

'81

# ICEM

Third International Conference on  
Environmental Mutagens

ABSTRACTS

Tokyo  
Conference  
Sept. 21-24 Hotel Pacific

Mishima  
Conference  
Sept. 25-26 Nihon Univesity

Kyoto  
Satellite  
Meeting  
Sept. 26-27 Kyoto Kaikan



The cover features a needlepoint interpretation by Mrs. Akie Sugimura, wife of the conference president, of "Gaifu Kaisei (Southerly Wind and Fine Weather)", one of the famous "Thirty-Six Views of Mt. Fuji" by wood-block print artist Hokusai Katsushika (1760 – 1849).

Errol Zeiger, Ph.D.  
NIEHS, P. O. Box 12233  
Research Triangle Park  
North Carolina 27709

# **Third International Conference on Environmental Mutagens**

## **PROGRAM**

**Tokyo Conference: September 21-24, 1981**

**Mishima Conference: September 25-26, 1981**

**Kyoto Satellite Meeting: September 26-27, 1981**

Hon. Presidents: C. Auerbach  
A. Hollaender

Hon. Vice-Presidents: S. Abrahamson  
B.A. Bridges  
P. Oftedal  
F.H. Sobels  
K. Sundaram  
Y. Tazima  
S. Wolff

Sponsored by: **International Association of  
Environmental Mutagen Societies  
and  
Environmental Mutagen Society  
of Japan**

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**International Association  
of  
Environmental Mutagen Societies**

President: P. Oftedal

Vice-President: Y. Tazima

Secretary: B.J. Kilbey

Treasurer: S. Wolff

**Environmental Mutagen Society  
of  
Japan**

President: T. Sugimura

Secretary: T. Kada

Treasurer: Y. Kuroda

## OFFICERS OF THE CONFERENCE

President:	T. Sugimura
Secretary-General:	T. Kada
Treasurer:	T. Matsushima
Finance Committee Chairman:	Y. Tazima
Program Committee Chairman:	S. Kondo
Local Committee Chairman:	T. Kawachi
Mishima Conference Committee Chairman:	Y. Kuroda
Kyoto Satellite Meeting Committee Chairman:	H. Nishioka

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H. Nishioka	M.S. Sasaki	S. Sato
Y. Shirasu	T. Sugahara	T. Sugimura
H. Takebe	N. Takemura	Y. Takizawa
H. Tanooka	Y. Tazima	A. Tonomura
K. Tutikawa	H. Yamaguchi	

### Finance Committee: Y. Tazima (chairman)

T. Kawachi	T. Matsushima	S. Sato
H. Yamaguchi		

### Program Committee: S. Kondo (chairman)

H. Hayatsu	M. Ishidate, Jr.	R. Kato
T. Kawachi	Y. Kuroda	T. Matsushima
M.S. Sasaki	Y. Shirasu	N. Takemura
A. Tonomura	K. Tutikawa	

### Local Committee: T. Kawachi (chairman)

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T. Matsushima	M. Miwa	N. Munakata
M. Nagao	S. Sato	Y. Shirasu
S. Takayama	H. Tanooka	M. Terada

### Mishima Conference Committee: Y. Kuroda (chairman)

E. Amano	H. Aoki	T. Fujii
K. Hirano	T. Inoue	Y. Inoue
T. Kada	A. Murakami	Y. Sadaie
Y. Tazima	K. Tutikawa	T.H. Yosida

### Kyoto Satellite Meeting Committee: H. Nishioka (chairman)

T. Abe	S. Fukui	M. Ikenaga
Y. Kikuchi	S. Kondo	O. Niwa
M.S. Sasaki	A. Shima	T. Sugahara
H. Takebe	K. Tanaka	Y. Titani
H. Utsumi	K. Yamamoto	

# GENERAL INFORMATION

## PASSPORT AND VISA

All foreign visitors to Japan must carry valid passports. Citizens of the following countries *do not* need visas to enter Japan.

Argentina, Austria, Bangladesh, Belgium, Canada, Chile, Colombia, Costa Rica, Cyprus, Denmark, Dominican Republic, El Salvador, Federal Republic of Germany, Finland, France, Greece, Guatemala, Honduras, Iceland, Iran, Ireland, Israel, Italy, Lesotho, Liechtenstein, Luxemburg, Malta, Mauritius, Mexico, The Netherlands, New Zealand, Norway, Pakistan, Peru, Portugal, San Marino, Singapore, Spain, Surinam, Sweden, Switzerland, Tunisia, Turkey, United Kingdom, Uruguay, Yugoslavia.

Those of other countries should obtain their visas from Japanese embassies or consulates before departure. No vaccination is necessary.

## JAPAN TRAVEL BUREAU (JTB) INFORMATION DESK AT THE AIRPORT

JTB information desks for the 3rd ICEM will be located in the South and North Wings of the New Tokyo International Airport Building (Narita) on Saturday, September 19, and Sunday, September 20. For information about transportation to downtown Tokyo, please consult the people at these desks.

Maps of the Tokyo transportation system and the various conference areas are available in the back of this program book for your convenience.

## TRANSPORTATION TO HOTELS IN TOKYO FROM THE AIRPORT

The conference site in Tokyo is Hotel Pacific. Takanawa Prince Hotel, Takanawa Tobu Hotel and Shinagawa Prince Hotel are all located within walking distance of the conference site.

The New Tokyo International Airport (Narita) is located 68 km east of Tokyo. If you take a taxi from the airport directly to a hotel in downtown Tokyo, you usually have to pay at least about 15,000 yen. *Therefore, we recommend taking a limousine bus into Tokyo. A limousine bus leaves every 15 minutes from the exit gate of the airport to bring you to the Tokyo City Air Terminal (TCAT) for a fee of 2,300 yen. It takes about 90 minutes.*

*After arriving at the TCAT, we recommend to take a taxi to your hotel because the subway system is not simple.*

However, the subway is economical. To get to the hotels around the Shinagawa conference site by the subway, walk 10 minutes from the TCAT to Ningyo-cho Station (600 m), and take subway Asakusa line train for Kawasaki or Misakiguchi to Shinagawa (13 minutes, 8 stops, 230 yen). To Chisan Hotel, take Asakusa line for Nishimagome to Nakanobu (21 minutes, 11 stops, 210 yen). Chisan Hotel is located within 5 minutes walking distance of Nakanobu Station. From Chisan Hotel to the conference site, take Asakusa subway line, change to the Keihin-Kyuko line at Sengakuji (4 stops), and get off at Shinagawa (1 stop).

The Keisei line has a non-stop express service ("Skyliner") to Ueno Station in Tokyo (60 minutes, 1,330 yen). It leaves from the Keisei Narita Airport Station, reached by a 5-minute shuttle-bus ride from the airport exit (130 yen). From Ueno Station, take the JNR (Japanese National Railways) Yamanote or Keihin Tohoku line, (to the direction of Tokyo Station) to Shinagawa (20 minutes, 9 stops, 170 yen). Hotel Pacific is located in front of the West Exit of Shinagawa Station. Keisei line also provides express trains without extra-charge directly connected with subway Asakusa line bound for Nishimagome.

#### **TRANSPORTATION BETWEEN TOKYO AND MISHIMA/HAKONE**

It is highly recommended to take conference buses, which will leave Hotel Pacific at 2:00 p.m. on Thursday, September 24 to bring you to your hotels in Mishima or Hakone within 3 hours. Reservation is necessary and may be made at the registration desk in Tokyo. Other transportation is to take the "Kodama" service of JNR "Shinkansen" ("bullet train") line from Tokyo Station to Mishima Station (4 stops, 1 hour). Kodama leaves every 30 minutes. Between Mishima Station and hotels in Hakone, city buses are available, although they are not convenient.

During the conference a shuttle bus service will be available between hotels in Hakone and Mishima, and the conference site at Nihon University. After the end of the conference on Saturday evening (September 26), conference shuttle buses will bring you to either Mishima Station (for Shinkansen) or to hotels in Hakone. Those leaving Hakone on that day should bring their baggages with them to the conference site in the morning.

#### **TRANSPORTATION FROM TOKYO TO KYOTO**

For those who have made reservations for the Transfer Package Tour arranged by the JTB, buses will pick you up at Hotel Pacific in Tokyo and take you to Tokyo Station. From there, you will take "Hikari" train of Shinkansen to Kyoto (2 stops, 3 hours). Then buses will take you to your hotels in Kyoto. For information on the exact time schedule for the package tour, please contact JTB desk at Tokyo conference site.

For those who have no reservations, Hikari trains, available every 20 minutes from Tokyo Station, are recommended. Further information on the transportation to Kyoto will be available at JTB desks at the conference sites.

#### **WEATHER IN JAPAN**

The temperature in the day at the conference sites will be around 26°C (79°F). Occasional rainfall is also anticipated.

#### **FOREIGN CURRENCY EXCHANGE**

It is highly recommended that conferees bring a minimum of 5,000 yen in cash from the airport. (Foreign currency can be converted into yen at the exchange banks in the airport.) This will be necessary for the limousine bus (from the airport to downtown Tokyo) and a taxi (from the Tokyo City Air Terminal to the hotels).

There is a bank (Mitsubishi) within walking distance of the Hotel Pacific conference site. City banks are open from 9:00 a.m. to 3:00 p.m. on weekdays and from 9:00 a.m. to noon on Saturdays. They are closed on Sundays and on Wednesday, September 23 (a national holiday). Foreign currency exchange can also be made at Hotel Pacific (24 hours open).

# CONFERENCE INFORMATION

## CONFERENCE SITES

Conferences and Satellite Meeting will be held at the following places.

- Tokyo:** Hotel Pacific  
13-3, Takanawa 3 chome  
Minato-ku, Tokyo 108  
Phone 03-445-6711
- Mishima:** Nihon University, Mishima  
Bunkyo-cho 2 chome  
Mishima 411  
Phone 0559-87-8714
- Kyoto:** Kyoto Kaikan  
Okazaki  
Sakyo-ku, Kyoto 606  
Phone 075-771-6051

## REGISTRATION

Registration desks will be open every day at the following conference sites. Participants may register for the Mishima Conference and the Kyoto Satellite Meeting at the Tokyo Conference desk also.

### Tokyo ( Hotel Pacific, 1st floor )

Sunday,	September 20	3:00 p.m. — 9:00 p.m.
Monday,	September 21	8:30 a.m. — 5:00 p.m.
Tuesday,	September 22	8:30 a.m. — 5:00 p.m.
Wednesday,	September 23	8:30 a.m. — 5:00 p.m.
Thursday,	September 24	8:30 a.m. — noon

### Mishima ( Nihon University, Building #11 )

Friday,	September 25	8:00 a.m. — 5:00 p.m.
Saturday,	September 26	9:00 a.m. — noon

### Kyoto

Friday,	September 25	4:00 p.m. — 7:00 p.m.	(Miyako Hotel)
Saturday,	September 26	9:30 a.m. — 6:00 p.m.	(Kyoto Kaikan)
Sunday,	September 27	9:30 a.m. — 3:00 p.m.	(Kyoto Kaikan)

## INFORMATION DESKS

Information desks will be located next to the registration desks in Tokyo, Mishima and Kyoto and will assist conference participants in every possible way.



## MESSAGE BOARDS

Message boards will be maintained near the registration desks in Tokyo, Mishima and Kyoto. They will be available for communication among the participants.

During their stay in Japan, conference members may use the following mailing addresses:

September 20 – noon of September 24, 1981

c/o 3rd ICEM

Hotel Pacific, Takanawa, Minato-ku, Tokyo 108, Japan

Phone: 03-445-6711      Telex: 2423074

September 24–27, 1981

Mishima

c/o 3rd ICEM

National Institute of Genetics

Mishima, Shizuoka-ken 411, Japan

Phone: 0559-75-0771

Kyoto

c/o Prof. H. Nishioka (3rd ICEM)

Doshisha University

Karasuma, Kamigyo-ku,

Kyoto 602, Japan

Phone: 075-251-3919

Letters and telegrams addressed to participants at the conference will be posted on the message board at every conference site.

## JTB DESK

JTB will maintain desks every day at the Tokyo, Mishima and Kyoto conference sites to handle hotel accommodations, tour arrangements, ticket reservations for trains, etc.

