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Résumés

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Zusammenfassungen

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299 An Apple IIe-Based Morphometrical Package

G.C. Panzica, M. Calcagni, G. Calcagni, Torino

Due to the enhancement in quantitative analysis, morphometry of histological structures (e.g., cells, nuclei, intracytoplasmatic organelles) has a wide application in modern anatomy. Today, commercial analyzers are very expensive and limited in flexibility. In our study we have developed a semiautomatic analyzer based upon a widely used and cheap personal computer (Apple IIe). Hardware requirements are a graphics tablet, two 140-kB disk drives (Apple Computers, Cupertino, USA), a graphic printer (Epson FX80, slot 1) and a RAM memory card (128 kB, auxiliary slot). The data acquisition system is a TV camera connected to a BHS Olympus microscope and a mixer card (slot 7) to mix TV signals with the computer signals (Bit Line, Genova, Italy). Several assembler routines are used in the package for fast drawing, storage of X,Y pen coordinates, access to RAM memory as a disk drive and transfer of data files. Owing to the limitations of the Apple internal memory (no more than 48 kB directly accessible) the package is structured upon different programs. Many of them can be temporarily stored on the RAM memory. SET.UP is a program to define the working area of the tablet and the conversion factors to have absolute measures for the different objectives. Other programs (VOLUME, AREA, PERIMETER) let us acquire data directly from the image on the video screen, outlining it by the movement of the pen on the tablet. Control keys can stop calculation and erase the last entry. The RAM card is used to store up to 14 graphic screens. Data are stored both on RAM memory and floppy disks. STAT program acquires these files and calculates means, standard deviations, asymmetry and kurtosis parameters. A last program (ISTO) analyzes each parameter (area, perimeter, shape factor, Ferret's diameters) and draws their frequency histograms. At the end of each session the graphic screen can be outprinted by a separate program.

Contributions from CNR and MPI.

300 Sex Dimorphism of the Avian Medial Preoptic Nucleus: Cytoarchitecture, Morphometry and Hormonal Control

G.C. Panzica, C. Viglietti-Panzica, J. Balthazart, Torino and Liège

The involvement of the preoptic region in the control of avian sexual behavior has been previously demonstrated by several studies performed with different techniques. We recently studied this region in Japanese quail (*Coturnix coturnix japonica*) and found that the medial preoptic nucleus (POM) is characterized by a specific, sexually dimorphic volume (Viglietti-Panzica et al., 1986). Morphometrical studies, done by means of a semiautomatic analyzer based upon an Apple IIe, revealed further differences in cell number, cell size and other morphometric parameters (perimeter, shape factor, orientation). In order to understand the role played by steroid hormones upon the POM, its total volume was measured in different experimental conditions: (1) male and female gonadectomized quails treated or not with systatic implants of testosterone (T); (2) injection of estradiol benzoate (EB) in egg, followed or not by gonadectomy and T implants in 4-week-old quails. Other hypothalamic (suprachiasmatic) or extrahypothalamic (rotundus thalami) nuclei were considered as controls. The POM volume significantly (ANOVA test) decreases after gonadectomy and restores by T treatment both in males and in females; on the contrary, it is not or slightly affected by in-egg EB treatment. The analysis of developmental stages in normal quails till hatching revealed no significant volume sex differences. Present data suggest that the quail POM volume is controlled by T levels in the

adulthood and that it is a specific hypothalamic area that is steroid hormone-sensitive. The connections of the avian POM (pigeon: Berk and Butler, 1981) with the septal area suggest that it could be a central structure involved in the control of LHRH secretion.

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301 A Cheap System for Image Analysis

M.T. Peg, A. Vera-Gil, J.M. Jover, S. Galtier, C. Fau, J. Benito, Zaragoza

In the past 20 years, several commercial image analyzers for morphological purposes have invaded the market. Often, in countries where there is little money for research, as in our country, it has been very difficult to buy these tools. This has been the reason to develop 'hand-made' tools that partially compensate for the lack of equipment. In our case, we have got a reasonably accurate method using a Commodore CBM-64 with a floppy unit, VIC 1541, a Digitalizer Cartridge (Print-Technik) that works with a black-and-white video camera signal, which afterwards is converted into a homogeneously colored image with Koala Paint Software and analyzed using a Basic Program made by us that counts pixels of the different colors. This gives us a final, analyzed image referable to a previously introduced scale. The cost of all this is 0.1 times that of any commercial tool for this purpose.

302 Histochemical, Autoradiographical and Radioactivity-Measuring Study of the Location of Zn in the Central Nervous System (CNS)

C. Perez-Castejon, M.J. Barral, M.J. Perrez-Castejon, M.J. Pinilla, M. Melgosa Gil, A. Vera-Gil, Zaragoza

The content and location of Zn in CNS has been revealed not to be as 'simple' and selective as described before. Systematic studies in the whole CNS, using Timm's technique, ⁶⁵Zn autoradiography and direct measuring of ⁶⁵Zn activity, shows the presence of Zn in many structures of the CNS beside the hippocampus. Otherwise the measurement of radioactivity in different parts of the brain shows no significant differences in the uptake profile of the ⁶⁵Zn. After all that, we propose a new look at the location and meaning of the presence of Zn in the CNS.

303 Influence de la présence d'une prothèse «cervico-céphalique» sur le comportement mécanique de fémurs humains

G. Peri, F. Cappello, V. Nigrelli, F. Piccione, G. Sala, Palermo

Dans le cadre d'un programme de recherche tendant à analyser le comportement de fémurs humains équipés de prothèses internes «cervico-céphaliques» de titane, par rapport à la géométrie de ces prothèses, les auteurs ont expérimenté sur des modifications qui en théorie en devraient améliorer la durée d'insertion avec une meilleure distribution des tensions. Ils ont utilisé des fémurs de sujets âgés, sur lesquels ils ont installé des prothèses internes de Moore. Ces prothèses ont été soumises à des charges simulant l'appui unipodal pendant la déambulation lente et ont relevé l'état de déformation à l'aide de vernis fragiles et d'extensomètres. Afin de distribuer plus uniformément les pressions de contact, quelques prothèses ont été fixées par des résines endo-médullaires, d'autres, par une vis de traction (cylindrique et conique) ancrée au grand