

**Fifth Conference on  
Superoxide and Superoxide  
Dismutase**

ORIGINAL PAGE IS  
OF POOR QUALITY



**FIFTH CONFERENCE  
ON SUPEROXIDE  
AND SUPEROXIDE  
DISMUTASE**

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**JERUSALEM, ISRAEL  
17-22 SEPTEMBER, 1989**

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**PROGRAM & ABSTRACTS**

September 1989

Dear Participant,

Welcome to Israel, to Jerusalem and to SOD V.

On behalf of the Organizing Committee, I wish to extend a very warm welcome to all of you to the *Fifth International Conference on Superoxide & Superoxide Dismutase*.

This meeting is proceeding the first meeting in 1976, SOD-I which was held in France, and then SOD-II in Malta, SOD-III in the USA and SOD-IV in Italy.

The interest in this field is still growing, both in basic research as well as in applications in medicine. SOD is even a product of genetic engineering of several companies.

This meeting will deal with the various aspects of this field and will bring together experts from different fields.

It is my hope that this Symposium will serve as a place for exchange of ideas, and will contribute to the continuation of the interdisciplinary activity, so typical in past years, in this field.

Gidon Czapski

## Cold Iron

***G**old is for the mistress—silver for the maid—  
Copper for the craftsman cunning at his trade.'*

'Good!' said the Baron, sitting in his hall,  
'But Iron—Cold Iron—is master of them all.

## **FIFTH CONFERENCE ON SUPEROXIDE AND SUPEROXIDE DISMUTASE**

**The Conference is held under the Auspices of:**  
The Israel Academy of Sciences and Humanities  
The Hebrew University, Jerusalem  
National Council for Research and Development  
International Union of Biochemistry

**Sponsored by:**  
Biotechnology  
Bristol — Myers  
The Council for Tobacco Research  
E.L. Dupont de Nemours  
Enzon  
Gamida — Israel  
Glaxco  
Grunenthal  
Holomed  
Pharmacia/Chiron  
Upjohn

### **LOCAL ORGANIZING COMMITTEE**

G. Czapski, Chairman  
M. Chevion  
A. Frimer  
M. Gorecki  
Y. Groner  
H.D. Rabinowitch  
A. Samuni

### **PROGRAM COMMITTEE**

G. Czapski, Israel, Chairman  
S. Aust, U.S.A.  
J.V. Bannister, U.K.  
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J. Peisach, U.S.A.  
W.A. Pryor, U.S.A.  
G. Rotilio, Italy  
D.T. Sawyer, U.S.A.

## CONFERENCE TIMETABLE

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### SUNDAY, SEPTEMBER 17, 1989

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17:00—21:00 Registration — Van Leer Institute, Jerusalem  
21:00 Informal Get-Together — Van Leer Institute, Jerusalem

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### MONDAY, SEPTEMBER 18, 1989

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08:00 Registration (Contd.)  
08:45—09:00 Opening Remarks  
08:45—10:30 Session 1  
**PRODUCTION DETECTION, AND REACTIONS OF SUPEROXIDE  
AND OTHER OXY RADICALS, IN SOLUTIONS AND IN  
BIOLOGICAL SYSTEMS**  
10:30—11:00 Coffee Break  
11:00—12:45 Session 2  
**ROLE OF SUPEROXIDE OXY RADICALS AND METAL IONS IN  
LIPID PEROXIDATION AND THEIR ROLE IN BIOLOGICAL DAMAGE**  
12:45—14:45 Lunch Break and Poster Session I  
14:45—16:45 Session 3  
**THE MECHANISM AND ROLE OF SOD AND SOD MIMICS IN  
SOLUTION AND IN VIVO PROCESS**  
16:45—17:10 Coffee Break  
17:10—18:25 Session 4  
**IS OH FORMED FROM SUPEROXIDE, HYDROGEN  
PEROXIDE AND METAL IONS, IN VIVO AND IN VITRO?**

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**TUESDAY, SEPTEMBER 19, 1989**

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- 08:45—10:15 Session 5  
**THE POSSIBLE ROLE OF SUPEROXIDE IN ISCHEMIA AND REPERFUSION**
- 10:15—10:45 Coffee Break
- 10:45—12:15 Session 6  
**CLINICAL USES OF SOD, RELATED ENZYMES SCAVENGERS AND OTHER DRUGS, IN INFLAMMATORY AND OTHER PATHOLOGICAL PROCESSES ATTRIBUTED TO SUPEROXIDE OR TO RELATED OXY RADICALS**
- 12:15—15:00 Lunch Break and continuation of Poster Session I
- 15:00—16:00 Session 7  
**OXYGEN RADICALS IN TUMOR PROMOTION AND IN CARCINOGENESIS**
- 20:00 Reception at, and visit to, the Israel Museum (details on page 11)
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**WEDNESDAY, SEPTEMBER 20, 1989**