## GENERAL ASSEMBLY OF INTERNATIONAL ASSOCIATION OF ENVIRONMENTAL MUTAGEN SOCIETIES (IAEMS)

The IAEMS assembly will be held at 4:15 p.m. to 4:45 p.m. on Saturday, September 26 at the Hall of Nihon University, Mishima.

## MEETING ON N-NITROSO COMPOUNDS

The **7th International Meeting on N-Nitroso Compounds—Occurrence and Biological Effects** will be held on Monday, September 28 – Friday, October 2, 1981, at the “Komaba Eminence” in Tokyo, organized by the International Agency for Research on Cancer in collaboration with the local Japanese Organizing Committee. Information on the meeting will be available at the information desk of the 3rd ICEM in Tokyo.



## KYOTO

All regular and associate members are invited to:

Friday, September 25

7:00 – 9:00 p.m.

Welcome Mixer

Miyako Hotel, Kyoto

The following programs are arranged only for associate members, free of charge. Reservations are necessary and may be made at the registration desk either in Tokyo or Kyoto.

Saturday, September 26

9:00 a.m. – noon

Bus Tour

Japanese gardens

Sunday, September 27

9:00 a.m. – noon

Bus Tour

Tea ceremony

# INSTRUCTIONS FOR PRESENTATIONS OF PAPERS

## CONTRIBUTED PAPERS

### (Oral Presentation)

#### 1. TIME ALLOTMENT

There will be 15 minutes for each paper: 10 minutes for presentation and 5 minutes for discussion.

#### 2. THE OFFICIAL LANGUAGE is English. Simultaneous interpretation will not be available. English should be used on all slides.

#### 3. NUMBER OF AVAILABLE PROJECTORS

Only one projector – for standard 5 x 5 cm (2 x 2 inch) slides – will be available.

#### 4. NUMBER OF SLIDES ALLOWED

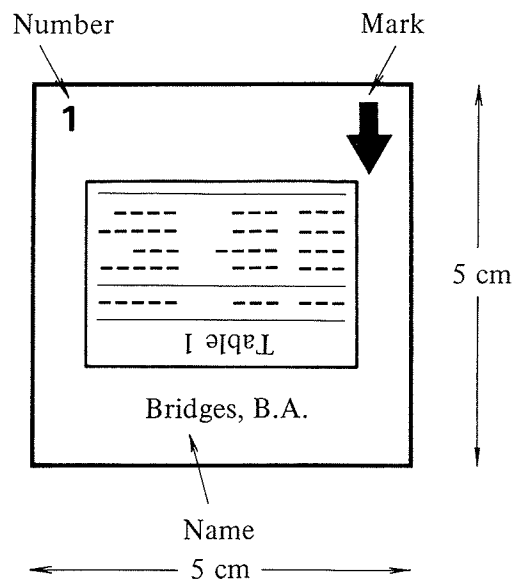
No more than 10 slides may be used for one presentation.

#### 5. SUBMISSION OF SLIDES

Slides should be submitted to the slide desk of each room at least one hour before the presentation.

#### 6. SLIDE FORMAT

Slides should be numbered from 1 to 10 in the order in which they are to be shown. Please mark each slide with either an arrow or a simple colored dot to indicate which end of the slide should be on top when the slide is in the projector. Also, to insure against loss, please write your name on each slide.



### **(Poster Display)**

#### **1. DATE FOR EXHIBITION**

Poster displays will be on exhibit on Tuesday, September 22 and Wednesday, September 23.

#### **2. DAILY EXHIBITION HOURS**

The poster display area will be open on both days from 9:00 a.m. to 4:00 p.m. Authors are requested to prepare their displays between 9:00 and 10:00 a.m. and to remove them between 3:30 and 4:00 p.m. *They are also requested to be present and available for questions at their respective display sites from 11:30 a.m. to 1:30 p.m.*

#### **3. THE LANGUAGE TO BE USED IN POSTER DISPLAY, as throughout the conference, is English.**

#### **4. CONFERENCE PROVISIONS FOR POSTER DISPLAYS**

We will provide each author with a numbered plywood board, measuring 1.5 meters x 1.5 meters, onto which materials are to be attached with thumbtacks.

#### **5. LAYOUT REQUIREMENT FOR DISPLAYS**

The title of the display, along with author's name and affiliation should be clearly written across the top of the display board.

### **PAPERS AT PLENARY AND SPECIAL LECTURES, SYMPOSIA, PANEL DISCUSSIONS AND WORKSHOPS**

Only one projector will be available. Please use the same slide format as that for slides used in oral presentation of contributed papers. We ask your cooperation in submitting your slides to the slide desk of each lecture room at least 30 minutes prior to the commencement of the session.

### **PUBLICATION OF PROCEEDINGS**

Papers selected from those presented at the conference will be published in book form. The book will be distributed to registered regular members free of charge after the conference.

# SUMMARY OF SCIENTIFIC PROGRAM

A complete timetable listing events in both the scientific and social programs is given at the end of this program book. The contents of the scientific sessions are as follows.

## TOKYO CONFERENCE

- A. PRESIDENT'S LECTURE: Room AB  
A view of a cancer researcher on environmental mutagens  
T. Sugimura (TL-1)..... Page 15
- B. PLENARY LECTURES: Room AB
1. DNA repair and its implications for human health  
B.A. Bridges (TL-2)..... 15
  2. International Commission for Protection against Environmental Mutagens and Carcinogens (ICPEMC)  
F.H. Sobels (TL-3)..... 15
  3. The role of DNA damage in radiation and chemical carcinogenesis  
A.C. Upton (TL-4)..... 15
- C. SYMPOSIA: Rooms A and B
1. Carcinogenesis and mutagenesis (TS1) ..... 35
  2. The toxicology of environmental mutagens (TS2) ..... 51
  3. Mutagens and carcinogens in the environment (TS3) ..... 22
  4. Mutagens and carcinogens in the digestive tract (TS4)..... 51
  5. Monitoring of human populations (TS5)..... 35
  6. Genetic factors in the response to environmental mutagens (TS6) ..... 21
  7. Biotransformation of mutagens and carcinogens (TS7)..... 21
  8. Modulators of mutagenesis and carcinogenesis (TS8) ..... 22
- D. PANEL DISCUSSIONS: Room C
1. Quantitative risk assessment, risk-benefit analysis (TP1) ..... 23
  2. Philosophy behind regulation of environmental mutagens and carcinogens (TP2)..... 23
  3. International cooperation on environmental mutagen research (TP3)..... 36
  4. Comparison of cytogenetic methods: chromosome aberration, SCE and micronucleus test (TP4) ..... 52
- E. WORKSHOPS: Room F
1. New methodology and results in screening for environmental chemical mutagens with *Drosophila* (TW1)..... 24
  2. New vistas in molecular mutagenesis (TW2)..... 36

F. CONTRIBUTED PAPERS (Oral Presentation): Rooms A to H	
1. Molecular mechanisms of mutagenesis (1C) .....	16
2. Teratogens and pesticides (1D) .....	17
3. Mutations in plants and insects (1E) .....	18
4. Population monitoring and epidemiology (1F) .....	19
5. Mutation and transformation in cultured mammalian cells (1G) .....	20
6. Specificities of chemicals in mutagenesis and carcinogenesis (2A) .....	26
7. Comparative studies on mutagens (2B) .....	27
8. Mutagenesis in microbes (2C) .....	28
9. Sister chromatid exchange (2G) .....	29
10. Pyrolysate mutagens (2H) .....	30
11. Mechanisms of mutagenesis in mammalian cells (3A) .....	37
12. Mutagens in food, water and air (3B) .....	39
13. Metabolism of mutagens and carcinogens (3C) .....	41
14. New methods of mutagenicity testing (3F) .....	43
15. Cytogenetic studies (3G) .....	45
16. DNA repair and carcinogenesis (3A) .....	38
17. Natural mutagens and carcinogens (3C) .....	42
18. Occupational and accidental exposure to mutagens (3G) .....	46

In case a particular paper is cancelled, the corresponding 15 minutes will be left free. The schedule for the succeeding papers will not be moved forward.

G. CONTRIBUTED PAPERS (Poster Display): Room DE	
1. Mechanisms of mutagenesis and carcinogenesis (2P) .....	31
2. Mutation and transformation in cultured mammalian cells (2P) .....	33
3. Population monitoring and epidemiology (2P) .....	33
4. Pesticides (2P) .....	34
5. Pyrolysate mutagens (2P) .....	34
6. Sister chromatid exchange (2P) .....	34
7. Natural mutagens and carcinogens (3P) .....	47
8. Mutagens in food, water and air (3P) .....	48
9. Occupational and accidental exposure to mutagens (3P) .....	49
10. New methods of mutagenicity testing (3P) .....	49
11. Cytogenetic methods (3P) .....	50

Posters will be displayed from 10:00 a.m. to 3:30 p.m. on Tuesday, September 22 and Wednesday, September 23. *The contributors will be present and available for discussion from 11:30 a.m. to 1:30 p.m. at their respective display sites.*

## MISHIMA CONFERENCE

A. PLENARY LECTURES: Hall	
1. The quantitation of environmental mutagens	
A. Hollaender (ML-1) .....	54
2. A view from the ivory tower	
C. Auerbach (ML-2) .....	58

<b>B. SPECIAL LECTURES: Hall</b>	
1. A brief sketch of environmental mutagen studies in Japan Y. Tazima (ML-3) .....	58
2. Factors affecting mutagenicity of ethylnitrosourea in the mouse specific-locus test and their bearing on risk estimation W.L. Russell (ML-4) .....	58
<b>C. SYMPOSIA: Rooms A to C</b>	
1. Mechanisms of mutagenesis and DNA repair (MS1).....	56
2. Chromosome aberrations (MS2).....	53
3. Dependence of mutagenesis on germ cell stage and sex (MS3).....	53
4. Higher plant systems for monitoring environmental mutagens (MS4).....	56
5. The evaluation of human genetic risk (MS5).....	54
6. Genetic implications of co-mutagenic and anti-mutagenic agents (MS6) .....	54
7. Dose-response relationship and the problem of thresholds (MS7).....	57
<b>D. PANEL DISCUSSIONS: Rooms B and C</b>	
1. Problems in mutation studies with cultured mammalian cells (MP1).....	55
2. Problems of environmental mutagens and carcinogens in developing countries (MP2)...	55

**KYOTO SATELLITE MEETING**

<b>A. SYMPOSIA: Hall</b>	
1. Mutagens and carcinogens in food (KS1) .....	59
2. Mutagens and carcinogens in air and water (KS2) .....	60
3. Mutagens and carcinogens in pesticides (KS3).....	60
4. Mutagens and carcinogens in drug and cosmetics (KS4).....	61
<b>B. LECTURES AND PANEL DISCUSSION: Hall</b>	
Biological complexities in estimating the genetic and somatic effects of environmental mutagens (KL).....	62



# **TOKYO CONFERENCE**

**SEPTEMBER 21-24**

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1951

# TOKYO CONFERENCE

MONDAY, SEPTEMBER 21

TOKYO Room AB

9:30 – 10:10 a.m. OPENING CEREMONY

10:15 – 11:00 a.m. PRESIDENT'S LECTURE

Chairperson: P. Oftedal (Norway)

A View of a Cancer Researcher on Environmental Mutagens

SUGIMURA, T. (Japan)

TL-1

11:00 – 11:45 a.m. PLENARY LECTURE 1

Chairperson: A. Hollaender (USA)

DNA Repair and its Implications for Human Health

BRIDGES, B. A. (UK)

TL-2

1:30 – 2:15 p.m. PLENARY LECTURE 2

Chairperson: S. Abrahamson (USA)

International Commission for Protection against Environmental  
Mutagens and Carcinogens (ICPEMC)

SOBELS, F. H. (The Netherlands)

TL-3

2:15 – 3:00 p.m. PLENARY LECTURES 3

Chairperson: S. Wolff (USA)

The Role of DNA Damage in Radiation and Chemical Carcinogenesis

UPTON, A. C. (USA)

TL-4

## CONTRIBUTED PAPER SESSION (Oral Presentation)

## MOLECULAR MECHANISMS OF MUTAGENESIS

1C

Chairperson: V. M. Craddock (UK)

Co-chairperson: M. Sekiguchi (Japan)

