

EDUCATION/PUBLIC INFORMATION

I. RESULTS

a. Education:

Our main focus for the 2006-2008 period is the High School Visiting Program. In 2006 the activities comprised two related aspects:

a1. High School visiting Program

The program of visiting public high schools was implemented and is fully operational: approximately 7000 students from 16 schools participated (Chronogram, Annex 1). Prior to the start of the visiting program, teachers of these 16 schools attended a workshop and received specific training pertaining to the educational material to be used during the visit. We focused on the concept of the cell. A giant cell (amplified 130,000 times) was constructed especially for this program and mounted in each school, allowing the immersion of the students in the three-dimensional compartments of an animal cell (DVD, Annex 2). Complementary activities addressed specific issues such as: how 1.5 meters of DNA can fit inside the nucleus, the relation between the cell membrane and the cytoskeleton, the molecule structure of DNA and the amplification power of microscopes. Through the use of three educational games, the students learned about organelles and cell functions. After our visit, teachers were able to carry on activities related to the subjects, since we supplied educational material and follow-up. Undergraduate and postgraduate students from the Biosciences Institute (IB-USP) acted as monitors in this visiting program (Annex 3).

The program is evaluated using two types of questionnaires, aiming at:

- evaluating students' perception of the activities (pleasantness, importance as a learning process);
- evaluating the learning process itself; before the activities and 30 days afterwards.

Although the evaluation process has not been concluded it is already evident that most students became motivated to study the cell.

a2. Training professionals to develop the current and future educational projects:

Two new disciplines for post graduation students have been offered to 24 students, namely:

- "Ensaio Pedagógico no Ensino de Biologia". (BIO-5741 – Pedagogic essays in biology teaching – (Coordination: Regina C. Mingroni-Netto). Students selected a theme, organized and taught a training course on the subject to high school teachers.

- "Ensino de Genética": (BIO-5727 – Teaching Genetics – Coordination: Eliana M. Belluzzo Dessen). This course provides pedagogical support for the production of teaching material to be used in the visiting program.

a3. Difficulties in the implementation of the Visiting Program:

While these disciplines are complementary to give support to the High School Visiting Program, they do not fill the need of people formally engaged in this activity. A far-reaching such as the High School Visiting Program requires at least two qualified full-time people. The post-graduation students develop the pedagogic activities, but the production of accessible material requires specialized people. In addition, the monitors for the visiting program are insufficient and work as volunteers. This structure results in a lack of personnel and a high turnover, not compatible with the task of organizing and managing a program involving approximately three visits per week to schools. Another complicating factor is the grant rules for acquiring consumables and paying personnel, which are not adaptable to the proposed activities.

b. Publications Directed to High school teachers

1. **Dessen, E. M. B.** (2006) – Gripe aviária: seguindo as pegadas de um novo vírus. *Genética na Escola* Vol 1; 4-7.2006 www.sbg.org.br
2. **Mingroni-Netto, R. C. e E.M.B. Dessen** (2006) Células-tronco: o que são e o que serão. *Genética na Escola* Vol 1: 12-15, 2006. www.sbg.org.br

Others:

3. **Vianna-Morgante, A.M.** – Temos 46 cromossomos. *Ciência Hoje, São Paulo, p.75-78, 2006.*

c. The Internet site

The CEGH Internet site is being revised and will be ready in January, 2007

d. Symposium

- "Embryonic and adult stem cells: research before treatment (June 9th, 2006; Centro de Estudos do Genoma Humano, Instituto de Biociências, USP). Coordinators: Mayana Zatz (USP), Maria Rita Passos-Bueno (USP), Irina Kerkis (Instituto Butantan). Speakers: Marco A Zago, Irina Kerkis, Steven Reher, Sponsorship: Invitrogen/FAPESP-CEPID. 103 participants.

e. Workshop

- Teaching biology using pedagogic material (September 3rd, 2006)– Coordinator: Eliana Maria Beluzzo Dessen – Speakers: Eliana Maria Beluzzo Dessen and Maria Ligia Coutinho Carvalhal - 35 participants

f. Training Courses

- **Human Genetic disease: what is new?**- 40 hours - July (17-21st, 2006) – participation of 21 teachers from public high schools. Eliana Maria Beluzzo Dessen and Regina Célia Mingroni-Netto.
- **Genetics of Neurological Diseases** – 8 hours – Satellite course to the 11th National Meeting of Pediatric Neurology. November 2nd, 2006. Coordination: Fernando Kok – 119 participants. Speakers: Fernando Kok, Angela M. Vianna-Morgante, Célia P. Koiffman, Carla Rosenberg, Lúcia Inês XXX, Maria Rita Passos-Bueno and Mayana Zatz (falta a aluna da Maya)
- **Molecular Cytogenetics in the Investigation of Genomic Alterations** – 30 hours – November 21-24th, 2006. Coordination: Carla Rosenberg – 13 participants. Speakers: Carla Rosenberg, Ana Cristina Krepisch-Santos, Angela M. Vianna-Morgante, Cleide Borovik, Regina C. Mingroni-Netto, Peter L. Pearson.

