

## Dear Guests!



Prof. HENRYK SKARŻYŃSKI, M.D., Ph.D.  
President of the 2009 ESPCI

First of all, I would like to heartily thank all our Guests, Collaborators and the accompanying persons for participating in yesterday's Opening Ceremony. It was an exceptional meeting of friends, people of science and medicine. I would like to specially thank the representatives of the President of the Republic of Poland, the Government and Parliament, universities and scientific societies. Very special thanks go to the guests, who along with our friends – artists and patients, created a remarkable atmosphere yesterday evening. We also had great pleasure in honoring previous ESPCI presidents, their teams and their involvement in the development of cochlear implants. Such flashback was not only symbolic – it was also a gesture toward establishing and preserving tradition, which is very important to all of us.

The main topic of today's debate is the problem connected with rehabilitation of our patients and the related problems. Usually during such meetings we concentrate on the spectacular successes of the surgeons and new technological achievements, while the very long and difficult process of the rehabilitation still remains in the shade. However, the problem itself is extremely important and indis-

pensable. Starting with the post-surgical rehabilitation. We would like to emphasize the importance of the procedures but the success lies in the hands of a very large group of devoted specialists.

We also want to indicate that the medical success and excellent reception of the Polish implantation program started by me in 1992 is also a result of constant and fruitful collaboration with our patients parents.

Our "Home Rehabilitation Clinic" program is not of a virtual nature. It is used on a daily basis as a method of post-surgical rehabilitation, utilizing the newest means and possibilities of computer science and technology.

May today's debate be fruitful and also allow us to share what is the best in our work. I am deeply convinced that this will find appreciation in the "ears and eyes" of our patients and will become a source of motivation for further developments in the fields of medicine and science. We have got a large group of highly qualified specialists trained in psychology, speech therapy and education here in Poland, who are all well prepared to work with the deaf and those who suffer from hearing disorders.

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## Opening Gala in Teatr Wielki – Polish National Opera

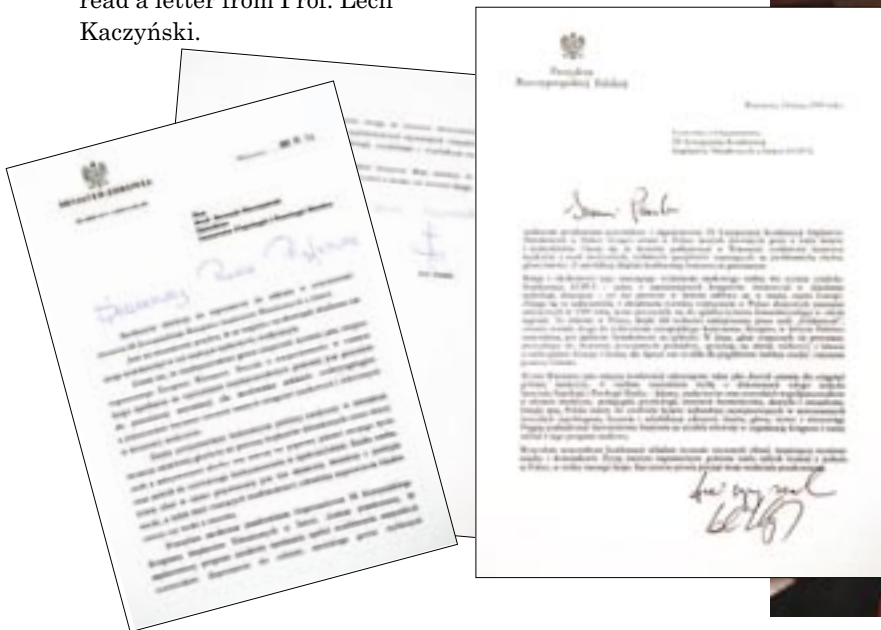
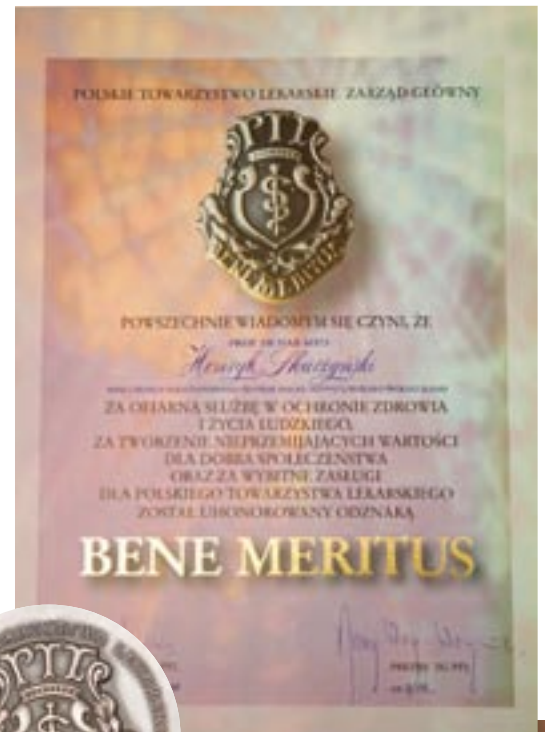
**Last night's ceremony at the Grand Theatre – Polish National Opera was both sublime and entertaining.**

In the formal part of the proceedings, Ms. Minister Ewa Juńczyk-Ziomecka, the representative of the President of the Republic of Poland, read a letter from Prof. Lech Kaczyński.

Undersecretary of State in the Ministry of Health, dr Marek Twardowski, read a letter from Ewa Kopacz, Minister of Health. Prof. Henryk Skarżyński honoured all of the presidents of the previous ESPCI congresses with special commemorative gold medals, which

were especially commissioned for this event. Prof. Henryk Skarżyński was also honored with Bene Meritus

distinction by Prof. Jerzy Woy-Wojciechowski, President of the Polish Medical Association.



