

COST IC0604

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WG3 – Images: Analysis, Processing, Retrieval and Management

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- * **Mission and objectives**
- * WG members
- * Tasks
- * Tasks distribution / declarations of contributions
- * Objectives and output for 2008
- * Open discussion

Missions

- ? Minimize the complications of subjectivity of pathologic evaluations in the specific areas, using information (automation) technology.
- ? Incorporate and standardize current image technology in the system aids pathologists used for detection, classification and/or counting of cells and tissues.
- ? Evaluate the potential of image analysis in Digital Pathology to assist in standardisation of immunohistochemistry results.
- ? Withdraw (produce), analyse, integrate and manage of the information available from images in the Digital Environment

Objectives

- ? Review the literature to recognise a specific areas of pathology using image analysis data for the diagnostic and research purposes.
- ? Propose and extend the study on the image analysis models (methods, systems, tools, fields of pathology).
- ? Establish / modify /standardize the tools for image analysis, processing and retrieval.
- ? Propose tools allowing (helping) pathologists to manage and interpret information that is enabled by the Digital Slides.
- ? Propose / recognise the recommendations for the immunohistochemistry [ihc] quantitative analysis in certain fields of the Digital Pathology (standard material, automated image analysis software, categorical scoring system etc.).

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- ? Inst. of Tuberculosis and Lung Diseases (PL)
 - ? EPFL (Switzerland)
 - ? TRIBNV (FR)
 - ? UCLM (ES)
 - ? Hospital General de Ciudad Real (ES)
 - ? University of Regensburg (DE)
 - ? University of Nottingham (UK)
 - ? School of Molecular Med. Sc. Nottingham (UK)
 - ? Univ. of Belgrade (Serbia)
 - ? Kaunas Univ. of Technology (LT)
 - ? University of Nicosia (CY)
 - ? Dako Copenhagen (DK)
 - ? Tampere University (FI)
 - ? VicomTech (ES)
 - ? Wielkopolskie Centre of Oncology (PL)
 - ? Precoptic (Nikon's Instruments Distributor), Warsaw (PL)
 - ? *Hospital do Espirito Santo – Évora (PT)*

WG Members (? not confirmed)

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- ? ? *SESCAM (ES)*
- ? ? *University of Helsinki (FI)*
- ? ? *INSERM (FR)*
- ? ? *Charité Universitätsmedizin Berlin (DE)*
- ? ? *University of Udine (IT)*

- 3.1. Image analysis tools study of possible solutions.
- 3.2. Design and implementation of image analysis tools related to scientific and medical data management.
- 3.3. Analysis of image compression techniques.
- 3.4. Design and development of conversion algorithms to create large files in standardized formats.
- 3.5. Design and development of a standardized large file formats microscopic pathology visualizing program.
- 3.6. Research on search engines available.
- 3.7. Developing collaborative work in telepathology servicing in Europe.

Objectives

A Review the literature and select a model for the ihc analysis study.

The proposed model: breast carcinoma biomarkers (HER-2, estrogen and progesteron receptors [ER/PgR] expression by ihc quantitaive analysis.

B Collection of the pathology material and clinical data

Pursuing the study of DAKO (approval) and COST Action IC0604 group in standards for IHC on ER/PgR.

IHC scoring by light microscopy

C Selection of the automated image analysis systems [AIAs]

Various algortims for quantitaive ihc analysis: ScanScope Aperio, ACIS III - DAKO, ALIAS (UCLM, c.Real Spain)

D Comparative analysis of ihc results obtained by various methods for HER-2 (

Statistical evaluation of the results

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- * Scientific contribution to the European Congress on Telepathology,
(Toledo, May 17th , 2008).
 - * Workshop on: Quantitative immunohistochemistry,
(Warsaw, Nov. 29th, 2008).
 - * Implementing STSMs.
 - * Contributing to Cross- WGs interactions
 - * Joint publications.

WG3 meetings for 2008

Madrid (ES),	Feb. 2 nd ,	(MC)
Evora (PT),	Oct. 2-3,	(MC)
Warsaw (PL),	Nov. 28th	(WG3 & WG4)
	Nov. 29 th ,	(Workshop (Quantitative immunohistochemistry))

Suggestions provided by the partners:

- ✍ Consider also further topics additionally to image analysis
- ✍ Include the image analysis study on the basic histological staining.
- ✍ Initiate in 2008 also starting activities in medical image processing (RoI detection, segmentation, further analysis / feature extraction functions, compression, Search & Retrieval, storage organization, etc.).
- ✍ Possibly contribute to elaborating Open Source Toolboxes that can be made available to the open community.
- ✍ Content based image analysis
- ✍ Requirement: do not send the complete image to the analysis server