Task 4

13 December 2012

Calculation of a Distance from FRET Data

The protein human serum albumin (HSA) has a single tryptophan residue at position 214. HSA was labeled with an anthraniloyl group placed covalently on cysteine 34 (Fig.1). Emission spectra of the labeled and unlabeled HSA are shown in Fig. 2. The Förster distance for Trp to anthraniloyl transfer is listed in Table 2 by your name. Use the values from Table 1 derived from emission spectra in Fig. 2 to calculate the Trp to anthraniloyl distance.

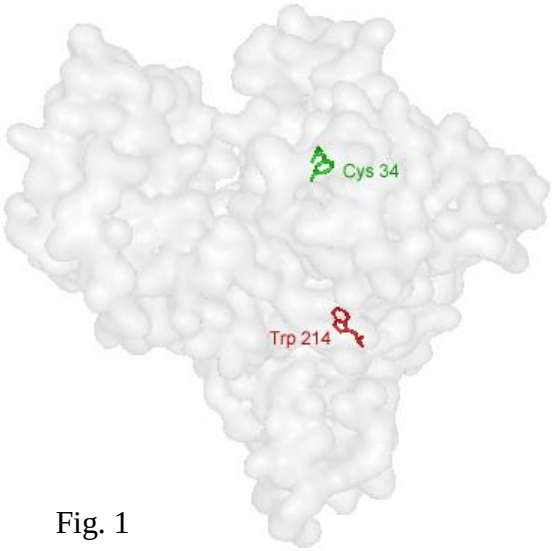

Fig. 1

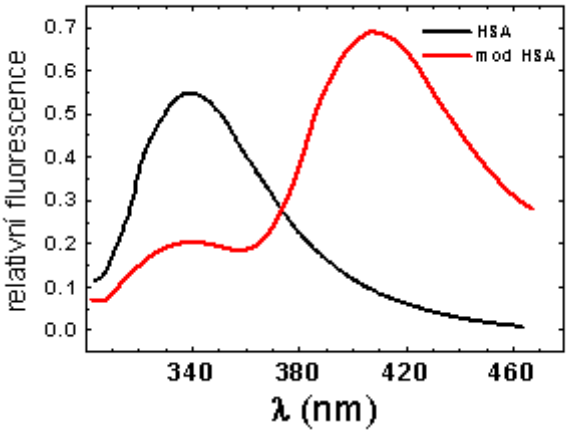

Fig. 2

Table 1

	relative fluorescence	
	λ (340nm)	λ (408nm)
HSA	0.546	0.091
mod HSA	0.202	0.687

1. **What is the transfer efficiency between Trp 214 and anthraniloyl E for such modified HSA?** Calculate the E value to two decimal places.

2. **What is the distance Trp 214 and anthraniloyl cysteine 34 calculated based on fluorescence resonance energy transfer?**
   Indicate the distance value in Angstrems (Å) with precision to one decimal place.

   Send me your answer via email. Correct answer = 1 point.

Table 2

		R_0 (Å)
1	Bencúrová, Petra	**28.9**
2	Dabravolski, Siarhei	**27.9**
3	Dubec, Vít	**29.2**
4	Dudová, Zdenka	**31.3**
5	Dvořák, Jan	**30.3**
6	Fabišik, Matej	**29.5**
7	Fedorko, Jan	**28.0**
8	Fialová, Martina	**28.4**
9	Holek, Michal	**31.1**
10	Kočka, Martin	**30.8**
11	Míka, Matěj	**30.6**
12	Obacz, Joanna Agnieszka	**28.5**
13	Partyka, Jan	**28.6**
14	Přikrylová, Terézia	**27.7**
15	Rájecký, Michal	**28.3**
16	Reichman, Pavel	**31.4**
17	Sochorová, Jana	**28.6**
18	Škubník, Karel	**28.4**
19	Tylichová, Zuzana	**30.5**

This task was prepared base on Problem 1.6 on page 25 in Principles of fluorescence spectroscopy (2006) book of Prof. Lakowicz.