THE 9<sup>TH</sup> EUROPEAN SYMPOSIUM ON PAEDIATRIC COCHLEAR IMPLANTATION

**ORGANIZERS:**

International Center of Hearing and Speech of the Institute of Physiology and Pathology of Hearing



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# European Symposium on Paediatric Cochlear Implantation History and People (2)

This is the 9th time when the most influential people from in the fields of physiology and pathology of hearing, otology, otosurgery, audiology, acoustics, psychoacoustics, biophysics, bioengineering, all related subjects at the European Symposium on Paediatric Cochlear Implantation

We hereby present, the second part of the material featuring the previous hosts of the ESPCI 2000 to 2006.

Hosts of the previous ESPCI comment on travelling to Poland and MCSM in Kajetany, what it takes to become a successful otolaryngology specialist, pros and cons about the profession, current economical situation in the world, expectations of the 9th ESPCI, recent changes in otolaryngology, hopes and trends in medicine, and the most significant event or feature of the congress they hosted.

We are very pleased to have an opportunity to interview Prof. Angel Ramos, Prof. Marco Peliz-



zone and Prof. Gregorio Babighian. On the first day of the 9th ESPCI, during the ope-

ning gala, the previous hosts were honored with the commemorative medals.

## The Boards of the ESPCIs:

- Nottingham 1992:  
Prof. Gerard M. O'Donoghue, Prof. Sue Archbold
- Montpellier 1994:  
Prof. Alain Uziel, Prof. Bernard Fraysse
- Hannover 1996:  
Prof. Thomas Lenarz, Prof. Roland Laszig
- Hertogenbosch 1998:  
Prof. Paul van den Broek, Prof. Ad Snik
- Antwerp 2000:  
**Prof. Erwin Offeciers, Prof. Stefaan Peeters**
- Las Palmas de Gran Canaria 2002:  
**Prof. Manuel Manrique, Prof. Angel Ramos**
- Geneva 2004:  
**Prof. Marco Pelizzone, Prof. Pierre Montandon, Prof. Izabel Kos**
- Venice 2006: **Prof. Gregorio Babighian**

### Prof. Angel Ramos – the vice-president of the 6th ESPCI



The Center in Kajetany is considered one of the best in Europe. I know Prof. Henryk Skarżyński personally and I only can say he is a great president of this meeting and give us support to all of us, as colleagues.

Work, work work, work and a little lucky always help. Do you think you can ever say “that’s all folks”, not in otolaryngology. Choice is s personal matter.

Stress live with me, we are very good friend.

Since 2002 there were a lot of changes. New systems, new stimulations, new concepts. I think the speed of the research and applications are incredible.

I think that in clinical application the cochlear implants area is the most important. In basic science the area of neural growth factors and stem cells in otology and tumor markers in oncology must be considered.

### Prof. Gregorio Babighian – the President of the 8th ESPCI

The Institute in Kajetany is, to my knowledge, very well qualified and its scientific level compares, without any doubt, to the best institutions in Europe. Prof. Skarżyński is scientifically qualified to be the president of the Symposium. He is putting, altogether with his collaborators, a great effort in organizing



a sound scientific program and I feel very honoured if I can be of help to him. I would suggest him to pay great attention to the contributions of the young scientists and researchers: many of these contributions may reveal very valuable and quite original as well.

It is a long way and the private life is very sacrificed. I was lucky with a wife who still now, after 43 years, is very patient and who never stood in the way of my career.

My first important choice was to abandon my dream of becoming a cardiologist first and then a cardiac surgeon and to become instead an otolaryngologist first and then an otosurgeon. To tell you the truth, this choice was not a real choice but a step that I had to take under compulsion and not of my free will. But this is another and too long story.

The most magnificent thing is to restore hearing to the patient, and/or to give hearing and language abilities to the deaf child.

Unfortunately, current situation on the market has a great impact on our field. Modern medicine is quite expensive, costs are very high. This requires that we avoid any waste of money, time, energy.

Progress in science is never-ending and in the few years elapsed since our congress in Venice some novelties and new developments took place, mostly concer-

ning imaging techniques of the inner ear, innovation in the electrode technology, etc.

I think that research concerning the stem cells as related to either congenital or acquired hearing defects is going to represent in the near future the main commitment of scientists.

### Prof. Marco Pelizzone – the President of the 7th ESPCI



I am looking forward to visiting the Center in Kajetany! Prof. Henryk Skarżyński is one of the leaders in this field in Eastern Europe.

To achieve success and be a good doctor – just concentrate

on doing good – the best you can – work. Becoming famous is a matter of chance. If you happen to become famous, then you might have a lot of responsibilities and a very tight work schedule. It might – or might not – interfere with your family life; this depends on people. Personally, I was lucky and the only choices I had to make were to follow my passion for research.

The most magnificent thing about my work I probably the fact that now in the French part of Switzerland, many deaf children go to normal schools. These children will enjoy a close to normal education and will have much better perspectives in their life than their sign language educated pairs.

Copying with tension is quite personal. Nobody enjoys stress! Passion can help to withstand stress.

I think that the crisis will tend to diminish state spending in the field of medicine. It will less affect private spending in medicine.

In the field of CI, devices have become more ergonomic to use. On the other hand, no real big progress has been made in terms of performance.

