equipment. On the West Medica scanner, 7.7% of images with a focus defect and 23.1% of images with focus problems in three-dimensional groups are observed. These percentages increase in the case of the equipment developed by Roche up to 60% and 20% respectively. **Conclusions:** In our opinion, cytological samples have characteristics that recommend the use of systems with continuous focus. This method offers a good result and optimizes image storage against solutions such as Z-stack scan method.

Image Analysis-Based Assessment of Perfluorooctanoic Acid-Induced Liver Pathology in Piscine Model

Maurizio Manera[1], Bahram Sayyaf Dezfuli[2], Giuseppe Castaldelli[2], Luisa Giari[2]

[1]Faculty of Biosciences, Food and Environmental Technologies, University of Teramo, Teramo, Italy, [2]Department of Life Sciences and Biotechnology, University of Ferrara, Ferrara, Italy. Email: mmanera@unite.it

Introduction: Perfluorooctanoic acid (PFOA) is an emerging pollutant in waters and fish, as aquatic representative vertebrate, may serve as model to assess its toxicity both in environmental monitoring programs and in translational biomedical research. **Materials and Methods:** Ultrathin sections from 5 specimens of common carp (*Cyprinus carpio*) for each PFOA exposure group (ctr, unexposed; low dosage, 200 ng L^{-1} PFOA; high dosage, 2 mg L^{-1} PFOA) were assessed at light and transmission electron microscopy, for box-counting fractal analysis and ultrastructural investigation, respectively. Fractal dimension and lacunarity of the cytoplasm outline were evaluated, comprehensive of the interface between glycogen-rich cytoplasm and remnant perinuclear, organelle-rich cytoplasm. Numeric results were statistically analyzed through ANOVA and Linear discriminant analysis. **Results:** Ctr vs. low dosage and Ctr vs. high dosage showed significant difference only for lacunarity (ANOVA; $p< 0.01$), whereas low vs. high dosage only for fractal dimension (ANOVA; $p< 0.01$). Linear discriminant analysis resulted in the correct classification of 100% of the original data and 73.3 % of both the cross-validated and jackknifed data set. Sensitivity was 100% (no false negative case), whereas specificity was 71.4% (2 false positive, low dosage misclassified cases). At ultrastructural level, a relative increase of the perinuclear organelle-rich area, mitochondria alteration, enlargement of cisternae of endoplasmic reticulum, autophagosomes and myelin figures were observed according to treatment. **Conclusions:** Fractal analysis and ultrastructural investigation could asses PFOA exposure even at ecologically relevant concentrations (low dosage), where previous sensitive, chemical-based methods failed to discriminate low dosage exposed from unexposed fish.

Feedback on Digital Undergraduate Pathology Course at University of Tartu

Ave Minajeva[1]

[1]Institute of Biomedicine and Translational Medicine, University of Tartu, Tartu, Estonia. E-mail: ave.minajeva@ut.ee

Introduction: In the last two years the undergraduate pathology course for the third year medical students at University of Tartu has been fully based on digital microscopic slides. **Materials and Methods:** The digital slides were created by using 3D Histech slide scanners, subsequently converted into OpenSlide format and uploaded into the university server. The on-line study at the university is generally based on Moodle open-source learning management system. In Moodle the database modules were created comprising systematic information for each particular slide, including the diagnosis, link to the digital slide, description and figures. Also, each slide in the database had a link to the tutorial video created in the Panopto recording system. Starting from the 2nd year, a computer class was installed. **Results:** The feedback from 87 (70% of 124) students studying in Estonian and 16 (73% of 22) from the English groups was collected. 97% of Estonian and 100% of the English students agreed digital slides provided better overview than learning under microscope. The tutorial videos and the possibility to study the material at home were most highly appreciated. Over half of the students reported they had been preparing at home to actively discuss the digital slides in the class. Their feedback revealed they'd prefer more case or problem based learning to fill the leftover class time. **Conclusions:** Digital microscopy slides are highly welcome among the students, facilitate independent learning in undergraduate pathology course and leave more time for case-based discussions in the classes.

Can Artificial Intelligence Help Cervical Cytopathologist to Detect High-Grade Squamous Intraepithelial Lesions on the Atrophic Background?

Ilknur Centinasalan Turkmen[1], Gizem Dursun[2], Ufuk Ozkaya[2], Abdulkerim Capar[3], Bahar Muezzinoglu[1], Beheet Ugur Toreyin[3]

[1]Department of Pathology, Istanbul Medipol University, Istanbul, Turkey, [2]Department of Electrical and Electronics Engineering, Suleyman Demirel University, Isparta, Turkey, [3]Informatics Institute, Istanbul Technical University, Istanbul, Turkey. E-mail: capar@itu.edu.tr