is readily detected with the human probe, careful examination revealed that a second slightly larger band was present in the cell lines containing the human chromosome 1 or its long arm (data not shown).

Together, these results establish that the human V3 vasopressin receptor gene is located on chromosome band 1q32. It is noteworthy that none of the other genes of this subfamily was found on this chromosome, even the oxytocin receptor, which we showed to be the most closely related in sequence (4) and structure (René and de Keyzer, unpublished).

Another G-protein-coupled receptor, the A1 adenosine receptor subtype, has already been mapped to 1q32 (11). However, sequence comparisons did not show any relationship between these two receptors, suggesting that both genes had evolved separately. Finally, to our knowledge, this area is not associated with known heritable disease that may involve the V3 receptor, although this will have to be reevaluated when all the physiological roles of the V3 receptor are known.

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The Gene Encoding PBP74/CSA/Motalin-1, a Novel Mouse hsp70, Maps to Mouse Chromosome 18

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The 70-kDa heat shock proteins (hsp70) function in folding of peptides and the assembly and disassembly of protein complexes (3). They are encoded by a multigene family comprising both heat-inducible and constitutively expressed genes. Different family members function in different organelles: hsp70 members such as hsp70 and hsc70 are present in the cytoplasm, BiP/GRP78 in the endoplasmic reticulum, and GRP75 in the mitochondria. PBP74/CSA/motalin-1 is a novel mouse hsp70 protein that was identified by three different groups. PBP74 was found to be a peptide-binding protein implicated in antigen processing (2). CSA is an antigen specific for the C3H strain (6, 7), and motalin-1 is a protein associated with cellular mortality (10).

To determine the chromosomal location of the mouse PBP74, we analyzed a panel of DNA samples from an intersubspecific backcross mice that was characterized for 135 anchor loci. The markers used for anchors were 70 *Mit* and 51 *Jpk* microsatellites and 14 authentic genes (1, 9). A primer set spanning exon 16 of the gene was synthesized for polymerase chain reaction (PCR), since this region of 141 bp was known to show variation between two laboratory strains (7). Indeed, sequence analysis showed three base substitutions between C57BL/6(B6) and the MSM strain originating in Japanese wild mice, *Mus mus molossinus*.

DNA typing was carried out with this polymorphism for 131 backcross mice that were obtained by mating (B6 × MSM)F_1 females to MSM males. Each of them displayed either the homozygous or the heterozygous F_1 pattern by PCR-SSCP analysis (8). Figure 1 summarizes the results of such typing. A clear linkage of the *PBP74/CSA/motalin-1* locus was found with three anchor loci near the centromere of chromosome 18; there was no recombinant between the *PBP74* and the *D18Jpk1* loci. From this haplotype analysis, we concluded that the most likely

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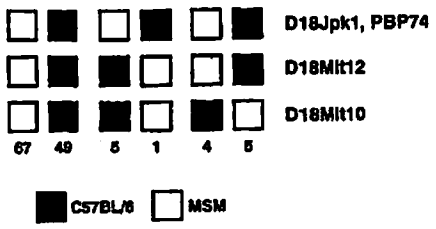

FIG. 1. Distribution of the haplotypes for 131 progeny from intersubspecific backcross mice that were obtained by mating (C57BL/6 × MSM)F_1 females to MSM males. The loci followed in the cross are indicated to the right. The filled squares represent the C57BL/6 allele, and the open squares represent the MSM allele. Each column represents the chromosome identified in the progeny. The numbers of the progeny carrying each type of chromosome are listed at the bottom. The lod score between *D18Jpk1* and *PBP74* is more than 40, and that between *PBP74* and *D18Mit12* is 29. The primer sequences used are 5'-GCCGTTTCCAGTGCAACAAG-3' and 5'-GATGCTGCCTGCCTGATGTT-3'.

order of loci was centromere–*D18Jpk1, PBP74*–4.6 ± 1.8 cM–*D18Mit12*–6.9 ± 2.2 cM–*D18Mit10*.

Several members of the *hsp70* family map to mouse chromosomes 2, 12, and 17 and to human chromosomes 1, 6, and 14 (4). Some are clustered, forming a complex on a chromosome. Since the *PBP74* gene is located on chromosome 18, the gene is probably a member functionally distinct from the other *hsp70* genes. Recently, fluorescence *in situ* hybridization analysis of the *mortalin/PBP74*-related genes has been reported; they are assigned to mouse chromosomes 18 and X (5). The result is consistent with ours.

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