University of Birmingham

Professor Gabriel Landini DrOdont, PhD

Professor of Analytical Pathology and Head of Oral Pathology Unit

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About

Gabriel Landini is Professor of Analytical Pathology and Head of the Oral Pathology Unit, at the School of Dentistry.

Qualifications

- PhD, 1991, Kagoshima University, Japan.
- Doctor of Odontology, 1984, Universidad de la Republica, Uruguay.

Teaching

- **BDS.**
- **BMedSc.**

Postgraduate supervision

Gabriel is interested in supervising doctoral research students in the following areas:

- Quantitative microscopy of oral cancer and oral mucosa ageing.
- Development of intelligent imaging methods for histolgical image interpretation.
- Biological object segmentation, image enhancement and digital staining.
- Analysis and computer modeling of cell mixing in heterogeneous populations *in vitro*.

For a full list of available Doctoral Research opportunities, please visit our **Doctoral Research programme listings (http://www.bham.findaphd.com/?es=y&apl=y&aplt=&show)** .

Research

RESEARCH THEMES

- Tumour growth, image analysis in histopathology, tissue architecture, cell mixing.

RESEARCH ACTIVITY

- Gabriel's research interests have been directed to the development of innovative quantitative markers of biological complexity. These include applications of fractal geometry and image analysis for the characterisation of biological shape to be able to understand and characterise morphological changes taking place in pathological conditions, in particular Oral Cancer.
- Current research interests include the development evidence-based methods of morphological analysis which underpin the emerging discipline of *Intelligent Microscopy*. In this area, formal quantitative analyses are processed by machine-reasoning procedures, so testable algorithms can replace the subjective components of traditional observer-based microscopy and histopathology to create more reliable means of diagnosis.
- Gabriel is also involved in the development of visualisation enhancements to histological imagery for dichromatic (colour blind) individuals.

Other activities

Gabriel is part of the international group of scientists contributing to the development of open source image processing modules for scientific imaging using the ImageJ and Fiji platforms.

Publications

Han, J. W., Breckon, T., Randell, D. A., Landini, G. (2011), The application of Support Vector Machine classification to detect cell nuclei for automated microscopy. *Machine Vision & Applications* DOI 10.1007/s00138-010-0275-y

Landini, G. (2011), Fractals in Microscopy. *Journal of Microscopy* 241, Pt1: 1-8, 2011. (Invited review) doi: 10.1111/j.1365-2818.2010.03454.x

Bloomfield, J. M., Sherratt, J. A., Painter, K. J., Landini, G. (2010), Cellular automata and integrodifferential equation models for cell proliferation in mosaic tissues. *Journal of the Royal Society Interface* 7: 1525–1535. doi: 10.1098/rsif.2010.0071.

Abu Eid, R., Landini, G. (2010), The complexity of the oral mucosa: a review of the use of fractal geometry. *Journal of Control Engineering and Applied Informatics* 12(1): 10-14.

Lea, S. C., Landini, G. (2010), Reconstruction of dental ultrasonic scaler 3D vibration patterns from phase-related data. *Medical Engineering & Physics* 32(6):673-677. doi:10.1016/j.medengphy.2010.02.010.

Landini, G., Randell, D. A., Breckon, T., Han, J. W. (2010), Morphologic characterization of cell neighborhoods in neoplastic and preneoplastic epithelium. *Analytical and Quantitative Cytology & Histology* 2: 30–38.

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Stockholm, D., Benchaouir. R., Picot, J., Rameau, P., Neildez, T. M. A., Landini, G., Laplace-Builhe, C., Paldi, A. (2007), The origin of phenotypic heterogeneity in a clonal cell population in vitro. *PLoS ONE* 2(4): e394. doi:10.1371/journal.pone.0000394 .

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