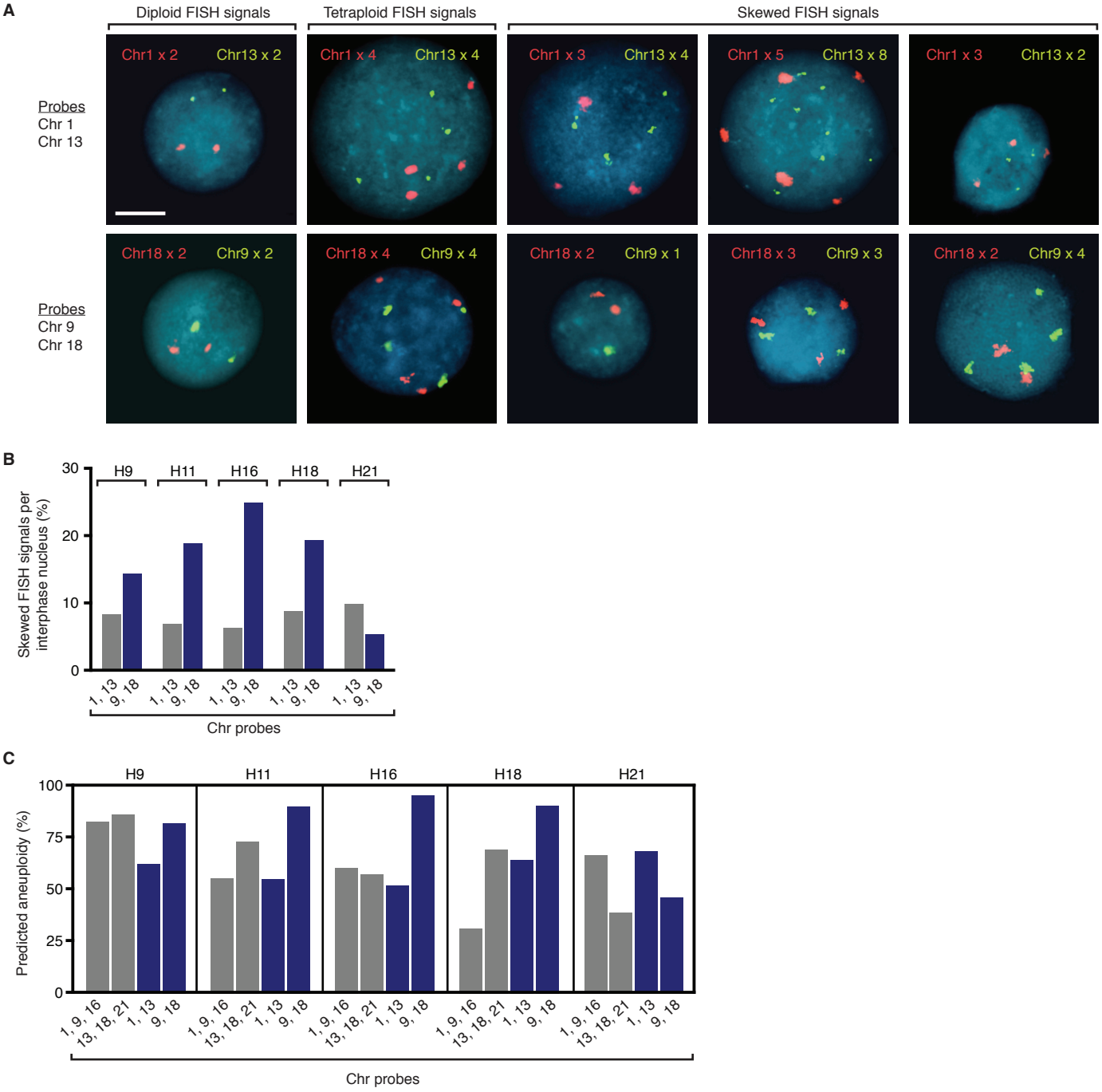
Chromosome loss detected by metaphase karyotyping. The frequency of hepatocyte chromosome-specific loss is shown (n=100 karyotypes from 5 donors).

Supplementary Figure 3



Hepatic aneuploidy by interphase FISH. The overall degree of hepatic aneuploidy (autosomes only) was calculated for each donor using chromosome probe sets 1, 9, 16 and 13, 18, 21.

Supplementary Figure 4



Validation of aneuploidy detected by interphase FISH. To confirm the degree of aneuploidy detected by interphase FISH, hepatocyte nuclei from 5 donors (H9, H11, H16, H18, H21) were independently hybridized with additional sets of chromosome probes. Probes for chromosomes 1, 13 and chromosomes 9, 18 were utilized. Chromatin was visualized with DAPI (blue). FISH signals were quantified in 200 nuclei/sample. A, Representative nuclei are shown for normal diploid and tetraploid hepatocyte nuclei as well as nuclei with abnormal (i.e., aneuploid) numbers of FISH signals. The number of chromosome signals/nucleus is indicated. Scale bar is 10 µm. B, Skewed FISH signals were detected in hepatocytes from each donor. C, The degree of hepatic aneuploidy (autosomes only) was calculated for probe sets 1, 13 and 9, 18 and compared to the predicted aneuploidy calculated with probe sets 1, 9, 16 and 13, 18, 21. The percentage of hepatic aneuploidy was similar for each set of probes.