g. Participation in "The National Science and Technology Week"

- Exhibit of the Giant Cell – Instituto Oceanográfico/USP, October 22nd, 2006.

h. Seminars

- Mayana Zatz Escola Superior de Advocacia/SP (Law School)- Genetic Tests. September 19th, 2006.
- Mayana Zatz - Espaço Cultural-CPFL (Cultural Center)/Campinas – Stem cells. October 10th, 2006.

i. Debates

- Mayana Zatz - Subject: "Cloning" - TUCA ARENA – (Catholic University São Paulo), TV Network - Sesc/Senac, November 27th, 2006

j. Media (newspapers, magazines, TV)

- (Annex 4)

k. Educational activities in scientific meetings

- Dessen, E.M.B. - 52^o Congresso Nacional de Genética – September 3-6, 2006 – Foz do Iguaçu, Paraná. Coordination: Genética na Praça (activities for high school students and teachers).
- Dessen, E.M.D. – Coordination: Open Workshops – X EPEB Encontro "Perspectivas do Ensino de Biologia" – July 2006
- Mingroni-Netto, R.C. - Short-course "Organização do Genoma Humano", 17^o Encontro de Biólogos do CRBio-1, April 9-12, 2006
- Mingroni-Netto, R.C. - Short course "Mecanismos atípicos de herança das doenças genéticas humanas, Semana de Reunião de Biologia, Universidade Metodista de Piracicaba, August 29th, 2006.
- Vianna-Morgante AM – Short Course "As Alterações Cromossômicas Humanas Origem e Conseqüências Fenotípicas", 17^o Encontro de Biólogos do CRBio-1, April 9 - 12, 2006.
- Rosenberg, C. - Short-course: "Variability of the Human Genome", 52^o Congresso Nacional de Genética – September 3 - 6, 2006 – Foz do Iguaçu, Paraná

II. PLANS FOR 2007

Objectives of the diffusion program in 2007:

- Implement the partnerships with 13 public high schools established this year with the Diretoria de Ensino Norte 2 (Educational Directory for the northern area of the city of São Paulo). The partner schools will include the Giant Cell in their teaching projects; students will build a giant cell concomitant with classes on the topic. The School Visiting Program will provide monitors and didactical material.
- Place the giant cell exhibit (and related educational activities) on permanent display at "Estação Ciência" (Center for Scientific, Technological and Cultural Information of the Administration Office for Culture, Extension Courses, University of São Paulo).
- Make the produced educational material available in the web
- Organize two training courses for high school teachers, two workshops for geneticists, and a short course for media professionals.
- Implement "scientific coffee" talks - dialogues in cultural spaces, such as bookshops, between geneticists and individuals who are interested in a clearer comprehension of genetics and its impact on society.

III. ANNEXES

1. List of schools visited

2. DVD - Journey to the center of the cell - Viagem ao interior da célula

3. Post graduation students working in the CEGH diffusion program

4. *Media*

Annex 1

List of schools visited (around 7,000 students participated in the program)

Sept. 26	Escola de Aplicação da Universidade de São Paulo (day time)
Sept. 28	EE Fadlo Haidar – Rua Murmúrios da Tarde, 200 – São Mateus (day + night time)
Oct. 3	EE Prof. Raquel Assis Bananeiras – Av. General Penha Brasil, 1225 – Vila Nova Cachoeirinha (day + night time)
Oct. 5	EE Dom José Gaspar – Rua Isadoro Fontes, sem número. Ribeirão Pires (day time)
Oct. 6	EE Luiz Gonzaga Pinto e Silva – Rua Geraldo Fraga de Melo, 324 – Jardim São Luis (day time)
Oct. 10	EE Salvador Allende Gossens – Rua Domingos Lisboa, 139 – Itaquera (day + night time)
Oct. 16-18	ETE Albert Einstein – Rua Nova Granada, 35 – Casa Verde ((day + night time)
Oct. 19	EE Vila Bela – Rua Terra Tombada, s.n Jardim da Conquista – São Mateus (night time)
Oct. 21	Colégio Guilherme Dumont Villares – Avenida Guilherme Dumont Villares, 723 – Jardim Suzana (day time)
Oct. 22	Lobby of Instituto Oceanográfico – as participation in the Semana de Ciência e Tecnologia 2006
Oct. 23	EE Parque Anhanguera – Rua São Marcos s/n Sol Nascente – Jaraguá (night time)
Oct. 24	Unifio – Universidade em Osasco (day + night time)
Oct. 26	EE Prof. Almeida Junior – Avenida Eng. Heitor Antonio Eiras Garcia, 1874 – Jardim Maria Luiza (day + night time)
Oct. 26 - 28	Unifio – Universidade em Osasco (day + night time)
Oct. 31	EE Roldão Lopes de Barros – Vila Mariana (day + night time)
Nov. 6	EE Guiomar – Rua Paulo Aires s/n km 18,5 (night time)
Nov. 8	EE Tito Prates – Rua Mendonça Junior, 611 – Vila Nova Cachoeirinha (day + night time)
Nov. 11	EE Antonio Firmino de Proença – Rua da Mooca, 363 (day + night time)

