

Early History of ORCA¹

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The Foundation

The initiative for the foundation of an 'Europäische Arbeitsgemeinschaft für Fluoridforschung und Kariesprophylaxe' (European Working Group for Fluoride Research and Caries Prophylaxis) goes back to the Swiss dentist Hans R. Held, who was in the thirties dental lecturer at the University of Geneva, during World War II (WWII) military dentist in the Swiss army and after WWII dental practitioner. In Basel, where he lived, he frequently met with the German dentist Hans Joachim Schmidt (Stuttgart) to make plans to establish the future ORCA [Schmidt, 1951]. Both had their background in maxillofacial surgery. As military dentist Hans Held was to develop a strategy for building up mobile oral surgery units in the Swiss mountains for the Swiss Army. After the transatlantic scientific isolation which prevailed during WWII, both dentists were impressed by reports from the USA, e.g. Dean et al. [1941], on the anti-caries effect of fluoride-containing drinking water. The early reports from the USA clearly stated the optimal beneficial level of 1 ppm fluoride. In the early fifties this information coincided with dramatically increasing rates of tooth decay, which were due to the considerable improvement in the nutritional status of the European population after long-lasting malnutrition during WWII and in the post-war period.

According to the foundation protocol the act of 'birth' of the later ORCA took place on November 7, 1953, 20:30 in the Hotel Halm, in Konstanz, Germany. Our founding fathers were:

Austria: S. Koller (Wolfsberg), H. Leonhardt (Salzburg)

Germany: Drum (Berlin), H. Hafer (Mainz), A. Knappwost (Tübingen), Ott (Stuttgart), Heuser (Marburg), H. J. Schmidt (Stuttgart)

Switzerland: H. R. Held (Geneva), Schmid (Zürich), Démole (Préverenge).

Excused were: A.J. Held (Geneva), Espi, Aarau and Piguet (Geneva)

The founders met to constitute with unanimous consent the '**Europäische Arbeitsgemeinschaft für Fluoridforschung und Kariesprophylaxe**' (European Working Group for Research on Fluorine and Dental Caries Prevention). Much later, the Congress in Perugia (June, 5-8, 1966) decided on the present name of our scientific organisation: 'Europäische Arbeitsgemeinschaft für Kariesforschung'; 'European **OR**ganisation for **CA**ries Research'; **OR**ganisme Européen des Recherches sur la **CA**rie

The founding assembly also elected the first executive council of the new scientific organisation:

Prof. A. J. Held, Switzerland: President of the Year, Founding President

Dr. H. R. Held, Switzerland: Vice-President

Dr. S. Koller, Austria: Reporter

Dr. Dr. H. J. Schmidt, Germany: Secretary General.



The first executive council of ORCA, then the Europäische Arbeitsgemeinschaft für Fluorforschung und Kariesprophylaxe (from left): H. Leonhardt (Co-President 1953-1954), S. Koller (Secretary Protocol), A. J. Held (President), H. R. Held (Vice-President), H. J. Schmidt (Secretary-General)

After dealing with various questions of a more legal kind, and determining that the seat of the documentary office was to be in Geneva, and the seat of the office of the Secretary General in Stuttgart, Dr Heuser (Marburg, Germany) proposed (after extended discussions) that the organisation should have 'the aim of promoting research on fluorine and dental caries prevention'. This aim was put down in a more detailed form one year later and approved and

amended by the General Assemblies held in Geneva (Switzerland) 1955 and in Malmö (Sweden) 1957:

1. Das Studium des Fluorproblems zu fördern [To promote studies on the fluorine problem]
2. Das Ansehen der Fluorforschung und der zahnprophylaktischen Maßnahmen und deren wissenschaftliche Ergebnisse zu wahren und zu schützen, sowie dem Missbrauch entgegen zu treten [To preserve and protect the reputation of fluorine research and tooth prophylactic measures, as well as to prevent abuse]
3. Die an dieser Aufgabe arbeitenden Forscher ungeachtet der Landesgrenzen zusammen zu führen [To bring together all researchers working on this task irrespective of national borders]

Almost fifty years after the first aims had been put down, the actual aims of ORCA have been only slightly modified (homepage of ORCA 2003):

1. To promote research into dental caries and related matters.
2. To evaluate the findings of research; to encourage their practical application and to prevent their abuse.
3. To establish close contacts between all individuals and organizations with similar aims, without distinction as to nationality

The assembly also debated on new members and came to the conclusion: 'Thus, the wish of the constitutional members will be adhered to in a rather high degree, to keep unsuitable members away' and 'It shall be tried to elect the professors as promoting members and other academics as active members.' The venue of the next meeting, the first Congress, was then determined to be Salzburg, Austria (May 29-30, 1954) and Dr Leonhardt and his wife declared themselves willing to take care of the preparations.

This first ORCA Congress in Salzburg, 1954, was announced officially in the *Deutsche Zahnärztliche Zeitschrift* [1954;9:550-551], together with the scientific programme. The announcement also mentioned that the Ladies' Programme and the 'special regulations for car drivers in Austria' were contained in the programme booklet. The registration fee was 50 AS (Austrian Schilling) or 10 DM (then about \$ 2.50) for members and 20 DM for non-members. It should be considered that a few years after the monetary reform in Germany the average monthly income was only very low.

