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“French Decade” at the Department of Molecular Biology and Genetics, KazNU

Communicated by Thierry Berges, Lina Lebedeva, Amangeldy Bissenbaev, Zaure Aytasheva, and Erika Dzhangalina



Published on November 23, 2016

This workshop has been offered by the University of Poitiers to al-Farabi National University

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The workshop has been held by Professor Thierry Berges from October, 22 until November, 6. It was offered by the University of Poitiers to al-Farabi National University hosting it based on Erasmus Mundus-CASEU programme. This workshop was devoted to recombinant *Taq* DNA polymerase purification for B. Sc. Students of the Faculty of Biology & Biotechnology, and specifically those of the Department of Molecular Biology & Genetics (Chair Prof. Zaure Aytasheva). There were also the series of lectures on fundamentals of Human Genetics” for B. Sc. Students. In addition research seminar on “Involvement of lipid stores in the process of autophagy for the yeast *Saccharomyces cerevisiae*” has been organized for the staff of the Department of Molecular Biology & Genetics on November 3, 2016.

The workshop aimed at showing an example of a biotechnology application. An *Escherichia coli* strain containing the so-called pTTQ18 plasmid (see attached document) in which the *Taq* DNA polymerase from *Thermus aquaticus* is inserted and whose transcription is regulated by the *lac* promoter, was grown in a culture medium to exponential phase. Thereafter the recombinant gene was induced by the addition of IPTG (*lac* promoter inducer). After >16 hours incubation, the students extracted proteins from the cells, using a procedure allowing to enrich most specifically the extract with *Taq* DNA polymerase (a procedure based on its heat stability). This extract was then used in a PCR assay to check the efficiency of the preparation, by comparison with a commercial *Taq* DNA polymerase.

Lecturing on fundamentals of Human Genetics proposed to the students has implied general introduction followed by demonstration of main techniques of cytogenetics, some examples of hereditary diseases illustrating various transmission modes, ethiology (the cause) of these diseases, implication of molecular tools to determine a diagnosis, and tools of novel therapies in line with molecular genetics (gene therapies, cellular therapies). Among diseases laying out these items Di George syndrome, Huntington’s disease (HD), Cystic Fibrosis (CF), Duchenne Muscular Dystrophy (DMD), Leber's hereditary optic neuropathy (LHON) have been considered.

Seminar on lab research performed by Prof. Berges’es team at the University of Poitiers (Signalisation & Transports Ioniques Membranaires, CNRS ERL7368) has been held based on the presentation on “Involvement of lipid stores during the process of autophagy in the yeast *Saccharomyces cerevisiae*”. Professor Thierry Berges has assured to do his best to have future opportunities to visit KazNU and promote international collaboration in molecular genetics.