- 3:15 p.m. Premutational Lesions Produced by N-Nitroso-N-alkylurea Derivatives in *Escherichia coli* Cells. YOSHIKAWA, K., MIYATA, R., NOHMI, T., NAKADATE, M. and ISHIDATE, M. Jr. (Japan) 1C01
- 3:30 Mutational Dissection of the Bacteriophage T4 WXY Mutagenic Repair System. CONKLING, M. A. and DRAKE, J. W. (USA) 1C02
- 3:45 Multiple Functions of DNA Repair Enzyme: Relationship between UV Endonuclease and AP Endonuclease. SEKIGUCHI, M., NAKABEPPU, Y. and NAKATSU, Y. (Japan) 1C03
- 4:00 Inactivation and Mutagenic Effects of the Photodynamic Action of Thio-pyrone in Lambda Phages and *Escherichia coli*. YASUI, A. and WINCKLER, K. (FRG) 1C04
- 4:15 New *Salmonella* Tester Strains and Oxidative Damage to DNA. AMES, B. N., HOLLSTEIN, M. C. and LEVIN, D. (USA) 1C05
- 4:30 The Activity of 3-Methyladenine Glycosylase. CRADDOCK, V. M. (UK) 1C06
- 4:45 Studies on Antimutagens in SOS Repair Systems. INOUE, T., SHIMOI, K. and KADA, T. (Japan) 1C07
- 5:00 Influence of Caffeine and Acriflavine on Prophage Induction in Strains of *E. coli* Lysogenic for Lambda. SHANKEL, D. M. and PERSONS, D. L. (USA) 1C08
- 5:15 Misincorporation in DNA Synthesis after Modification of Templates or Polymerase by Alkylating Agents or UV Light. MIYAKI, M., SUZUKI, K. AKAMATSU, N. and ONO, T. (Japan) 1C09
- 5:30 Comutagenicity of Norharman. NAGAO, M., WAKABAYASHI, K., KOSUGI, A. and SUGIMURA, T. (Japan) 1C10
- 5:45 Discovery of a New Agent that Enhances the Repair Processes in Bacterial Cells. VASILIEVA, S. V. (USSR) 1C11

## CONTRIBUTED PAPER SESSION (Oral Presentation)

## TERATOGENS AND PESTICIDES

1D

Chairperson: M.D. Waters (USA)

Co-chairperson: T. Sugiyama (Japan)

- 3:15 p.m. Detection of Teratogenicity of Environmental Chemicals by Abnormal Limb Regeneration in the Burmese Newt, *Tylototriton verrucosus* Anderson. TAKAHASHI, R., SONO, K., MURAO, S., FUJIWARA, T. and SUGIYAMA, T. (Japan) 1D01
- 3:30 Comparisons of Teratogenicity of Cadmium and Zinc between the Medaka Fish and the Mouse. YASUDA, M., NAKAMURA, H., SHIBASAKI, F., HIRAOKA, Y. and OKURA, H. (Japan) 1D02
- 3:45 Structure and Chicken Teratogenicity of Organophosphorus Compounds. ETO, M. (Japan) and CASIDA, J. E. (USA) 1D03
- 4:00 Comparison of Early Effects of Vinylethylnitrosamine and Diethylnitrosamine in the Respiratory Tract of Young Syrian Golden Hamsters after Transplacental Administration. RICHTER-REICHHELM, H. B. EMURA, M., ALTHOFF, J., SCHMIDT-RIESE, L. and MOHR, U. (FRG) 1D04
- 4:15 Pesticides Induced Mammalian Chromosome Aberration *in vivo*. BHUNYA, S. P. and BEHERA, J. (India) 1D05
- 4:30 Mutagenicity Screening of Pesticides in Bacteria. MORIYA, M., OHTA, T., KATO, K., WATANABE, K., MIYAZAWA, T. and SHIRASU, Y. (Japan) 1D06
- 4:45 Genotoxicity of Methylbromide in Short-term Assay Systems. VAN DER HEIJDEN, C. A., KNAAP, A. G. A. C., VOOGD, C. E. and KRAMERS, P. G. N. (The Netherlands) 1D07
- 5:00 Mutagenicity of Pesticides Evaluated by Means of Gene-conversion, Crossing-over and Non-disjunction in *Aspergillus nidulans*. DE BERTOLDI, M., VALLINI, G. and PERA, A. (Italy) 1D08
- 5:15 *In vivo*, *in vitro*, and *in situ* Activation of Promutagens by Green Plants. GENTILE, J. M. and PLEWA, M. J. (USA) 1D09
- 5:30 Genetic and Cytogenetic Tests on Agricultural Chemicals in Egypt. BADR, E. A. and ELMETAINY, A. Y. (Egypt) 1D10
- 5:45 Mutagenicity Testing of Some Food Preservatives and Pesticides. GOPALAN, H. N. B. and NJAGI, G. D. E. (Kenya) 1D11

## CONTRIBUTED PAPER SESSION (Oral Presentation)

## MUTATIONS IN PLANTS AND INSECTS

1E

Chairperson: M. E. Gaulden (USA)

Cochairperson: A. Murakami (Japan)

- 3:15 p.m. Activation of Benzo[a]pyrene by Microsomes of Higher Plant Tissues and Their Mutagenicity. HIGASHI, K., KARASAKI, Y., FUKUNAGA, M. and MIZUGUCHI, Y. (Japan) 1E01
- 3:30 Use of Maize Pollen to Detect Genetic Effects by Radiation. AMANO, E. and UKAI, Y. (Japan) 1E02
- 3:45 Sensitivity of *Drosophila melanogaster* to Low Concentrations of Gaseous Mutagens. IV. Mutation in Embryos. KALE, P. and BAUM, J. W. (USA) 1E03
- 4:00 The Response of the *Drosophila* Larval Assay to Chemical Mutagens. ANGUS, D. S. (Australia) 1E04
- 4:15 Relationship between Mutagenic Effects and Doses of Dimethylnitrosamine and 7,12-Dimethylbenz[a]anthracene on *Drosophila melanogaster*. YOSHIDA, Y. H. (Japan) 1E05
- 4:30 Induction of Somatic Eye-color Mutations in *Drosophila melanogaster* by Tryptophan Pyrolysis Products and Furylfuramide. FUJIKAWA, K. (Japan) 1E06
- 4:45 The Use of *in vitro* Grasshopper Embryo Neuroblasts for Detecting Clastogenic Agents. LIANG, J. C. and GAULDEN, M. E. (USA) 1E07
- 5:00 Advantages of Grasshopper Neuroblasts for Detecting Chemical Mutagens and Teratogens. GAULDEN, M. E., LIANG, J. C. and FERGUSON, M. J. (USA) 1E08
- 5:15 Dominant Lethal Mutations Induced by Several Indirect Mutagens in the Silkworm, *Bombyx mori*. MURAKAMI, A. and OZAWA, T. (Japan) 1E09
- 5:30 On the Relevance of Acetaldehyde in Ethanol-induced Chromatid Aberrations. RIEGER, R., MICHAELIS, A. and SCHUBERT, I. (GDR) 1E10
- 5:45 An Evaluation of the Mutagenic Potentialities of Antibiotics in French Beans. PRASAD, A. B. and PRASAD, P. R. (India) 1E11

## CONTRIBUTED PAPER SESSION (Oral Presentation)

## POPULATION MONITORING AND EPIDEMIOLOGY

1F

Chairperson: N. P. Bochkov (USSR)

Co-chairperson: T. Hirayama (Japan)

- 3:15 p.m. Assessing the Mutation Component of Genetic Damage in Man. CROW, J. F. and DENNISTON, C. (USA) 1F01
- 3:30 Internal Causes of Environmental Mutagenesis. BERG, R. L. (USA) 1F02
- 3:45 A Comparison of the Genetic and Somatic Risks to Man from Ionizing Radiation. CHILDS, J. D. (Canada) 1F03
- 4:00 Eco-genetics: Genetically Determined Differences in Susceptibility to Environmental Mutagens and Carcinogens. OMENN, G. S. (USA) 1F04
- 4:15 Examination of Rat Faeces for Mutagenic Activity – Evaluation of Different Extraction Procedures. WILLEMS, M. I., DUBOIS, G., VERDUGT, N. and QUIRIJNS, J. K. (The Netherlands) 1F05
- 4:30 Sister Chromatid Exchange in Humans – Analysis of Cigarette Smokers and the Application of a Novel Statistical Approach. CARRANO, A. V. and MOORE, D. H. II, (USA) 1F06
- 4:45 Monitoring Human Environmental Aneuploidy – Down Syndrome in British Columbia, 1952 to Present. GRIFFITHS, A. J. F. (Canada) 1F07
- 5:00 Population Monitoring by Means of Sister Chromatid Exchange Analysis. LAMBERT, B. (Sweden) 1F08
- 5:15 SCE Frequency in Oral Contraceptive Users. MURTHY, P. B. K. and PREMA, K. (India) 1F09
- 5:30 Population Monitoring and Cancer Epidemiology in the FRG. BECKER, N., FRENTZEL-BEYME, R. and WAGNER, G. (FRG) 1F10
- 5:45 Oncoplasia Determinants in Xeroderma Pigmentosa. HASHEM, N. (Egypt) 1F11

## CONTRIBUTED PAPER SESSION (Oral Presentation)

## MUTATION AND TRANSFORMATION IN CULTURED MAMMALIAN CELLS 1G

Chairperson: U. Mohr (FRG)

Cochairperson: T. Seno (Japan)

- 3:15 p.m. Effect of Temperature on the Spontaneous Mutation Frequency per Cell Generation in Cultured Human Skin Fibroblasts. SIMONS, J. W. I. M. (The Netherlands) 1G01
- 3:30 Induction of Multinucleated and Aneuploid Cells by Griseofulvin in Diploid Human Fibroblasts. CHOY, W. N. and TS'O, P. (USA) 1G02
- 3:45 Human Bladder Cells Propagated *in vitro* - A Model for the Study of Human Carcinogenesis. CHRISTENSEN, B., VILLIEN, M., DON, P. and KIELER, J. (Denmark) 1G03
- 4:00 Trial of Carcinogenesis on Human Prostate by N-Methyl-N'-nitro-N-nitrosoguanidine (MNNG) in Explant Culture. SANEFUJI, H. (Japan), HEATFIELD, B. M. and TRUMP, B. F. (USA) 1G04
- 4:15 The Relationship between Somatic Mutation and Neoplastic Transformation in Cultured Adult Rat Liver Epithelial Cells. SHIMADA, T., KREISER, D. M. and WILLIAMS, G. M. (USA) 1G05
- 4:30 Transformation and Mutation in a New Non-fibroblastic Cell Line Derived from Syrian Hamster Fetal Lung. EMURA, M., RICHTER-REICHEL, H. B., BÖNING, W. and MOHR, U. (FRG) 1G06
- 4:45 Fundamental Limitations of the BHK 21 Cell Transformation Assay Using Soft Agar Cloning as the Criterion of Transformation. BOOTMAN, J. (UK) 1G07
- 5:00 BALB/3T3 Cells Can Simultaneously Monitor Chemically Induced Cytotoxicity, Mutagenicity and Neoplastic Transformation in the Absence and Presence of Exogenous Metabolic Activation. SCHECHTMAN, L. M., BEARD, S. F., CURREN, R. D. and KOURI, R. E. (USA) 1G08
- 5:15 Post-irradiation Properties of a Hypersensitive Variant of CHO. WOOD, R. D. and BURKI, H. J. (USA) 1G09
- 5:30 Temperature-sensitive Conditional Thymidine Auxotrophic Mutants of Mouse FM3A Cells due to Thermolabile Thymidylate Synthetase and their Prototrophic Revertants. SENO, T., AYUSAWA, D., KOYAMA, H. and IWATA, K. (Japan) 1G10
- 5:45 *In vitro* and *in vivo* Mutagenicity Studies with Inorganic Chromate (VI) and Thio-TEPA. PASCHIN, Yu. V., KOZACHENKO, V. I. and ZACEPILOVA, T. A. (USSR) 1G11



9:00 – 11:30 a.m. SYMPOSIUM 6

**GENETIC FACTORS IN THE RESPONSE TO ENVIRONMENTAL MUTAGENS** TS6

Chairperson: H. J. Evans (UK)  
 Cochairperson: H. Takebe (Japan)