In *Deutsche Zahnärztliche Zeitschrift* [1954;9:1185-1186] a detailed report appeared on the first meeting of our scientific organisation. Obviously, ORCA (the abbreviation officially was mentioned first in the constitution of 1954, published on the occasion of the Malmö Congress, 1957) was prospering. After one year it had 54 active members from 17 European countries and the opening ceremony in the Aula of the University of Salzburg was attended by more than 100 participants. The Executive Council could also welcome representatives of various governments as well as of health departments of many countries. There were also delegates from the USA and Argentina. It was a special pleasure for the president, A.J. Held, to welcome an old lady who 'came over from Bad-Reichenhall', Germany: Dr Stresemann-Deninger, whose ancestor, the German chemist Dr A Deninger from Mainz recommended in 1878 calcium fluoride as a caries-protective agent. In 1907 he conducted a pseudo-epidemiological experiment with a few panellists to whom he gave sparingly soluble calcium fluoride orally. Though Deninger's statistics were far from optimum, he found both an anti-caries effect as well as an appendicitis-protective effect, because none of the panellists given calcium fluoride tablet medication got appendicitis [Deninger, 1907a,b].

The report on the first Congress of our scientific organisation [Schmidt, 1954] ends with the conclusion that such an unbelievable success could never have been anticipated when one year before 14 'men' decided on the foundation of the later ORCA. The only woman in the founding assembly was Hertha Hafer (she became honorary member of ORCA), a pharmacist from Mainz, Germany, who developed the first fluoride toothpaste (1950) and later on the early Blendax (now blend-a-med) toothpaste [Hafer, 1953]. She was obviously ignored: an attitude to women which was not unusual in 1954

The first ten years after the foundation of ORCA

In the early fifties, prevention was not on the agenda in dentistry, similar to medicine in general. During WWII and in the post-war period, repair or (mainly) extraction were dominant. Accordingly, our founding fathers were far ahead of their time with their early vision on prevention in dentistry. It should be considered that in this period, academic dentistry in Germany (but not only there) was represented by maxillofacial surgery, which became an independent branch of surgery during and after World War I. The specialization was due to the cruel head injuries soldiers experienced in WWI, caused by the newly developed shrapnel weapons. Beginning not earlier than in the fifties, academic dentistry diversified, and the first independent professors in Prothodontics, Restorative Dentistry, Orthodontics, etc. were appointed.

It must be said, however, that the visionary ideas of our founding fathers, focussing on water fluoridation, salt fluoridation and fluoridated toothpastes, were not necessarily backed by scientific standards or by a profound scientific education. This is no surprise at all, because their dental or medical education reached back into the periods of WWII, when in Europe individual scientific promotion (except when focussed on the aims of the war) was not at the top of the agenda. In addition, the scientific progress of ORCA suffered from organizational weaknesses, mainly because there were no clear structures for the organization of the yearly Congresses. Each organizer was free to select the submitted presentations with respect to topics as well as quality. Similarly, all presenters at the early Congresses expected their contributions to be published. Because in the early days ORCA did not have its own print outlet it was up to the respective organizers to develop strategies as to how, where and when to publish (or not) the Congress manuscripts. Thus criteria of quality of research and of adhesion to the initial aims of ORCA were at risk.

Nevertheless in the first ten years a series of names crystallized from the early beginnings. For example, Wolfgang Büttner and his wife (Würzburg), Hans R Mühlemann (Zürich), Otto Backer-Dirks (Utrecht), Adolf Knappwost (Hamburg), Wipko Perdok (Groningen), Yngve Ericsson (Stockholm) all contributed to establishing the scientific roots of ORCA. Another positive aspect in this period of ORCA development was the international interest in the ORCA Congresses, so that German alone as 'the' ORCA language was no longer appropriate for disseminating the message. In consequence, each Congress participant had to provide an English and French abstract as well. Some even presented additional abstracts in Italian and Greek.

By nominating corresponding members, Hans R Held established first contacts with scientists outside Europe in particular in the USA, e.g. Harold Trendley Dean, Finn Brudevold from Rochester, NY (ORCA-Rolex Prize winner in 1983), F. A. Arnold, then director of the National Institute of Health, Department of Health, Education and Welfare, Bethesda, MD and J. W. Knutson, then Chief Dental Officer of the U.S. Public Health Service, Washington DC

The early ORCA (in the late fifties) also defined so-called 'ORCA Teams' with the aim of investigating the American findings on the anti-caries effect of 'fluorine' and on establishing strategies for adapting the American research to the European situation. Five of the so-called 'ORCA Teams' are reported, but the extant protocols document only the activities of Team I (chair: Louis Baume, Geneva, Switzerland) which had to establish scientific criteria for the diagnosis of caries lesions and to make contacts with WHO (the World Health Organisation) and the FDI (Fédération Dentaire Internationale). These efforts later resulted in the establishment of

the DMFT indices and were even appreciated by the WHO. Team V (chairman: Hans Joachim Schmidt, Stuttgart, Germany) had to report on European and American efforts in 'fluorine' research and on fluoridation of drinking water [Schmidt, 1957]. Hans Joachim Schmidt, with scrupulous exactitude, collected all information available in the early fifties on fluorine (as he said) and in particular on its anti-caries effect. His unique collection of the literature was the basis for the foundation of the "Dokumentationszentrum für Präventive Zahnheilkunde" [Documentation Center for Preventive Dentistry] in Vienna. Tragically, a heart attack took him away at the threshold of his life's achievement, namely at the opening ceremony of the Center.

