(Nembutal® 30 mg/kg). 5 ml of a Tyrode solution with heparin (10 µg/ml) was injected i.p. The abdomen was gently massaged for 1 min and the fluid withdrawn through a midline incision. Fluid samples from 5 to 10 rats were pooled and the crude cell suspension was exposed to OHRD for 30 min at 37 °C. The cell-suspension was then centrifuged at 1000 × g for 5 min and the amine level in the supernatant assayed.

Cutaneous mast-cells. Two methods were used for testing the reactivity of cutaneous mast-cells. First, the rat hind quarter preparation was perfused according to Feldberg and Mongar preparation[5]. Second, skin flaps were removed from the hind paws. The flaps were chopped with scissors, washed with cold Tyrode solution, blotted with filter paper, weighed and homogenized. The homogenate was centrifuged at 250 × g for 5 min to remove skin fragments. The suspension, which contained some intact mast-cells, was then diluted with Tyrode solution to 50 mg/ml. After 30 min of incubation at 37 °C with or without OHRD, the suspension was centrifuged at 1000 × g for 5 min. The supernatant was then assayed for its amine levels.

Amines assay. Histamine and 5-hydroxytryptamine concentration were measured by bioassay using 2 sets of 3 pieces of tissues in each case (guinea-pig ileum and rat stomach strip[6]) superfused with Tyrode solution in the presence or in the absence of cyproheptadine and mepyramine ($5 \cdot 10^{-7}$).

Results and discussion. Injection of 1–10 mg of OHRD in the aortic cannula of a perfused hind quarter preparation provokes the appearance of free histamine in the effluent of the vena cava (0.2–20 µg in 10–15 min). Skin histamine stores are depleted.

'In vitro' addition of OHRD (50 µg–1 mg · ml^{-1}) for 30 min to rat peritoneal mast-cells in Tyrode's solution (glucose 5.6 mM, $CaCl_2$ 1.8 mM), induces neither degranulation as observed using phase-contrast microscopy, nor amine release as detected by superfusion. OHRD with rat plasma (5–25% vol.) or OHRD plus $CaCl_2$ 3 mM are also inactive.

Similarly, 'in vitro' heterogenous cell suspensions containing some intact mast-cells, prepared from skin-flaps from the hind-paws of Wistar rats, release large amounts of histamine and serotonin when exposed to 300 µg to 1 mg · ml^{-1} of OHRD (table).

Compound 48/80 (1–10 µg · 100 g^{-1} or 1–10 µg · ml^{-1}), used to test the viability and the amine-releasing properties of the preparations, is equally active on peritoneal mast-cells, isolated skin mast-cells and perfused hind quarters.

Therefore, skin mast-cells, 'in vivo' as well as 'in vitro' release histamine and serotonin in the presence of OHRD in concentrations which are completely inactive on peritoneal mast-cells 'in vitro'.

In the same species, qualitative pharmacological differences appear to exist between peritoneal mast-cells and connective skin mast-cells. So it would not be correct to draw conclusions about the properties of one population on the basis of the responses of the other. This precludes any generalization and extrapolation, especially for clinical purposes. This conclusion is in agreement with Barrett and Pearce's results[7] comparing rat peritoneal and pleural mast-cells.

Histamine and serotonin (ng · ml^{-1}) detected in the supernatant of rat skin mast-cells or of rat peritoneal mast-cells (mean ± SEM)

		Histamine	Serotonin	n
Skin				
Control		1230 ± 118	12.5 ± 2.7	6
48/80	10 µg ml^{-1}	3200 ± 84*	71.2 ± 10.8*	4
OHRD	1 mg ml^{-1}	3415 ± 140*	67 ± 10.5*	6
Peritoneum				
Control		110 ± 14	5 ± 2	6
48/80	10 µg ml^{-1}	1325 ± 137*	86 ± 5*	6
OHRD	100 µg ml^{-1}	100 ± 9	5 ± 2	6
	300 µg ml^{-1}	110 ± 12	5 ± 2	6
	1 mg ml^{-1}	105 ± 14	5 ± 2	6

n, Number of assays; * significantly different from the control, $p < 0.01$; Student's t-test for paired values.