- An Introduction  
 EVANS, H. J. (UK) TS6-1  
 Genetically Determined Chromosomal Instability in Man  
 SASAKI, M. S. (Japan) TS6-2  
 Diseases of Environmental-genetic Interaction  
 KRAEMER, K. H. (USA) TS6-3  
 Epidemiological Aspects of Ecogenetics in Human Mutagenesis  
 MULVIHILL, J. J. (USA) TS6-4  
 Population at High Risk of Mutation and Cancer by Environmental  
 Mutagens and Carcinogens – Concluding Remarks  
 TAKEBE, H. (Japan) TS6-5

9:00 – 11:30 a.m. SYMPOSIUM 7

Room B ✓

**BIOTRANSFORMATION OF MUTAGENS AND CARCINOGENS** TS7

Chairperson: H. Bartch (France)  
 Cochairperson: R. Kato (Japan)

- Introductory Remarks  
 BARTCH, H. (France) TS7-1 ✓  
 Species Variability in the Metabolic Activation of Benzo[a]pyrene  
 SELKIRK, J. K. (USA) TS7-2 ✓  
 N-Hydroxylation of Mutagenic Heterocyclic Aromatic Amines in  
 Protein Pyrolysates by Cytochrome P-450  
 KATO, R. (Japan) TS7-3 ✓  
 Genetic Consequences of Arylamine-DNA Adduct Formation and  
 their Relation to Urinary Bladder Carcinogenesis  
 KADLUBAR, F. F. (USA) TS7-4 ✓  
 Microsomal Metabolic Activation, Mutagenicity and Antimuta-  
 genicity  
 ROBERFROID, M. B. (Belgium) TS7-5 ✓  
 General Discussion

1:30 – 4:00 p.m. SYMPOSIUM 3

**MUTAGENS AND CARCINOGENS IN THE ENVIRONMENT**

TS3

Chairperson: L. Fishbein (USA)

Cochairperson: Y. Shirasu (Japan)

An Overview TS3-1

Structural Features of Mutagenic S-Chlorallylthio and Dithiocarbamate Pesticides and Trichlorfon, Dichlorvos and their Metabolites

FISHBEIN, L. (USA) TS3-2

Styrene – a Widespread Mutagen: Conclusions from the Results of Testing

ZETTERBERG, G. (Sweden) TS3-3

Urinary Mutagenicity Assay in Identifying Individuals with Exposure to Genotoxics in Rubber Industry

SORSA, M. (Finland) TS3-4

Mutagenicity Screening Studies on Pesticides

SHIRASU, Y. (Japan) TS3-5

Knowledge Gained from the Testing of Large Numbers of Chemicals in a Multi-laboratory, Multi-system Mutagenicity Testing Program

ZEIGER, E. (USA) TS3-6

General Discussion

1:30 – 4:00 p.m. SYMPOSIUM 8

Room B

**MODULATORS OF MUTAGENESIS AND CARCINOGENESIS**

TS8

Chairperson: W. Troll (USA)

Cochairperson: H. Hayatsu (Japan)

Opening Remarks

TROLL, W. (USA) TS8-1

Biotransformation and Interaction of Chemicals as Modulators of Mutagenicity and Carcinogenicity

DE FLORA, S. (Italy) TS8-2

Modulation of Mutagenesis by Biological Substances

HAYATSU, H. (Japan) TS8-3

Enhancement and Suppression of Genotoxicity of Food by Naturally Occurring Components in these Products

STICH, H. F. (Canada) TS8-4

Free Oxygen Radicals – Modulators of Carcinogenesis

TROLL, W. (USA) TS8-5

General Discussion

9:00 a.m. – noon PANEL DISCUSSION 2

**PHILOSOPHY BEHIND REGULATION OF ENVIRONMENTAL  
MUTAGENS AND CARCINOGENS** TP2

Chairperson: J. Higginson (France)

Co-chairperson: J. Miyamoto (Japan)

## Introduction

HIGGINSON, J. (France) TP2-1

Characterization of Risk of Potential Human Mutagens and Carcinogens: Basis for Prioritization of Regulatory Actions

OMENN, G. S. (USA) TP2-2

Radiation as a Mutagen/Carcinogen Model and a Regulatory Norm

OFTEDAL, P. (Norway) TP2-3

General Problems of Extrapolation from Animals and Bioassay Models for Extrapolation and Risk Assessment

NEAL, R. A. (USA) TP2-4

Regulation of Chemicals on the Basis of Results from Short-term Mutagenicity Tests – Problems and Possibilities

BORA, K. C. (Canada) TP2-5

Some Experiences on the Regulation of Carcinogen in Working Environment

SAKABE, H. (Japan) TP2-6

## General Discussion

## Summary

HIGGINSON, J. (France) TP2-7

1:30 – 4:00 p.m. PANEL DISCUSSION 1

Room C

**QUANTITATIVE RISK ASSESSMENT, RISK-BENEFIT ANALYSIS** TP1

Chairperson: U. H. Ehling (FRG)

Co-chairperson: Y. Kikuchi (Japan)

## Introduction

EHLING, U. H. (FRG) TP1-1

Quantitative Risk Assessment – Risk Benefit Analysis

GRICE, H. C. (Canada) TP1-2

The Role of the Mouse Spot Test in Risk Assessment

RUSSELL, L. B. (USA) TP1-3

Risk Estimations Based on Germ-cell Mutations in Mice

EHLING, U. H. (FRG) TP1-4

Drug Metabolism and the Extrapolation from Mouse to Man

SCHÖNEICH, J. (GDR) TP1-5

Concluding Remarks

KIKUCHI, Y. (Japan) TP1-6

9:00 a.m.—4:00 p.m. WORKSHOP 1

**NEW METHODOLOGY AND RESULTS IN SCREENING  
FOR ENVIRONMENTAL CHEMICAL MUTAGENS WITH  
*DROSOPHILA*** TW1

Chairpersons: R. C. Woodruff (USA)  
F. E. Würgler (Switzerland)  
Cochairpersons: D. Moriwaki (Japan)  
S. Ohba (Japan)  
Y. N. Tobar (Japan)

9:00 – 11:30 a.m. Morning Session

## Opening Address

- SOBELS, F. H. (The Netherlands) TW1-1  
Use of the Sex-linked Recessive Lethal Mutation Test in *Drosophila melanogaster* for Screening and Hazard Evaluation (will include a Report from the U.S. E.P.A. Gene-Tox Committee on Lethal Mutations)
- LEE, W. R. (USA) TW1-2  
*Drosophila* Chromosome Mutations: A Report from the U.S. E.P.A. Gene-Tox Work Group
- VALENCIA, R. (USA) TW1-3  
USE OF REPAIR DEFECTIVE MUTANTS IN SCREENS FOR MUTATIONS AND CHROMOSOME BREAKAGE.  
Isolation and Characterization of Repair-defective Mutants of *Drosophila melanogaster*
- SMITH, P. D. (USA) TW1-4  
Repair Efficiency of Different *Drosophila* Strains
- WÜRGLER, F. E. (Switzerland) TW1-5  
Somatic Mutagenesis by Ethyl Methanesulfonate in Repair Deficient Strains of *Drosophila melanogaster*
- FUJIKAWA, K. (Japan) TW1-6  
Interaction of Mutator (MR) Strains with Repair Deficient Mutants of *D. melanogaster*
- SLATKO, B. (USA) TW1-7  
METABOLIC ACTIVATION OF PROMUTAGENS TO MUTAGENS IN *DROSOPHILA*  
Xenobiotic-metabolizing Enzymes in *Drosophila melanogaster*
- BAARS, A. J. (The Netherlands) TW1-8  
Activation of Mixed Function Oxidases in *Drosophila*
- RAMEL, C. (Sweden) TW1-9  
The Role of Genetic and Non-genetic Factors with Special Reference to Mutagenic Effects of Procarcinogens
- VOGEL, E. (The Netherlands) TW1-10

1:30 – 4:00 p.m. Afternoon Session

A Review of Recent *Drosophila* Testing Schemes for Induced Non-disjunction

ABRAHAMSON, S. (USA) TW1-11

A New Methodology for Screening Environmental Chemical Mutagens with *Drosophila*

RASMUSON, B. (Sweden) TW1-12

Genetic Factors Controlling Mutation Rate and Male Recombination Frequency in *Drosophila ananassae*

TOBARI, Y. N. (Japan) TW1-13

Genetic Factors that Affect the Spontaneous Mutation Rate in *Drosophila*

WOODRUFF, R. C. (USA) TW1-14

The Role of *Drosophila* in Assessing Potential Hereditary Risk to Humans from Chemical Mutagen

ABRAHAMSON, S. (USA) TW1-15

Some Unorthodox Ideas about the Role of *Drosophila* in Mutagen Testing

AUERBACH, C. (UK) TW1-16

Experimental Strategies and Statistical Analysis

WÜRGLER, F. E. (Switzerland) TW1-17

Summary and Open Discussion

LEE, W. R. (USA) TW1-18

## CONTRIBUTED PAPER SESSION (Oral Presentation)

## SPECIFICITIES OF CHEMICALS IN MUTAGENESIS AND CARCINOGENESIS 2A

Chairperson: D. Schmähl (FRG)

Cochairperson: T. Kakefuda (USA)

- 4:15 p.m. Semiquinone Radical Formation and Mutagenic Properties of Aromatic Dihydroxy- and Aminohydroxy-compounds. WILD, D., KING, M.-T., GOCKE, E. and ECKHARDT, K. (FRG) 2A01
- 4:30 Studies of Relationships between Chemical Structure and Genotoxic Activities Using the *Salmonella* Assay. RAO, T. K. and EPLER, J. L. (USA) 2A02
- 4:45 A Quantitative Comparison of the Genetic Effects of Ethylating Agents on the Basis of the DNA Ethylation Level. VAN ZEELAND, A. A., MOHN, G. R. and TATES, A. D. (The Netherlands) 2A03
- 5:00 Mechanisms of Mutagenesis and Carcinogenesis by N-Nitroso Compounds. LIJINSKY, W. (USA) 2A04
- 5:15 Involvement of Noncovalent Interaction, Sequence Alteration, and Translocation in Generating Mutation by Benzo[a]pyrene Metabolites and Amino Acid Pyrolysates. KAKEFUDA, T., MIZUSAWA, H., LEE, C-H. R., MADIGAN, P. (USA), SUGIMURA, T. and NAGAO, M. (Japan) 2A05
- 5:30 Relation between Mutagenic and Carcinogenic Properties of Heavy Metals. LEONARD, A. (Belgium) 2A06
- 5:45 Effect of a Tumor Promoter on Amino Acid Transport in Mouse Fibroblasts. NISHINO, H., NISHINO, A., FUJITA, K., INOUE, F., HASEGAWA, T. and IWASHIMA, A. (Japan) 2A07
- 6:00 Increased Cancer Incidence in the Progeny of Male Rats Exposed to Ethylnitrosourea before Mating. TOMATIS, L., CABRAL, J. R. P. C., LIKHACHEV, A. J. and PONOMARKOV, V. (France) 2A08
- 6:15 Role of L-Ascorbate on Benzo[a]pyrene Metabolite-DNA Adduct Formation. BHATTACHARYA, R. K. and SHAH, G. M. (India) 2A09

## CONTRIBUTED PAPER SESSION (Oral Presentation)

## COMPARATIVE STUDIES ON MUTAGENS

2B

Chairperson: H. F. Stich (Canada)

Cochairperson: I. Tomita (Japan)

- 4:15 p.m. Mutagenicity Testing of 74 Compounds with Known Carcinogenic Potential. ✓  
McGREGOR, D. B., McCONVILLE, M., RIACH, C. G. and PRENTICE, R.  
 (UK) 2B01
- 4:30 Use of *Salmonella* Microsome and Sister Chromatid Exchanges for Screening ✓  
 Mutagenic Carcinogenicity of Seventy Chemicals. ZHAO, S. Y., LI, Z. B.  
 and TAN, C. C. (People's Republic of China) 2B02
- 4:45 A Study with Pairwise Combinations of Mutagens *in vitro* and *in vivo*. ✓  
 Implications for the Testing of Environmental Samples. SALAMONE, M. F.,  
HEDDLE, J. A. and KATZ, M. (Canada) 2B03
- 5:00 Genotoxicity of n-Hexane. McCARROLL, N. E., PIPER, C. E.,  
PADILLA-NASH, H., KEECH, B. H. and FARROW, M. G. (USA) 2B04
- 5:15 Mutagenicity and Carcinogenicity of Fungus-contaminated Foods from  
 Linxian, China. LI, M. H., CHENG, S. J. (People's Republic of China) and  
CHOUROULINKOV, I. (France) 2B05
- 5:30 Genotoxicity of Cocoa in Mammalian Test Systems. RENNER, H. W.  
 (FRG) 2B06
- 5:45 Mutagenic Substances Formed by Oral Administration of Spermidine and  
 Nitrite in the Digestive Tract of Mice. NAKAMURA, Y., TAKENAKA, H.  
 and TOMITA, I. (Japan) 2B07
- 6:00 An *in vivo* Evaluation of Mutagenicity of Sodium Metabisulphite.  
BOROFFICE, R. A. (Nigeria) 2B08
- 6:15 A Comparative Study of the Effects of 5-Fluorouracil and Pseudoisocytidine  
 on Meiotic Cells of Male Mice. SUBRAMANYAM, S. and LAXMI  
NARAYANA, D. (India) 2B09