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- 08:45—10:55 Session 8  
**SUPEROXIDE DISMUTASE: MECHANISM, STRUCTURE AND AMINO ACID SEQUENCES, ISOLATION AND EVOLUTIONARY ASPECTS**
- 10:55—11:25 Coffee Break
- 11:25—12:45 Session 9  
**CHEMISTRY OF SUPEROXIDE IN NON-PROTIC SOLVENTS**
- 12:45—14:00 Lunch Break and Poster Session II
- 14:00 Tours of Jerusalem
- 18:30—19:30 Lecture and slides on "Archeology of Jerusalem — Yesterday & Today" (details on page 11)

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**THURSDAY, SEPTEMBER 21, 1989**

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- 08:45—10:50    Session 10  
                  **BIOTECHNOLOGY OF SOD: CLONING, SEQUENCING, OVER  
                  EXPRESSION OF SOD GENES AND GENETIC ENGINEERING**
- 10:50—11:20    Coffee Break
- 11:20—13:05    Session 11  
                  **MECHANISMS OF SITE SPECIFIC DAMAGE TO BIOLOGICAL  
                  MACROMOLECULES CAUSED BY SUPEROXIDE IN THE  
                  PRESENCE OF METAL IONS, AND MECHANISMS OF DAMAGE  
                  IN ABSENCE OF METAL IONS**
- 13:05—13:20    Business meeting to decide on location and date of SOD VI
- 13:20—16:00    Lunch Break and continuation of Poster Session II
- 19:15            Farewell Banquet (details on page 11)
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**FRIDAY, SEPTEMBER 22, 1989**

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- 08:45—10:15    Session 12  
                  **SOD IN PLANTS AND IN ENVIRONMENTAL PROBLEMS**
- 10:15—10:35    Coffee Break
- 10:35—11:35    Session 13  
                  **REPAIR SYSTEMS IN OXIDATIVE STRESS**



## **SOCIAL PROGRAM**

### **SUNDAY, SEPTEMBER 17, 1989**

21:00           **INFORMAL GET-TOGETHER**  
                  Van Leer Institute — Jerusalem

### **TUESDAY, SEPTEMBER 19, 1989**

20:00           **RECEPTION** at the Israel Museum hosted by the Municipality of  
                  Jerusalem, and visit of the Museum.  
                  Buses will leave the Y.M.C.A., Moriah and Windmill Hotels at 19:45 hrs.

### **WEDNESDAY, SEPTEMBER 20, 1989**

14:00           **TOUR OF JERUSALEM**  
                  Departure from the main gate of the Van Leer Institute to the Old City of  
                  Jerusalem.  
18:30—19:30   Lecture and slides on "Archeology of Jerusalem — Yesterday & Today" by  
                  Dan Bahat.

### **THURSDAY, SEPTEMBER 21, 1989**

19:15           **FAREWELL BANQUET**  
                  Performance:       Jerusalem Children  
                                     Folkdance Group — —  
                                     **"HORA EFROCHIM"**  
                  Buses will leave the Y.M.C.A., Moriah and Windmill Hotels at 19:00 hrs.

## **PROGRAM FOR ACCOMPANYING PERSONS**

Registered accompanying persons are invited to take part in all the events listed in the Social Program. In addition, the following half-day tours will take place during session hours.

### **MONDAY, SEPTEMBER 18, 1989**

#### **09:30 NEW CITY OF JERUSALEM**

Depart from the Moriah Hotel for an orientation tour of Jerusalem, starting atop the Mount of Olives for a panoramic view of the Old City. Drive on to Mount Scopus, and pass the Knesset (Israel Parliament) and the Mint. Continue to Haddassah Medical Center to view the famous Marc Chagall stained glass windows, and then to Ein Karem — the birthplace of John the Baptist — to visit the Catholic Church of Visitation. Return to hotels.

### **WEDNESDAY, SEPTEMBER 20, 1989**

#### **OLD CITY TOUR**

Jerusalem Old City and its history.