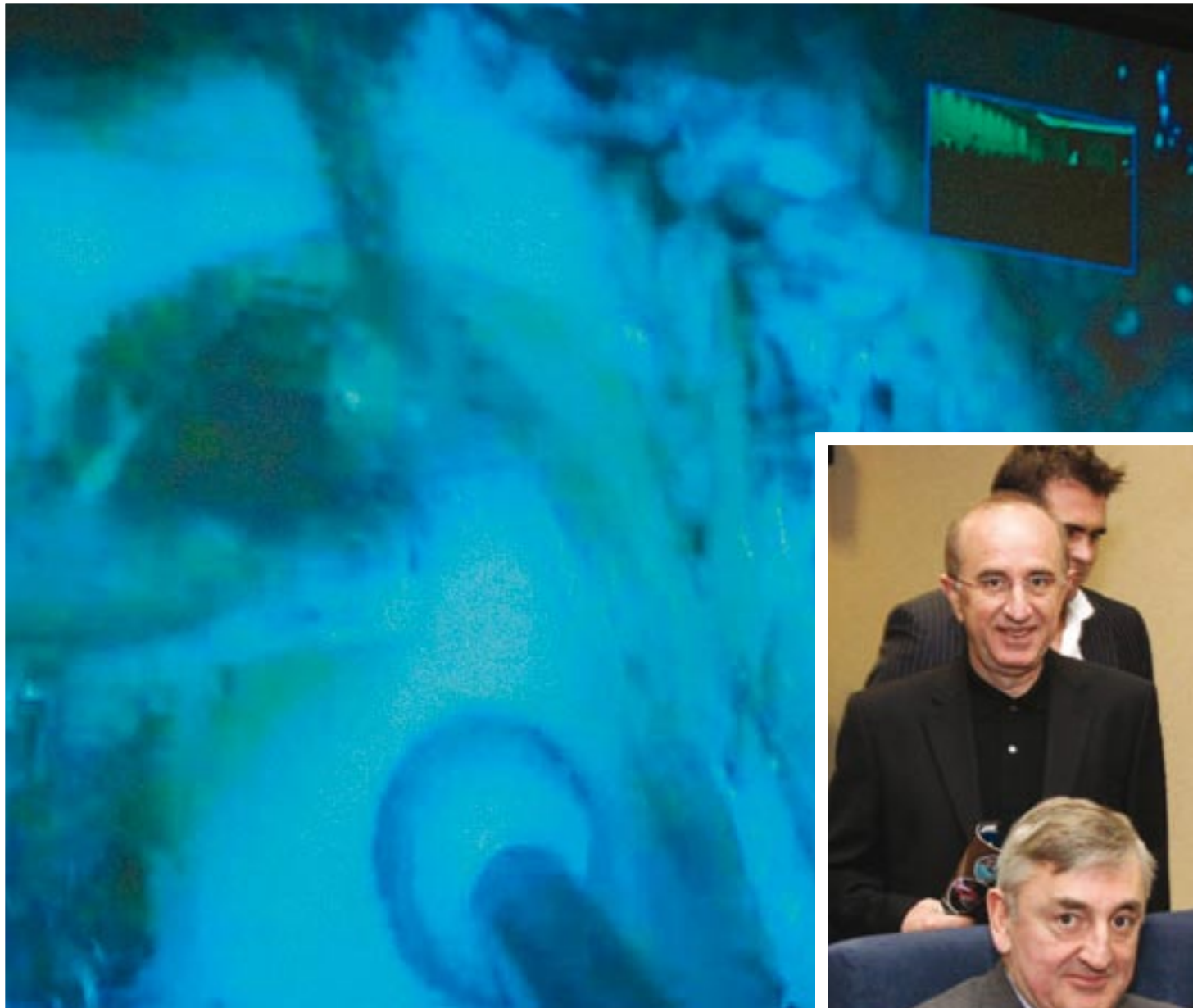
It would be nice to see concrete results in the field of stem cells. It might well be that, one day, otolaryngologists can cure deafness by drastically other means than CI.



## LIVE SURGERY EVENT

# Window Approach Workshop 5

One of the first events of the 9th European Symposium on Paediatric Cochlear Implantation was the Window Approach Workshop 5, which took place in the International Center of Hearing and Speech in Kajetany.



The surgeries were broadcast at Warsaw Hilton's conference room. The workshop started with an introductory lecture by Prof. Henryk Skarżyński.

During the workshop, there have been six cochlear implantations in patients with partial deafness. One middle-ear implant was implemented in a patient with a sensorineural hearing loss. All surgeries were performed by Prof. Skarżyński.

The workshop transmission was led and moderated by Dr Robert Podskarbi-Fayette (Kajetany) and Dr Artur Lorens (Warsaw).

The following electrodes were used in Partial Deafness Treatment: standard, flex, and M arrays were used as parts of MedEl devices. The new Cochlear SRA 25 mm carrier was implanted for the first time in a 6 years old girl. This marks the first time for such device to be implanted during a live surgery event.

Numerous questions from the audience were asked concerning the choices for electrodes' carriers in particular patients, indications for PDT and outcomes in patients operated to date in the Institute. The six step RWA was thoroughly explained by Prof. Skarżyński and Dr Podskarbi-Fayette.





# Neurelec Satellite Symposium



**Congress Room B from 12.00h to 13.00h was the site of the Neurelec Luncheon Symposium. Neurelec's Chief Executive Officer Cédric Briand provided the introduction and opening remarks, along with a brief history of the company, which was created in 2006 as a spin-off of MXM, maker of the first fully digital CI system, initially produced in 1992. MXM has over 30 years of experience in the medical devices sector and continues to distinguish itself in this area, due primarily to its technological and design innovations.**

Mr. Briand outlined the progress in sales and clinical support the company has made since its inception three years ago, and also discussed Neurelec's state of the art manufacturing facility, located at its headquarters in France.

In terms of outlook, Neurelec hopes to build on its numerous successes to date, as it continues to increase growth with ongoing investment in research and development, along with its operational capabilities, as it expands activities in the export market and in clinical research.