## CONTRIBUTED PAPER SESSION (Oral Presentation)

## MUTAGENESIS IN MICROBES

2C

Chairperson: J. M. Parry (UK)

Cochairperson: H. Inoue (Japan)

- 4:15 p.m. An Improvement of Detection and Evaluation of a *Bacillus subtilis* Rec-assay Method for Mutagens in Wastewaters. MATSUI, S., YAMAMOTO, R., TOKUGAWA, M. and KOIDE, Y. (Japan) 2C01
- 4:30 Inactivation and Mutation Induction at *ad-3A* and *ad-3B* Loci in Methyl-methane Sulfonate-sensitive Strains of *Neurospora crassa*. INOUE, H. and ISHII, C. (Japan) 2C02
- 4:45 Isolation of Genes Involved in Mutagenesis and DNA Repair in the Yeast *Saccharomyces cerevisiae*. BECK, A. K., LEMONTT, J. F., LARIMER, F. W. and BERNSTINE, E. G. (USA) 2C03
- 5:00 9-Anilino-acridine Derivatives with Antitumour Activity: Structural Requirements for *petite* Induction in *Saccharomyces cerevisiae*. FERGUSON, L. R. and BAGULEY, B. C. (New Zealand) 2C04
- 5:15 Synergistic Interaction of Combined UV/ $\gamma$ -ray Exposure with Respect to Inactivation and Mutation Induction in *Rad*<sup>+</sup> *Schizosaccharomyces pombe*. GENTNER, N. E. (Canada) 2C05
- 5:30 Use of Repair-defective Mutants, Mitotic Recombination and Gene Conversion in Characterizing Mutagenic Contaminants in Medical Grade Samples of Pyrvinium Pamoate. MEHTA, R. D. and VON BORSTEL, R. C. (Canada) 2C06
- 5:45 The Induction of Mitotic Aneuploidy in Yeast by Some Tumour Promoters. PARRY, J. M., PARRY, E. M. (UK) and BARRETT, J. C. (USA) 2C07
- 6:00 Delayed Effect of Organic Phosphorus Insecticides on Growth of Slime Mold. TERAYAMA, K., OHNO, H., HIRATA, F. and KAWARABAYASHI, T. (Japan) 2C08
- 6:15 On the Relative Validity of Some Plant Systems as Monitors of Genetic Damage. SHARMA, C. B. S. R. (India) 2C09



## CONTRIBUTED PAPER SESSION (Oral Presentation)

**SISTER CHROMATID EXCHANGE**

2G

Chairperson: S. A. Latt (USA)

Cochairperson: A. Oikawa (Japan)

- 4:15 p.m. Cell-cycle Kinetics in Human Lymphocyte Cultures Measured by a Simple Combination of Autoradiography and Sister-chromatid Differential Staining. MORIMOTO, K., WOLFF, S. and KOIZUMI, A. (Japan and USA) 2G01 ✓
- 4:30 Effects of DNA Gyrase Inhibitors on Sister Chromatid Exchanges. IKUSHIMA, T. (Japan) 2G02
- 4:45 Inhibitors of Poly(Adenosine Diphosphate Ribose) Polymerase Induce Sister Chromatid Exchanges. OIKAWA, A., TOHDA, H., KANAI, M., MIWA, M., NAGAO, M. and SUGIMURA, T. (Japan) 2G03
- 5:00 Post-treatment Effect of Specific Inhibitors of DNA Polymerases on Induction of Sister Chromatid Exchanges and Drug-resistant Mutations in Chinese Hamster Cells. NISHI, Y., HASEGAWA, M. M. and INUI, N. (Japan) 2G04
- 5:15 Factors Influencing the Induction of Sister Chromatid Exchanges in Mammalian Cells by 12-O-Tetradecanoylphorbol-13-acetate (TPA). NAGASAWA, H. and LITTLE, J. B. (USA) 2G05
- 5:30 Metabolic Activation of Promutagens by Cultured Rat Tumor Cells as Revealed by the Sister Chromatid Exchange (SCE) Test. ABE, S. and SASAKI, M. (Japan) 2G06
- 5:45 *In vivo* Induction of Sister Chromatid Exchanges in Rat Embryo Tissues. SHARMA, R. K., DUNN, R. and ALLEN, J. W. (USA) 2G07
- 6:00 Cyclophosphamide Induced Sister Chromatid Exchanges in Human Lymphocytes *in vivo* and *in vitro* – An Activation System by Rat Liver Perfusion. ABE, T., MISAWA, S., IDE, T., TOSA, Y., SONODA, Y., TANIWAKI, M., EDAGAWA, J. and TAKINO, T. (Japan) 2G08 ✓
- 6:15 The Effects of Age, Sex and Genes on Sister Chromatid Exchange. WAKSVIK, H., MAGNUS, P. and BERG, K. (Norway) 2G09

## CONTRIBUTED PAPER SESSION (Oral Presentation)

## PYROLYSATE MUTAGENS

2H

Chairperson: M. L. Mendelsohn (USA)

Cochairperson: G. W. Newell (USA)

- 4:15 p.m. Identification of Genotoxic Volatiles in Model Browning Systems and Processed Food. ROSIN, M. P., POWRIE, W. D. and WU, C. H. (Canada) 2H01
- 4:30 Studies on the Formation of Mutagenic Substances in Food Processing and Cooking Especially with Amino-carbonyl Reaction. OMURA, H., JAHAN, N., SHINOHARA, K. and MURAKAMI, H. (Japan) 2H02
- 4:45 Formation of Mutagens during Cooking of Protein Foods. HATCH, F. T., FELTON, J. S., HEALY, S. K., STUERMER, D. H., BERRY, P., TIMOURIAN, H., BJELDANES, L. F. and MORRIS, M. (USA) 2H03
- 5:00 2-Amino-3,8-dimethylimidazo[4,5-f]quinoxaline: A New Potent Mutagen Isolated from Fried Beef. KASAI, H., YAMAIZUMI, Z., SHIOMI, T., NISHIMURA, S., YOKOYAMA, S., MIYAZAWA, T., WAKABAYASHI, K., NAGAO, M. and SUGIMURA, T. (Japan) 2H04
- 5:15 Quantitative Measurement of IQ, Me-IQ and Me-IQx Present in Broiled Foods by Gas Chromatography/Mass Spectrometry (GC/MS). YAMAIZUMI, Z., SHIOMI, T., KASAI, H., WAKABAYASHI, K., SUGIMURA, T. and NISHIMURA, S. (Japan) 2H05
- 5:30 Comparative Genotoxicity of the Food Mutagens Trp-P-2 and IQ in *Salmonella* and CHO Cells. HATCH, F. T., CARRANO, A. V., FELTON, J. S., THOMPSON, L. H., MINKLER, J. L., SALAZAR, E. P. and HEALY, S. K. (USA) 2H06
- 5:45 Formation of Mutagens by Heating Nitrogenous Compounds with Addition of Carbohydrates or Fatty Acids. YOSHIDA, D. and OKAMOTO, H. (Japan) 2H07
- 6:00 Studies on the Active Metabolite of 3-Amino-1-methyl-5H-pyrido[4,3-b]-indole (Trp-P-2). YAMAZOE, Y., ISHII, K., MITA, S., KAMATAKI, T. and KATO, R. (Japan) 2H08
- 6:15 Inhibition of Protein Pyrolysate Mutagenicity by Retinol (Vitamin A). BUSK, L., AHLBORG, U. G. and ALBANUS, L. (Sweden) 2H09

## CONTRIBUTED PAPER SESSION (Poster Display)

10:00 a.m. - 3:30 p.m.

## MECHANISMS OF MUTAGENESIS AND CARCINOGENESIS

2P

1. A Simple Method for the Detection of Base Substitution Specificity of Mutagens. SHINOURA, Y. and KATO, T. (Japan) 2P01
2. Inducible Error-free Repair of Alkylated DNA in *Bacillus subtilis* and Isolation of Repair Defective Mutants. MOROHOSHI, F., MUNAKATA, N. and TANOOKA, H. (Japan) 2P02
3. Differential Mutabilities of Ames' Tester Strains of *Salmonella typhimurium* by Ultraviolet Radiation and 4-Nitroquinoline 1-Oxide. NAKANO, E., ICHIKAWA-RYO, H. and KONDO, S. (Japan) 2P03
4. Dose-rate Dependence of the DNA-damaging Action of 4-Nitroquinoline 1-Oxide on *Escherichia coli* and *Saccharomyces cerevisiae*. DAI, H., CHANG, C.H. (Taiwan), ICHIKAWA-RYO, H. and KONDO, S. (Japan) 2P04
5. Genotoxicity of 5-Methoxypsoralen and Near Ultraviolet Light in Repair Deficient Strains of *Escherichia coli* WP2. POOL, B.L., KLEIN R. and DEUTSCH-WENZEL, R.P. (FRG) 2P05
6. Mutagenic and Cytotoxic Activity of Extracts from Diesel Exhaust Particulates. CLARK, C.R., MARSHALL, W.F., WALTER, R.A., ROYER, R.E., LI, A.P., BROOKS, A. L. and McCLELLAN, R. O. (USA) 2P06
7. Structure-activity Relationship Studies Using *Salmonella typhimurium* Assay System. SHAHIN, M.M., BUGAUT, A. and KALOPISSIS, G. (France) 2P07
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9. DNA Damage and Mutation by Furazolidone. CHATTERJEE, S.N., BANERJEE, S.K. and PAL, A.K. (India) 2P09
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11. Nitroso and Nitro Derivatives of Harman, Norharman and their Mutagenicity. CHOUGHULEY, A.S.U., NAGALAKSHMI, C., PEDNEKAR, M.D., CHITNIS, V.M. and SUBBARAMAN, A.S. (India) 2P11
12. Antimutagenic Activity of Human Placental Extracts. MOCHIZUKI, H., INOUE, T. and KADA, T. (Japan) 2P12
13. Primer Activating Enzyme Deficiency and *in vitro* Complementation of the Enzyme Activity in Cell-free Extracts from Ataxia Telangiectasia Fibroblasts. YOKOIYAMA, A., INOUE, T. and KADA, T. (Japan) 2P13
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16. Unscheduled DNA Synthesis May Not Represent the Quantitative Capacity of Excision Repair in Cultured Human Cells. TAKEBE, H., ISHIZAKI, K., YAGI, T. and INOUE, M. (Japan) 2P16
17. Detection of Mutagen-induced DNA Damage in Mouse Post-meiotic Germ Cells after *in vivo* Treatment. INOUE, M., KURIHARA, T., IKENAGA, M. and KONDO, S. (Japan) 2P17
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21. Potentiation of Bacterial Mutagenicity of Dimethylnitrosamine in Liver Homogenate-mediated, but Not in Host-mediated Assays by Pretreatment of Mice with Ethanol or Acetone. GLATT, H.R., DE BALLE, L. and OESCH, F. (FRG) 2P21
22. Studies on the Influence of Culture Conditions, Bacteria and S9 Protein Content on the Ames Test Results. GÖGGMANN, W. (FRG) 2P22

**MUTATION AND TRANSFORMATION IN CULTURED MAMMALIAN CELLS** 2P

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29. Recessive Mutations in Mouse FM3A Cells: A High, Induced Mutation Frequency at the Adenine Phosphoribosyltransferase Locus. KOYAMA, H. (Japan) 2P29
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31. The Additional Effect of Phenacetine and its Derivatives on the Mutagenicity and Clastogenicity of MNNG (N-Methyl-N'-nitro-N-nitrosoguanidine). SASAKI, M., YOSHIDA, S. and HIRAGA, K. (Japan) 2P31
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34. Dietary Mutagenicity between Two Populations with Different Stomach Cancer Risks. KAMIYAMA, S., KOBAYASHI, S., SHIMADA, A., MICHIOKA, O. and MIURA, K. (Japan) 2P34
35. Genetic Disorders and Environmental Factors – in the Indian Background. TALUKDER, G. and SHARMA, A. (India) 2P35

