

## REGGIO CALABRIA SIBS BRANCH

### EVALUATION OF THE SENSITIVITY OF DIFFERENT KITS USED IN ANCA'S DETERMINATION

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Small and medium vessel vasculitis are associated with the presence of anti-neutrophil cytoplasmic antibodies (ANCA) in sera of patients affected by these immuno disorders. ANCA antigen targets have been described as a range of proteases, found in neutrophils, including PR3, MPO, neutrophil elastase (NE), cathepsin G, BPI, lysozyme and lactoferrin. The combination of indirect immunofluorescence (IIF) analysis with enzyme linked immunosorbent assays (ELISAs) is internationally recommended for ANCA detection. However the screening of ANCA remains a challenge for the scientific community because of the presence of highly homologous sequences within the ANCA antigens and the lack of standard methods. This study aimed to evaluate the performances of commercially available assays (IIF, ELISA, immuno-dot assays) for ANCA detection in terms of specificity and sensitivity. Sera of 60 patients were tested for ANCA by IIF and ELISA. The results obtained, both IIF and ELISA methods, suggesting that both methods are good for approximately 50 samples; however a great variation has been observed for 10 samples tested by four ELISA kits, two IIF and one immuno-dot assay. Based on this evaluation, we can confirm that the specificity and sensitivity of commercially available kits for the detection of ANCA vary considerably. The major challenges for academia and industry remain the developments of i) antigen-specific assays with high sensitivity, and ii) internationally validated calibrators. Currently, it is recommended to test the same clinical sample with various methods and kits produced by different manufacturers to address these issues.

### EVALUATION OF DIAGNOSTIC EFFICACY OF A NEW TEST, ZNT8, USED IN THE SCREENING OF DIABETES MELLITUS 1

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Diabetes Mellitus is a chronic disease associated with an increase in mortality rate all over in the world. The identification of risk factors and the early detection of the pathology have the aim to develop effective strategies to prevent or delay the clinical onset. Diabetes Mellitus type 1 (DM1) is a form of diabetic disease of autoimmune aetiology with increasing incidence rates. The objective of this study was to evaluate the efficacy of an innovative method of investigation, aimed at finding ZnT8 autoantibodies, in combination with other diagnostics tests [Glutamic Acid Decarboxylase (GAD-IA2) and Islet Cell Antibodies (ICA)] used in the screening of DM1. The anti-ZnT8 are autoantibodies directed against the C-terminal portion of isoform 8 of the zinc transporter (ZnT8). ZnT8 autoantibodies, anti-GAD-IA2 and anti-ICA were measured in the sera of 40 patients 17 of them aged between 6 and 20 years. The detection was carried out through ELISA

(enzyme-linked immunosorbent assay) and IIF (indirect immunofluorescence) using kits provided by various companies. The results obtained showed that the ZnT8 is present in 45% of sera tested; anti-ZnT8 were found in combination with anti-GAD-IA2 in 60% of samples and samples with high levels of GAD-IA2 exhibited similar high levels of ZnT8. Based on these data, it was established that the combination of ZnT8, GAD-IA2 and ICA leads to an increase in the diagnostic sensitivity and specificity; in addition, the ZnT8 is a test which can replace tests such as ICA without loss of sensitivity and specificity, and represents a reliable diagnostic tool for the autoimmune diabetic pathology.

## SASSARI SIBS BRANCH

### FEMORAL BONE MICROMORPHOLOGY: A COMPARATIVE STUDY BETWEEN WILD (OVIS ARIES MUSIMON) AND DOMESTIC SHEEP (OVIS ARIES ARIES)

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The mouflon (*Ovis aries musimon*) and the sheep (*Ovis aries aries*) are the wild and domestic subspecies of the same species. In spite of some different phenotypic features, such as coat color and horn morphology, their skeletons are very similar, so distinguishing bones between these two subspecies is not easy. In this work, mouflon bone micromorphology was studied for the first time and compared to the domestic subspecies, in order to highlight the role played by the lifestyle on bone with special regard to secondary osteon morphology and morphometry. Area, perimeter, minimum and maximum diameter of more than 200 secondary osteons and Haversian canals were measured in cross sections of four adult femurs from each subspecies. Qualitative investigation of bone histology revealed plexiform and irregular Haversian tissue in both subspecies, as previously reported for Ruminants. In addition, the mouflon showed the presence of several secondary osteons clustered in small groups in many regions, which may be consistent with the definition of dense Haversian tissue. Quantitative analysis demonstrated that mouflon secondary osteons are larger than in the sheep and made of a higher number of lamellae (5-7). The wide areas characterized by dense Haversian tissue frequently found in mouflons, as well as the larger dimensions of secondary osteons may be consequent to the habits of wild life typical of that subspecies.

## TURIN SIBS BRANCH

### VERTEBRAL MORPHOMETRY FOR STATURE ESTIMATION IN FORENSIC ANTHROPOLOGY BASED ON DEXA IMAGING: A PRELIMINARY REPORT

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Incomplete remains are a common issue in forensic investigation. Identification of these remains suggests to perform the anthropological profile, assessing attributes as sex, age,

ethnicity and stature from bones. If long bones, commonly used for stature estimation, are fragmented or missing, the measurements made on the vertebral column are considered reliable. On this purpose, a method based on a population similar to the remains recovered is required. In this preliminary study we measured heights of the vertebral bodies in a Caucasian Italian population, evaluated by images of dual energy X-ray absorptiometry (DEXA) morphometry in the living investigated in diagnostic routine. DEXA utilises two X-ray beams with different energy levels for calculating the different absorptions of soft tissues and bone and it is considered to be

the most reliable densitometric technique as for spatial resolution, precision, and accuracy. It is also a quantitative method to identify osteoporotic vertebral fractures and anatomical anomalies, based on the measurement of vertebral bodies. In this preliminary study, thoracic and lumbar segments of the spine were measured in 209 females (mean age: 65.5 years; mean stature: 155.8 cm) and statistical analysis was performed, obtaining regression formulae for estimated living stature from T6-T12, L1-L4 and T6-L4 spinal segments. The range of standard deviation of the calculated stature varied from 5.32 to 5.7.