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The chromosome complements of two species of *Gobius* (Teleostei, Perciformes)

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Summary. The karyotypes of *G. bucchichi*, 2n = 44, and *G. cruentatus*, 2n = 46, are described. No chromosome differences have been revealed between males and females of either of these gonochoristic species. The results are compared with data from other species of the same genus.

The large number of species (over 600) described for the genus *Gobius*, the fact that Gobiidae show very similar morphological patterns, and their high intraspecific variability, can make identification of these species on the basis of only morphological parameters very difficult. In spite of this phenotypic similarity, however, karyological studies in this genus show that the karyotype can be used to identify each species unequivocally. In the present work, the karyotypes of *G. bucchichi* and *G. cruentatus* are described for the 1st time, as a part of a broad study carried out in our laboratory on the cytogenetics of this group.

Material and methods. Two males and 6 females of *G. bucchichi* (Steindachner, 1870) and 1 male and 3 females of *G. cruentatus* (Gmelin, 1789) were collected from the southern Mediterranean coast of Spain. The Giemsa-air dried metaphase plates were made from spleen, kidney and gonads, following the procedure described by Alvarez et al.[2] with slight modifications.

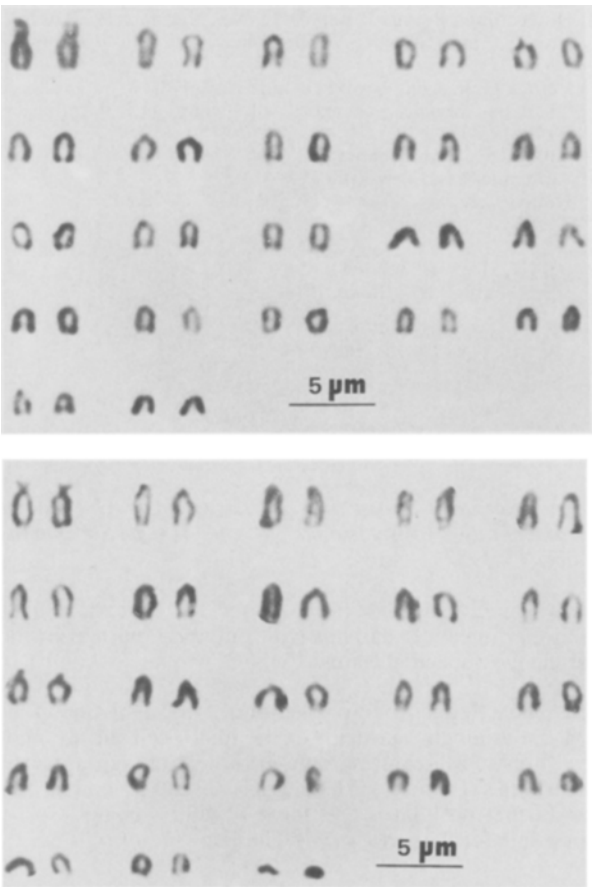

Figure 1. *a* Karyotype of *G. bucchichi; b* Karyotype of *G. cruentatus.*

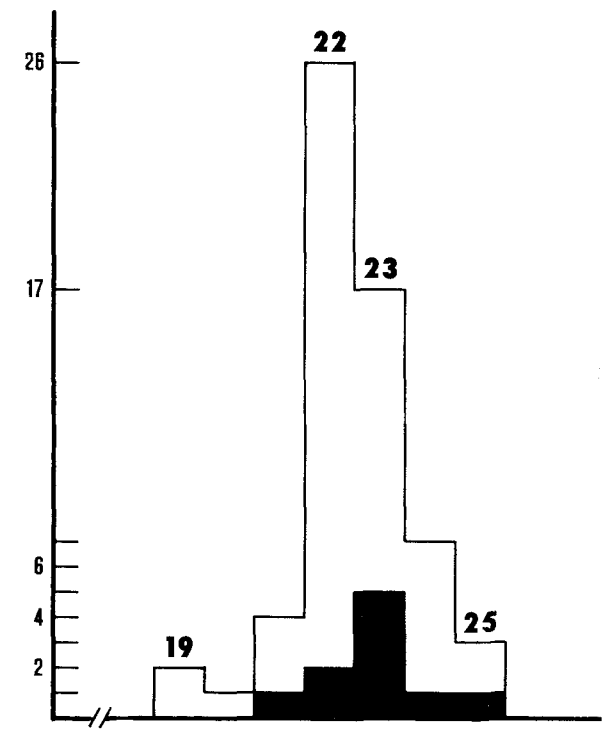

Figure 2. Histogram showing the distribution of the chromosome haploid numbers of 60 species of the family Gobiidae (In black 10 species of the genus *Gobius* are outlined).

Chromosome complement of 10 species of the genus *Gobius*

Species	2N	FN	Reference
G. abei	46	46	Post[6]
G. bucchichi	44	46	Present report
G. cobitis	46	46	Cataudella et al.[7]
G. cruentatus	46	46	Present report
G. fallax	42	46	Thode et al.[8]
G. niger	50	62	Thode et al.[8]
G. paganellus	46	48	Thode et al.[8]
G. sadanundio	48	...	Hinegardner and Rosen[9]
G. similis	44	44	Arai and Sawada[10]
G. striatus	46	46	Verma[11]

2N, Diploid number; FN, fundamental number.

To construct the karyograms, the diploid number and the mean length of each chromosome were determined on more than 30 good metaphase plates in each species. The criteria of Levan[3] for chromosome classification were used. Fundamental number (FN) is defined as the number of chromosome arms. Specimens were classified according to Tortonesse[4] and Bath[5].

