

Report on my JSPS advanced researcher fellowship (April 1<sup>st</sup> - May 22<sup>nd</sup>)  
in Kyoto (host: Prof. Motomu Tanaka) and Nagoya (hosts: Prof. Fumihito  
Arai and Prof. Toshio Fukuda).

The main objectives of my sabbatical have been the establishment of direct scientific collaborations between my laboratory and groups from Kyoto, Nagoya and Osaka Universities, to further increase center-to-center activities within the HeKKSaGOn network and to set up novel program-to-program cooperations between the BioAssembler Program in Japan and the BioInterfaces Program in Germany.

I started my work in Kyoto on April 4<sup>th</sup> with an introductory talk entitled '*Bio-functionalized 2D-surfaces and 3D-scaffolds to study cell adhesion and axon guidance*' within the framework of the ICeMS Symposium Series. During my stay at the iCeMS in Kyoto, I regularly participated in the group meetings of Prof. Norio Nakatsuji (Stem-Cell Biology, Developmental Biology), Prof. Yong Chen and Prof. Ken-ichiro Kamei (Nano-biotechnology), and Prof. Motomu Tanaka (Biological Physics) and gave several more specialized lectures on recent scientific topics of my laboratory. In the Tanaka group I also worked experimentally together with Dr. Marcel Hoerning and Akihisa Yamamoto to establish microcontact-printing techniques for supported membranes. Dr. Hoerning will visit my lab in Karlsruhe in August 2014 and a visit of Akihisa Yamamoto is also planned for this year to further strengthen this collaboration.

I visited the Department of Micro-Nano System Engineering at Nagoya University during my stay in Japan twice, on April 9<sup>th</sup> and from April 21.-23. On April 22<sup>nd</sup> I gave a seminar talk for faculty members and students on '*Bio-functionalized 2D-surfaces and 3D-scaffolds to study cell adhesion, migration and differentiation*'. During my stay I had several scientific discussions with Prof. Fumihito Arai, Prof. Hisataka Maruyama, Prof. Taisuke Masuda and their group members from the Biorobotics and Bioengineering laboratory. I also talked to Prof. Masahiro Nakajima and Dr. Takeuchi from the Micro-Nano Control Engineering Bio-Robotics laboratory and their former head of department, Prof. Toshio Fukuda (Meijo University & Nagoya University) about their recent projects and possible future cooperation.

My sabbatical was completed by a joint Symposium with speakers from the BioAssembler program and the iCeMS in Kyoto on May 16<sup>th</sup>. Here I gave a talk entitled '*Taking Cell Adhesion to the Third Dimension: Direct Laser Writing and Biocompatible Click Chemistry for defined 3D Cell Culture Scaffolds*'. Prof. Tatsuo Arai from Osaka University also attended this symposium. He is the Spokesperson for the Bio Assembler program, a 5-year Japanese national project, whose target is a challenge of constructing 3D cellular system in vitro. The major topics are high speed cell characterization & sorting, 3D cellular system construction,

and cell functionalization analysis. Prof. Arai will visit Karlsruhe on July 14<sup>th</sup> and will give a talk at KIT within the seminar series of our BioInterfaces (BIF) program. Since BIF and BioAssembler work on related topics, we plan to set up an international program-to-program cooperation.

In addition to my activities related to iCeMS and HeKKSaGOn, I also visited academic institutions in Okazaki and Osaka. On April 24<sup>th</sup> I visited the laboratory of Prof. Naoto Ueno and gave a seminar talk entitled '*3D Cell Culture Approaches*' at the National Institute for Basic Biology (NIBB) in Okazaki. I became acquainted with Prof. Ueno in the past because he is a member of the Scientific Advisory Board of the BioInterfaces Program at KIT, where I am one of the two spokespersons. After the talk I had scientific discussions with Prof. Masaharu Noda, who is working in the field of neurodevelopment, and with Prof. Shinji Takada, a developmental biologist. With Prof. Takada I arranged a future collaboration to apply our expertise on surface functionalization of 3D scaffolds to study Wnt-signalling during development. On April 15<sup>th</sup> and May 19<sup>th</sup> I visited the laboratory of Prof. Makoto Sato at Osaka University, Faculty of Medicine. I know Prof. Sato since 1993, when we were both postdocs in the same laboratory at the Salk Institute for Biological Studies in San Diego, USA. I had long and fruitful discussions with several postdocs on their projects of cortical development and gave a seminar talk for the faculty entitled '*Bio-functionalized 2D-surfaces and 3D-scaffolds to study Cell Adhesion and Axon Guidance*' on May 19<sup>th</sup>.

I would like to thank the Japanese Society for the Promotion of Science for granting me a JSPS advanced researcher fellowship. Scientifically the grant has given me the opportunity to strengthen and refresh already existing scientific projects. It will also assist to further increase center-to-center activities within the HeKKSaGOn network and set up novel program-to-program cooperations between the BioAssembler Program in Japan and the BioInterfaces Program in Germany. Personally the grant has provided me with the opportunity to learn about Japanese history and culture and to elaborately experience the Japanese society. I am confident that my sabbatical has formed a strong basis for future collaboration, not only between my group and Japanese groups but also between the Karlsruhe Institute for Technology (KIT) and Japanese Universities within the HeKKSaGOn network.