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## LECTURES

### A1

#### “Miguel Lillo” Lecture

### ROLE OF KLF6 TRANSCRIPTION FACTOR IN TUMOR SUPPRESSION TRIGGERED BY ACTIVATED RAS ONCOGEN

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KLF6 protein is a member of the Krüppel-like factors family of transcription factors which have diverse roles in the regulation of cell physiology including proliferation, apoptosis, differentiation and development. KLF6 is ubiquitously expressed and mutations within the *klf6* gene, decreased expression and/or loss-of-heterozygosity were associated with the development of different human malignancies.

In this work, we investigate the ability of KLF6 to regulate the oncogenic activation triggered by the Ras pathway, focusing on the signal transduction cascades involved in the regulation of KLF6 expression. It is noteworthy that gain-of-function mutations within the Ras genes are associated with more than 30% of cancer in humans. Herein, we demonstrate that KLF6 behaves as a tumor suppressor, restraining the spontaneous onset of the transformed phenotype and reducing cell proliferation rate and tumor growth driven by mutated H-Ras. Loss of function analysis using *shRNA*-mediated KLF6 depletion resulted in the formation of transformed foci and allowed the spontaneous conversion of NIH3T3 cells to a tumorigenic state. We also showed that KLF6 was up-regulated by H-Ras<sup>G12V</sup> expression in a Jun N-terminal Kinase-dependent manner, correlating with enhanced *klf6* promoter activity. Moreover, we demonstrate that ectopic KLF6 expression induced a G1-phase cell cycle arrest, thereby decreasing cell proliferation rate. Additionally, constitutive KLF6 expression was able to impair some capabilities of the Ras-transformed cells like loss of density-dependent growth inhibition and anchorage-independent growth potential. Furthermore, growth of H-Ras<sup>G12V</sup>-driven tumors was reduced in mice challenged with cells stably expressing KLF6. However, KLF6 silencing did not modify the malignant phenotype triggered by H-Ras<sup>G12V</sup>. KLF6 levels correlated with increased expression of p21, whereas neither p53 induction nor apoptotic cell death was detected. Further, p21 knockdown impaired KLF6-induced cell cycle arrest. This cytostatic response was associated with resistance to apoptosis mediated by DNA damaging chemotherapy drugs, suggesting that these drugs would not be effective for treatment of tumors expressing high levels of KLF6, but simultaneously raising the need for the development of new alternative therapies.

These findings provide novel evidence highlighting KLF6 function in response to oncogenic stress, suggesting a relevant activity of KLF6 in controlling cell proliferation and hindering tumorigenesis.

### A2

#### Opening Lecture

### IT HAS THE BODY OF AN OX, AND IT IS NOT AN OX...

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The title of this presentation alludes to the beginning of the description of the *tapir* or *anta* made by Petrus Martyr D'Anghleria in 1511. An emblematic beast of the New World, the tapir and its description challenged the chronicler, who had found nothing like it before since the so-called *orbe novo* was new in every sense. The newcomers found, together with a new geography, a new fauna, another flora, different products and men who, being neither black nor white, were not the "slaves by nature" mentioned by Aristotle. Even the sky was new, without the Pole Star to guide sailors, as Vespucci complained.

This fauna, which surpassed fiction, became the protagonist of another literature, more natural and exciting, made up of the detailed chronicles that accompanied the discovery of America. Thus, beyond numerous anecdotes, something will be said about the development of the zoological knowledge in the New World, in a mixture in which myths, legends, beliefs and pure knowledge were burnt in the pyres of the Inquisition.

outbreaks in Tucuman: LSP's key role. This allowed the generation of reports to effectors so they could implement adequate responses to the situation.

### A132

#### **INFLUENCE OF TICs IN LEARNING BIOMEDICAL SCIENCES**

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Introduction: TICs represent a key to carry out actions that lead to the formation element and learning, such as content submission, implementation of activities and learning assessment. Objectives: - To assess the student in the subject Hemostasis by using multimedia (interactive videos). - To determine the influence of TICs in the rapid acquisition of knowledge. Materials and Methods: We worked with a sample of 50 students, which was divided into two groups: Group 1 (control), Group 2 (multimedia material). Students attended classes of the subject Hemostasis. Group 1 had only oral exposure of the subject while Group 2 also received support from the lecture with multimedia material. Immediately in both groups a written evaluation of the subject was made consisting of ten multiple choice questions related to the topic and to the interactive video. SPSS version 23 for the statistical treatment of the data was used. Results: written assessment of only four responses were statistically significant, difference favoring learning in the group that received a lecture with the support of interactive videos over the group that only received a conventional lecture ( $p < 0.05$ ). It could be determined that learning was facilitated by the use of TICs in group 2. Conclusions: Promoting the use of TICs together with lectures could a useful resource for the rapid incorporation of knowledge.

### A133

#### **ANALYSIS OF THE CONTENTS OF ENVIRONMENTAL EDUCATION IN SECONDARY LEVEL CURRICULAR DESIGNS OF THE PROVINCE OF CATAMARCA**

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Environmental education is a permanent construction space in which no unified criteria exist concerning teaching strategies for the subject nor its inclusion in the school curriculum. Objective: To analyze how Environmental Education contents are addressed from the curricula of the Province of Catamarca, framed in environmental education, determining its complexity. Methodology: A qualitative, exploratory, descriptive and cross-addressed study, supporting a diagnosis for later comparison with teaching practice. A documentary analysis technique was used in the curricula of secondary school level. They triangulated data from the theories. The following analytical categories were determined: curricular areas and teaching courses related to current environmental education. Results: content were developed in the areas of the basic cycle of geography, ethics and civic education, and biology. In the cycle there is a more oriented approach towards tourism, agri-environment and natural sciences guidelines, while the spaces containing general training of all orientations in general biology, regional geography and local geography are all oriented in conservation, scientific, eco-education and sustainability trends. Conclusions : The secondary level curricula in the province of Catamarca address the content of environmental education from a transversal perspective, preferably from the analysis of local and regional issues, as well as real national and global problems, meaningfulness promoting the learning of students.

### A134

#### **EVALUATION OF THE IMPLEMENTATION OF A NEW COURSE SYSTEM**

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Introduction: University assesses knowledge through written and oral tests. Our course has implemented an evaluation system that allows us to obtain information and assessment of proposed learning outcomes effectively and reliably. In 2011 we applied changes, introducing the term competition (strategic mobilization of the knowledge elements, skills and attitudes) as resources available and necessary to respond to a given situation.

Objective: to evaluate course system change and train students in the generation of criteria, development of attitudes and skills, in the resolutions of situations that may appear in professional life.

Methods: the new system design consists of theoretical chronological classes concatenated with theoretical practical classes, lab practice and 3 tests including knowledge with a passing grade of 7. This method was used since 2011. In previous periods, the course was passed with final exams after regularization. Results: since 2011, 187 students were enrolled, where 83.96% was promoted with 9 to 7, 10.70% regularized and 5.35% failed. Previous periods until the proposed change (2001 to 2010), 26.09% out of 874 exams passed with 10 to 7, 41.76% were absent. But with the current system, 90.60% of the students passed the exams and only 10% were absent.

Conclusions: This system allowed us to see in the student knowledge, skills and attitudes that apply to daily situations in their professionally future. Academic performance was optimized, and absenteeism decreased.