Following Mr. Briand, Marketing Director Daphnée Emili continued the presentation, giving an overview of which include an innovative and unique fixation system using self-tapping screws, thereby making bed drilling unnecessary, which allows for a minimal surgical incision and a shorter time period to complete the procedure. Afterwards, Prof. Paul Govaerts of the Eargroup, Bel-

gium, discussed the Digisonic SP Reliability Report from March 2009, and its key findings regarding Neurelec's SP Binaural and Digi SP'K Micro-BTE products. The Digisonic SP Binaural is the only bilateral hearing solution for adults with a single 24 electrode implant, and is an alternative solution to bilateral implantations (2 implants + 2 processors).

The Digi SP Behind the Ear Processor is also remarkably light weight at a mere 12g, can be adapted to both adults and children, is available in nine colours, and is powered by only two batteries. The Digi SP'K- Micro-BTE with remote battery provides an ideal pediatric solution, and is currently the smallest and lightest micro-BTE on the market. It features 4-program selector, direct auxiliary connection and an integrated telecoil. Bertrand Philippon from Neurelec's clinical research department also spoke, presenting the results of a retrospective study of 60 children, ran-

ging in age from 1.2 to 11.3 years, which evaluated their post-implantation progress attained in the areas of auditory capacity, linguistic capacity and verbal communication, after being implanted with Neurelec's Digisonic SP CI System.

The data from the study indicated that the earlier the CI implantation was conducted, the better the patient's overall achievement in all categories. Therefore, language growth as a function of age at implantation needs to be taken into consideration.

And the findings indicate that 15 to 16 months of age seems to be a crucial time (and plays a decisive factor) on the patient's future level of attainment, and the gap widens if the implantation takes place later, leading to the conclusion that early detection and intervention is imperative to maximize a patient's chances of achieving optimum results.



# ADVANCED BIONICS SATELLITE SYMPOSIUM

**The session started with an overview of Advanced Bionics' new European logo (AB), regional growth and their new research and development in Europe. Later on, Quentin Summerfield presented clinical and cost effectiveness data on bilateral implants for small children.**

In children with bilateral implants, spatial listening as well as quality of life are improved and additional decibels of noise (up to 5dB) are better tolerated. Patrizia Mancini spoke about HiRes 120, which enables users to better recognize and distinguish rhythm and melodies, as well as achieve better speech recognition. On the whole, HiRes 120 is easily managed, safe, helpful in noisy situations and has potential for development. Still, a larger group is needed to confirm the, so far, hopeful laboratory results.

Chris Rocca's main message was that children with cochlear implants are not given adequate access to music education, as currently rehabilitation techniques focus more on speech. Hence the introduction of a paediatric rehabilitation tool called Musical journey through the ra inforest, which is a package of activities consisting mainly of books, CDs, musical instruments and on-line activities. The solution can be



viewed in the technology booth. At a time when rehabilitation teams are getting busy, these rehabilitation tools are particularly important, as they can be used by the patients in the comfort and safety of their own homes.

Geraldine Gettriaux presented a software rehabilitation tool for adults, which, through a great set of exercises, helps them listen to and appreciate music. The French and English CDs are available in the lounge, while the on-line version should also be available on each country's website. Matt

Haller spoke of the behind the ear processor "Harmony System". It has the potential to be extended in order to make it more reliable and to stimulate more of the cochlea. Harmony allows the use of the optimum location of the mike, improves performance in high noise environments, gives more electronic precision and fine structure preservation.

Users noticed that men's voices sound more masculine, and voices in general sound more natu-

ral. Positive feedback from patients also included: appreciation of music; ability to hear very low tones; and the ability to use the system in various environments. Andrea Buchner reviewed Strategy 10, which is a working name for a sophisticated algorithm for reducing noise in speech. The system tries to find ways to reduce unwanted noise whilst without interfering with desired speech.

Patients preferred Strategy 10 over their current strategy. Laboratory results are

very satisfactory and patients' feedback is positive. To conclude, Patrick Boyle described the overall message of the Symposium. Despite the increasing amount of reliable technology available today, there is still room for further development. There is still a need to work on a number of areas: enhancements for children, solutions for noisy situations, improvement of the easiness of use and user-friendliness. Even bilateral implants still are a long way off normal hearing, he said, but we are definitely getting closer step by step.





# Med-El Satellite Symposium "Especially for Children"

**Med-El session attracted a large audience, as the opening speech was delivered by Prof. Henryk Skarżyński, who expressed his thanks to Med-El and wished all the participants a pleasant stay in Warsaw and Kajetany.**

The first lecture was conducted Prof. Dr. Joachim Muller from the University of Wurzburg and focused on early cochlear implantation and adaptation of surgical procedures for cochlear implants in infants and toddlers. During his speech, he stressed the im-

portance of neonatal screening and the involvement of pediatric audiologists, surgeons, anesthesiologists and pediatricians to ensure safe surgical intervention in terms of cochlear implantation. The second lecture of the theme, aimed at surgeons, was con-

ducted by Prof. Dr. Benoit Godey, whose presentation was titled "Atraumaticity of the Electrode". According to Prof. Godey, optimal insertion characteristics for intracochlear electrodes should focus on the ease of the insertion, insertion depth, trauma and inva-

siveness. Godey pointed out that thin arrays made of silicone are much easier to insert.

Another presentation to the large audience was given by Prof. Dr. Andrej Kral from University Medical Center, Hamburg-Eppendorf. The speech focused on another theme in the satellite symposium, this time dealing with audiological aspects. Prof. Kral presented in great detail information about the patterns of cortical activity with bilateral cochlear implants.

Continuing with the "Especially for the audiologists" segment, a presentation by Chris Durst MA, MSc, Clinical Scientist and Technical Director of MED-EL U.K. Ltd. Mr. Durst said that the fitting of the CI system is an integral part of the implantation, which includes assessment, surgery and rehabilitation. Durst said that both the efficiency in fitting and high quality of the process must be reconciled.

