

C111 **Effects of Smoking on the mRNA Expression of Dopamine Receptors
in the Rat Brain**

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The research for the dopamine(DA) receptors is interest because the treatment with nicotine, a toxic substance absorbed by smoking, is less known to regulate striatal DA D₁ and D₂ receptor. The purpose of this study is in order to examine the regulation of DA receptors mRNA expression in the rat brain including the caudate-putaman, nucleus accumbens, and olfactory tubercle by smoking. Adult male Sprague-Dawley rats were administrated with cigarette smoking(3 times× 30 min× 500 ml/day, 4 weeks, n = 5). DA D₁ and D₂ receptor mRNA levels were determined by *in situ* hybridization. In the smoking group, DA D₁ and D₂ receptor mRNAs were modestly increased in the brain partial areas. These results suggest that nicotine-adminstration influences the dopaminergic neural system by smoking.

C112 **Three-Dimensional Reconstruction of Male Reproductive Organ in the
Internally Self-Fertilizing Hermaphroditic Teleost, *Rivulus marmoratus***

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Rivulus marmoratus is the only known vertebrate that is a natural functional hermaphrodite with internal self-fertilization. The structure of the male reproductive organ in this species was studied by the automated three-dimensional reconstruction technique to enlarge our understanding of this remarkable species. The results obtained were as follows: 1) A pair of gonads that consisted of ovotestis and main reproductive ducts was located antero-posteriorly on each side of the swimming bladder with a soft, creamy white colored canoe shape. 2) The volume of testis in the 4-month-old fish was about 13% of gonadal volume. The testis consisted of the spermatogonia restricted tubular type was located in the ventrolateral inner gonad with antero-posterior elongated shape. Many cysts in the seminiferous tubules consisted of interstitial cells and Sertoli cells. In the cysts of the seminiferous tubules, synchronized germ cells at the various stages of spermatogenesis or spermiogenesis were presented. 3) The paired main reproductive ducts that ran along the longitudinal body axis coalesced in the end of ovotestis to form a common genital duct and then linked to the urogenital pore between the pelvic and anal fins.