Annex 3

Post graduation students working in the CEGH public information program

1. Adriana Ribeiro de Oliveira Marques
2. Ana Carolina Suzuki Dias Cintra
3. Érika Yeh
4. Fernando Nodari
5. Gustavo Alencastro
6. Karina Griesi
7. Paula Cristina Gorgueira Onofre
8. Renato Chimaso dos Santos
9. Silvio Ganiko Higa
10. Vivian Lavander Mendonça

Annex 4

List of interviews to different communication medium

Name	Subject	Medium	Date
Dessen, E.M.B.	"Dentro da Fábrica da Vida"(Inside life's factory)	Jornal da USP no. 781: 8,	October, 2006.
Dessen, E.M.B.	Projeto leva célula gigante para observação de aluno de ensino médio (Program deliver a giant cell .for the observation of high school students)	USP OnLine	October 24 th 2006
Mingroni-Netto, R.C.	"Elogio da diferença" (In praise of the difference)	Folha de São Paulo Newspaper	January 15th, 2006
Zatz, M.	"Células-tronco" (Stem cell)	Revista Almanaque Abril	January, 2006
Zatz, M	Fraude Dr. Hwang: as pesquisas continuam – Dr. Hwang's research continues	O Estado de São Paulo Newspaper	January, 2006
Zatz, M	"Isso é crime" (This is crime)	Revista Carta Capital	January, 2006
Zatz, M	"Células-tronco (Stem cells)	Fundação Casa de Rui Barbosa/Ministério da Cultura	February, 2006
Zatz, M	Ciência Unida e com financiamento (Funding a united Science)	Scientific American Brazil	February, 2006
Zatz, M	Células-tronco (Stem cells)	Revista Saúde	March, 2006.
Zatz, M	Ciência para salvar a vida de portadores de doenças genéticas (Science to save the life of persons stricken with genetic diseases)	Globo On line	March, 2006
Zatz, M	" Teoria e Prática das Células-Tronco" (Stem cell Theory and practice)	Boletim Reitoria ano IV, no. 15	March, April, 2006
Zatz, M		Jornal da Cidade da Associação de Jornalismo Científico	April, 2006
Zatz, M	Genética como medicina preventiva (Genetic as preventive medicine)	Revista Médico	April, 2006
Zatz, M	Células-tronco: tudo sobre o polêmico debate (Stem cell: all about the polemic debate)	Discutindo Ciência	April, 2006
Zatz, M	Mayana Zatz recebe prêmio "Faz Diferença" da Globo (Mayana Zatz is awarded Globo's "Make a difference"prize)	Boletim Reitoria ano IV-no. 46	April, 2006
Zatz, M	USP elabora projeto de incentivo à pesquisa (USP organizes a project to encourage research)	Universia-site	May, 2006
Zatz, M	Laboratórios da USP terão vagas para os melhores do ensino médio (USP labs wil, open space for the best high school students)	ESTADO DE SÃO PAULO newspaper	June, 2006
Zatz, M	Defensora das Células Tronco. (Defender of stem cells)	Revista O GLOBO	June, 2006
Zatz, M	Cérebros de Laboratório (Lab brains)	Folha de São Paulo Newspaper	June, 2006
Zatz, M	Burocracia atrapalha ciência brasileira (Bureaucracy hinders Scienc)	Fantástico TV Program	July, 2006
Zatz, M	Bush e células-tronco – (Bush and stem cells)	Estado de São Paulo - Newspaper	July, 2006
Zatz, M	"Pesquisa em terapia celular e suas implicações para a atenção à saúde(Research on Cell Therapy and its Implications to heath services)	Round Table in - Hospital Universitário	August, 2006
Zatz, M	USP avança contra distrofia muscular (USP advances against muscular distrophy)	O Estado de São Paulo - Newspaper	August, 2006
Zatz, M	A revolução da Ciência (The revolution of Science)	Revista Super Saudável Ano VI-no.32 pg 18-21	October/ December,

			2006
Zatz, M	Muito além do tubo de ensaio (Beyond the test tube)	Portal Globo: globolog.com.br	October, 2006
Zatz, M	A medicina do futuro.(The Medicine of Tomorrow)	Portal Globo: globolog.com.br	October, 2006
Zatz, M	Os gêmeos ingleses: e as cotas como ficam? (The British Twins: how do the quotas apply?)	Portal Globo: globolog.com.br	October, 2006
Zatz, M	Estamos no caminho certo (We're on the right track)	Revista Fapesp	November, 2006
Zatz, M	Células-tronco: o que podemos esperar delas? (Stem cells: What can we Expect from them?)	Revista Galileu	December, 2006.