

8) Silvie Belaskova [TITLE?]

This paper considers an investigation of the influence of using program Mathematica in mathematical education on the level of knowledge and skills of students of the Faculty of Applied Informatics. Program environments of dynamic mathematics systems are introduced and special attention is devoted to the most expanded [extended/developed?] products from this field, which are Mathematica, AcroTex and Maple. In the main part of this paper, dealing with our pedagogical research, the structure, and organization of the experiment, including its statistic evaluation using modern statistical methods in a program Statistica, are described.

9) L. Homola (A. Holcikova, M. Kyr, I. Valaskova)

Cystic Fibrosis Patients Homozygous for F508del Are Not Different at the Beginning

**BACKGROUND:** The relation between Cystic fibrosis (CF) genotype and phenotype has been many times reported. F508del is considered to be the mutation with severe symptoms. We tested whether the patients homozygous for F508del have earlier CF manifestation and different first symptoms compared to the patients with alternative CF genetic background.

**METHODS:** Data were obtained from 52 patients from Southern Moravia CF centre from 1977 till 2008. Patients were divided into two groups: the group of homozygotes F508del with 26 subjects and the group of other CF mutations with 26 subjects. Collected data were year of birth, very first symptom typical for CF mentioned in the personal history and very first appearance of this symptom. The data for both groups were compared.

**RESULTS:** No statistical difference has been found between the two groups for the time of manifestation ( $p=0.385$ ) and initial symptoms ( $p=0.888$ ). The most common time of the first CF symptom appearance is from 1 month to 16-20 months of age for both groups. The group of other mutations has a greater variability. A typical first symptom is a failure to thrive and loose fatty stools (49-50%). It is followed by a respiratory tract disease (32-35%). The group of other symptoms is minor (19-15%).

**CONCLUSION:** Patients homozygous for F508del are not significantly different from patients with a different CF genetic background at the beginning of the disease.

10) Josef Skopalik

Use of Calcium-regulated Photoprotein Aequorin as Intracellular  $Ca^{2+}$  indicators in Follicular Lymphoma Cells

Aequorin belongs to the group of  $Ca^{2+}$  indicators called  $Ca^{2+}$  regulated photoproteins. Aequorin is not a toxic compound and can be used for the measurement of intracellular  $Ca^{2+}$  concentration. Aequorin has several advantages in comparison to the widely used  $Ca^{2+}$  fluorescent indicators (Fura-2, Indo-1, Fluo-3), e.g. high signal to background ratio or minor influence to intracellular  $Ca^{2+}$  concentration. Its only disadvantage is the relatively difficult incorporation into cells, because aequorin is a 22kDa protein.  $Ca^{2+}$  intracellular concentration

in follicular lymphoma cells was intensively studied in the last decade. Suitable methods of incorporation of aequorin into follicular lymphoma cells and measurement of intracellular  $\text{Ca}^{2+}$  by aequorin have not been published yet.

Method for incorporation of aequorin into the cells based on Hypoosmotic solution treatment was gradually modified and used to load aequorin into cytoplasm of follicular lymphoma cells in our laboratory. The measurement of fluorescence was performed by a home-made apparatus using a photomultiplier (Hamamatsu).

The improved method of incorporation is effective for aequorin loading into follicular lymphoma cells in vitro and the ratio of cell survival of the procedure is high. It could be anticipated that this method can be used for intracellular  $\text{Ca}^{2+}$  concentration measurement in other types of nonadherent blood cells.

## 11) Pavel Nepustil

### You Can Make It Without Treatment: Transforming Identity After Quitting Long-term Methamphetamine Use

In this article I summarize the partial conclusions of my dissertation „Identity transformation of former illicit drug users.“. The main goal of my study is to describe a process of quitting long term illicit drug use in the framework of a social psychological perspective with the application of social constructionist theory. I draw from my own research (Nepustil, 2008) in which I interviewed 20 people who stopped long term methamphetamine use more than 5 years ago. I offer an interpretation of the process which they were subject to at the level of self and self-identity. From this standpoint I distinguish between four inter-related components – development of self-agency, development of reflexivity, creation of commitments and finding a new ethical framework - which together create a form of self-identity which is always unfinished. The notion of identity which I was drawing on shows that these processes cannot be maintained without interaction with other people who ideally contribute to the development of reflexivity and self-agency and they also mediate the new ethical frameworks. Even if new commitments may be formulated within these relationships, it seems to be necessary to formulate these commitments in one’s own inner dialogue. All these processes mentioned are directed to the situation when one is able to connect his past, present and future goals, to make one’s own decisions based on the choice from a range of possibilities and to orient oneself in a moral space. The possible task of experts at this level is to temporarily substitute or mediate such support relationships to people who do not have them at hand.