## PESTICIDES

2P

36. Chromosomal Aberrations Induced by Certain Pesticides, Fungicides and Other Agents in Higher Organisms. SHARMA, A. and TALUKDER, G. (India) 2P36
37. Isolation and Characterization of Pesticide-resistant Mutants of the Blue-green Alga *Nostoc muscorum*. VAISHAMPAYAN, A. and PRASAD, A.B. (India) 2P37
38. Mutagenic Potentials of 2,4-Dichlorophenoxy Acetic Acid in *Hordeum vulgare* L. KHALATKAR, A.S. and BHARGAVA, Y.R. (India) 2P38
39. Fungicides, Insecticides and Herbicides Screened in the Meristem Assay and Progeny Test for Cytogenetic Activity. SHARMA, C.B.S.R., BEHERA, B.N., SAHU, R.K., PANDA, B.B., RAO, R.N., RATRA, B.B., RAO, A.A., PATNAIK, T. and HARIHARAN, G. (India) 2P39

## PYROLYSATE MUTAGENS

40. Phage-inducing Activity and Mutagenicity of Cooked Japanese Foods of Animal Origin. IZUTANI, K. and EBATA, J. (Japan) 2P40
41. Covalent Binding of a Tryptophan Pyrolysate, 3-Amino-1-methyl-5*H*-pyrido [4, 3-*b*]-indole (Trp-P-2), to DNA. MITA, S., YAMAZOE, Y., ISHII, K., KAMATAKI, T. and KATO, R. (Japan) 2P41
42. Induction of Sister Chromatid Exchanges by Mutagenic Components of Amino Acid and Protein Pyrolysates and Three Structurally Related Compounds. TOHDA, H., TADA, M., OIKAWA, A. KAWACHI, T. and SUGIMURA, T. (Japan) 2P42
43. Mediated Mutagenicity of Isomers of Aminodipyrido[1,2-*a*: 3',2'-*d*]imidazole. Their Importance in the Mutagenic Activity. PAIRON, D., SAINT-RUF, G., MERCIER, M. and PONCELET, F. (Belgium and France) 2P43
44. Inactivation of the Pyrolysate Mutagens Trp-P-2, Glu-P-1 and IQ by Treatment with Chlorinated Tap Water. TSUDA, M., WAKABAYASHI, K., HIRAYAMA, T., KAWACHI, T. and SUGIMURA, T. (Japan) 2P44
45. Mutagenic Activity in Fried Pork and Bacon. BAKER, R.S.U., BONIN, A.M., ANGUS, D., GELBART, A. and ARLAUSKAS, A. (Australia) 2P45

## SISTER CHROMATID EXCHANGE

46. Sister Chromatid Exchange of Mouse Blastocyst for the Toxicological Evaluation of Drugs. KAMATA, K., SUZUKI, S. and OH-ISHI, S. (Japan) 2P46
47. Spontaneous and Induced Sister Chromatid Exchanges in Mouse Lymphoma Cell Mutants Sensitive to Mutagens. TSUJI, H., SHIOMI, T., SATO, K., TAKAHASHI, E. and TOBARI, I. (Japan) 2P47
48. SCE in Human "Metabolizing System". The Assessment of DNA Damage Caused by Cytostatic Therapy and its Modification by a Dihydroquinoline-type Antioxidant. RAPOSA, T., SRÉTER, L., POLLÁK, Zs., VÁRKONYI, J. and FEHÉR, J. (Hungary) 2P48

9:00 – 11:30 a.m. SYMPOSIUM 1

<b>CARCINOGENESIS AND MUTAGENESIS</b>	TS1
Chairperson: A. C. Upton (USA)	
Cochairperson: L. Tomatis (France)	
Introductory Remarks	
UPTON, A. C. (USA)	
TOMATIS, L. (France)	TS1-1
Role of DNA Damage and Repair in Carcinogenesis	
NOMURA, T. (Japan)	TS1-2
Comparison of Mutagenesis and <i>in vitro</i> Transformation Models in Detecting Potential Carcinogens	
RAY, V. (USA)	TS1-3
Correlation between Mammalian Cell Toxicity, Mutagenicity, and Neoplastic Transformation	
SCHECHTMAN, L. M. (USA)	TS1-4
Carcinogenic Potency	
AMES, B. N. (USA)	TS1-5
Concluding Remarks	
UPTON, A. C. (USA)	
TOMATIS, L. (France)	TS1-6

9:00 – 11:30 a.m. SYMPOSIUM 5

Room B

<b>MONITORING OF HUMAN POPULATIONS</b>	TS5
Chairperson: J. R. Miller (Canada)	
Cochairperson: E. Matsunaga (Japan)	
Introductory Comments	
MILLER, J. R. (Canada)	TS5-1
Hiroshima and Nagasaki: Three and a Half Decades of Genetic Screening	
SCHULL, W. J. (USA)	TS5-2
The Clinician's Role in Monitoring for Diseases from Chemicals in the Environment	
MILLER, R. W. (USA)	TS5-3
Surveillance of Human Populations for Germinal Cytogenetic Mutations	
HOOK, E. B. (USA)	TS5-4
Epidemiological Follow-up Study on Mutagenic Effects in Self- poisoning Persons	
CZEIZEL, A. (Hungary)	TS5-5
General Discussion	

9:00 – 11:30 a.m. PANEL DISCUSSION 3

**INTERNATIONAL COOPERATION ON ENVIRONMENTAL  
MUTAGEN RESEARCH** TP3

Chairperson: F. J. de Serres (USA)

Cochairperson: T. Matsushima (Japan)

International Program for Chemical Safety: Evaluation of  
Short-term Tests for Mutagenicity

DE SERRES, F. J. (USA) TP3-1

The Gene-Tox Program: Progress Report and Update

AULETTA, A. E. (USA) TP3-2

The Coordinated Research Effort on the Comparison of Test  
Systems for the Detection of Mutagenic Effects, Sponsored by the  
E.E.C.

ADLER, I.-D. (FRG) TP3-3

9:00 – 11:30 a.m. WORKSHOP 2

Room F

**NEW VISTAS IN MOLECULAR MUTAGENESIS** TW2

Chairperson: J. F. Lemontt (USA)

Cochairperson: M. Sekiguchi (Japan)

Gene Isolation and Manipulation

LEMONTT, J. F. (USA) TW2-1

WALKER, G. C. (USA) TW2-2

Non-DNA Primary Targets in Mutagenesis

HAYNES, R. H. (Canada) TW2-3

Analysis of Mutational Hot Spots, Cold Spots, and Transposable  
Elements

DRAKE, J. W. (USA) TW2-4

GLICKMAN, B. W. (USA) TW2-5

Panel Discussion

PAINTER, R. B. (USA) TW2-6



## CONTRIBUTED PAPER SESSION (Oral Presentation)

## MECHANISMS OF MUTAGENESIS IN MAMMALIAN CELLS

3A

Chairperson: R. B. Painter (USA)

Cochairperson: S. Okada (Japan)

- 1:30 p.m. Sensitivity to Chemical Mutagens in Thymidine Kinase Deficient Friend Leukaemia Cells. McKENNA, P. G. and YASSEEN, A. A. (UK) 3A01
- 1:45 Types of DNA Damage and their Repair in Human Cells Exposed to the Potent Carcinogen 4-Nitroquinoline 1-Oxide or its Weakly Carcinogenic 3-Methyl Derivative WATERS, R. and MIRZAYANS, R. (UK) 3A02
- 2:00 Cytological Evidence for Persistence of DNA Lesions in G<sub>2</sub> of Cells Treated with Mutagens in G<sub>1</sub>. PALITTI, F., DEGRASSI, F., DE SALVIA, D., TANZARELLA, C., FIORE, M. and NATARAJAN, A. T. (Italy and The Netherlands) 3A03
- 2:15 Studies of Remaining DNA Damage by the Ionizing Radiation or Chemical Mutagens in Cultured Mammalian Cells. SAKAI, K. and OKADA, S. (Japan) 3A04
- 2:30 The Combined Effects of Alkylating Agents and UV Light on Excision Repair of Mammalian Cells. PARK, S. D., HONG, S. H. and CHUNG, H. Y. (Korea) 3A05
- 2:45 Mutagenesis and DNA Repair in a Mutagen-sensitive Mouse Cell Variant. SATO, K., HAMA-INABA, H., HIEDA-SHIOMI, N. (Japan) and SETLOW, R. B. (USA) 3A06
- 3:00 Ataxia Telangiectasia as a Model System for the Role of Chromosomal Aberrations in Carcinogenesis. PAINTER, R. B. (USA) 3A07
- 3:15 Effects of Chemical and Physical Mutagens and Carcinogens on Fibroblasts from Patients with Cockayne Syndrome. OHTANI, H., IKENAGA, M., KAWAI, K., NIKAIDO, O. and KONDO, S. (Japan) 3A08
- 3:30 Normalization by Cell Fusion of SCE in Bloom Syndrome Lymphocytes. SHIRAIISHI, Y. (Japan) and SANDBERG, A. A. (USA) 3A09

## CONTRIBUTED PAPER SESSION (Oral Presentation)

## DNA REPAIR AND CARCINOGENESIS

3A

Chairperson: J. H. Weisburger (USA)

Cochairperson: Y. Konishi (Japan)

- 4:00 p.m. Comparative Studies on Excision Repair in Human and Mouse Cells. YAGI, T. and TAKEBE, H. (Japan) 3A10
- 4:15 Increased Sensitivity of Ataxia Telangiectasia Cells to Neocarzinostatin. TATSUMI, K., KURIHARA, T. and INOUE, M. (Japan) 3A11
- 4:30 Does Correlate Detected Mutagenicity, Induced Lesions in DNA and their Repair of Some 5-Nitrofurans Containing Vinyl, Azomethine and Aldehyde Group with Quantum Chemical Characteristics? ANGELIS, K. J., HOBZA, P., ŠRÁM, R. J. and VELEMÍNSKÝ, J. (Czechoslovakia) 3A12
- 4:45 The Significance of Different Methods of Testing for Carcinogenesis. MOHR, U. (FRG) 3A13
- 5:00 Monoclonal Origin of 3-Methylcholanthrene-induced Subcutaneous Tumors in P<sub>gk</sub>-1<sup>a</sup>/P<sub>gk</sub>-1<sup>b</sup> Mice. TANOOKA, H. and TANAKA, K. (Japan) 3A14
- 5:15 A Revised Approach to Chemical Carcinogenesis – Implications of New Fields of Research. HERZBERG, S. (The Netherlands) 3A15
- 5:30 Mutagenicity and Carcinogenicity of 3-Di(hydroxymethyl)amino-6-(5-nitro-2-furylethenyl)-1,2,4-triazine(DHNT) and Establishment of Experimental Model for Intestinal Adenocarcinomas in Rats. KONISHI, Y., OHNISHI, T., DENDA, A., TAKAHASHI, S. and NOZU, K. (Japan) 3A16
- 5:45 Bioassay of Nitrotriacetic Acid(NTA) in Rodents. SQUIRE, R. A. (USA) 3A17
- 6:00 The Role of Altered Divalent Cation Disposition in Urinary Tract Toxicity in Rats Ingesting Diet Containing Nitrotriacetate(NTA). ANDERSON, R. L. (USA) 3A18
- 6:15 Lack of Genotoxicity of Nitrotriacetic Acid. WILLIAMS, G. M. (USA) 3A19

## CONTRIBUTED PAPER SESSION (Oral Presentation)

## MUTAGENS IN FOOD, WATER AND AIR (I)

3B

Chairperson: P. H. M. Lohman (The Netherlands)

Co-chairperson: W. Lijinsky (USA)