The closing act for the session was presented under the heading "Especially for users", with a lecture delivered by David F. Ratz MBE, Product Manager for Electric Acoustic Stimulation, MED-EL Headquarters, Innsbruck, Austria. Mr. Ratz provided a quick, yet well-balanced information on the latest DUET 2 audio processor (the 2nd generation EAS<sup>tm</sup> audio processor). Mr. Ratz underlined its unique and superior performance. All the innovative features are based on OPUS 2 proven and tested solutions and designs. The DUET 2 features an anatomically friendly design and is comfortable to wear.



## COCHLEAR SATELLITE SYMPOSIUM

**To begin the session, Prof. Henryk Skarżyński introduced Cochlear - the Implantable Hearing Solution Company, as a significant partner of the Institute, covering the whole spectrum of hearing technologies. More information on the company was given by Jan Janssen, who mentioned: the Cochlear Hybrid System, the Baha BP100 Sound Processor, the Direct Acoustic Cochlear Stimulator, the Common Technology Platform.**

An overview of hearing performance research and technology was presented. More background on redefined Baha solutions was added by Ron Mendel. Newly launched in Europe, Baha BP100 qualities include: improving hearing performance; a multi channel digital processor; automatic adaptive signal processing, full programmability.

Studies show improved sound quality and better adjustment in the paediatric population. Blake C. Papsin convinced the audience of the advantages of bilateral cochlear implantation in children. Bilateral simultaneous implantation, whilst being safe and effective as unilateral implantation, minimises the inability to localise sound as well as difficulties in understanding speech in a noisy environment. Simultaneous im-

plants in kids fuse in one day and stay fused, but the longer the delay between operations, the longer it takes for implants to fuse and in some cases, this might not take place at all.

The new strategy in cochlear implants widens the possibility to extend the audiometric criteria to those cases of asymmetric hearing loss with the use of cochlear implants and hearing aids. Hybrid-L Electrode was covered in detail by Prof. Thomas Lenarz. It improves the probability of hearing preservation versus Contour Advance and reduces the risk of running out of channels in progressive hearing loss versus 10mm Hybrid-S array.

The additional benefits of conserved ipsilateral (binaural) acoustic low frequency hearing are confirmed by music perception tests and tests with spatially separated sources. Prof. Skarżyński discussed a clinical study done with a new investigational device - Straight Research Array (SRA). This new electrode, designed for preservation, together with surgical approach through round window, gives partial deafness treatment a new meaning. In the closing words Jim Patrick briefly covered the topic of Modiolar Research Array (MRA) versus Straight Research Array (SRA) as well as Cochlear Electrode Developments - from Straight to Hybrid L.







# Third life

An interview with MAŁGORZATA STRYCHARZ, Assistant Lecturer in the Department of Restorative Dentistry at the Medical Academy of Lublin, patient of the Institute of Physiology and Pathology of Hearing

## What does the term "health" mean to you?

**MS:** Health is priceless, healthy people are hardly aware of it. As is so often the case, I only started to fully appreciate the value and flavour of health once I had lost it. When, as a teenager, I lost my hearing, I realised just how much my opportunities had diminished. Before, I never considered what role hearing plays in everyone's life, what freedom it gives, how it opens one to the world, providing the opportunity for ordinary human interaction.

My only wish was to be able to hear again. I did not want to let go of the idea that I would somehow return to the world of sounds, especially that, since childhood, I adored music and was a talented student at a music school. When, despite doctors' attempts, the therapies brought no result, it became clear to me that the only option was a cochlear implant.

## When did the problems with your hearing begin?

**MS:** When I was a child I had an ear for music, I used to study in the music school. Playing piano, singing and music in general were my great joy, an integral part of my life. It did not even cross my mind that it could ever change. Very suddenly, I completely lost the hearing in my left ear and partially in the right one. I neither wanted to believe it, nor accept it. I tried to deny the fact but reality was harsh. I left music education. The next summer, however, I suffered another blow – I fully lost my hearing. If it was not for my parents and my own determination, I would have undoubtedly separated myself from the outside world. I stayed at ordinary school and kept my friendships. I was still hoping that one day I would hear. I will not deny that it was an unexpected and challenging time for me. Despite numerous appointments with specialists from all over Poland, doctors were still unable to figure out what was wrong with me.

## So the decision to operate became obvious?

**MS:** At the beginning, I had lots of doubts about the operation. The thought of rehabilitation and having to wear a hearing aid did not seem appealing. It was all unknown territory to me and I was simply afraid. On the other hand, deep down, I had this feeling that the implant would be my only option, that I had to give it a try. When I think of my hesitation today, I feel slightly silly. I cannot imagine my life without this implant. After the operation and adjusting the processor, my new life became particularly sweet. Like I was born for the second time. The first operation of grafting the cochlear implant was done in 1994, during my third year of high school, by Prof. Henryk Skarżyński.

## What changed most? What was your "second life" like?

**MS:** At last I felt independent. I could lis-

ten to what the teachers were saying at school. I did not need transcripts anymore. As it was much easier to communicate with my peers, my social life became fuller. I started to enjoy dealing with everyday issues that would not even attempt before. The first year after the operation was one of the most pleasant times of my life. I enjoyed everything around me. I was like a small child, getting to know the world for the first time, listening to everything, asking loads of questions

## Today you are even able to have practical classes with groups of students.

**MS:** My "new hearing" played a big role in my own education. Thanks to the first implant, I could participate in lessons fully, which certainly had a positive effect on my grades. I applied for, and got accepted to the Medical Academy in Lublin (nowadays Medical University of Lublin). My chosen speciality was dentistry. I did not need an individually tailored programme, I was not treated favourably because of my disability, which I am very pleased about. I earned my degree with flying colours and went on to do my post-graduate year placement.

Afterwards I got accepted to do my PhD programme at the Medical University of Lublin. I was awarded my Medical Dentistry PhD with distinction.