Results. G. bucchichi (fig. 1a), 2n = 44, FN = 46. This species displays 1 pair of submetacentrics and 21 pairs of acrocentrics in both sexes. Their mean length ranged between 2.62 ± 0.20 µm and 1.24 ± 0.11 µm, and except for the submetacentric pair, they showed a continual gradation; for that reason, no size grouping was attempted.
G. cruentatus (fig. 1b), 2n = 46, FN = 46. This species shows 1 pair of subtelocentrics and 22 pairs of acrocentics in both males and females. The karyogram revealed that no size groups could be established among them and that the mean length of their pairs ranged between 2.97 ± 0.10 µm and 0.85 ± 0.15 µm.

Discussion. The currently available data related to the chromosome numbers in the genus *Gobius*, including the tropical species, appear in the table and show a variation ranging from 2n = 42 for *G. fallax* to 2n = 50 for *G. niger*, this wide dispersion being parallel to the large range found in their F.N. (44 for *G. similis*, 62 for *G. niger*).
If we compare the distribution of the haploid values of 10 species of the genus *Gobius*, with the distribution obtained for 60 species belonging to the family Gobiidae (unpublished data, fig. 2), we can confirm that the chromosome numbers of the genus *Gobius* are located around the modal values (2n = 44, 2n = 46), which allows us to consider this genus as a good representative of the family. However, neither the modal value of the family (2n = 44), nor that of the genus (2n = 46) agrees with 2n = 48, considered by many authors[12] as ancestral for the modern teleosts. This difference could be interpreted as indicating that the chromosome rearrangements that have taken place in the phylogeny of the group have led in most cases to a reduction in the chromosome number.
Currently available data indicate that fish are remarkably conservative in their karyotypes, this being especially pronounced in the order Perciformes[13], which suggests that chromosomal rearrangements here may not be an important contributing factor in speciation. The relatively frequent occurrence of hybridization which generally characterizes fish[14], seems to support such a view. Nevertheless, the Gobiids, as the above data show, have to be excluded from this consideration, since the rate of chromosome change during their evolutionary history has been much higher than the rate of their organismal evolution. Besides, we must take into account that structural changes in chromosomes beyond the resolution of present cytological techniques have probably occurred.