- 1:30 p.m. Presence, Introduction and Removal of Organic Mutagens in Drinking Water in The Netherlands. KOOL, H. J., VAN KREYL, C. F., VAN KRANEN, H. J. and DE GREEF, E. (The Netherlands) 3B01
- 1:45 Nitriiotriacetic Acid (NTA) – The Canadian Experience. BECKING, G. C. and DOUGLAS, G. R. (Canada) 3B02
- 2:00 Biological Availability, Activation and Detoxification of Diesel Exhaust Extracts. BROOKS, A. L., LI, A. P., CLARK, C. R., ROYER, R. E. and McCLELLAN, R. O. (USA) 3B03
- 2:15 Detection of Gaseous and Particulate Mutagens in Automobile Exhaust. SASAKI, Y., ENDO, R. and KOIDO, Y. (Japan) 3B04
- 2:30 Mutagenicity of Nitro-derivatives Induced by Exposure of Aromatic Compounds to Gaseous Pollutants, TOKIWA, H., NAKAGAWA, R. and OHNISHI, Y. (Japan) 3B05
- 2:45 Mutagenic Effects of Sulfur Dioxide in Animals and Plants. YOON, J. S., BULLION, P. and NOBLE, R. D. (USA) 3B06
- 3:00 Detection of Mutation Induced by Air-pollutant in the Stamen Hair Cells of Tradescantia. TANO, S. and YAMAGUCHI, H. (Japan) 3B07
- 3:15 Carcinogens and Mutagens from Fossil Fuel Burning. OKAMOTO, K. (Australia) 3B08
- 3:30 Prevalence of Gastro-duodenal Nodules with a Continuous Oral Administration of Hydrogen Peroxide (H<sub>2</sub>O<sub>2</sub>) in Mice. ITO, A., NAITO, M. and WATANABE, E. (Japan) 3B09

## CONTRIBUTED PAPER SESSION (Oral Presentation)

## MUTAGENS IN FOOD, WATER AND AIR (II)

3B

Chairperson: G. R. Mohn (The Netherlands)

Cochairperson: S. Kamiyama (Japan)

- 4:00 p.m. Studies on the Mutagenicities of Analgesics and Antiinflammatory Drugs. Part 1. Sulpyrine and the Metabolites. TAMURA, T., KUBOYAMA, N. and FUJII, A. (Japan) 3B10
- 4:15 Mutagenicity of Antichagasic Drugs in the Ames System and Deactivation of this Effect by Microsomal Addition. NAGEL, R. and NEPOMNASCHY, I. (Argentina) 3B11
- 4:30 Mutagenicity of Azo Dyes. CHUNG, K. T. (Taiwan) 3B12
- 4:45 Genotoxic and Chromatographic Analyses of Urinary and Faecal Metabolites of Two Food Dyes and Some Structural Analogues. EDWARDS, C. N. and COMBES, R. D. (UK) 3B13
- 5:00 The *Salmonella* Mutagenicity Test of Hair Dyes and Lipsticks Used in Thailand. ROJANAPO, W. and CHUTIMATAEWIN, S. (Thailand) 3B14
- 5:15 Mutagenicity and Mutagen-depressive Effect of Foods. KAMIYAMA, S., MICHIOKA, O. and MIURA, K. (Japan) 3B15
- 5:30 Inactivation of Mutagens in Coffee by Sulfite. SUWA, Y., NAGAO, M., WAKABAYASHI, K., KOSUGI, A. and SUGIMURA, T. (Japan) 3B16
- 5:45 Human Saliva Inactivates Mutagenicity of Carcinogens. NISHIOKA, H., NISHI, K. and KYOKANE, K. (Japan) 3B17
- 6:00 Chemical Features of Antimutagenic Factor in Human Placenta. KOMURA, H., MINAKATA, H., NAKANISHI, K., MOCHIZUKI, H. and KADA, T. (Japan) 3B18
- 6:15 Decrease of Mutagenic Activity of 1-Nitropyrene in Intestinal Bacteria. OHNISHI, Y., KINOUCI, T. and WAKISAKA, K. (Japan) 3B19

## CONTRIBUTED PAPER SESSION (Oral Presentation)

## METABOLISM OF MUTAGENS AND CARCINOGENS

3C

Chairperson: M. B. Roberfroid (Belgium)

Cochairperson: M. Okada (Japan)

- 1:30 p.m. Cytochrome P-450 in Different Tissues and Species of Animals with Reference to Role in the Susceptibility to Chemical Carcinogen and Mutagen. WATANABE, M., ABE, T., TAMURA, Y. and TAKAHASHI, I. (Japan) 3C01
- 1:45 Mutagenicity of 3'-Methyl-N,N-dimethyl-4-aminoazobenzene (3'-Me-DAB) Metabolites and Related Compounds. MORI, Y., NIWA, T., TOYOSHI, K., MATSUO, N., KATSURAGI, M. and KONISHI, Y. (Japan) 3C02
- 2:00 Enhancing Action of Human Urine Concentrates (HUC) on Promutagens in the Ames *Salmonella* Assay. MORTELMANS, K. E., PETERS, J. H., RICCIO, E. S., WINANT, R. C. and SAUBERLICH, H. E. (USA) 3C03
- 2:15 Hepatocytes in Suspension Release Activating Enzymes into the Medium. BHUYAN, B. K., MATHEWS, J. and ZIMMER, D. M. (USA) 3C04
- 2:30 Evidence for the Sulfate Conjugate as an Ultimate Form in the Metabolic Activation of the Carcinogen, 7-Hydroxymethyl-12-methylbenz[a]anthracene (7-HMBA). WATABE, T., ISHIZUKA, T., OZAWA, N. and ISOBE, M. (Japan) 3C05
- 2:45 Metabolic Activation of Dialkylnitrosamines by  $\alpha$ -Hydroxylation in Mutagenesis. SUZUKI, E., MOCHIZUKI, M., TAKEDA, K. and OKADA, M. (Japan) 3C06
- 3:00 Activation Mechanism of Two Mutagenic Vinylic Monomers. A Comparative Study Using *Salmonella typhimurium*. DUVERGER, M., LAMBOTTE, M., DE MEESTER, C., MERCIER, M. and PONCELET, F. (Belgium) 3C07
- 3:15 Effect of Cortisol on the Aflatoxin B<sub>1</sub>-induced Inhibition of Ornithine Decarboxylase and Nucleic Acid Synthesis in Intestinal Mucosal Cells. KUREBE, M., HIRANUMA, T. and OH-ISHI, S. (Japan) 3C08
- 3:30 Comparison of Some Inducing Agents of Drug-metabolizing Enzymes. BONIN, A. M. (Australia) 3C09

## CONTRIBUTED PAPER SESSION (Oral Presentation)

## NATURAL MUTAGENS AND CARCINOGENS

3C

Chairperson: A. Kappas (Greece)

Cochairperson: Y. Ueno (Japan)

- 4:00 p.m. Comparative Genotoxicity of Phenolic Compounds of Plant Origin. STICH, H. F., ROSIN, M. P. and POWRIE, W. D. (Canada) 3C10
- 4:15 Natural Mutagens in Food Plants. VAN DER HOEVEN, J. C. M., HOGENKAMP, M., BRUGGEMAN, I. M., VAN BROEKHOVEN, W., VORAGEN, A. G. J., ALINK, G. M. and KOEMAN, J. H. (The Netherlands) 3C11
- 4:30 Effects of Retinoids (Vitamin A) on Plating Efficiency (PE), Sister Chromatid Exchanges (SCE) and Mitomycin C (MMC), Cyclophosphamide (CPP) and Aflatoxin B<sub>1</sub> (AFB) Induced SCE in Chinese Hamster V79 Cells. HUANG, C. C., SIRIANNI, S. R., HSUEH, J. L. and CHEN, C. C. (USA) 3C12
- 4:45 N,N-Diethyldithiocarbamates – Biologically Inactivated Forms Derived from Dialkylnitrosamines. POOL, B. L. and WIESSLER, M. (FRG) 3C13
- 5:00 Mutagenicity of Emodin in *Salmonella typhimurium*. YOSHIZAWA, H., MASUDA, T. and UENO, Y. (Japan) 3C14
- 5:15 Indoleacetic Acid (IAA) Induced Genetic Instability in *Aspergillus nidulans*. KAPPAS, A. (Greece) 3C15
- 5:30 Mutagens Isolated from the Metabolites of Intestinal Bacteria. OSAWA, T., NAMIKI, M., SUZUKI, K. and MITSUOKA, T. (Japan) 3C16
- 5:45 Influence of 1,3-Diphenylguanidine on Murine Seminal Cytology. BEMPONG, M. A. (USA) 3C17
- 6:00 Mutagenic Effects of Two Pesticides in the Blue-green Alga *Nostoc muscorum*. VAISHAMPAYAN, A. and PRASAD, A. B. (India) 3C18

## CONTRIBUTED PAPER SESSION (Oral Presentation)

## NEW METHODS OF MUTAGENICITY TESTING (I)

3F

Chairperson: J. Schöneich (GDR)

Cochairperson: N. Egami (Japan)

- 1:30 p.m. Detection of Mutagen-induced DNA Content Variations in Bone Marrow Cells Using High Resolution Flow Cytometry. OTTO, F. J. and OLDIGES, H. (FRG) 3F01
- 1:45 Alkaline Elution Assay Coupled with Microfluorometry and Electron Microscopy in the Condensed or Extended Chromatin. KANANISHI, N., KINJO, Y. and WATANABE, M. (Japan) 3F02
- 2:00 Counting of 6-Thioguanine-resistant Peripheral Blood Lymphocytes in Man with the Help of Fluorescent Activating Cell Sorting (FACS). AMNÉUS, H., MATSSON, P., NYLANDER, C. and ZETTERBERG, G. (Sweden) 3F03
- 2:15 New Method for the Detection of Environmental Mutagens Using the Fish, *Oryzias latipes*. I. Fundamental Experiments on the Induction of Dominant Lethal Mutations with Ionizing Radiation. EGAMI, N. and KIRITA, A. (Japan) 3F04
- 2:30 A New Application of the *Salmonella* Microsome Assay for Detection of Mutagens in Complex Organic Mixtures. MØLLER, M., EIDSÅ, G., GETHER, J., BJØRSETH, A. and LANDMARK, L. H. (Norway) 3F05
- 2:45 Development of an Assay to Measure Toxicity in the Ames *Salmonella*/Microsome Assay. WALEH, N. S., RAPPORT, S. J. and MORTELMANS, K. E. (USA) 3F06
- 3:00 Biological Dosimetry of Solar UV Intensity with *Bacillus subtilis* Spores. MUNAKATA, N. (Japan) 3F07
- 3:15 Method of Mutagenicity Testing in Anaphases in Animal Cells *in vivo*. BOGAJEWSKI, J. (Poland) 3F08
- 3:30 Frequency of Mutations at Protein Loci and in Chromosome Structure in Normal and Affected Newborns. SUSKOV, I. I. (USSR) 3F09

## CONTRIBUTED PAPER SESSION (Oral Presentation)

## NEW METHODS OF MUTAGENICITY TESTING (II)

3F

Chairperson: L. B. Russell (USA)

Co-chairperson: S. Iwahara (Japan)

- ✓ 4:00 p.m. A Short-term Method for Detecting Organ Specificity of Potential Carcinogens. FURIHATA, C., JIN, S. S. and MATSUSHIMA, T. (Japan) 3F10
- 4:15 The Sensitive-indicator Method: A Rapid Means of Studying the Induction of Dominant Skeletal Mutations in Mice that Can Be Applied Directly to Risk Estimation. SELBY, P. B., RAYMER, G. D., MCKINLEY, T. W., Jr. and LEE, S. S. (USA) 3F11
- 4:30 Comparison between the Doubling Doses for Germinal and Somatic Mutations in Mice. NEUHÄUSER-KLAUS, A. and KRISPENZ, L. (FRG) 3F12
- 4:45 Studies on the Mutagenic Potential of the Pesticide Chlordimeforme and its Main Metabolites N-Formyl-4-chloro-*o*-toluidine and 4-Chloro-*o*-toluidine in Male Mice by the Heritable Translocation Assay (HTA). LANG, R. and ADLER, I.-D. (FRG) 3F13
- 5:00 Spot Test on Mice with Alkylnitrosoureas. SHIBUYA, T., MUROTA, T. and TUTIKAWA, K. (Japan) 3F14
- 5:15 Sequential Chromosomal and Gene Mutations Occurred in the Laboratory Rat. YOSIDA, T. H. (Japan) 3F15
- 5:30 Expression of Genetic Damage Induced in Oocytes of Mice by Alkylating Agents. BECKER, K. and SCHÖNEICH, J. (GDR) 3F16
- 5:45 Linear Dose-response Relationship of Urethan-induced Somatic Mutations in PT-HT F<sub>1</sub> Mice. NOMURA, T. (Japan) 3F17
- 6:00 Application of a New Chromosomal Technique for Assessing Chromosome Aberrations in Mammalian Oocytes and Preimplantation Embryos. KAMIGUCHI, Y. and MIKAMO, K. (Japan) 3F18
- 6:15 A Study on the Interaction of Pesticide Toxicity with Protein Deficiency in Experimental Animals. CHAKRAVARTY, I. and SREEDHAR, R. (India) 3F19