For the past five years I have been working as an assistant at the Department of Restorative Dentistry, where I am also one of the lecturers. Practical classes, during which students deal with real patients, were quite a challenge for me at first. I felt unsure if I could manage the task, if I would understand enough in the continuously noisy environment. It also does not help that most of the time students wear surgical masks, so I cannot see their lips when they talk. In the end, I decided to be open about my situation

and every time I get a new group, I explain that there is one rule: anyone talking to me should make sure I can see their face. So far it has been working like a treat.

## In the meantime, you decided to have another operation?

**MS:** Having the first implant made me more self-sufficient. However it was a single-canal implant, so it did require a lot of hard work on my part. I needed to concentrate properly when listening, preferably looking at the speaker's lips at the same time. Quite often, I would need to second-guess the details from the general context of the conversation. I would manage all that reasonably well when it was relatively quiet. Once it got noisy, finding the meaning of a message was like completing a crossword puzzle – some letters present while others still need to be deciphered. I had the least trouble when I could see and hear the interlocutor, as I became quite good at combining the visual and auditory communication.

## Before losing my hearing, I never considered what role hearing plays in everyone's life, what freedom it gives, how it opens one to the world

Still, my brain was constantly overworked. As time went by, I felt more and more "hungry" for a better experience. When Prof. Skarżyński grafted a second implant, my third life began.

## What new quality of life did the second implant give you?

**MS:** My first impressions during testing of the electrode were amazing. At first I could hear high tones, then higher and even higher. It was a huge joy for me. Now, even from a distance, I am able to distinguish a lot of timid sounds, like the creaking of the floorboard or voices next door, even whispers from a few meters, which I never could

with the old implant. It is much easier to take part in lectures, meetings. I also hear a lot more high-pitch sounds.

For example, it turns out crickets produce sounds a few octaves higher than I had been able to pick up through my old implant I do not have a problem distinguishing a dog's barking from a bird singing, which was hard with the old implant. I do not have to look at my interlocutor's mouth so intently anymore. The conversation I can hear is much clearer to me and lots of words are instantly recognizable. I find it much easier to communicate in a noisy environment. I can actually drive and talk to the passengers at the same time even when I cannot see them in the dark or when they are sitting in the back.

Simply watching television or listening to the radio, I now understand a lot more, even when the volume is turned down. With the old implant I could only catch the meaning when I was actually seeing the lips of the speaker. Also, I can now listen to audio books without the need to follow

the written text. There has been a major change when it comes to using the phone too. After three months, I completely switched to telephone conversations over my new processor. There is no interference when I put the receiver against the processor's cover. I started enjoying music again. I can actually distinguish a lot more of its components, which makes it less of an interesting noise and more of a harmonious coexistence of different instruments and voices.

When I sit at the piano myself, I control a lot more of my creation. I can register every key stroke even when I play very fast, and not a general mish-mash I was receiving previously. More often than not, I can hear the melody I played, whereas before I only knew how it should have sounded, but could not appreciate it myself. If the background music is not too loud, I can understand a song's lyrics. Sometimes even English phrases just pop into my ear.

## - What are your thoughts after years of fighting?

**MS:** When I think about various parts of my life, I often find myself appreciating just how lucky I am, having lived in times like these and having met so many extraordinary people who helped me regain my hearing. I would wish the same for all other patients.





## NEW TECHNOLOGIES

# Home rehabilitation clinic

**Constant high – technology developments, combined with new methods of diagnosing and rehabilitating patients, now allow to implement new therapeutic solutions that give patients the chance to communicate with the surrounding world. Surgery and implantation of a new device – they are only an introduction to a further medical treatment. Rehabilitation is a vital supplement to the overall process.**

The development of a new international tele-rehabilitation program creates the possibility of turning the family environment, especially in the case of a child after surgery, into the specialized rehabilitation support. This has led to the introduction of a new term and program – “Home Rehabilitation Clinic”.

The most important feature of this program is the fact that a child can perform the subsequent phases of the after-surgery rehabilitation program in 97 per. at home, in the most familiar environment where they can assimilate new skills in the fastest and easiest way, thereby producing the best effects.

“Home Rehabilitation Clinic” also provides excellent means of preparing and involving the child’s parents and caregivers into the program of developing speech, hearing and language skills. Without the involvement of the closest family members, even professional rehabilitation sessions provided to a child by highly qualified personnel twice a week could not maximize the expected effects and the overall costs would be very high both for the parents and the public health service.

The new program involves the use of Internet service, training parents or caregivers, as well as preparing and providing training materials to them.

In the purpose of the “Home Rehabilitation Clinic”, a set of special educational programs was developed for the parents and caregivers. During the family and child’s stay at the Institute, the specialists responsible for the rehabilitation present to them the program devised by Prof. H. Skarżyński. Then the parents receive a CD with the instructional materials for the speech and hearing rehabilitation of a

child to be performed at home. Subsequently, they are acquainted with the effects of the remotely evaluated and coordinated rehabilitation. During the follow-up sessions, all activities led under the “Home Rehabilitation Clinic” program are evaluated, verified and corrected, in order to provide the best possible final effects of therapeutic process.

To date, the “Home Rehabilitation Clinic” program has enabled 1754 families to use the new therapeutic solutions and techniques. In practical terms, it also allowed to speed up overall speech and hearing development of the implanted children and teenagers. Moreover, it has also led to a substantial reduction of costs for the parents and families, due to less frequent commuting and fewer absences at work.

One of the most important and valuable effects of the program was bringing more understanding for implanted patient by closest environment. That kind of support is hard to measure, it is well know that without this crucial support, the chances for a patient to achieve the desired effects of the rehabilitation success process are lower. Therefore the means of diagnosing and treatment are effectively used both by the patient and its closest environment.