Starting at Mt. Zion, visit the Jewish Quarter, the Cardo, the Western Wall, pass through the Via Dolorosa, the Church of the Holy Sepulchre and arrive at the Jaffa Gate

### **THURSDAY, SEPTEMBER 21, 1989**

#### **09:30 CAVE and KIBBUTZ**

Depart from Moriah Hotel for a visit to a recently discovered cave to see the breathtaking beauty of its stalactites and stalagmites. Continue to Kibbutz Tzora where you will be introduced to this unique way of communal life. Enjoy a chat over coffee and cake, and stroll around the Kibbutz. Return to Hotels.

## **GENERAL INFORMATION**

### **VENUE and SESSION**

The Conference will take place at the Van Leer Institute, Albert Einstein Square, 43 Jabotinsky Road, Jerusalem (within walking distance from the Y.M.C.A., Moriah and Windmill Hotels).

The Opening Session will take place on Monday, September 18, at 08:45 a.m. Sessions will be held daily, mornings and afternoons, and will end on Friday, September 22, before lunch.

### **HOTELS**

- Moriah Jerusalem, 39 Keren Hayesod St.  
Tel: 02-232232 Telex: 25383 Fax: 02-232411
- Windmill Jerusalem, 3 Mendele St.  
Tel: 02-663111 Telex 26536
- Y.M.C.A., 26 King David St.  
Tel: 02-22711 Telex 25247

### **LANGUAGE**

The Conference will be conducted in English.

### **NAME TAG**

Please wear your name tag at all sessions and social events.

### **REGISTRATION, INFORMATION & HOSPITALITY DESK**

The Desk will operate in the Van Leer Institute as follows:

Sunday, September 17 — from 17:00 to 21:00 hrs.

Other days — according to scientific sessions.

### **SLIDE PREVIEW**

Slide and overhead projectors will be available to speakers at the session hall from Sunday, September 17, at 17:00 hrs.

### **PROJECTIONS**

Speakers are requested to hand over their slides to the projectionist 20 minutes before the beginning of the session, and to collect them immediately thereafter. The sequence of the slide presentation and the speaker's name must be marked on each slide.

## **POSTER SESSIONS**

There will be two Poster Sessions:

- Poster Session I:  
Monday—Tuesday, September 18—19
- Poster Session II:  
Wednesday—Thursday, September 20-21

Presentors are requested to hang their posters on the board marked with their Poster number. Further assistance, information and stationery will be available at the Registration Desk, upon request.

## **COFFEE BREAKS and MEALS**

Coffee during breaks and lunches during session days will be served in the foyer of the Van Leer Institute.

## **TRAVEL AND ACCOMMODATION**

Peltours Conventions will operate a travel desk at the Conference Venue during the same hours as the registration & information Desk. All tourist services, such as hotel accommodation, excursions by buses or private cars, car rentals, departure transfers and other tourists services will be provided. Please pay attention to the Egged Tour Excursion booklet and the Hertz special convention price list, both included in your briefcase.

## **RECONFIRMATION OF FLIGHT**

All overseas participants must reconfirm their return flight at least 72 HOURS before departure. Please complete the form enclosed in your envelope and hand it over to the Peltours' Hospitality Desk by Wednesday.

## **BALANCE OF PAYMENT FOR HOTEL ACCOMMODATION AND TOURS**

Participants who made their hotel reservation directly with Peltours must settle their bill at the Travel Desk. It is recommended to do so not later than Wednesday, September 20.

## **POST CONFERENCE TOUR A**

Participants who registered for the Post-Conference tour A to the Galilee (September 22—25), are requested to be ready for departure with their luggage, at the hotel lobby on August 26, after lunch, and after having settled their extra charges with the hotel.

Y.M.C.A. —	13:40 hrs.
Moriah Hotel —	13:50 hrs.
Windmill Hotel —	14:20 hrs.

## **ORGANIZERS & TRAVEL AGENTS**

PELTOURS Ltd. — CONVENTIONS

P.O.Box 394

61003 Tel Aviv — ISRAEL

Phone: (03) 650871

Telex: 33803, 35819

Cable: PELTOURS TELAVIV

Fax: 972-3-660060

## **POST-CONFERENCE TOUR A — GALILEE**

September 22—25, 1989

### **FRIDAY, SEPTEMBER 22, 1989**

After sessions, depart Jerusalem via Bethany to Jericho. Continue along the Jordan Valley with detailed explanations by the guide. Drive via the city of Tiberias, along the Sea of Galilee, to the Kibbutz Guesthouse for dinner, to be followed by an explanation and tour or slide show on the Kibbutz way of life. Dinner and overnight at the Kibbutz Guesthouse.

