



Neuroscience
2015

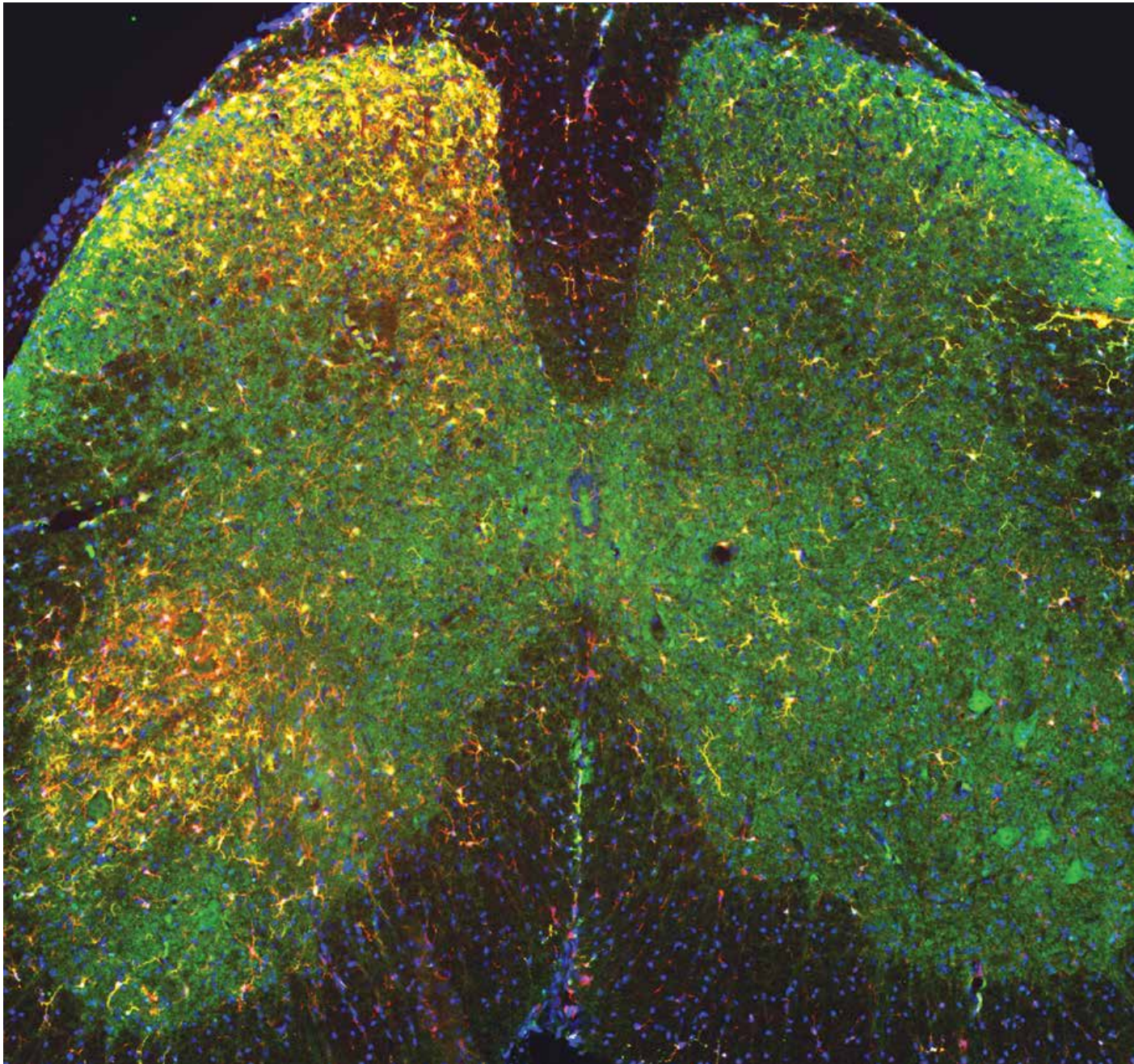
Chicago | October 17-21

Friday to Saturday

Scientific Session Listings 1-95



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Presentation Abstract

Program#/Poster#: DP01.04/DP04

Presentation Title: Effect of tsDCS applied with different electrode configurations on the lumbar spinal circuits

Location: Hall A

Presentation time: Saturday, Oct 17, 2015, 1:00 PM - 5:00 PM

Topic: ++C.10.f. Spinal cord: Animal models and human studies

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Abstract: Spinal Cord Injury (SCI) is a severe injury to the central nervous system (CNS) which, despite a heavy post injury rehabilitation regime, often leaves patients bound to a wheelchair or with other impairments diminishing their quality of life. Trans-spinal direct current stimulation (tsDCS) is a promising new technique for the treatment of SCI. During tsDCS a small direct current is applied to the spinal cord via two or more stimulation electrodes, placed over the backbone of a subject. The technique aims to alter the response of the neural pathways in the spinal cord, which is hypothesized to have a positive effect on the recovery of the damaged spinal cord neuronal networks. The objective of this study, is to assess how tsDCS modulates the excitability of the spinal cord and whether this modulation is dependent on the electrode placement configurations. The primary goal is to compare a new electrode placement configuration with one that is commonly used in previous tsDCS studies. This is assessed using the H- Reflex, whereby the novel configuration is hypothesized to have a larger modulatory effect on the spinal circuits. The two different configurations are: 1) cathode and anode placed on the T11 vertebra and the left shoulder blade respectively (commonly used) and 2) the two electrodes placed over the spinal cord, 7 centimeters apart and centered around the 11 thoracic vertebra. TsDCS is applied on the lumbar spinal cord for a period of 15 minutes with a current of 2,5mA. The ascending part of the H-reflex recruitment curve is measured before, during and after tsDCS. We hereby present the outcome of the aforementioned study as well as the current progress of our laboratory with respect to the effect of tsDCS on

the spinal circuits. We hope that our work will be able to contribute to the effectivity of tsDCS, which could possibly be applied in the rehabilitation of spinal cord injured subjects in the future.

Disclosures: **A. Kuck:** None. **H. van der Kooij:** None. **D.F. Stegeman:** None. **E.H.F. van Asseldonk:** None.

Keyword (s): SPINAL CORD INJURY
ELECTRICAL STIMULATION
REHABILITATION

Support: ZonMW: NeuroControl-Assessment and stimulation (NeurAS) - 104002008

NANOSYMPOSIUM

020. Reward and Uncertainty

Theme F: Cognition and Behavior

Sat. 1:00 PM – McCormick Place, N228

- 1:00 **20.01** What do you do when you don't know what to do: Probing for informativeness on latent states during value-based decision making. J. COCKBURN*; M. J. FRANK. *Caltech, Brown Univ.*
- 1:15 **20.02** Age-related alterations in decision policy under conditions of uncertain strategy choices in mice. R. D. COLE; J. A. FRANCESCONI; A. YU; V. V. PARIKH*. *Temple Univ., Univ. of California San Diego.*
- 1:30 **20.03** Population dynamics of reward and uncertainty in frontal and parietal cortex. N. C. FOLEY; J. P. GOTTLIEB*. *Columbia Univ. Med. Ctr.*
- 1:45 **20.04** Distinct mechanisms for behavioral control under uncertainty in the primate basal forebrain. I. E. MONOSOV*; N. LEDBETTER. *Washington Univ. Sch. of Med.*
- 2:00 **20.05** Neurons in posterior cingulate cortex encode information signals and regulate behavioral plasticity. M. L. PLATT*; J. GARIÉPY; D. L. BARACK. *Duke Univ.*
- 2:15 **20.06** Competing neural representations of choice alternatives in orbitofrontal cortex during value-based decisions. E. L. RICH*; J. D. WALLIS. *UC Berkeley.*
- 2:30 **20.07** Metaplasticity as the neural substrates for choice under uncertainty. S. FARASHAHI; C. H. DONAHUE; H. SEO; D. LEE; A. SOLTANI*. *Dartmouth Col., Gladstone Inst. of Neurolog. Dis., Yale Univ. Sch. of Med.*
- 2:45 **20.08** The attentional modulation of the activity of value-sensitive orbitofrontal neurons. T. YANG*; Y. XIE; C. CHEN; C. NIE. *Inst. of Neurosci.*

DYNAMIC POSTERS

DP01. Dynamic Posters—Saturday Afternoon

Sat. 1:00 PM – McCormick Place, Hall A

All dynamic poster presentations will take place during the full four-hour session time. The theme of the dynamic poster being presented is indicated by the letter in the leftmost column.

- B **DP01 DP01.01** ● Bk channels are critical for synaptic depression underlying sensory filtering associated with cognition. *T. ZAMAN; M. SMOKA; S. SCHMID. *Anat. and Cell Biol., Schulich Sch. of Med. & Dent.*
- B **DP02 DP01.02** Single molecule imaging with monovalent quantum dot-aptamer conjugates. K. E. KITKO; D. M. BAILEY; *Q. ZHANG. *Program in Interdisciplinary Materials Sci., Pharmacol., Vanderbilt Univ.*
- C **DP03 DP01.03** Altered striatal functional connectivity and its relationship to cognitive and motivational processes in traumatic brain injury. *S. DE SIMONI; P. O. JENKINS; J. J. FLEMINGER; A. E. JOLLY; J. H. COLE; D. J. SHARP. *Imperial Col. London, Imperial Col.*
- C **DP04 DP01.04** Effect of tsDCS applied with different electrode configurations on the lumbar spinal circuits. *A. KUCK; H. VAN DER KOOIJ; D. F. STEGEMAN; E. H. F. VAN ASSELDONK. *Lab. of Biomechanical Engin., Univ. of Twente, Dept. of Neurol., Radboud Univ. Med. Ctr.*

- C **DP05 DP01.05** Behavioral characterization and pharmacological validation of chronic social defeat stress mouse model. *I. MORGANSTERN; S. DAVIS; K. HOMA; T. HANANIA. *Behavioral Pharmacol., Psychogenics.*
- D **DP06 DP01.06** Nonlinear integration of core and matrix thalamic input within somatosensory neocortical circuitry. *J. A. PRASAD; B. CHAMBERS; J. N. MACLEAN; S. M. SHERMAN. *Univ. of Chicago, Dept. of Neurobio., Committee on Computat. Neurosci., Univ. of Chicago.*
- D **DP07 DP01.07** Event-related causality in a cortical sensorimotor control network during precise finger force generations. *M. SCHUBERT; C. REINSBERGER; J. BAUMEISTER. *Sports Med., Univ. of Paderborn.*
- E **DP08 DP01.08** Whole-population network dynamics in neuroendocrine dopamine neurons. *C. T. PEREZ; A. STAGKOURAKIS; A. HELLYSAZ; J. VAN LUNTEREN; I. DEHNISCH; C. BROBERGER. *Neurosci., Med. Biochem. and Biophysics, Karolinska Inst., Radboud Univ. Nijmegen, Neurosci., Karolinska Institutet.*
- F **DP09 DP01.09** Dopamine is co-released from the locus coeruleus into the dorsal hippocampus. *K. A. KEMPADOO; E. V. MOSHAROV; S. CHOI; D. L. SULZER; E. R. KANDEL. *Columbia Univ.*
- F **DP10 DP01.10** An aggregate rate code represents reward intensity in midbrain dopamine neurons and in their afferents: evidence from optical self-stimulation for two-stage integration of reward signals. *I. TRUJILLO-PISANTY; P. SOLIS; K. CONOVER; P. SHIZGAL. *Psychology (CSBN), Concordia Univ.*

THEME H POSTER McCormick Place

021. History of Neuroscience

Theme H posters will be on display from Sat. 1 p.m.-Sun. 5 p.m., with one-hour presentations occurring either Saturday afternoon (presentation numbers ending in SA) or Sunday morning (presentation numbers ending in SU)—McCormick Place, Hall A

- 1:00 **CC15 21.01SA** Beritashvili and Tolman: Pioneers of animal spatial behavior. M. G. TSAGARELI. *Ivane Beritashvili Exptl. Biomedicine Ctr.*
- 2:00 **CC16 21.02SA** Mirrors in old master and modern art and contemporary clinical and basic cognitive neuroscience. E. L. ALTSCHULER; V. RAMACHANDRAN. *Temple Univ. Sch. of Med., UCSD.*
- 3:00 **CC17 21.03SA** The history of myelin. A. I. BOULLERNE. *Univ. of Illinois at Chicago.*
- 4:00 **CC18 21.04SA** Albert von Kölliker: Founder of systematic histology and comparative embryology. N. E. KINNEY. *Southeast Missouri State Univ.*
- 1:00 **CC19 21.05SA** Escaping the tyranny of Yerkes-Dodson: Creating and sustaining new complex behaviors - the 'Frontopolar Cortex exception' and human ascendance and survival. S. CURTIS. *True North, LLC.*
- 2:00 **CC20 21.06SA** The interventricular foramen - an example of a scientific argument carried out in public. B. W. BAKKUM. *Illinois Coll Optometry.*
- 3:00 **CC21 21.07SA** Is the cortical column an organizational unit of the cortex? A historical reconstruction (1955-2015). P. HAUEIS. *Berlin Sch. of Mind & Brain, Max Planck Inst. for Human Cognitive and Brain Sci.*

• Indicated a real or perceived conflict of interest, see page 79 for details.
 ▲ Indicates a high school or undergraduate student presenter.
 * Indicates abstract's submitting author