A long and effective home rehabilitation conducted under the strict control of specialists remains a challenge to the whole medical and health care system in our country, not only in case of speech and hearing disorders. The program changes the common view that the best place for long and short-term rehabilitation is a highly specialized center.

Making the program commonly available should make patients – but also specialists – aware that the patient’s home is the best place for long term rehabilitation under the remote supervision of specialists.

The home setting can be the best clinic and the rehabilitation process with the use of the newest computer technology, conducted in familiar surrounding can bring optimal effects.

That is,  
in a comfortable  
setting where  
a child can assimilate  
new skills in  
the fastest  
and the easiest way



## New Technology for Hearing Stimulation Employing the SPS-S Method

**The system outlined here, namely the Compact Audio Therapy Unit (CATU) can process any audio signal inside a very compact device working in real time, employing advanced digital filtration, signal keying, manipulating playback rate, various spectral modifications of the signal, repeating phrases and others.**

It was designed to provide a platform for the therapy with the Skarżyński’s Method of the Aural Perception Stimulation (SPS-S). The design for wearability allows one to use the device effectively in normal everyday life condi-

tions, e. g. outdoors. The compact and versatile processing device can potentially open a new era in patients and trainees mobility .

The device consists of: small internal digital sound recorder/player, tiny audio signal processing unit programmable from a PC through a USB port, a pair of earphones and a bone conduction phone. Despite the advanced functionality being offered, the technology employed in the CATU device makes it possible to keep its dimensions no bigger than a walkman player.

Any audio signal can be processed by the small device CATU,

employing its internal tiny processors representing high end of modern digital technology. Based on logical programming the signal can be transmitted to the left or to the right ear using earphones after the ear has been previously alerted by osseous conduction employing a bone conduction phone.

The principal hearing conditioning procedure consists in band-pass filtering of audio signal and sending its adequately filtered version to the left or to the right subject’s ear depending on the estimated loudness of the signal upon alerting the ear by osseous

conduction. Another set of signal processing methods employ some new ideas of how to improve the wrong lateralization in some patients using specially designed stereo sound.

The application of a very compact and relatively powerful signal processors in the CATU device opens also an opportunity to apply the device in stuttering and Tinnitus patients therapy and in many others tasks through storing, repeating or modifying signals in the auditory feedback loop, formed by the electro-acoustical path consisting in: microphone, real-time digital sig-

nal processors and acoustic transducers. Optionally, a variety of hitherto applied therapy and training methods could be implemented in the tiny device as procedures working in real-time, such as proper lateralization restoring, acoustic ambience conditioning, re-education of the voice, storing the last phrase spoken - through the detection of vocal cords relaxing or speech intensity, student’s progress in a dialogue monitoring by measuring the deviation of the student’s current speech from his original speech template and many others.



# Openi

ESPCI 2009 Opening Gala in Teatr Wielki – Polish National Opera was an exceptional meeting of people of science and medicine. It was an unforgettable evening,



Prof. Henryk Skarżyński wearing the Presidential commemorative chain



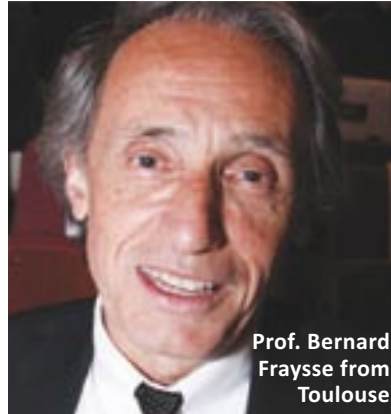
Prof. Paul van den Broek decorates Prof. Henryk Skarżyński with a commemorative chain



Former ESPCI Presidents honored with commemorative medals by Prof. H. Skarżyński



Prof. Bernard Fraysse from Toulouse



Prof. Manuel Manrique from Pamplona



Former ESPCI Presidents honored with commemorative medals



The beginning of gala: Prof. H. Skarżyński and Ms. Anna Popek



Prof. Marco Pelizzone from Geneva



Prof. Manuel Manrique from Pamplona



Prof. J. Woy-Wojciechowski honors Prof. H. Skarzynski with Bene Meritus award



Ms. Anna Popek and Ms. Elwira Ludwikowska



Prof. G. Babighian, Prof. ...



Prof. G. O'Donoghue and Prof. T.Lenarz



Dr. M. Twardowski congratulates Prof. H. Skarzynski on behalf of the Minister of Health



Prof. R. Laszig, Prof. G. Tavartkiladze, Prof. M. Profant





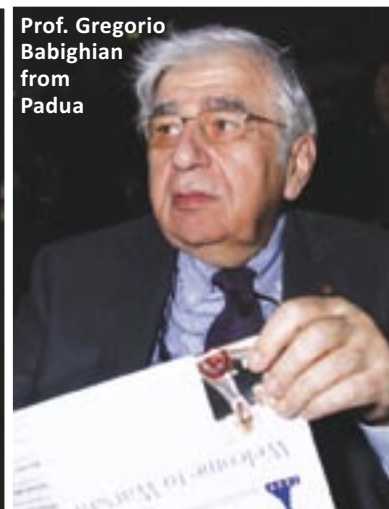
# ng Ceremony

full of great moments. After the formal part of the proceedings, there took place a magnificent show prepared by Mr. Waldemar Malicki. During that evening in Teatr Wielki there

appeared friends and guests of Prof. Henryk Skarżyński and his team: guests of ESPCI 2009, collaborators of the Institute, patients, and numerous celebrities, politicians and artists.



orative medals by Prof. Skarżyński



Prof. Gregorio Babighian from Padua



Prof. Thomas Lenarz from Hannover



Prof. Paul van den Broek from Hertogenbosch



Prof. Ad Snik from Nijmegen



of. I. Kos, Prof. M. Pelizzone



Prof. A. Snik and Prof. P. van den Broek



Prof. M. Kleiber, Prof. T. Zdrojewski, Dr. E. Junczyk-Ziomecka, Prof. H. Skarzynski



