Cholangiofibroma and Cholangiocarcinoma, Liver, Rat

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**Synonyms.** Nodules of cholangiofibrosis, cholangiocellular carcinoma, cholangiolar adenocarcinoma bile duct carcinoma, malignant cholangioma, adenocarcinoma

**Gross Appearance**

Both cholangiofibroma and cholangiocarcinoma appear macroscopically as firm nodules frequently...
distributed in the liver in a multinodular fashion (Fig. 40). The tumor tissue, which usually has a grayish-white color, may also show yellow areas. The macroscopic picture may become very complex and colorful when the cholangiocellular tumors are combined with hepatocellular carcinomas or malignant mesenchymal tumors, such as angiosarcomas.

**Microscopic Features**

Cholangiofibromas and cholangiocarcinomas are collectively classified as carcinomas by many authors (Stewart et al. 1980; Maronpot et al. 1991; Goodman et al. 1994). Based on detailed studies on the morphogenesis and biologic behavior of these tumors, Bannasch et al. (1985; Bannasch and Massner 1976) have proposed that the cholangiofibroma be classified as a separate pathomorphological entity which is only potentially malignant and may progress to cholangiocarcinomas after long lag periods. This classification has widely been used (Ohshima et al. 1984; Moore et al. 1986; Evans et al. 1989; Bannasch and Zerban 1990, 1994; Steinberg et al. 1991; Hacker et al. 1992; Elmore and Sirica 1993), but it has not yet been accepted unanimously (Maronpot et al. 1991; Goodman et al. 1994). Whereas autchthonous cholangiofibromas may reach a considerable size without leading to distant metastases (Bannasch and Massner 1976; Bannasch et al. 1985; Evans et al. 1989), the metastatic potential of cholangiocarcinomas has been established beyond doubt (Bannasch and Massner 1976; Maronpot et al. 1991; Elmore and Sirica 1993).

**Cholangiofibroma**

The cholangiofibroma (Figs. 40–42) is composed of atypical ductules and large amounts of collagen-rich connective tissue (Bannasch and Massner 1976; Bannasch et al. 1985). As a rule, the epithelium of the neoplastic ductular structures is composed of one cell layer (Fig. 41), which contains many goblet cells storing and secreting abundant