

Applicant Name (Last, first, middle):

## BIOGRAPHICAL SKETCH

Christos G. Gkogkas

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| Name: [Last, First, Middle Initial(s), Degree(s)]<br><b>Gkogkas, Christos, G.</b> | <b>POSITION TITLE:</b><br>Principal Investigator, Chancellor's Fellow, Sir Henry Dale Fellow, Assistant Professor |
| Personal Webpage: www.gkogkaslab.com  |   |

### EDUCATION /TRAINING

| INSTITUTION AND LOCATION                 | DEGREE<br>(if applicable) | YEAR(s)   | FIELD OF STUDY            |
|--|---------------------------|-----------|---------------------------|
| Biology Department, NKUA, Athens, Greece | BSc                       | 1999-2003 | Biology                   |
|  | MSc                       | 2004-2005 | Neuroinformatics          |
|  | PhD                       | 2005-2008 | Neuroscience              |
|  | Postdoctoral              | 2008-2013 | Neuroscience/Biochemistry |

### A. ACADEMIC AND PROFESSIONAL POSITIONS

#### POSITIONS HELD

Dates: Title, Professor of ..., School of Medicine, University of Crete  
2013-present Assistant Professor, Edinburgh Medical School:Biomedical Sciences, University of Edinburgh, UK

#### ADVISORY-ADMINISTRATIVE DUTIES

PhD student supervisor (2 active), GM Committee Health and Safety member.

### B. RESEARCH INTERESTS

- Translational Control of gene Expression

Proteins catalyse most of the reactions in the cell on which life depends. **Translational control** is defined as a change in protein production per mRNA per unit of time, and it is a powerful means to alter protein abundance. Our lab is particularly interested in understanding the molecular and signalling mechanisms of translational control in the brain and how they control complex brain functions and behaviours, such as learning, memory, social interactions, anxiety and fear.

- Neurodevelopmental Disorders

The complex polygenic nature of neurodevelopmental disorders (NDs) along with the plethora of contributing non-genetic factors have impeded our efforts to understand and treat NDs. By studying **converging** signalling, molecular and cellular pathways, we can shed fresh light on the causality of NDs.

- Translational Research

Elucidating complex brain functions is key for designing novel **therapeutics** for NDs. Using biochemical, electrophysiological and behavioural analysis in rodents, we wish to examine translational control as a key tenet in the pathophysiology of neuropsychiatric/ neurodevelopmental disorders such as Autism Spectrum Disorders (ASD), Fragile X Syndrome (FXS) and Intellectual Disability (ID).

**C. SELECTED PEER-REVIEWED PUBLICATIONS** (*max 10*) (*in chronological order*).

1. Gkogkas, C. G., Khoutorsky, A., Ran, I., Rampakakis, E., Nevarko, T., Weatherill, D. B., Vasuta, C., Yee, S., Truitt, M., Dallaire, P., Major, F., Lasko, P., Ruggero, D., Nader, K., Lacaille, J. C. & Sonenberg, N. **Autism-related deficits via dysregulated eIF4E-dependent translational control**. *Nature* 493, 371-377, doi:10.1038/nature11628 (2013).
2. Khoutorsky, A., Gkogkas, C. G.\*, Yanagiya, A.\*, Fabian, M. R., Prager-Khoutorsky, M., Cao, R., Gamache, K., Bouthiette, F., Parsyan, A., Sorge, R. E., Mogil, J. S., Nader, K., Lacaille, J. C. & Sonenberg, N. **Control of synaptic plasticity and memory via suppression of poly(A)-binding protein**. *Neuron* 78, 298-311, doi:10.1016/j.neuron.2013.02.025 (2013).
3. Cao, R., Robinson, B., Xu, H., Gkogkas, C., Khoutorsky, A., Alain, T., Yanagiya, A., Nevarko, T., Liu, A. C., Amir, S. & Sonenberg, N. **Translational control of entrainment and synchrony of the suprachiasmatic circadian clock by mTOR/4E-BP1 signaling**. *Neuron* 79, 712-724, doi:10.1016/j.neuron.2013.06.026 (2013).
4. Jung, H., Gkogkas, C. G., Sonenberg, N. & Holt, C. E. **Remote control of gene function by local translation**. *Cell* 157, 26-40, doi:10.1016/j.cell.2014.03.005 (2014).
5. Gkogkas, C. G., Khoutorsky, A., Cao, R., Jafarnejad, S. M., Prager-Khoutorsky, M., Giannakas, N., Kaminari, A., Fragkouli, A., Nader, K., Price, T. J., Konicek, B. W., Graff, J. R., Tzinia, A. K., Lacaille, J. C. & Sonenberg, N. **Pharmacogenetic inhibition of eIF4E-dependent Mmp9 mRNA translation reverses fragile X syndrome-like phenotypes**. *Cell reports* 9, 1742-1755, doi:10.1016/j.celrep.2014.10.064 (2014).
6. Cao, R., Gkogkas, C. G., de Zavalía, N., Blum, I. D., Yanagiya, A., Tsukumo, Y., Xu, H., Lee, C., Storch, K. F., Liu, A. C., Amir, S. & Sonenberg, N. **Light-regulated translational control of circadian behavior by eIF4E phosphorylation**. *Nature Neuroscience* 18, 855-862, doi:10.1038/nn.4010 (2015).
7. Aguilar-Valles, A., Matta-Camacho, E., Khoutorsky, A., Gkogkas, C., Nader, K., Lacaille, J. C. & Sonenberg, N. **Inhibition of Group I Metabotropic Glutamate Receptors Reverses Autistic-Like Phenotypes Caused by Deficiency of the Translation Repressor eIF4E Binding Protein 2**. *The Journal of neuroscience : the official journal of the Society for Neuroscience* 35, 11125-11132, doi:10.1523/JNEUROSCI.4615-14.2015 (2015).
8. Skalecka, A., Liszewska, E., Bilinski, R., Gkogkas, C., Khoutorsky, A., Malik, A. R., Sonenberg, N. & Jaworski, J. **mTOR kinase is needed for the development and stabilization of dendritic arbors in newly born olfactory bulb neurons**. *Dev Neurobiol*, doi:10.1002/dneu.22392 (2016).
9. Tuttle A. H., Tansley S., Dossett K., Tohyama S., Khoutorsky A., Maldonado-Bouchard S., Stein L., Gerstein L., Crawhall-Duk H., Pearl R., Sukosd M., Leger P., Hardt O., Yachnin D., Austin J. S., Chan C. M., Groves I., Pooters T., Martin L. J., Sonenberg N., Mogil J. S.\* & Gkogkas C. G.\* **Social propinquity in rodents as measured by tube co-occupancy differs between inbred and outbred genotypes** *PNAS* doi: 10.1073/pnas.1703477114 (2017)
10. Gantois I., Khoutorsky A., Popic J., Freemantle E., Aguilar-Valles A., Cao R., Sharma V., Nagpal A., Gamache K., Chapat C., Pooters T., Nader K., Lacaille J. C., Sonenberg N.\* and Gkogkas C. G.\* **Metformin ameliorates core deficits in a Fragile X syndrome mouse model**. *Nature Medicine* doi: 10.1038/nm.4335 (2017)