### **SATURDAY, SEPTEMBER 23, 1989**

After breakfast, drive up onto the Golan Heights to the Banias, one of the sources of the Jordan River. Cross the river to visit the Mount of Beatitudes, Capernaum and Tabgha — Site of the fish and loaves' miracle. Continue along the shores of the Sea of Galilee to Tiberias, and then to Nazareth to visit the Church of Annunciation, Joseph's House, Mary's Well and the Oriental market. Dinner and overnight at the Kibbutz Guesthouse.

### **SUNDAY, SEPTEMBER 24, 1989**

Check-out of the Guesthouse and drive via the Hula Valley to the mystic town of Safed for a visit to the Artists' Quarter. Then drive through the Galilee and Acre, and visit the Knights Halls, the prison and the harbour. Continue to Tel Aviv for overnight at the Dan Panorama Hotel, or to Ben Gurion Airport for flight to Cairo.

### **MONDAY, SEPTEMBER 25, 1989**

Departure transfer to Ben Gurion International Airport.

#### **Rate per person:**

for September 22—24 only

in double room USD 209.-

in single room USD 244.-

for September 22—25  
(incl. hotel Sunday night)  
USD 249.-  
USD 309.-

#### **Rates include:**

- 2 nights at the Ayelet Hashachar Kibbutz Guesthouse, with dinners and breakfasts.
- 2 1/2 days of sightseeing in a luxury airconditioned coach.
- Services of an English-speaking Government licensed guide.
- Entrance fees as per itinerary, portorage at hotels.
- Departure transfer (car-sharing basis) on September 25 only.
- 22—25 September package includes accommodation on Sunday night at the Dan Panorama Hotel with breakfast.

## **POST-CONFERENCE TOUR B — EGYPT**

September 24—27, 1989

### **SUNDAY, SEPTEMBER 24, 1989**

Flight to Egypt. On arrival, transfer to hotel in Cairo for dinner and overnight.

### **MONDAY, SEPTEMBER 25, 1989**

Full-day tour to Memphis, capital of the oldest kingdom in the world, Sakkara with the famous King Zoser's Step Pyramid and the Serapheum. Enjoy lunch at the Mena House Hotel followed by a visit to the three great Pyramids of Giza, the Sphinx and the Valley Temple. Overnight in Cairo.

### **TUESDAY, SEPTEMBER 26, 1989**

Morning: touring includes the fascinating Egyptian Museum, rich in Pharaonic treasures covering a period of 5000 years. Also exhibited, the golden treasures of King Tut. Visit Old Cairo to see the Al Moallaka Church, the "Hanging Church", Coptic Museum and the Ben Ezra Synagogue, the oldest in Cairo.

Afternoon: Visit the Citadel of Saladin, the Alabaster Mosque, and the colourful Khan Kahlil, famous for copper, silver and golden products. Dinner and overnight in Cairo.

### **WEDNESDAY, SEPTEMBER 27, 1989**

Departure transfer to the airport for homebound flights.

#### **RATES:**

Per person in double room — USD 245.-

Per person in single room — USD 358.-

#### **RATES include:**

- Transfers in Egypt from Cairo Airport to and from hotel.
- 3 nights accommodation in a Deluxe Hotel on half-board basis.
- 2 full days of sightseeing.
- Portage and entrance fees where applicable.

**NOTE: —** Rates do not include flight arrangements to/from Cairo and are based on a minimum of 15 participants.

#### **VISAS TO EGYPT**

For most visitors to Egypt an entry visa will be granted at the Cairo airport upon arrival. However, please check with our Travel Desk if this applies to your nationality.

## SCIENTIFIC PROGRAM

MONDAY, SEPTEMBER 18, 1989

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08:45—10:30 Session 1

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### PRODUCTION DETECTION, AND REACTIONS OF SUPEROXIDE AND OTHER OXY RADICALS, IN SOLUTIONS AND IN BIOLOGICAL SYSTEMS

Chairmen: **W. Bors**, FR Germany  
**M. Simic**, U.S.A.