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Liver lectins: mediators for metastases?

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Summary. Development of liver metastases in 1542 cancer patients was investigated. It was found that in certain liver diseases the incidence of liver metastases was reduced compared to that in cancer patients with otherwise normal livers. We propose that this reduction may be due to a reduced function of the liver-specific lectins.

In certain liver diseases there is a marked increase of serum asialoglycoproteins[1]. This phenomenon may arise from an alteration of the liver cell plasma membrane, whose surface lectins recognize and eliminate asialoglycoproteins. This mechanism, which has been reviewed recently[2], has been investigated for various glycoproteins in our laboratory[3].

It has been claimed by Springer et al.[4] and Uhlenbruck et al.[5,6] that asialoglycoproteins of the tumor cell surface may carry tumor cell-characteristic carbohydrate groups, for instance the Thomsen-Friedenreich receptor[7], and it has been further postulated that these structures could also be responsible for the arrest of metastasizing tumor cells[7].

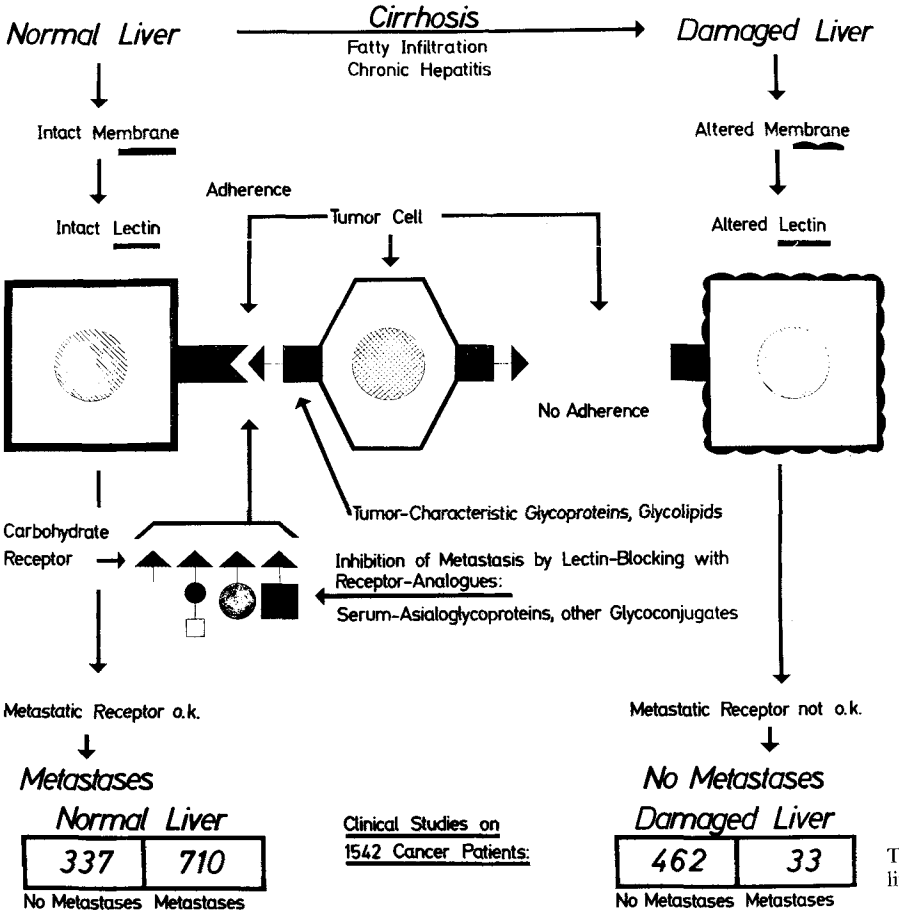

Table: Relationship between liver diseases and liver metastases.