

## The international seminars

Monday 10<sup>th</sup> and Tuesday 11<sup>th</sup> October 2016  
At Facultad de Filosofía y Letras  
Aula 1.24  
16.00h-18.00h



*Valentina Kratasyuk y Oleg Sutormin.  
Siberian federal University. Krasnoyarsk.*

### "Physics, Chemistry and Biology of Bioluminescence",

*Lecture 1.* Overview of bioluminescence: bioluminescence in nature, luciferases and luciferins, photoproteins, biochemistry and biophysics of bioluminescence, spectra in bioluminescence. Distribution of bioluminescent organisms and their categorization.

*Lecture 2.* Description (Enzyme and substrate/co-substrate nature, Enzyme commission number) of different luciferases (Firefly/bacterial/Cypridina/Fungi/ Renilla/ Gonyaulax/ Gaussia/ Metridia/ Vargula/ Cypridinaluciferase), and respective luciferins (structure). Photoproteins. Mechanism of bioluminescent reaction mechanism and kinetics.

*Lecture 3.* Bioluminescent analysis. Few important past investigations and current trends related to bioluminescent analysis. Green Fluorescent Protein and other fluorescent proteins and their applications. Summary of different bioluminescent applications with focus on ground breaking research in this area.

*Lecture 4.* Bioluminescent toxicity bioassays: from idea to laboratory. Bioluminescent biosensors for ecology and medicine. Portable bioluminescent laboratory for universities and high schools.

### Erasmus+Mobility program K107

#### Expected outcomes and impact

*(e.g. on the professional development of the staff member and on both institutions):*

The project will contribute to the modernization and internationalization of education and research at both universities. Prof. Valentina Kratasyuk will give lectures on bioluminescence and bioluminescent analysis and will share her unique experience in this modern branch of science to students and teachers of University of Cadiz.

The topics of joint research on the application of bioluminescent analysis will be discussed. The proposed joint research projects on bioluminescent enzymatic bioassays and bioluminescent biosensors for ecology and medicine will be outlined to apply for funding and developing the research project in the frame the network master's degree program on biological engineering. The mobility programme for students and teachers of both universities based on mutual research project will be discussed.