- 08:45 Opening Remarks  
09:00 ASSAYS FOR SUPEROXIDE DISMUTASE  
**S. Goldstein**, G. Czapski, Israel  
09:20 BIOMARKERS OF FREE RADICAL DAMAGE IN VIVO  
**M.G. Simic**, L.R. Karam, D.S. Bergtold, U.S.A.  
09:40 USE OF A LOW-FREQUENCY ESR SPECTROMETER: IMPLICATIONS  
FOR SPIN-TRAPPING FREE RADICALS IN SITU.  
**G.M. Rosen**, U.S.A.  
10:00 HUMAN PHAGOCYTES, SUPEROXIDE, AND/OR HYDROXYL RADICALS  
**M.S. Cohen**, G.M. Rosen, S. Pou, B.E. Britigan, U.S.A.  
10:15 THE USE OF WATER-SOLUBLE RADICAL SCAVENGERS TO DETECT  
HYDROXYL RADICAL FORMATION BY PMNs  
**M.J. Thomas**, S. Smith, J. Pang, U.S.A.  
10:30—11.00 Coffee Break

**ROLE OF SUPEROXIDE OXY RADICALS AND METAL IONS IN  
LIPID PEROXIDATION AND THEIR ROLE IN BIOLOGICAL DAMAGE**

Chairmen: **S. Aust**, U.S.A.  
**P. Hochstein**, U.S.A.

- 11:00      **MECHANISM OF IRON-CATALYZED LIPID PEROXIDATION**  
            **F. Ursini**, Italy
- 11:30      **POSSIBLE SOURCES OF IRON FOR LIPID PEROXIDATION**  
            **G. Minotti**, M. Di Gennaro, D. d'Ugo P. Granone, Italy
- 11:45      **FERRITIN, LIPID PEROXIDATION AND THE TOXICITY OF**  
            **REDOXENOBOTICS**  
            **C. Winterbourn**, G.F. Vile, H.P. HUGO, New Zealand
- 12:15      **THE POSSIBLE ROLE OF IRON IN ISCHEMIA/REPERFUSION INDUCED**  
            **OXIDATIVE DAMAGE IN GERBIL BRAIN**  
            **R. Floyd**, G. J. Liu, J.M. Carney, M. Kindy, E. Stadtmann, P.E. Starke-  
            Reed, C.N. Oliver, U.S.A.
- 12:30      **A NEW MODE OF ACTION FOR SUPEROXIDE: INACTIVATION OF**  
            **ENZYMES WITH (Fe-S) CLUSTERS**  
            **D.H. Flint**, M.H. Emptage, U.S.A.
- 12:45—14:45      **Lunch Break and Poster Session I**



**THE MECHANISM AND ROLE OF SOD AND SOD MIMICS IN SOLUTION AND IN VIVO PROCESS**

Chairman: **I. Fridovich**, U.S.A.

- 14:45      **REQUIREMENTS OF SOD MIMICS IN VITRO TO WORK IN VIVO**  
**G. Czapski**, S. Goldstein, Israel
- 15:05      **ATOMIC STRUCTURE AND MECHANISM OF SUPEROXIDE DISMUTASE**  
**J. Tainer**, U.S.A.
- 15:25      **STABLE, ACTIVE AND NON-TOXIC MIMICS OF SUPEROXIDE DISMUTASE**  
**T. Nagano**, T. Hirano, M. Hirobe, Japan
- 15:45      **METAL-INDEPENDENT SOD MIMICS PROTECT CELLS AGAINST OXIDATIVE DAMAGE**  
**A. Samuni**, D. Godinger, J. Aronovitch, Israel; M.S. Ahn, A. Russo, J.B. Mitchell, U.S.A.
- 16:00      **SERUM CLEARANCE AND IMMUNOLOGIC PROPERTIES OF LONG-ACTING SUPEROXIDE DISMUTASE PREPARED USING 40,000—120,000 DALTON POLYETHYLENE GLYCOL**  
**M.G.P. Saifer**, R. Somack, L.D. Williams, U.S.A.
- 16:15      **THE SOD-MIMIC DEFEROXAMINE-MANGANESE IMPROVES SURVIVAL AND REDUCES HIPPOCAMPAL CELL DAMAGE FOLLOWING CEREBRAL ISCHEMIA AND REPERFUSION**  
**L. de Garavilla**, H. Valentine, E. Kotras, B. Jones, J. Ferkany, R. Hanson, U.S.A.
- 16:30      **DO THE COPPER COMPLEXES OF HISTAMINE, HISTIDINE AND OF TWO  $H_2$  ANTAGONISTS REACT WITH  $O_2^-$  ?**  
**S.G. Konstantinova**, I.E. Russanova, E.M. Russanov, Bulgaria
- 16:45—17:10      Coffee Break