During the fifties the fluoridation of drinking water was introduced, in 1953 in The Netherlands (promoted by Otto Backer Dirks) and in 1952 in Germany, in Kassel (promoted by Hans Hornung, a veteran General Surgeon of the German Army and as such not necessarily a scientist). The German approach was soon abandoned because of various inadequacies. In the first years ORCA was almost exclusively financed with the help of the 'Fluorine Factory' Zyma, which was then owned by the wife of Hans Held. Hans Held served ORCA as founding president, president, vice-president, general secretary and treasurer. Close personal relationships of his family with the owners of the Swiss watch manufacturer Rolex were the basis for the long-standing ORCA-Rolex Prize (see below). Hans Held became the first ORCA honorary member. He died on December 3, 1998. Klaus König wrote an obituary notice on him in *Caries Research* [1999;33:251].



Hans Held at the 1956 ORCA congress in Marburg

The period of search and consolidation 1960-1980

In the files of ORCA, this period is characterized by a remarkable fluctuation in the membership and by severe controversies between the members on the aim of the organisation. Some were disappointed because what in their apprehension should have been the major aim of ORCA – namely drinking water fluoridation – had somewhat moved out of the focus. Some of the founding members and founding officers even left ORCA in disappointment (H Eggers-Lura, H-J Schmidt, A J Held). The new incoming members of ORCA, mostly scientists with a solid background in systematic research, propagated more intensive research on the various aspects of the anti-caries mechanisms of fluoride and on caries itself. These intra-ORCA controversies added to controversies from outside, namely the foundation of the International Society on Fluoride Research, an international organization of anti-fluoridationists.

The most urgent structural problems and their solution

Analyzing this situation, the Executive Council of ORCA realized that one of the main weaknesses of the organization was the unstructured publication of the Congress reports. Internationally, especially in the USA, ORCA was even regarded with dismay. A first approach to solving the problem was the publication of the proceedings as supplements to *Archives of Oral Biology*. The efficient publisher (the English newspaper tycoon Robert Maxwell) did the printing the 'cheap' way, namely in his eastern Europe resulting in chaotic cascades of printing errors. From 1965 to 1966, the contributions to the Congresses appeared in successive issues of a separate series, *Advances in Fluorine Research and Caries Prevention* (editors Leslie Hardwick, Hans R. Held and Klaus König). Nevertheless, one problem remained: the strong opposition of authors of low-quality presentations to not having their manuscripts published. This still dilettante publication policy ended abruptly when Yngve Ericsson suggested to the executive council that ORCA implement its own publication medium, *Caries Research*, and Hans Held negotiated the contractual basis with the internationally renowned Karger Publishers. The aim was a rigorous [hardcore in original] journal with a peer review system and a publication policy independent of the yearly Congresses. The polyglot dissemination of Congress abstracts in German, English and French was abandoned and English alone became the official publication language for ORCA. The first issue of Volume 1 appeared in 1967, with Yngve Ericsson as the Editor. Ericsson performed his job with unique scrutiny, resulting in such enormous delays in the appearance of individual articles that the continued existence of the newly founded journal was at risk. Therefore, in 1969 the Board nominated Klaus König, then Assistant Secretary, to follow Ericsson as the Editor of *Caries Research*. Because the Editor is

ex officio a member of the Board, König thus served for a further 18 years as an officer of ORCA. The Editors of *Caries Research* are given in Table 1.

Table 1

Editors of *Caries Research*, 1967-2010.

Period	Editor
1967-1969	Y Ericsson
1964, 1970-1987	K G König
1987-1994	J M ten Cate
1994-1999	J Tenovuo
2000-2009	R P Shellis
2010-	D Beighton

Reformation of the ORCA Congress

The twentieth anniversary Congress of ORCA was celebrated in 1973 in Zürich, Switzerland. At that period, ORCA had about 230 members from 29 nations. The Congress was dedicated to Hans Held. The Congress programme contained a statistical summary on the nationalities of the ORCA presenters in the first 20 years of the ORCA history (Table 2).

Table 2

Analysis of geographical origin of presenters at the 1973 ORCA Congress.

Country	%
Germany, Switzerland, Austria	35.0
United Kingdom	20.5
Scandinavia	18.0
Switzerland	7.5
Italy	5.0
USA + Canada	5.0
The Netherlands	5.0

Table 2 shows that ORCA in the seventies still was dominated by the German-speaking countries. In the same year a meeting on the state of the art in caries research was held in Düsseldorf, Germany and published by German-speaking authors only [Naujoks et al., 1978] But this changed drastically in the next decades, with steadily increasing fractions of British,

Scandinavian, Dutch and American scientists. In the beginning of the ORCA Congresses each individual meeting was allocated to a specific topic. Thus in the seventies one of the most drastic changes in ORCA was the re-organization of the Congress. After Shelby Kashket (Forsyth Dental Center, Boston, MA, USA) had introduced poster sessions in the IADR/AADR Congresses, John Weatherell did the same for ORCA and thus gave the yearly Congresses a much more professional appearance. Thus, even before its 25th 'birthday' the dream of the founding father Hans Held, of a professionally organized ORCA – with a budget, its own journal, members with remarkable expertise, an attractive Congress and good connections to other scientific organizations in its basic principles – was almost a reality.

In Table 3 are listed the ORCA Congresses up to 2009, together with the ORCA Presidents and the Co-Presidents responsible for organizing the Congresses.

Table 3
ORCA Congresses

Year	Congress City	Country	President	Co-President
1953	Konstanz	German Federal Republic	H R Held	
1954	Salzburg	Austria	A J Held	H Leonhardt
1955	Geneva	Switzerland	A J Held	H R Held
1956	Marburg	German Federal Republic	H R Held	H Heuser
1957	Malmö	Sweden	H R Held	A Syrrist
1958	Brüssel	Belgium	H R Held	M Joachim
1959	Pavia	Italy	O Backer Dirks	S Palazzi
1960	Hamburg	German Federal Republic	O Backer Dirks	F Bramstedt
1961	London	UK	A Syrrist	J Forrest
1962	Paris	France	A Syrrist	J Delibéros
1963	Geneva	Switzerland	A Syrrist	A J Held
1964	Sandefjord	Norway	G Toverud	G Toverud
1965	Utrecht	The Netherlands	G Toverud	O Backer-Dirks
1966	Perugia	Italy	R Weill	A Seppilli
1967	Würzburg	German Federal Republic	R Weill	R Naujoks
1968	Basel	Switzerland	R Naujoks	M Guthertz
1969	Stockholm	Sweden	J L Hardwick	Y Ericsson
1970	Debrecen	Hungary	J L Hardwick	P Adler
1971	Århus	Denmark	G N Jenkins	I J Møller
1972	Leipzig	German Democratic Republic	G N Jenkins	W Künzel
1973	Zürich	Switzerland	H R Held	H R Mühleemann

1974	London	UK	H R Mühleman	L M Silverstone
1975	Wien	Austria	H R Mühleman	K Binder
1976	Szeged	Hungary	Y Ericsson	K Tóth
1977	Megève	France	Y Ericsson	R Weill
1978	Turku	Finland	L M Silverstone	K Mäkinen
1979	Stirling	UK	L M Silverstone	K W Stephen
1980	Marburg	German Federal Republic	W Künzel	G Ahrens
1981	Erfurt	German Democratic Republic	W Künzel	H-J Maiwald
1982	Annapolis	USA	T Ericson	J P Carlos
1983	Dublin	Ireland	T Ericson	D M O'Mullane
1984	Nordwijkerhout	The Netherlands	G Ahrens	J D Stoppelaar
1985	Stenungsund	Norway	G Ahrens	T Ericson
1986	Ullensvang	Sweden	R Z M Triller	G Rølla
1987	Budapest	Hungary	R Z M Triller	J Bánóczy
1988	Angers	France	J A Weatherell	R Z M Triller
1989	York	UK	J A Weatherell	M E J Curzon
1990	Ljubljana	Yugoslavia (Slovenia)	J Arends	V Vrbic
1991	Corfu	Greece	J Arends	A Athanassoulis
1992	Helsinki	Finland	K G König	I K Paunio
1993	Dresden	Germany	K G König	L Stösser
1994	Cork	Ireland	D A M Geddes	H Whelton
1995	Nordwijkerhout	The Netherlands	D A M Geddes	C van Loveren
1996	Århus	Denmark	D M O'Mulane	B Nyvad
1997	Dundee	UK	D M O'Mulane	C M Pine
1998	Stockholm	Sweden	J M ten Cate	B E Angmar-Månsson
1999	Barcelona	Spain	J M ten Cate	I Martínez-Lizán
2000	Alghero	Italy (Sardinia)	C Robinson	G Falcolini
2001	Graz	Austria	C Robinson	P Staedtler
2002	Turku	Finland	B E Angmar-Månsson	J Tenovuo
2003	Konstanz	Germany	B E Angmar-Månsson	H Duschner
2004	Marburg	Germany	B Nyvad	K Pieper
2005	Indianapolis	USA	B Nyvad	G Stookey
2006	Glasgow	UK	A Lussi	A Hall
2007	Helsingör	Denmark	A Lussi	K Ekstrand
2008	Groningen	The Netherlands	N B Pitts	M-C D N J M Huysmans
2009	Budapest	Hungary	N B Pitts	Zs Tóth
2010	Montpellier	France	C van Loveren	P Tramini
2011	Kaunas	Lithuania	C van Loveren	V Machiulskiene

Steering mechanisms of the Board and the Editor to improve the quality of ORCA

K. König (private communication) has summarized the steering mechanisms and concepts which in the transition period led from lack of control towards an active definition of the aims. In this process one should bear in mind that the democratic principles of the practice of science limit the steering capacity of the Board. In particular, this applies to the Editor of the official publication medium, the most permanent and outwardly-oriented member of the Board.

Though *Caries Research* was the official publication medium of ORCA, it was open for submissions of manuscripts to all scientists worldwide, including non-members as well. On the other hand, the presentation of a paper on the yearly meeting was no longer a guarantee [privilege in the original] of getting manuscripts published. Despite this openness the Editor succeeded in guaranteeing general steering mechanisms. The Editor in any case participated actively on the Board of ORCA and played a strong role in all actions of the Board. Since the foundation of *Caries Research* the Editor was the head of a small committee which, 6 months prior to the yearly Congresses, selected the abstracts according to quality only. Thus, on the one hand lower quality abstracts could be eliminated and on the other hand especially topical, interesting or brilliant research results could be put together in the opening session: a particularly prominent place of presentation. To a certain degree the Editor could steer the publication policy of *Caries Research*, by rejecting articles not fitting into the 'scope of the journal'. Positively speaking, to attract attention to outstandingly good articles he could place them on the first pages in the respective issues.

Complementary to the steering tools of the Editor, the Board defined 4 major instruments to influence the activities of ORCA:

- Historically the most important instrument was the inauguration of so called 'task forces': committees of outstandingly experienced scientists to deal with a strictly defined problem. According to K. König, the earliest example of such a working group was the one which had to work out criteria for practical use in diagnosing caries lesions. This group goes back to the early sixties and seems to this author to have been identical with the above-mentioned 'ORCA Team I' chaired by Louis Baume.
- The second instrument was a decision of the Board to promote desirable developments, for example in community dentistry. Again, an early example of this are two 'Statements of ORCA' presented by the Board to the General Assembly of the Debrecen ORCA Congress and accepted on July 7, 1970. One was a 'Statement of ORCA concerning caries prophylactic

measures' and the other a 'Statement concerning drinking water fluoridation'. The rationale for the first statement was the desire of ORCA to publicise and to recommend to health authorities world-wide prophylactic measures backed by a wealth of scientific and clinical research from institutions and scientists with a unique expertise in their field. The second statement was the desperate attempt to salvage the introduction of drinking water fluoridation despite the long-standing resistance of its opponents. Both statements were published in *Caries Research* [1971;5:2-6]. Exceptionally, the statements were polyglot in German, English and French.

- The third instrument was (and still is) the organisation of symposia on current topics with the underlying intention of the Board to attract more attention. These symposia were prepared by putting together existing scientific results which were then allocated to specialized scientists. Sometimes individual specialists were asked one or two years prior to a symposium, to bridge gaps in the existing knowledge by focussed research. The results were then presented at the respective symposia. Three examples belonging to this category will be mentioned here:
 - 'Cariostatic Mechanisms of Fluoride' held in 1976 in Naples, FL, USA, jointly organized by the American Dental Association Health Foundation, the National Institute for Dental Research and in particular by the Board of ORCA and by ORCA members. The voluminous proceedings (327 pages) were edited by K G König and W E Brown, and were published in *Caries Research* as Supplement 1 to Vol. 11, 1977. The necessary transatlantic cooperation strengthened the 'Americanisation' of ORCA.
 - 'Monofluorophosphate Perspectives' held in 1983 at the Forsyth Dental Center in Boston, MA, USA, and published as Supplement 1 to Vol 17, 1983 of *Caries Research* (Guest editors P Gron, Y Ericsson). The rationale for this meeting was the coincidence of the growing importance of this complex compound as an additive to toothpastes with fragmentary knowledge of the reaction mechanisms.
 - '2nd European Congress on Diet, Nutrition and Dental Caries' organized by Martin Curzon in York, U.K., 1989, and published as Supplement 1 to Vol 24 of *Caries Research*. Guest editors were M E J Curzon and J M ten Cate.
- The most recent instrument has been the Summer Schools for the promotion of young researchers. These were organized from 1980 on and were held directly after the yearly

Congress. The Summer Schools are announced in *Caries Research* as official statements of ORCA.

Increasing ‘Americanisation’ in the second half of the eighties

In the eighties, ORCA grew constantly and attracted more and more the interest of American scientists, mainly for three reasons:

- The work of ORCA was more and more appreciated by American scientists, resulting in the above-mentioned activities and joint meetings.
- Several ORCA members left Europe, for instance Bill Bowen (to USA), Tony Hargreaves, George Bowden (to Canada). Harald Linke had even much earlier emigrated to the USA
- Some American scientists had family roots in Europe. Ernie Newbrun's parents originated from Vienna. Jim Carlos was married to a German. He and his wife used ORCA meetings for family reunions. He even succeeded in getting the ORCA Congress one year to the USA: to Annapolis, the first capitol. Afterwards he was a long-standing member of the Board.

The increasing American interest in ORCA in the seventies and eighties with very positive impulses underlined the appreciation of the work of ORCA by the scientific elite worldwide. It is not a surprise that the Americans also tried to acquire more influence over the work of ORCA. After Klaus König ended his editorship of *Caries Research* on the occasion of the 1987 Congress in Budapest, the inner circle of the Board agreed on Bob (J) M ten Cate as his successor and it was assumed that he would be presented to the General Assembly for election. The next day, in one of its longest sessions, the Board voted, with 9 votes for Bob ten Cate.

One reason for the interest of the Americans, in particular of the IADR, focussed on the publication organ of ORCA, *Caries Research*. IADR had founded its own, maybe too expensive, publication office, and a possible integration of *Caries Research* into the IADR journals would also have helped to alleviate the financial situation of the IADR publishing branch.

The ORCA Prizes

The ORCA-Rolex Prize

From 1957 on, another very important steering mechanism for focussing research onto the aims of ORCA, and for attracting interest on the excellence of scientific work conducted by ORCA

members, was the ORCA Rolex Prize. Hans Held can be considered the 'father' of this highly esteemed award for outstanding research on the field of caries research. He used his and his wife's excellent personal connections to the owners of the Rolex watch manufacturers to establish the first long-lasting donation of a commercial company to the young ORCA. He also worked out the first statutes, which in the beginning foresaw three prizes yearly in the form of a Rolex Chronometer. Awardees were to be selected by the membership by way of questionnaires handed out to the participants together with the Congress abstracts.

The first recipient of the Rolex Prize was the physical chemist Dr. Adolf Knappwost (Tübingen, Germany) one of the founding members of ORCA. He can be considered as being the intellectual father of the demineralization/remineralization theory. From the observation that tuberculosis patients encountered a much higher caries risk, and the fact that tuberculosis is always accompanied by xerostomia, he concluded that constituents of saliva must contribute to remineralization. Actually, he received the Rolex Prize for his ORCA lecture at the Congress in Marburg, Germany, 1956, on silicic acid (H_2SiO_4) in dental hard tissues. Except for two ORCA Junior Rolex Prizes (A. Kröncke and W. Büttner, 1965) Adolf Knappwost has been the only German recipient of the prize.

In the files of ORCA there is no further mention of the ORCA-Rolex Prize until 1963, when Leslie Hardwick newly defined the rules for the Prize, which was now subdivided into three categories:

- **Open Rolex Prize:** Awarded for the best presentation at the previous years' Congress. Evaluated were the scientific merits and the presentation of the lecture as well as the general scientific work of the candidate.
- **Junior Rolex Prizes:** Two prizes for ORCA members aged 40 years or younger:
 - Prize for the best lecture on clinical and epidemiological factors of caries
 - Prize for the best lecture on basic mechanisms of caries

From 1968 on, only one ORCA prize was awarded except in 1969 when, in addition to the normal ORCA prize, a special prize was given to Yngve Ericsson.

From 1984 on, the rules for the ORCA Prize were again modified. From then on the Prize was no longer awarded for the best presentation at an ORCA Congress but was meant to honour longstanding scientific engagement for research in the field of caries.

After a very long period of time – Rolex donated the prize for almost 50 years – the famous and prestigious watch manufacturer withdrew from ORCA in 2000.



The first ORCA Prize Winner, Prof. Dr A Knappwost (left) together with Dr Dr Hans Joachim Schmidt (right) and Prof. A Syrrist (ORCA president from 1961 – 1963). ORCA Congress, Hamburg, 1960.

ORCA-Zsolnay Prize

Following the announcement by Rolex that they wished to sever their links with the ORCA-Rolex Prize, the ORCA Board, through the offices of Zeno Gintner, negotiated an agreement with the Zsolnay company of Pécs, Hungary, that they would provide a piece of their fine pottery each year. This was known as the ORCA-Zsolnay Prize and was donated between 2000 and 2009. In its first year, the prize took the form of a pottery owl, reflecting the interests of its recipient, Jaap ten Bosch. Since then, the prize was always a highly decorated plate. Fittingly, the last ORCA-Zsolnay Prize was presented at the Congress in the Hungarian capital, Budapest.

The ORCA Prize

The Zsolnay Company ceased to donate a prize in 2009. On behalf of the Board, Adrian Lussi negotiated favourable terms for purchase of a watch from the Swiss watchmakers Swatch, which would be awarded as the ORCA Prize.

The Young Investigator's Prize

In 2006 the Board considered that, while the senior ORCA-Zsolnay Prize recognized the achievements of experienced scientists in research and other caries-related activities, there was a need to encourage younger caries researchers. A Young Investigator Prize was therefore initiated. This was to be awarded to the presenter of the poster considered by the judges (Vice-President and session chairs) to be the best among the competition entrants at each Congress. The Prize, which consists of a certificate and payment of registration for the succeeding ORCA Congress, was first awarded in 2007.

Prizewinners and their research

Table 4 lists the winners of the various ORCA prizes. The laudations for the ORCA prizes would have offered a fantastic chance to document ORCA and the progress of research going on in ORCA. It must be said, however, that the laudations for the individual prize winners were not archived appropriately or were lost. Some of the early prize winners even did not remember for which of their scientific works they received the prize. Additionally, for the first ten years of ORCA, from 1953 to 1963, only very few written documents are available. Nevertheless, in Table 4, an attempt has been made to allocate to the known prize winners a short characterization of their work.

