

treatment ( $p = 0.012$ ), and remained at similar, decreased levels after chemotherapy.

**Conclusions:** Levels of IL-8 and VEGF, but not IL-17, are elevated in tumor tissue compared to normal surrounding tissue in CRC. Serum IL-8 decreases after surgery, and VEGF decreases after FOLFOX adjuvant chemotherapy in CRC.

### 55ASM-0031 FT | Relationship between neuronal activity in whole-cell and cell-attached current-clamp modes

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**Background:** Cell-attached current-clamp recordings have been proposed for measuring neuronal resting membrane potential and synaptic responses. However, the accuracy of cell-attached current-clamp recordings in neurons remains unknown.

**Materials and Methods:** We used concomitant dual cell-attached and whole-cell current-clamp recordings from the soma of cortical L5 neurons in slices of the mouse somatosensory cortex to directly estimate accuracy of cell-attached current-clamp recordings.

**Results:** We found that the values of resting membrane potential and the magnitude of membrane potential shifts induced by current steps through the whole-cell pipette or by bath-applied high-potassium solution were similar during cell-attached and whole-cell recordings. However, the resting membrane potential values were slightly more negative and more variable during cell-attached recordings. Also, fast signals were attenuated in amplitude (synaptic potentials, by two-fold, and action potentials, by five-fold) and slowed down in cell-attached recordings. We developed a mathematical model describing signal transformation during cell-attached recordings. The model considers resistance and capacitance of the membrane patch under the electrode tip, pipette capacitance and leak resistance at the contact between the pipette and cell membrane, and it shows reliability of cell-attached current-clamp recordings for assessment of the resting membrane potential and its slow shifts as well as distortions introduced by the complex filter during measurements of fast events such as synaptic potentials and action potentials.

**Conclusions:** Cell-attached current-clamp recordings provide relatively accurate estimates of the resting membrane potential and slow membrane potential shifts but significantly attenuate and slow down fast events including synaptic and action potentials. The proposed model can describe distortions caused by pipette-membrane contact in cell-attached recordings.

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### 55ASM-0038 FT | Pre-neoplastic lesions associated with liver and colon responses to 1,2-dimethylhydrazine in an animal model of colorectal cancer

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**Background:** The high incidence and mortality of colorectal cancer (CRC) combined with the lack of an effective method for early diagnosis and effective treatments make CRC one of the most relevant cancers to be studied. Thus, our work aims to study the spectrum of liver and colon lesions induced in rats by the 1,2-Dimethylhydrazine (DMH).

**Materials and Methods:** Twenty-nine male Wistar rats were randomly divided into two control groups (CTRL1 ( $n = 6$ ) and CTRL2 ( $n = 6$ )) administrated with ethylenediamine tetraacetic acid (EDTA)-saline; and two induced groups (CRC1 ( $n = 8$ ) and CRC2 ( $n = 9$ )) administrated with DMH (40 mg/kg) for 7 consecutive weeks. The CRC1 and CTRL1 groups, and the CRC2 and CTRL2 groups were sacrificed 11 and 17 weeks after the first administration, respectively. A complete necropsy was performed. Liver and colon samples of all animals were collected, fixed in formalin, and processed for histopathological analysis. The animals' blood and a small portion of the liver were collected to analyze serum markers of inflammation and to validate chemical induction through the comet assay, respectively.

**Results:** Half of the animals belonging to the CRC1 group presented mild to moderate dysplasia foci ( $n = 3$ ) in the colon. The incidence of neoplasia was only 16.7% ( $n = 1$ ) in the CRC2 group. Moreover, one animal from the CRC2 group also exhibited severe dysplasia and two presented mild to moderate dysplasia foci. Inflammatory lesions in colon samples were present in all animals from CRC groups. Although the animals showed local inflammation, there was no evidence of systemic inflammation (normal CRP and IL-6 serum levels).

Lymphoid inflammatory aggregates were observed in the liver of all animals. Furthermore, DMH induced other changes, such as hepatocyte megalocytosis and single-cell necrosis. Results from liver comet assay showed a lower genetic damage index



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