CoPGr CURRICULAR CHAMBER
SUBJECTS PRESENTATION FORM

SUBJECT'S ACRONYM: **RNP5770**

SUBJECT'S NAME: Nerves Morphometry: Results' Analysis and Interpretation

CURRICULUM/AREA: Neurology/17140

FOCAL AREA: Neurosciences

INITIAL VALIDITY (Year/Semester):

 N. OF CREDITS: 06

Theoretical Classes: 02   Practical Classes, Seminars and Others: 08   Hours of Study: 05
DURATION IN WEEKS: 06

PROFESSOR(S) IN CHARGE:
USP Professor, n. 1960208 – Valeria Paula Sassoli Fazan

ACTUAL COSTS OF THE SUBJECT: BRL

(Presenting, if applicable, the budget foreseen for the year, as an attachment)

PROGRAM

OBJECTIVES:

The main objective of the subject is helping the student on the interpretation of the results obtained with the nerves morphometry from the numerical data presented in electronic spreadsheets. The students will get training in the handling of the numerical data, data grouping, elaboration of tables and graphs proper to the interpretation of the results obtained, as well as basic initiation to the statistic analysis of the data according to the experimental protocol.

JUSTIFICATION:
The main objective of morphometric studies of normal nerves is obtaining characteristic and specific values which allow a comparison with abnormal nerves. The morphometric analysis of nerves has been extensively used in researches on their repair, regeneration, implant and transplant, so that the quantitative methods constitute important tools in the study of experimental neuropathies. Additionally, the morphometry has been widely used on the investigation of experimental models of diseases hitting the peripheral nervous system, such as diabetes, hypertension, and aging.
Besides the wide use of the morphometry in neuropathies studies, this technique has been extremely useful on the definitions of normal parameters of nerves, both in men and in laboratory animals, since the data obtained provide the morphological basis for the studies of the damages caused by the diseases attacking the peripheral nervous system.
The use of morphometric techniques for the diagnosis of peripheral neuropathies is also widely used in the clinical practice so that this technique makes the diagnosis as faster and trusting as possible. Thus, it is not a surprise the large number of methods employed in the nerves morphometry, in an attempt of getting further accuracy on the obtainment of quantitative data.
Classically, the morphometry can be performed in a manual, automatic or semi-automatic way. Some authors argue that the manual technique is inappropriate and inaccurate, in due to the chance of errors in the countings and measurements, and to the large number of fibers in the samples and the exhaustive work of the researcher, since any method requiring attention to individual nervous fibers involve a considered boredom and a large consumption of time. These authors also highlight the difficulty of counting of small fibers, perhaps being necessary the study with transmission electronic microscopy, which would imply in an excessive expenditure of time and with consumption material. On the other hand, as long as some authors believe that the automatic method, without any intervention of the researcher, may fail in the counting of small fibers and/or adding in the countings, artifacts and other structures which are not the fibrous ones,

which would limit its use in the nerves morphometry, other authors defend the use of this method, in order to avoid the disadvantages of the manual method and also, allowing the evaluation of the nerve as a whole, with express results in absolute values, surpassing the problems caused by the sampling. Other authors still defend that the use of semi-automatic methods is a good choice, since it allows an interaction between the researcher and the computer, eliminating the errors of the automatic and manual method. But still, some methods considered as semi-automatic, with the use of graphics tables connected to the computer, are described by some authors as tedious and unnecessary time consuming methods, as long as the automatic method has been, at the same time, accurate and "economic" in time and effort of the researcher.

In general, at the end of the morphometry process, whether it is manual or automatic, a spreadsheet is generated with the data generally hard to handle and interpret. Thus, the need of helping the students on the correct interpretation of these data, as well as on how to correctly present the results obtained, which justifies the present subject.

CONTENT (SYLLABUS):

1. Histology of normal nerves. 2. More Common Histological Alterations in the Peripheral Nervous System. 3. Morphometry of normal nerves. 4. More Common Morphometric Alterations in the Peripheral Nervous System. 5. Methods Available for the Nerves Morphometry. 6. Morphometric Parameters Commonly Used in Nerves Morphometry. 7. Data Grouping and Elaboration of Tables and Graphics. 8. Handling of Computer Program's Tools (Microsoft Excel and Sigma Plot, Jandel Scientific), for Getting Final Values for Interpretation. 9. Data Interpretation from Mean Values and Graphics. 10. Proper Statistic Analysis for Common Cases. 11. Special Cases Discussion.12. Presentation of a New Computer Program for Performing Automatic Morphometry.

EVALUATION METHOD:

Frequency in theoretical and practical classes, evaluation of the seminars presentations and delivery of a report on one of the types of analyses learned.

NOTES: