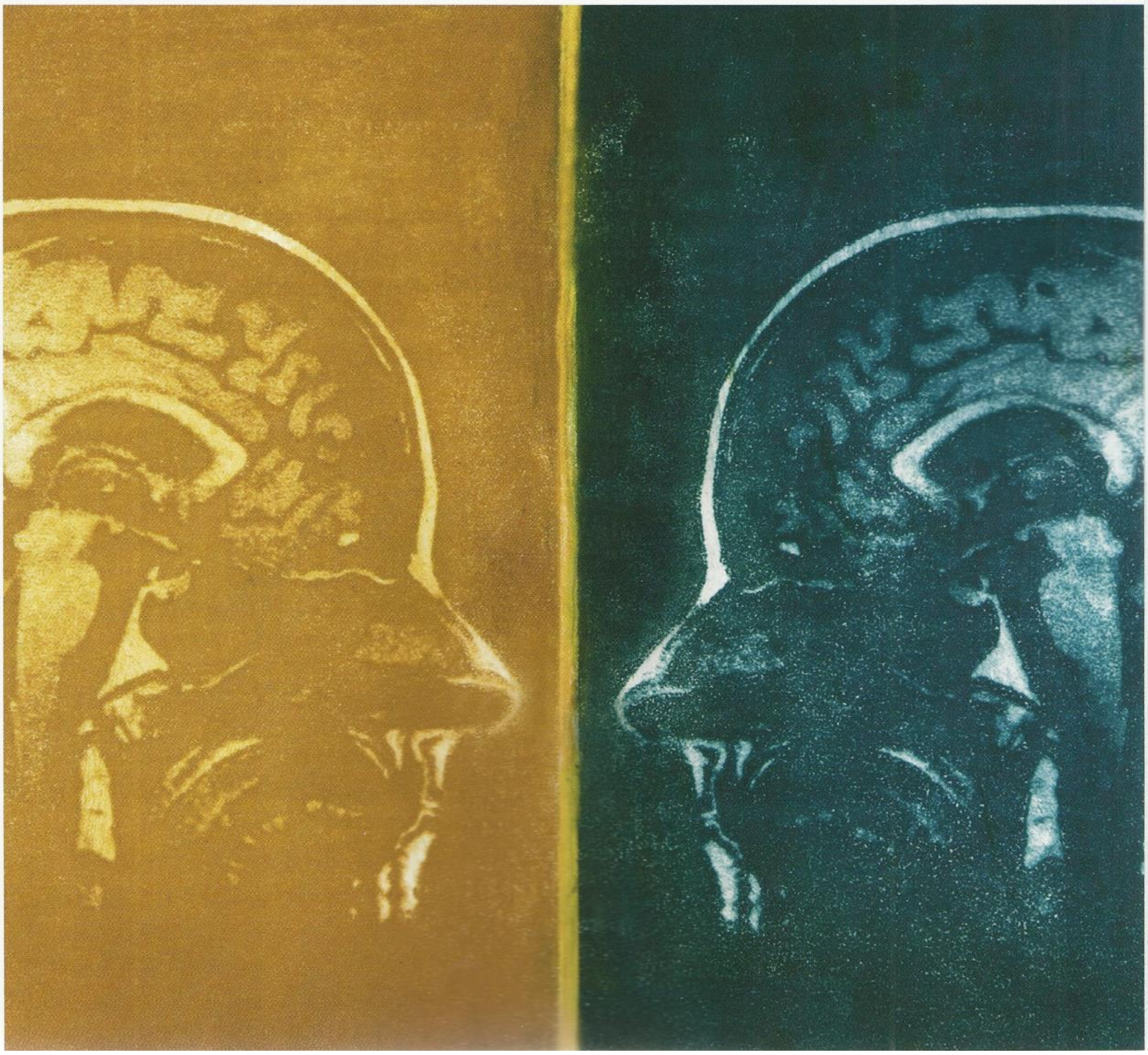
Neuroscience 2015

Chicago | October 17–21

Monday

Scientific Session Listings 269–451

SfN SOCIETY *for* NEUROSCIENCE



4:00 C60 **392.12** Identification of mRNAs that localize to the distal dendrites of the molecular layer of the dentate gyrus following high frequency stimulation of the perforant path. C. A. DE SOLIS*; A. C. PARTIN; M. P. HOSEK; A. A. MORALES; J. E. PLOSKI. *Univ. of Texas at Dallas, UT Southwestern.*

1:00 C61 **392.13** ● Kismet affects endocytosis and glutamate receptor localization at the *Drosophila* melanogaster neuromuscular junction. T. DELANEY*; C. GRIDLEY; F. L. W. LIEBL. *Southern Illinois Univ. Edwardsville.*

2:00 C62 **392.14** Selective optogenetic activation of perforant path synapses in hippocampal slices. P. SALGADO*; B. TRIEU; Y. JIA; C. GALL; G. LYNCH; O. STEWARD. *Univ. of California, Irvine, Univ. of California, Irvine.*

3:00 C63 **392.15** Dissecting the role of Fragile X Mental Retardation Protein in activity-dependent local synthesis of key synaptic protein PSD95 by TimeSTAMP. Y. GENG*; Y. YANG; M. Z. LIN. *Stanford Univ.*

4:00 C64 **392.16** SynapTRAP: Cell specific identification of localized translation in neuronal processes *in vivo.* R. OUWENGA*; A. MOGHA; J. DOUGHERTY. *Washington Univ. In St Louis, Washington Univ. In St Louis, Washington Univ. In St Louis.*

1:00 C65 **392.17** Staufen 2 and the mRNA decay factor Upf1 regulate stalled translation and synaptic plasticity in neurons. E. B. FREEMANTLE*; T. GRABER; S. HÉBERT-SEROPIAN; R. MCADAM; W. SOSSIN; J. LACAILLE. *Univ. De Montréal, McGill University, Montreal Neurolog. Inst.*

2:00 C66 **392.18** Cell type-specific mTORC1 function in somatostatin-expressing interneurons regulates hippocampal network plasticity and memory. J. ARTINIAN*; A. LA FONTAINE; M. MAURER; I. LAPLANTE; K. GAMACHE; K. NADER; J. LACAILLE. *Univ. de Montréal, McGill Univ.*

3:00 C67 **392.19** Visualization of dynamic local proteins synthesis in response to visual experience in Xenopus laevis. H. LIU*; H. T. CLINE. *The Scripps Res. Inst., The Scripps Res. Inst.*

4:00 C68 **392.20** Drug-controllable protein tags allow selective visualization, or selective shutoff, of newly synthesized pools of specific endogenous synaptic proteins in mammalian neurons. C. JACOBS*; Y. GENG; R. Y. TSIEN; M. Z. LIN. *Stanford Univ., UCSD.*

1:00 C69 **392.21** Chemical long term potentiation studied by bio-orthogonal noncanonical amino acid tagging. R. P. MOLLOY*; R. D. HAWKINS. *Columbia Univ., New York State Psychiatric Inst.*

2:00 C70 **392.22** A role for the deadenylase Nocturnin in synaptic plasticity. Y. ONDER*; G. MOLINARO; K. M. HUBER; C. B. GREEN. *UT Southwestern Med. Ctr., UT Southwestern Med. Ctr.*

3:00 C71 **392.23** ● ▲ Kismet is important for endocytosis and the localization of the cell adhesion molecule, FasII, at the *Drosophila* neuromuscular junction. S. A. MARKEL*; F. L. W. LIEBL. *Southern Illinois Univ. Edwardsville, Southern Illinois Univ. Edwardsville.*

4:00 C72 **392.24** Effect of trithorax group proteins on synaptic vesicle endocytosis and glutamate receptor localization at the *Drosophila* neuromuscular junction. C. GRIDLEY*; T. DELANEY; F. LIEBL. *Siue.*

POSTER

393. Oscillations and Synchrony: Other II

Theme B: Neural Excitability, Synapses, and Glia: Cellular Mechanisms

Mon. 1:00 PM – *McCormick Place,* Hall A

1:00 C73 **393.01** Dynamics of coupled oscillatory networks in sensory cortex. L. FONTOLAN*; M. KRUPA; A. HYAFIL; S. ROMANI; B. GUTKIN. *Univ. of Geneva, HHMI, INRIA Paris-Rocquencourt Res. Ctr., Univ. Pompeu Fabra and Fundacio Sant Joan de Deu, Ecole Normale Superieure.*

2:00 C74 **393.02** Non-linearities between neuronal firing rates and spike-field coherence in primary somatosensory and motor cortex. F. I. ARCE-MCSHANE*; N. HATSOPOULOS; B. SESSLE; C. ROSS. *Univ. of Chicago, Univ. of Chicago, Univ. of Toronto.*

3:00 C75 **393.03** VIP+ interneurons control spontaneous activity in neocortical circuits. J. C. JACKSON*; M. M. KARNANI; I. AYZENSHTAT; R. YUSTE. *Columbia Univ., Columbia.*

4:00 C76 **393.04** ▲ Early-life stress impairs recognition memory by perturbing the activity within prefrontal-hippocampal-perirhinal networks of juvenile rats. S. A. J. REINCKE*; I. L. HANGANU-OPATZ. *Univ. Med. Ctr. Hamburg-Eppendorf.*

1:00 C77 **393.05** Electrophysiological correlates of the default mode network. J. C. BILLINGS*; W. PAN; M. NEZAFATI; S. D. KEILHOLZ. *Emory Univ., Emory Univ. and Georgia Inst. of Technol.*

2:00 C78 **393.06** Bold fmri correlation reflects frequency-specific neuronal correlation. J. F. HIPP*; M. SIEGEL. *Roche, Univ. of Tübingen.*

3:00 C79 **393.07** High-density scalp EEG in the macaque monkey during spatial working memory. F. SANDHAEGER*; C. VON NICOLAI; N. NOURY; M. SIEGEL. *Univ. of Tuebingen, Univ. of Tuebingen.*

4:00 C80 **393.08** Measuring the correlation structure of cortical oscillations with EEG and MEG. M. SIEMS*; A. PAPE; J. F. HIPP; M. SIEGEL. *Univ. of Tübingen.*

1:00 C81 **393.09** Obstacles of simultaneous transcranial current stimulation and electrophysiological recording. N. NOURY*; J. HIPP; M. SIEGEL. *Univ. of Tuebingen, Univ. of Tuebingen.*

2:00 C82 **393.10** Large-scale cross-frequency coupling during spatial working memory. C. V. NICOLAI*; E. K. MILLER; M. SIEGEL. *Univ. of Tuebingen, MIT.*

3:00 C83 **393.11** Phase-amplitude coupling in the resting human brain. J. GIEHL*; J. F. HIPP; A. A. PAPE; M. SIEGEL. *Univ. of Tuebingen, Univ. of Tuebingen.*

4:00 C84 **393.12** Cortical information flow during flexible sensorimotor decisions. M. SIEGEL*; T. J. BUSCHMAN; E. K. MILLER. *Ctr. for Integrative Neurosci., Univ. of Tuebingen, MIT, Princeton Univ.*

1:00 C85 **393.13** Prestimulus activity in motor cortex predicts sensorimotor decisions. A. PAPE*; M. SIEGEL. *Univ. of Tübingen, Ctr. for Integrative Neurosci. and MEG Ctr., IMPRS for Cognitive and Systems Neurosci.*

● Indicated a real or perceived conflict of interest, see page 160 for details.
▲ Indicates a high school or undergraduate student presenter.
* Indicates abstract's submitting author

2:00 C86 **393.14** Spontaneous and stimulus-induced activity in ferret visual cortex before and after eye-opening. Y. LI*; C. YU; K. K. SELLERS; Z. ZHOU; J. H. GILMORE; F. FROHLICH. *Univ. of North Carolina At Chapel Hill, Univ. of North Carolina At Chapel Hill, Univ. of North Carolina At Chapel Hill, Univ. of North Carolina At Chapel Hill, Univ. of North Carolina At Chapel Hill.*

*3:00 C87 **393.15** Ih regulates cortical oscillations driven* by layer V pyramidal neurons. S. L. SCHMIDT*; A. K. IYENGAR; A. A. FOULSER; M. R. BOYLE; F. FROHLICH. *Univ. of North Carolina.*

4:00 C88 **393.16** Biophysical thalamic network model of alpha, gamma, and spindle oscillations dependent on cholinergic neuromodulatory state. G. LI*; F. FROHLICH. *Univ. of North Carolina at Chapel Hill.*

1:00 C89 **393.17** ● Feedback-controlled sleep spindle transcranial alternating current stimulation promotes motor memory consolidation. C. LUSTENBERGER*; M. R. BOYLE; S. ALAGAPAN; J. M. MELLIN; B. VAUGHN; F. FROHLICH. *UNC at Chapel Hill.*

2:00 C90 **393.18** $GABA_A$ receptor density affects both gamma oscillations and fMRI BOLD activity during visual working memory. J. KUJALA*; J. JUNG; C. CIUMAS; S. BOUVARD; F. LECAIGNARD; A. LOTHE; R. BOUET; P. RYVLIN; K. JERBI. *Aalto Univ., Lyon Neurosci. Res. Ctr., Inst. for Child and Adolescent with Epilepsy, CERMEP imaging center, Ctr. hospitalier universitaire vaudois, Univ. of Montreal.*

3:00 C91 **393.19** State-dependent modulation of alpha oscillation by direct electrical stimulation. S. ALAGAPAN*; S. L. SCHMIDT; J. LEFEBVRE; H. SHIN; F. FRÖHLICH. *Univ. of North Carolina At Chapel Hill, Univ. Hosp. Ctr. and Univ. of Lausanne.*

4:00 C92 **393.20** The effects of ketamine on *in vitro* network dynamics. X. CHEN; R. DZAKPASU*. *Georgetown Univ., Georgetown Univ. Med. Ctr.*

1:00 C93 **393.21** The onset of intrinsic predictability at criticality in somatosensory cortex. L. FAKHRAEI*; S. GAUTAM; W. SHEW. *Univ. of Arkansas.*

2:00 C94 **393.22** Fast sparsely synchronized brain rhythms in a scale-free neural network. W. LIM*; S. KIM. *Daegu Natl. Univ. of Educ., Computat. Neurosci. Lab.*

3:00 C95 **393.23** ● Propagation of epileptiform activity along the dorso-ventral axis of the medial entorhinal cortex. T. RIDLER; A. POPE; K. PHILLIPS; A. D. RANDALL; J. T. BROWN*. *Univ. of Exeter, Eli Lilly.*

4:00 C96 **393.24** Distinct contributions of somatostatin- and VIP-expressing interneurons to pyramidal cell excitability during Up states in barrel cortex. G. NESKE*; B. W. CONNORS. *Brown Univ.*

1:00 D1 **393.25** Potential mechanisms and functions of short desynchronizations of neural oscillations. L. L. RUBCHINSKY*; S. AHN. *IUPUI & Indiana Univ. Sch. Med., Indiana Univ. Purdue Univ. Indianapolis.*

2:00 D2 **393.26** Developmental switch from hypo- to hypercoupling within prefrontal-hippocampal networks of a gene-environment mouse model of mental illness. H. HARTUNG*; S. SCHILDT; A. MARQUARDT; N. CICHON; V. DE FEO; S. RIEMANN; C. MULERT; J. GOGOS; I. L. HANGANU-OPATZ. *Univ. Med. Ctr. Hamburg-Eppendorf, Univ. Med. Ctr. Hamburg-Eppendorf, Columbia Univ.*

*3:00 D3 **393.27** Noradrenaline alters the structure of long-*range temporal correlations of intrinsic activity fluctuations in the human cortex. T. PFEFFER*; K. LINKENKAER-HANSEN; A. K. ENGEL; T. H. DONNER. *Univ. Med. Ctr. Hamburg-Eppendorf, VU Univ. Amsterdam, Univ. of Amsterdam, Univ. of Amsterdam.*

4:00 D4 **393.28** ▲ Contextual connectivity: Intrinsic dynamic architecture of large-scale functional brain networks. R. CIRIC*; J. S. NOMI; L. Q. UDDIN; A. B. SATPUTE. *Pomona Col., Pomona Col., Univ. of Miami, Pomona Col.*

1:00 D5 **393.29** Microscopic evaluation of synaptogenesis and synaptic connectivity in health and disease: An *in vitro* toolbox. P. VERSTRAELEN*; J. R. DETREZ; I. PINTELON; R. NUYDENS; T. MEERT; W. H. DE VOS; J. TIMMERMANS. *Univ. of Antwerp, Janssen Pharmaceutica.*

POSTER

394. Schwann Cells and Peripheral Nerve

Theme B: Neural Excitability, Synapses, and Glia: Cellular Mechanisms

Mon. 1:00 PM – *McCormick Place*, Hall A

1:00 D6 **394.01** An improved method for the isolation, purification and expansion of Schwann cells from adult rodent nerves. N. D. ANDERSEN*; S. SRNIVAS; C. ZABALO; P. MONJE. *Univ. of Miami Miller Sch. of Med.*

2:00 D7 **394.02** Expression profiling of developmentally arrested Schwann cells reveals new candidates in the regulation of peripheral nerve myelination. N. E. SANCHEZ*; K. R. MONK. *Washington Univ.*

3:00 D8 **394.03** The soluble adenyly cyclase (sAC) is required for ErbB3 expression and neuregulin-dependent Schwann cell proliferation. R. G. CORREDOR*; K. BACALLAO; P. V. MONJE. *Florida Intl. Univ., Univ. of MIami Miller Sch. of Med.*

4:00 D9 **394.04** Glial βII spectrin stabilizes nodal and paranodal molecular organization. K. SUSUKI*; D. R. ZOLLINGER; K. CHANG; C. ZHANG; C. TSAI; Y. LIU; M. N. RASBAND. *Wright State Univ., Baylor Col. of Med.*

1:00 D10 **394.05** Neuregulin modifies the disease course of Charcot-Marie-Tooth disease 1A. M. W. SEREDA*; R. STASSART; K. NAVE; R. FLEDRICH. *Max-Planck Inst. Exp. Med., Max-Planck Inst., Max-Planck Inst. of Exptl. Med.*

2:00 D11 **394.06** Advanced chronic nerve compression injuries induce robust glial scar. D. ZHU; M. TAPADIA; M. LUU; J. JUNG; W. WANG; T. MOZAFFAR; R. GUPTA*. *Univ. of California, Irvine, Univ. of California, Irvine.*

3:00 D12 **394.07** Identity-function correlates in human and rodent Schwann cells as revealed by next generation RNA sequencing. P. V. MONJE*; M. MCGRATH; D. SANT; G. WANG. *Univ. of Miami Miller Sch. of Med., Miller Sch. of Medicine, Univ. of Miami.*

● Indicated a real or perceived conflict of interest, see page 160 for details.
▲ Indicates a high school or undergraduate student presenter.
* Indicates abstract's submitting author

Fast Sparsely Synchronized Brain Rhythms in A Scale-Free Neural Network

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We consider a directed version of the Barabasi-Albert scale-free network (SFN) model with symmetric preferential attachment with the same in- and out-degrees, and study emergence of sparsely synchronized rhythms for a fixed attachment degree in an inhibitory population of fast spiking Izhikevich interneurons. Fast sparsely synchronized rhythms with stochastic and intermittent neuronal discharges are found to appear for large values of J (synaptic inhibition strength) and D (noise intensity). For an intensive study we fix J at a sufficiently large value, and investigate the population states by increasing D. For small D, full synchronization with the same population-rhythm frequency fp and mean firing rate (MFR) fi of individual neurons occurs, while for large D partial synchronization with fp > <fi> (<fi>: ensemble-averaged MFR) appears due to intermittent discharge of individual neurons; particularly, the case of fp > 4 <fi> is referred to as sparse synchronization. For the case of partial and sparse synchronization, MFRs of individual neurons vary depending on their degrees. As D passes a critical value D* (which is determined by employing an order parameter), a transition to unsynchronization occurs due to destructive role of noise to spoil the pacing between sparse spikes. For D<D*, population synchronization emerges in the whole population because the spatial correlation length between the neuronal pairs covers the whole system. Furthermore, the degree of population synchronization is also measured in terms of two types of realistic statistical-mechanical measures. Only for the partial and sparse synchronization, contributions of individual neuronal dynamics to population synchronization change depending on their degrees, unlike the case of full synchronization. Consequently, dynamics of individual neurons reveal the inhomogeneous network structure for the case of partial and sparse synchronization, which is in contrast to the case of statistically homogeneous random graphs and small-world networks. Finally, we investigate the effect of network architecture on sparse synchronization for fixed values of J and D in the following three cases: (1) variation in the degree of symmetric attachment (2) asymmetric preferential attachment of new nodes with different in- and out-degrees (3) preferential attachment between pre-existing nodes (without addition of new nodes). In these three cases, both relation between network topology (e.g., average path length and betweenness centralization) and sparse synchronization and contributions of individual dynamics to the sparse synschronization are discussed.