



Seminário

FAMB

PHOTONICS FOR DIAGNOSIS: INTEREST OF INFRARED AND RAMAN MICRO-IMAGING

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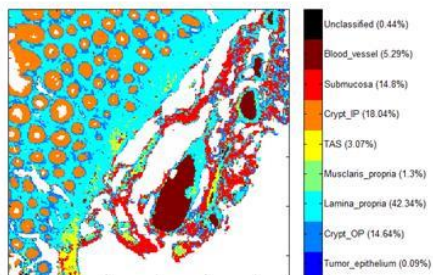
Local: Anfiteatro (sala 11) do bloco das exatas (B4)

Data: 12 de novembro de 2013,

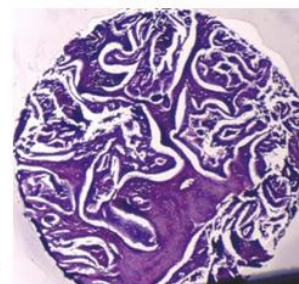
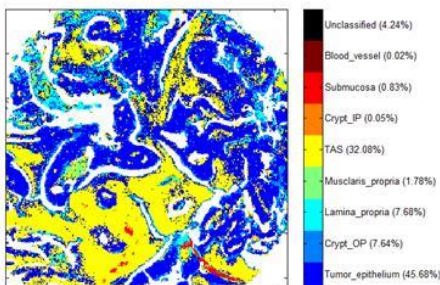
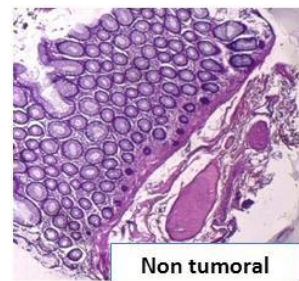
Terça-feira Horário: 14:00 - 16:00

Innovative diagnostic methods are the need of the hour that could complement the gold standard cyto-/histo-pathology for cancer diagnosis. In this perspective, biophotonic approach such as vibrational spectral micro-imaging (including infrared (IR) absorption and Raman scattering) is one of the candidate methods, as it provides spectral fingerprint of cell and tissue biochemistry in a non-destructive and label-free manner. Examples of application at cell and tissue levels will be given.

IR Prediction



HPS staining



Apoio: Departamento de Física da Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto, Universidade de São Paulo (USP);

FAMB - Programa de Pós-Graduação Física Aplicada a Medicina e Biologia.



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Numerical processing of spectroscopic data

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Local: Anfiteatro (sala 11) do bloco das exatas (B4)

Data: 12 de novembro de 2013,

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Vibrational spectroscopies (Raman and infrared) are able to probe the biomolecular composition of samples. Recorded spectra are composed of a huge amount of spectral information. Some spectral contributions are however useless since they are due to physical effects or are generated by uninteresting compounds included into the sample. The development of imaging systems furthermore increased the quantity of recorded data by introducing two spatial dimensions, inducing the acquisition of datacube. Finally, the spectral differences existing between different biological structures of a sample or between different physiopathological states of tissues can be very weak.

In this presentation, a review of the usual data analysis tools applied in vibrational spectroscopy will be proposed. For instance, a numerical dewaxing method will be presented in order to exploit the data acquired on formalin-fixed paraffin-embedded samples. Then, some classical clustering methods and some of their extensions will be explained. Finally, some supervised classification methods will be presented.

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