1687-Pos Board B579
Functional Compatibility between Purkinje Cell Axon Branches and their Target Neurons in the Cerebellum
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Each neuron sprouts axonal branches and innervates numerous cells that are divergent in activity. The activity strengths of these axonal branches are ideally differentiated to be compatible with their target cells so that a neuron efficiently regulates postsynaptic cells. We studied this hypothesis in the cerebellum where a main axon of Purkinje cell projects to deep nucleus cells and recurrent axons innervate adjacent Purkinje cells. The fidelity of spike propagation is superior in recurrent branches than main axon; and the abilities of encoding spikes and processing GABAergic inputs are advanced in Purkinje cells versus deep nucleus cells. Hence, the functional strengths are differentiated among Purkinje cell axon branches and among their target cells. In addition, the functional states between presynaptic and postsynaptic partners are proportionally correlated, i.e., active axonal branches innervate active postsynaptic cells, or vice versa. Computational simulation indicates that their functional compatibility makes the neurons in microcircuits being activated appropriately. Therefore, each cerebellar Purkinje cell differentiates its axonal branches to be functionally compatible with their target cells in order to form a homeostatic and efficient unit.

1688-Pos Board B580
Study of Probable Retinal Change in the Epileptic Patients using Electrooculogram
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Aim: Epilepsy describes a condition in a person have recurrent seizures due to a chronic, underlying process. Epilepsy, which is the most common chronic neurologic condition, affects individuals of all age with a peak incidence in childhood and in the elderly. The aim of present work is to look for probable retinal change in the epileptic patients using Electroocculogram.
Materials and Methods: in present cross-sectional study, 50 subjects (without visual problem) including 25 with epilepsy and 25 without epilepsy were selected and the EOG test was examined in total population.
Results: The mean Arden index was 2.22 ± 0.2 in case group and 2.24 ± 0.1 in control group indicating no significant difference (p=0.825)
Conclusions: based on results obtained in present study ,it may be concluded that epilepsy would not affect the retina and therefore retinal changes which will be discussed in detail in full paper.

1689-Pos Board B581
Study of Probable Retinal Change in the Epileptic Patients using Electroretinogram
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Aim: Epilepsy describes a condition in a person have recurrent seizures due to a chronic, underlying process. Epilepsy, which is the most common chronic neurologic condition, affects individuals of all age with a peak incidence in childhood and in the elderly. The aim of present work is to look for probable retinal change in the epileptic patients using Electroretinogram.
Materials and Methods: in present cross-sectional study, 50 subjects (without visual problem) including 25 with epilepsy and 25 without epilepsy were selected and the ERG test was examined in total population.
Results: The mean voltage of ERG b-wave was 42.6 ± 0.2 microvolt in case group and 42.80 ± 0.3 microvolt in control group indicating no significant difference (p=0.741).The mean latency of ERG was 104.5 ± 1.25 millisecond in case and 103.84 ± 1.38 millisecond in control group indicating no significant difference(p=0.866).
Conclusions: based on results obtained in present study, it may be concluded that epilepsy would not affect the retina and therefore retinal changes which will be discussed in detail in full paper.

1690-Pos Board B582
Study of Changes in the B-Wave of Electroretinogram in Early Detection of Organic Amblyopia in Children
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Background: Amblyopia or Lazy eye is a common problem among children and indicating the existence of underlying diseases such as strabismus or refractive error, and therefore its diagnosis and treatment is needed, to prevent complications in the visual system and therefore, identifying and treating these children is an important task. One of the methods proposed is the use of electrophysiological tests mainly Electroretinography (ERG), ERG deals with retina of visual system. The aim of present research is an attempt to survey the retina of these patients and look for possible changes in **b** wave of ERG pattern.
Methods: 50 children with organic amblyopia were enrolled in this study, the demographic information of the patients was recorded in a list prepared for this purpose. The ERG, mainly the **b** wave was measured in the patient population. The results obtained were analyzed by software SPSS19.
Results: The mean voltage of **b** wave in case and control group was. 34.88 and 90.96 μv respectively. The difference between the two groups is statistically significant ($P<0.05$),however, the latency in patients and healthy population was 86.56 and 43.6 msec respectively, which is statistically significant ($P<0.05$)too.
Conclusion: In general we can conclude that ERG test; provide useful information about retina of the children suffering from amblyopia which will be discussed in the manuscript in detail.
Keywords: Amblyopia, children, ERG **b**-wave

1691-Pos Board B583
Effect of Hydroxychloroquine on Visual System in Patients with Systemic Lupus Erythematosus using Visual Evoked Potential
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Aim: This study was performed to determine the effect of Hydroxychloroquine on visual system in patients with systemic lupus erythematosus.
Materials and methods: In a cross -sectional study, 50 subjects (without visual problem and seizure) including 25 with and 25 without systemic lupus erythematosus under treatment with chloroquine were selected. Visual evoked potential test was performed in two groups.
Results: The mean amplitude was 6.04 in case and 5.84 μ∉- ιε1/2 χοε1/2∉"ροΔ γρο∉..π ωηιχη σηοωσ ε1/2ο σ∉"α∉"ισ∉"ιχαΔΔψ σιγε1/2ιφιχαε1/2∉" διφφερε1/2χε.
The mean latency was 100.50 in case and 95.35 msec in control group which is not statistically significant.
Conclusion: Based on the result of present work one can conclude that hydroxychloroquine has no adverse effect on visual pathway which will be discussed in detail in full paper.

Auditory Biophysics

1692-Pos Board B584
Transduction Channels' Gating Produce Friction Forces that Dominate Viscous Drag on Vibrating Hair-Cell Bundles
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Hearing begins when sound-evoked vibrations of the hair-cell bundle change the open probability of mechanosensitive transduction channels. A dynamic interplay between channel gating and Ca^{2+}-dependent adaptation can give rise to spontaneous hair-bundle oscillations and frequency-selective amplification of sinusoidal inputs. As for any micromechanical device, friction is critical to the performance of the hair bundle. Here we performed dynamic force measurements to decipher the different contributions to hair-bundle friction.
We used flexible glass fibers as force sensors to deflect single oscillatory hair bundles from the bullfrog's sacculus. In response to a symmetric triangular waveform of motion, the force-displacement relation followed a hysteretic cycle; friction forces were deduced from the cycle width along the force axis. At low velocities of bundle motion, friction could be negative, a signature of the active process that drives spontaneous hair-bundle oscillations. When moving at velocities high enough to outrun adaptation, however, we found that friction became positive with a maximum within the narrow region of displacements where the channels gate. Strikingly, friction was significantly reduced in the presence of a channel blocker (gentamicin). From this reduction, we estimated that channel gating contributed frictional forces 3-5 fold larger than those of hydrodynamic origin. In accordance with these measurements, increasing endolymph viscosity by thirty-fold had only a mild effect on active hair-bundle movements. A physical description of active hair-bundle mechanics that accounts for the finite activation kinetics of the transduction channels ($\tau \cong 1$ ms in frog) could quantitatively reproduce the data from both experiments.