Our Guests of the Opening Ceremony





President of Corlas 2007, Chon Sun Kim



Piano virtuoso Mr. Waldemar Malicki



Artists performing for the guests of the 9th ESPCI



Ms. Anna Popek, TVP presenter



Partially defened implanted children awaiting their performance



Ms. Minister Ewa Junczyk-Ziomecka with implanted children





# Opening Ceremony



Estera, implanted patient plays the flute



Group of implanted children with partial deafness on stage



Med-El team



Owner of Advanced Bionics and Cochlear's CEO



Children and the stars together on the stage



Prof. Skarżyński with implanted children before the Ceremony

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THE INTERNATIONAL CENTER OF HEARING AND SPEECH IN KAJETANY

# When work becomes passion

The International Center of Hearing and Speech is one of the most important units of the Institute, the heart of its scientific, educational and clinical activities.



The Institute has subsidiaries and cooperating units all around the country, e.g. in beautiful resorts and cities with tradition, such as Ciechocinek, Kraków, Łeba, Olsztyn and Gdańsk.

**The history of the Institute has been marked by a series of impressive milestones:**

- First cochlear implant operation in Poland was performed on a completely deaf patient on July 16, 1992. This huge scientific, surgical, technical and organizational challenge was taken up by Prof. Henryk Skarżyński.

- Only few months later, due to the increasing demand, a public place for people with various hearing disorders, called the Cochlear Center was created. It was the first institution of this kind in Poland and only second after the one in Hannover, Germany. Its most important achievement was an early infant diagnostics programme initiated by Dr. Maria Góralówna.

- After over three years of fruitful work, on January 1, 1996, the Institute of Physiology and Pathology of Hearing was established.

- Another important scientific, clinical and organisational venture was the first operation at in the tumor from the brain stem and subsequent brain implantation, which was conducted together with scientists from Austria and Germany. Poland was the fourth country in the world where such as operation was carried out successfully. Since then, the patient has been rehabilitated so favourably as to understand words spoken in three languages.

- Owing to the fertile collaboration with various partners, both in the country and abroad, a lot of technological and methodology breakthroughs followed.

- In 2002, for the first time in the world, Prof. Skarżyński successfully operated on a partially deaf patient.

- In 2003, an implant was placed into a patient's middle ear.

- In May 2003, a very satisfying event for all of Prof. Skarżyński's team was the opening of a new, specially designed building in Kajetany - the International Center of Hearing and Speech (ICHS), which has become the headquarters of the Institute.

- Recently, the team has celebrated yet another addition to the family. On March 19, 2009 a new department, the Scientific Center for Biomedical Imaging (NCOB), was officially opened.

- One of the wide-ranging clinical programmes was rehabilitation of patients suffering from the tinnitus.

- Implementation of novel programmes in Poland included first application of the RetroX hearing system; popularisation and novel application of bone anchored hearing aids (BAHA); pioneering application of implants in the middle ear; first use of alloplastic material together with ionomeric cement for reconstruction of a middle ear.

- The postoperative rehabilitation has been a great success. The patient is now able to communicate in three languages. One of the most notable achievements of the Institute was establishing the first extensive epidemiological study of children and teenagers' hearing abilities to-

gether with Prof. David McPherson from the Provo University, Utah (USA). Further investigations showed that as many as one third of adult Poles might be suffering from some kind of hearing problems in their everyday life.

- In 1993, the first comprehensive nationwide program of newborn screening tests, including both intensive-care and healthy babies, was launched. Since then, new technologies have been developed by the Institute's team, including devices such as the "Kuba Micro AS" and "Marta". Together with Gdańsk Technical University, the original multimedia systems "Słyszę" (I can hear), "Mówię" (I can talk), "Widzę" (I can see), and "Tinnitus", have been elaborated. They are used for screening of hearing impairments, speech and sight problems, as well as in case of Tinnitus. The Institute's team has also developed new, remote diagnostic forms and therapy methods which can be used on-line. One of them is "Home Rehabilitation Clinic", an electronic software comprising information and exercises for patients with hearing

difficulties, which, as the name suggests, can be used in the comfort of setting one's home.

**International recognition of the Institute's achievements has been confirmed by numerous awards and distinctions such as:**

- Gold medal at the International Hall of Inventions and Advances in Technologies "Brussels Eureka 2008" and the Award of the Ministry of Education and Science of Romania for the system for remote fitting of cochlear implant speech processor;

- Officer's Cross "Labor Improbus Omnia Vincit" for scientific achievements of the Institute of Physiology and Pathology of Hearing, awarded at the 57th World Exhibition on Innovation, Research and New Technologies INNOVA 2008

- Gold and silver medals awarded at the 36th International Hall of Inventions, Technologies and New Products (Hall International des Inventions, des Techniques et des Produits Nouveaux) in Geneva 2008

- Gold medal at the 35th International Hall of Inventions, Technologies and New Products (Hall International des Inventions, des Techniques et des Produits Nouveaux) in Geneva, 2007

- Gold Medals of the Jury at the International Hall of Inventions "Concours Lépine", Paris in 2003, 2004, 2005 and 2007 KUNDE IENA 2007 in Nuremberg, Germany

- Two special awards at the International Hall of Inventions and Advances in Technologies "Brussels Eureka 2002"

- Nomination for "Euro Prix 2000" award at the International Fair in Frankfurt.



**TOMORROW ON ESPCI:**

- New ways of partial deafness treatment - round table
- New chances and hopes for patients with various hearing disorders
- Cochlear implantation in very young children

**TOMORROW IN THE CONGRESS TRIBUNE:**

- New technologies: telefitting
- Treatment of partial deafness
- An interview with one of the 1st PDCI patients

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