

"Fellows Experience"

My name is Seva Telezhkin I am a Lecturer in Physiology at Newcastle University School of Dental Sciences. My project **“Towards rescuing from persistent pain at Parkinson’s Disease neuronal degeneration: neuroprotective effect of Kv7 channel activation”** was supported by The Japan Society for the Promotion of Science (JSPS) with Long Term Invitational Fellowships for Research in Japan which I undertook in June-September 2019. My hosting organisation was Osaka University Graduate School of Dentistry and my hosting scientist was the Head of the Department of Dental Anaesthesiology Professor Hitoshi Niwa who together with his colleagues Associate Professor Dr Chiho Kudo and Assistant Professor Dr Hiroharu Maegawa provided me with extraordinary friendly welcome. Also, I would like to acknowledge Professor Takafumi Kato, the Head of Department of Oral Physiology and Dr Hiroki Toyoda who allowed me to use their electrophysiological set ups, Professor Takeshi Noda, the Head of Department of Pharmacology and Dr Yohei Yamomoto, who allowed me to use their cell culture facilities and the Head of the School of Dentistry of Osaka University Professor Satoshi Imazato, who graduated from Newcastle School of Dental Sciences about 30 years ago.

Thanks to such friendly and supportive atmosphere of my Japanese colleagues I started generating positive experimental outcomes right from the first week of my visit. The consumables and animals which I needed for the project were ordered and the necessary equipment was provided immediately. Concerning the electrophysiological set up in Osaka I was using an upright microscope with immersed objectives, pClamp 8.2 software, amplifier Axopatch 1D and ADC Digidata 1322, which was all very well familiar to me, because I was using that type of appliances about ten years ago. After I modified the platform on the stage of upright microscope for the experimental chamber of my design and grounded all equipment on the rig the baseline current noise characterised by root mean square (RMS) was around 0.7 pA, which is good enough even for the single channel studies.

During my research I was isolating neurons from trigeminal ganglia (TG), dorsal root ganglia (DRG), and striatal (STM) of 10-12 week old rats. Normally these neurons researchers isolate from the embryos, newborns or 7-14 days old rats, due to these cells survive so much better in *in vitro* culture. My project was about exploring the crosslinks between neurodegeneration and neuropathic pain, therefore it must have performed my studies on the aged models which are available in Professor Niwa’s laboratory. This was my first and very positive experience of isolating and *in vitro* culturing of the neurons from such aged animals I only slightly optimised the protocol.

The students of Professor Niwa’s laboratory Mrs Nayuka Usami and Mr Masayoshi Hayashi provided me not only with Parkinson’s Disease rats but also with Alzheimer’s Disease rat models throughout all period of my work in Osaka University, therefore I managed to run satellite project on dementia on the top the Parkinsonian neurodegeneration. During my three months JSPS fellowship I together with my Japanese colleagues generated significant amount of data which is reflected in 9 pages of my JSPS report (form 7) supplemented with 12 figures and 18 tables. I believe that combined together with behavioural and molecular data of my colleagues the data could be published in the peer reviewed journals.

In Osaka University I presented my research to the staff and students of the Graduate School of Dentistry and reported the data which I generated during the my JSPS project at the end of my visit. After my final presentation my Japanese colleagues arranged for my pizza party.

Besides research I had fantastic three months in Japan because I travelled together with my family (wife Polly and two sons Alexey 7 year and Maximilian 1year). We explored around

Osaka, visited Osaka castle, Kaiyukan Aquarium, Universal Studios Japan, Expo city including Expo 70 Commemorative Park and different museums. Besides Osaka we visited Kyoto, Nara, Kobe and went to the seaside.

I believe this is only beginning of our long and productive collaboration between Newcastle and Osaka Universities.

Seva Telezhkin



Professor Hitoshi Niwa's group