Table 4.
ORCA Prizewinners

Year	Prize	Prizewinner	Country	Reason for Award
1957	ORCA-Rolex	A Knappwost	Germany	Silicic acid in hard tissues
1964	ORCA-Rolex	R J Gibbons	USA	Aetiology of caries
1964	Junior Rolex	H Schüle	?	
1965	ORCA-Rolex	J E Eastoe	UK	
	Junior Rolex	A Krönke, W Büttner	Germany	
1966	ORCA-Rolex	A Boyde	UK	
	Junior Rolex	T M Marthaler	Switzerland	
1967	ORCA-Rolex	W G Armstrong	UK	
	Junior Rolex	S A Leach, D Neff	UK, ??	
1968	ORCA-Rolex	J A Weatherell	UK	Phosphates in enamel
1969	ORCA-Rolex	P Critchley	UK	
	Special Prize	Y Ericsson	Sweden	
1970	ORCA-Rolex	J M Birkeland	Sweden	
1971	ORCA-Rolex	G Cimasoni	Italy	
1972	ORCA-Rolex	B Guggenheim	Switzerland	Biochemistry of Plaque
1973	ORCA-Rolex	L M Silverstone	UK	
1974	ORCA-Rolex	T Mikx	The Netherlands	
1975	ORCA-Rolex	J A Beeley	UK	
1976	ORCA-Rolex	G S Ingram	UK	
1977	ORCA-Rolex	W H Bowen	USA	Antibodies of Primates
1978	ORCA-Rolex	J Patz	?	
1979	ORCA-Rolex			
1980	ORCA-Rolex	H R Held	Switzerland	
1981	ORCA-Rolex	J Arends	The Netherlands	Anti caries effect of low fluoride concentrations
1982	ORCA-Rolex	C Robinson	UK	
1983	ORCA-Rolex	F Brudevold	USA	
1984	ORCA-Rolex	G Rølla	Norway	
1985	ORCA-Rolex	J Ekstrand	Sweden	
1986	ORCA-Rolex	J M ten Cate	The Netherlands	Solubility isotherms of calcium phosphates
1987	ORCA-Rolex	J P Carlos	USA	Cooperation between ORCA and IADR
1988	ORCA-Rolex	O Fejerskov	Denmark	Anti caries mechanisms of fluoride
1989	ORCA-Rolex	C Dawes	Canada	Theoretical and experimental studies of salivary sugar clearance

1990	ORCA-Rolex	K W Stephen	UK	Research on plaque
1991	ORCA-Rolex	P D Marsh	UK	Metabolism of plaque bacteria
1992	ORCA-Rolex	G M Whitford	USA	Metabolism and toxicity of fluoride
1993	ORCA-Rolex	G H Bowden	Canada	Microbiology of the oral cavity
1996	ORCA-Rolex	A J Rugg-Gunn	UK	Plaque
1998	ORCA-Rolex	D A M Geddes	UK	Plaque
1999	ORCA-Rolex	B Angmar-Månsson	Sweden	Fluorosis and mechanisms of fluoride
2000	ORCA-Zsolnay	J J ten Bosch	The Netherlands	Optical and fluorescence properties of dental hard tissues
2001	ORCA-Zsolnay	B Nyvad	Denmark	Etiology of caries and composition of the biofilm
2002	ORCA-Zsolnay	J D B Featherstone	USA	Lasers in caries research
2003	ORCA-Zsolnay	D M O'Mullane	Ireland	Epidemiology and prevention of caries
2004	ORCA-Zsolnay	J Tenovuo	Finland	Defence factors in saliva
2005	ORCA-Zsolnay	N B Pitts	UK	Caries treatment and management
2006	ORCA-Zsolnay	B Clarkson	USA	De- and re-mineralization of dental hard tissues
2007	ORCA-Zsolnay	G Stookey	USA	Outstanding lifetime achievement in caries research
2007	Young Investigator:	N Cochrane	Australia	Remineralization with CPP-ACP
2008	ORCA-Zsolnay	H Whelton	Ireland	
2008	Young Investigator	P Tschoppe	Germany	Saliva substitutes
2009	ORCA-Zsolnay	A Lussi	Switzerland	Dental erosion and caries diagnostics
2009	Young Investigator	M Mantzourani	UK	Bifidobacteria in plaque

This table shows the immense transatlantic scientific influence of North American scientists on ORCA (9 senior prizewinners from USA and 2 from Canada). Fourteen prize winners were from the United Kingdom, 8 from Scandinavia, 4 from The Netherlands, 3 from Switzerland, 2 from Ireland, and one each from Germany and Italy.

The Yngve Ericsson Prize

The Yngve Ericsson Prize, previously known as The Patent Revenue Fund's Prize for Research in Preventive Odontology, is awarded once every 3 years in acknowledgement of outstanding contributions to prevention of oral diseases. Established in 1963, The Swedish Patent Revenue Fund for Research in Preventive Odontology was originally founded on royalties from patents, primarily patents for addition of fluoride to dentifrices to prevent or arrest dental caries. The Fund is the largest non-public granting source for dental research in Sweden through its continued support of research into prevention of dental and oral diseases. Since 2010 the prize will be awarded in collaboration with ORCA and be presented at the openings ceremony of the ORCA meeting. The Prize awardees are selected by a five-member Prize Committee appointed by the Patent Revenue Fund and ORCA.

Year	Prize	Prizewinner	Country	Reason for Award
2010	Yngve Ericsson Prize	H Hausen	Finland	Oeuvre
2010	Yngve Ericsson Prize	J.A. Cury	Brazil	Oeuvre

ORCA in the nineties

The nineties were characterized by the political turnover in the Eastern European countries, in the first place by the unification between the German Federal Republic and the German Democratic Republic. Before this period, the countries behind the so-called Iron Curtain were drastically under-represented in ORCA. Nevertheless there were long-standing connections between individual scientists in the various countries of the Eastern Bloc. It was the outspoken policy of ORCA to support the existing but rare contacts, a consequence of the severe travel restrictions which the people behind the Iron Curtain had to endure. In this very sad situation the response of ORCA was to encourage the scientists in the east to organize one of the yearly Congress in their countries. The success of this strategy is seen in Table 5. It could not have been foreseen by the ORCA committees that the Congress in Lublijana would coincide with the upheaval in the Eastern Bloc.

