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The *European Journal of Histochemistry* was founded in 1954 by Maffo Vialli and published till 1979 under the title of *Rivista di Istochimica Normale e Patologica*, from 1980 to 1990 as *Basic and Applied Histochemistry* and in 1991 as *European Journal of Basic and Applied Histochemistry*. It is now published under the auspices of the University of Pavia, Italy.
The *European Journal of Histochemistry* is the official organ of the Italian Society of Histochemistry and a member of the journal subcommittee of the International Federation of Societies for Histochemistry and Cytochemistry (IFSHC), and has been an influential cytology journal for over 60 years, publishing research articles on functional cytology and histology in animals and plants.

The Journal publishes Original Papers, Technical Reports, Reviews, Brief Reports, Letters to the Editor, Views and Comments, and Book Reviews concerning investigations by histochemical and immunohistochemical methods, and performed with the aid of light, super-resolution and electron microscopy, cytometry and imaging techniques; attention is also given to articles on newly developed or originally applied histochemical and microscopical techniques.

Coverage extends to:
- functional cell and tissue biology in animals and plants;
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- cell-cell interaction and molecular trafficking;
- biology of cell development and senescence;
- nerve and muscle cell biology;
- cellular basis of diseases.

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NPs by both myoblasts and myotubes. Transmission electron microscopy showed that HA-NPs enter the cell by endocytosis, and after 24 h incubation they may be found in the cytoplasm both inside membrane-bounded vesicles and free in the cytosol as a consequence of endosomal escape. NPs were never found in the nucleus and no organelle damage was ever observed in both myoblasts and myotubes. At 48 h, many residual bodies were found inside the cells, which suggests that HA-NPs are degraded *via* the endo-lysosomal pathway. All these data demonstrate that of HA-NPs are highly biocompatible for muscle cells and promise to be suitable for efficiently carrying pentamidine inside muscle cells.

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EVALUATION OF OOCYTE QUALITY IN GRANULOSA AND CUMULUS CELLS OF PATIENTS UNDERGOING PMA

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We investigate the apoptosis rate of individual granulosa cell-oocyte and cumulus cell-oocyte (COC), associated with the levels of molecules playing a critical role in the regulation of cell death or survival. These molecular analyses have been done to verify the difference of competence between oocytes producing embryos able to reach the blastocyst stage compared with embryos arrested during the *in vitro* culture. From each single follicle: granulosa cells were processed for Western blotting analyses, using the following antibodies: pAKT, ERK 1/2, pERK 1/2; cumulus cells were used for *in situ* immunofluorescence with the same antibodies. DNA fragmentation rate was measured by TUNEL assay. We have involved 58 patients and recovered 255 MII oocytes, of which 197 were fertilized and the derived embryos had the following evolution: 117 transferred, 57 vitrified and 23 arrested; 58 oocytes failed the fertilization or were in GV or MI stages. In the cumulus cells: we found a significant inverse correlation between oocytes resulting in transferred and arrested embryos in the ratio pAKT/TUNEL; nuclear localization of pERK1/2 showed a significant inverse correlation pERK1/2/TUNEL and a significant direct correlation with the intracellular accumulation of pERK1/2/pAKT. In granulosa cells: oocytes able to produce blastocysts, ERK1/2 /TUNEL ratio was higher than in cells of arrested embryos. Cumulus and granulosa cells showed different levels of expression of the investigated molecules. We found that in the cumulus cells of the oocytes able to produce blastocysts, the pAKT/TUNEL ratio is higher than in cumulus cells of arrested embryos, indicating that pAKT is involved in survival pathways. Moreover, pERK1/2 has an anti-apoptotic effect, when translocated into the nucleus. In granulosa cells: ERK1/2 indicates that it is involved in survival pathways. Briefly, we demonstrated that DNA fragmentation rate related to specific molecular levels could be considered a molecular marker of oocyte competence, for the evaluation of a prognostic pattern of blastocyst formation.

MicroRNAs CONTROL IN ZEBRAFISH CARDIAC HYPERTROPHY: A MODEL OF STUDY IN TRANSLATIONAL MEDICINE

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Zebrafish is an emerging model to study cardiac diseases since is still lack studies about hypertrophy. In this study, for the first time in zebrafish, it was induced a cardiac hyertrophy by using phenylephrine treatment in hearts cultured in ex-vivo with the aim to have a translational model to use in the study of human disease. The effect of the treatment has been valued for dose and timing by histology and immunohistochemistry. Moreover, due to the similarities between fish and mammalian genomes, using qRT-PCR experiments, it was analyzed the expression of some microRNAs (miR-1, miR-133a), already known to be involved in cardiac regeneration and in inducing hypertrophy hearts in mice and humans. The experiments showed down-regulation of miRNAs, especially miR-133a, demonstrating the importance of that miR in the hypertrophy conditions in zebrafish as well as in mouse and human. To confirm their role in cardiac hypertrophy, the *in vivo* inoculation of sequences of complementary miRs have demonstrated their key role in control the cardiac hypertrophy also in zebrafish. The hypertrophic increase of myocytes, has been more evident by the treatment with the anti-miR 133a. The results suggest the possibility to activate the FGF-receptor pathway, necessary to start the epicardial and myocardial hypertrophy process. This experimental system, using different and easier model of study, should provide clues to understand human pathophysiology.

STEROIDOGENIC ENZYME PROTEIN EXPRESSIONS IN *Coturnix coturnix* TESTIS DURING THE REPRODUCTIVE CYCLE

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Sex steroid hormones are mainly synthesized within reproductive organs, and once secreted they regulate different physiological events in target tissues. In the testis, somatic cells as well as germ cells, synthesize sex hormones start a common precursor, the cholesterol, via a series of enzyme-catalyzed reactions[1, 2]. The quail, *Coturnix coturnix* is a seasonal breeder with a physiological switch on/off of gonadic activity. To more thoroughly comprehend the steroidogenic pathways that govern the seasonal reproductive cycle, we have investigated the localization of StAR protein and steroidogenic enzymes (3β-HSD, 17β-HSD, P450 aromatase and 5 -Red) as well as androgen and estrogen levels, in the testis of reproductive and no-reproductive quails. We demonstrated that StAR, 3β-HSD, 17β-HSD, P450 aromatase and 5 -Red were always present in the somatic (Leydig and Sertoli cells) and germ cells (spermatogonia, spermatocytes I and II, spermatids and spermatozoa). In addition, by Western blotting analysis we demonstrated that 17β-HSD, P450 aromatase and 5 -Red showed the highest expression levels during the reproductive testis compared to non-reproductive one. Accordingly, we also found that during the reproductive phase the highest titres of testosterone, 17β-estradiol and 5 -dihydrotestosterone are recorded. In conclusion, our findings demonstrated that in *C. coturnix*: 1) both somatic and germ cells are involved in local synthesis of sex hormones; 2) 17β-HSD, P450 aromatase and 5 -Red expressions as well as testicular androgens and estrogens