Table 5

ORCA Congresses held in East European countries before the removal of the Iron Curtain

Year	Town	Country	Co-President
1970	Debrecen	Hungary	P Adler
1972	Leipzig	German Democratic Republic	W Künzel
1976	Szeged	Hungary	K Tóth
1981	Erfurt	German Democratic Republic	W Künzel
1986	Budapest	Hungary	J Bánoczy
1990	Ljubljana	Yugoslavia (Slovenia)	V Vrbic

In most countries of the Eastern Bloc, scientific caries research was underdeveloped for economic and political reasons (exceptions were the institutions of the above mentioned ORCA Co-Presidents). Because of the existing contacts with key cariologists in the east, ORCA was well prepared to initiate immediate assistance by helping young researchers to become acquainted with modern research techniques. Moreover, although English was not so well accepted in the Eastern Bloc, language barriers were not an insurmountable problem, because most of the longstanding ORCA members from the East were bi- and even tri-lingual, speaking English and at least one East European language (mostly Russian), helping to bridge language barriers. In addition there was a long experience in ORCA of organizing special meetings focussed on individual topics (see above). This could now be extended to organize the traditional ORCA Summer Schools in East European Countries. During the presidency of Klaus König (1992-1993), ORCA developed a 'Go East' policy with the aim of encouraging caries research in countries within Eastern European and developing countries. Following successful Summer Schools in Prague and 1994, in Latvia in 1996 and in Poland in 1998, ORCA has also established funded initiatives. The first is the ORCA Conference Travel Fellowship which enables awardees to attend an ORCA Congress and to present a paper or a research proposal. The other is the ORCA Consultancy Service which provides help in the actual execution of research at an international level. This programme of Summer Schools is aimed at the stimulation of caries research and the promotion of contacts between ORCA members and scientists from Eastern Europe.

The ORCA Family

Though the ORCA Congresses immediately attracted a remarkable interest in researchers worldwide, the number of participants after the first few Congresses soon stabilized at around 300. The intimate atmosphere at the ORCA Congresses opened the chance for personal friendships and most typical for ORCA also family friendships. Members of the Executive Council and of the Advisory Council often met several times per year. For a lot of ORCA members, the fact that from the beginning the Congress was held at attractive places was reason enough to travel with their wives and even with the whole family.



ORCA founding father Hans Joachim Schmidt together with his wife and his daughter (right) and other accompanying ladies at the ORCA Congress, Hamburg, Germany, 1960.

From the beginning attractive places (Table 3) were found for the yearly Congresses. In addition, as mentioned before, some of the American members had family ties to Europe, either because they had emigrated after WWII or because they had European roots, so that the ORCA Congresses provided a good opportunity to combine scientific interests and family aspects. It must be considered that in the first years of ORCA, science was dominated by males so that normally only very few women participated in scientific Congresses. In ORCA, matters were totally different, because from the first few meetings on a so-called 'Ladies' Programme' was a fundamental part of each Congress, mostly with its own Ladies' Programme Committee constituted from the wives of the male Congress participants. Therefore the term 'ORCA family' was almost formally introduced by ORCA members in the early sixties.

The strong family ties of ORCA are best demonstrated by the reception of all participants of the 1956 Congress in Geneva, organized by Hans Held in his own private villa. Hertha Hafer of Mainz, one of the few still living founding members of ORCA vividly remembers that evening as a unique sign of personal friendship (private communication; Mainz, 2001). That gesture of Hans Held also characterizes the intimate relationship between him and 'his' ORCA.

References

- Dean HT, Jay P, Arnold FA, Elvove S: Report of epidemiological investigations in over 7000 schoolchildren. *Publ. Health Rep* 1941;56:761–792.
- Deninger A: Das Fluor. Ein Mittel gegen Zahnkrankheiten und vielleicht auch gegen Blinddarmentzündung [Fluorine. An agent against dental diseases and possibly also against appendicitis]. *Dtsche Zahnärztl Wochenschrift* 1907;10:196-198.
- Deninger A: Über die Wirkungen des Fluor auf Zähne und Blinddarm [On the effects of fluorine on teeth and the appendix]. *Dtsche Zahnärztl Z* 1907;6:143.
- Hafer H: Phosphataseaktivität und ihre Hemmung durch Fluorid [Phosphatase activity and its inhibition by fluoride]. *Arzneim-Forsch* 1953;3:564-565.
- Naujoks R, Bergmann KE, Newesly H, Knappwost A, Büttner W, Ahrens G, Schmidt HFM, Büchs H, Gülzow HJ, Marthaler TM: Kariesprophylaxe mit Fluorid. Eine wissenschaftliche Standortbestimmung, Vortragstexte einer Fortbildungsveranstaltung. [Caries prevention with fluoride. A scientific positioning. Lecturers of Continuing Education Event]. Düsseldorf, 1978.
- Schmidt HJ: Kariesprophylaxe durch Fluortherapie [Caries prophylaxis through fluorine therapy] Heidelberg, Hüthig Verlag, 1951.

Schmidt HJ: Erste Tagung der Europäischen Arbeitsgemeinschaft für Fluorforschung und Kariesprophylaxe [First Congress of the European Working Group for Fluorine Research and Caries Prophylaxis]. Dtsche Stomatologie 1954;11:338.

Schmidt HJ: Die Ergebnisse zehnjähriger Trinkwasserfluoridierung in den USA [Results of ten years' drinking water fluoridation in the USA], 1957.