## CONTRIBUTED PAPER SESSION (Oral Presentation)

## CYTOGENETIC STUDIES

3G

Chairperson: A. T. Natarajan (The Netherlands)

Cochairperson: Y. Kikuchi (Japan)

- 1:30 p.m. Chromosome Aberrations in Mutagen-sensitive Mutant Cells of Mouse Lymphoma Cells (L5178Y). TAKAHASHI, E., TSUJI, H., SHIOMI, T., SATO, K. and TOBARI, I. (Japan) 3G01
- 1:45 Nature of the Mitomycin C-induced Lesion Causing Chromatid Exchange between Homologous Chromosomes at Homologous Sites. ISHII, Y. (Japan) 3G02
- 2:00 Influence of Cycloheximide Block on the Association of Homologues in Mammalian Cells. KIRSCH-VOLDERS, M., HENS, L., VERSCHAEVE, L. and SUSANNE, C. (Belgium) 3G03
- 2:15 Effects of Mercury Compounds on the Nucleolar Activity. VERSCHA EVE, L., KIRSCH-VOLDERS, M. and SUSANNE, C. (Belgium) 3G04
- 2:30 Chromosome Aberrations in Rat Bone Marrow Cells Induced by Sterigmatocystin, Amino Acid Pyrolysates, AF2, and 7,12-Dimethylbenz[a]anthracene – Problems of Threshold and Evaluation. FUJIE, K., TAGAMI, M., ARIMA, T., UEDA, N., GOTO-MIMURA, K., SHIMAZU, H. and SUGIYAMA, T. (Japan) 3G05
- 2:45 Studies on Micronuclei Time Response and on the Effects of Multiple Dosages of Mutagens on Micronuclei Induction. YAMAMOTO, K. I., HITOTSUMACHI, S. and KIKUCHI, Y. (Japan) 3G06
- 3:00 The Use of Micronucleus Test for Evaluating the Clastogenicity of 20 Chemical Mutagens and Nonmutagens. CHAUBEY, R. C., CHAUHAN, P. S. and SUNDARAM, K. (India) 3G07
- 3:15 Alterations in Cell and Chromosome Division Induced by Heavy Metals in Higher Organisms. SHARMA, A. and TALUKDER, G. (India) 3G08
- 3:30 Mutagenicity Studies with Dithane M-45 in Mice. KRISHNAMURTHY, N. B. and VASUDEV, V. (India) 3G09

## CONTRIBUTED PAPER SESSION (Oral Presentation)

**OCCUPATIONAL AND ACCIDENTAL EXPOSURE TO MUTAGENS**

3G

Chairperson: R. W. Miller (USA)

Cochairperson: T. Hirohata (Japan)

- 4:00 p.m. Mutagenicity of Smoke Condensates Induced by CO<sub>2</sub> Laser Irradiation and Electrocauterization. TOMITA, Y., MIHASHI, S., HIRANO, M. and HIROHATA, T. (Japan) 3G10
- 4:15 Mutagens in Stomach and Colon Mucosal Tissues of the Human and the Dog. ICHINOTSUBO, D., STEMMERMANN, G. and MOWER, H. F. (USA) 3G11
- 4:30 Biological Monitoring of Mutagen Exposure among Nurses Handling Cytostatic Drugs. SORSA, M., NORPPA, H., FALCK, K. and VAINIO, H. (Finland) 3G12
- 4:45 Mutagenicity for *Salmonella typhimurium* of Human Urine Treated with Antitumor Agents. PAK, K., MIYAKAWA, M. and YOSHIDA, O. (Japan) 3G13
- 5:00 The Gap/Break Scoring Problem in Chromosome Monitoring. BRØGGER, A. (Norway) 3G14
- 5:15 Comparison of Chromosome Analyses after Occupational Exposure to Electric and Magnetic Fields and Ionizing Radiation. DRESP, J., BAUCHINGER, M., SCHMID, E. and HAUFF, R. (FRG) 3G15
- 5:30 The Diagnostic Value of Urinary Cytology in Dyestuff Workers Exposed to Aromatic Amine. MATSUSHIMA, M., YAGISHITA, T. and ANDO, K. (Japan) 3G16
- 5:45 Chemical Screening of Mutagenic Activity of Environmental Pollutants. BARDODĚJ, Z. (Czechoslovakia) 3G17
- 6:00 Pesticides and Mutagenicity Implications. KRISHNAKUMARI, M. K., RAJINI, P. S. and MAJUMDER, S. K. (India) 3G18
- ~~6:15~~ Regulatory Implications of Mutagenicity Testing of Environmental Chemicals. BORA, K. C. (Canada) 3G19

## CONTRIBUTED PAPER SESSION (Poster Display)

10:00 a.m. - 3:30 p.m.

## NATURAL MUTAGENS AND CARCINOGENS

3P

1. Chromosomal Aberration Test *in vitro* with a Chinese Hamster Fibroblast Cell Line on the Human Urine. WATANABE, M., MOGI, M. and ISHIDATE, M. Jr. (Japan) 3P01
2. Chromosomal Aberration Test *in vitro* with a Chinese Hamster Fibroblast Cell Line on Endogenous Substances. MOGI, M. and WATANABE, M. (Japan) 3P02
3. Genotoxicity Study of Saffrole and Related Compounds. SEKIZAWA, J. and SHIBAMOTO, T. (Japan) 3P03
4. Isolation and Structure Determination of Mutagenic Substances in Coal Tar. KOSUGE, T., TERADA, A., ZENDA, H., NUKAYA, H., OKAMOTO, T., SHUDO, K., YAMAGUCHI, K., SUGIMURA, T., KAWACHI, T., NAGAO, M., WAKABAYASHI, K. and KOSUGI, A. (Japan) 3P04
5. Mutagenicity Testing of Chalks. HAYATSU, H., HAYATSU, T., OHARA, Y. and TOGAWA, K. (Japan) 3P05
6. Lack of Mutagenicity of Tryptophan Metabolites in *Salmonella* Tester Strains. SHETTY, A.S. and RAO, T.K. (USA) 3P06
7. Mutagenicity Tests with Streptomycin-dependent Strains of *Salmonella typhimurium* TA98 and TA100. AOKI, K., KADA, T. and SUGIMURA, T. (Japan) 3P07
8. Desmutagenesis of Flavonoids. HAYASHIYA, K., YAMAOKA, R., NANJOU, S. and KADA, T. (Japan) 3P08
9. The Mutagenicity of Some Commonly Used Dyes. CHUNG, K.T., FULK, G.E. and ANDREWS, A.W. (USA) 3P09

## MUTAGENS IN FOOD, WATER AND AIR

3P

10. Mutagenic Effect of Extracts of Fungus-contaminated Corn Bread from Linxian, China. CHENG, S.J., LI, M.H., WANG, Y.L. (People's Republic of China) BOGUETTO, N. and CHOUROULINKOV, I. (France) 3P10
11. Formation of C-Nitro and Nitroso Mutagens by the Reaction of Nitrite with Sorbic Acid and its Structurally Related Compounds. NAMIKI, M., OSAWA, T., KADA, T., TSUJI, K. and NAMIKI, K. (Japan) 3P11
12. Mutagen Formation by the Nitrite-spices Reaction. NAMIKI, K., YAMANAKA, M., ISHIBASHI, H., OSAWA, T. and NAMIKI, M. (Japan) 3P12
13. Investigation of the Organic Constituents Responsible for the Mutagenic Activity in River Rhine Water in the Netherlands. VAN KREYL, C.F., KOOL, H.J., VAN KRANEN, H.J., SLOOFF, W. and DE GREEF, E. (The Netherlands) 3P13
14. Mutagenicity of Nitrogen Dioxide and its Combined Effect with Ethylurea in *Drosophila melanogaster*. SHIOMI, T. and HISANO, K. (Japan) 3P14
15. Evaluation of the Clastogenic Effect of Chlorozotocin on Somatic Cells of Mice. LAXMI NARAYANA, D. and SUBRAMANYAM, S. (India) 3P15
16. Mutagenic Activity of Nitropyrenes and Heterocyclic Aromatic Amines on Chinese Hamster Cells with Diphtheria Toxin Resistance as a Marker. TERADA, M., NAKAYASU, M., SAKAMOTO, H., WAKABAYASHI, K., NAGAO, M., ROSENKRANZ, H. S. and SUGIMURA, T. (Japan and USA) 3P16
17. Mutagenic Constituents of Pulp Mill Effluents. DOUGLAS, G.R., NESTMANN, E.R., ELLENTON, J.A., McKAGUE, A. B. and LEE, E. G. H. (Canada) 3P17
18. Mutagens in Agricultural Soils. GÖGGMANN, W. and SPITZAUER, P. (FRG) 3P18
19. Desmutagenic Action of Vegetable Extracts on the Mutagenic Pyrolysis Products of Foods. YOSHIKAWA, K., ISHII, R. and KADA, T. (Japan) 3P19
20. Vegetable Desmutagens: Purification and Properties. MORITA, K., INOUE, T., HARA, M., KADA, T. and NAMIKI, M. (Japan) 3P20
21. Detection and Estimation of N-Nitrosamine in the Indian Varieties of Chewing Tobacco. SIPAHIMALANI, A.T., BHIDE, S.V. and CHADHA, M.S. (India) 3P21
22. Evaluation of Mutagenicity of Antihelmenthic and Sedative-hypnotic Drugs in Mouse Systems. REDDI, O.S., RITA PENTIAIAH, P. and REDDY P.P. (India) 3P22

## OCCUPATIONAL AND ACCIDENTAL EXPOSURE TO MUTAGENS

3P

23. Mutagenicity Screening of Dental Root Canal Filling Material in *Salmonella*/Microsome System. NAKASHIMA, K., TAKEUCHI, E., OGUNI, H., OUCHI, K. and YOSHITSUGU, K. (Japan) 3P23
24. A Sensitive Immunochemical Technique for Detection of DNA-damages. BAAN, R.A., VAN DEN BERG, P.T.M., BROCADES ZAALBERG, O. and LOHMAN, P.H.M. (The Netherlands) 3P24
25. Mutagenesis and Modification of Mutagenesis by Chlorinated Dibenzofurans. SCHOENY, R. (USA) 3P25

## NEW METHODS OF MUTAGENICITY TESTING

26. Forward Mutation Assay Using Low-concentration Streptomycin Resistance Mutation in *E. coli* Strains with Plasmid pKM101. NISHIOKA, H., NISHI, K. and KOSAKO, M. (Japan) 3P26
27. Rec-assay with *B. subtilis* by Survival Colony Counting. SAKAMOTO, Y., NAGAYABU, O., YAMAMOTO, K.S. and KIKUCHI, Y. (Japan) 3P27
28. Improvements in the *Bacillus subtilis* Rec-assay; Results on 500 Chemicals and their Implications. HIRANO, K., KADA, T., SADAIE, Y. and HARA, M. (Japan) 3P28
29. Development of Mutagen Detection System with *Bacillus subtilis*, TANAKA, K., MOROHOSHI, F., MUNAKATA, N. and TANOOKA, H. (Japan) 3P29
30. Biological Relaxation Method – A New Method to Measure Mutation Rate and to Study Selection Process of a Bacteriophage. HUSIMI, Y., NISHIGAKI, K., KINOSHITA, Y. and TANAKA, T. (Japan) 3P30
31. New Method for the Detection of Environmental Mutagens Using the Fish, *Oryzias latipes*. II. Effects of the Treatment of Males with Chemicals on the Hatchability of Eggs Fertilized by the Males. KIRITA, A., EGAMI, N. and SAKAIZUMI, M. (Japan) 3P31
32. Induction of Chromosome Aberrations in Fish (*Boleophthalmus dussumieri*) Following *in vivo* Exposure to Mitomycin C and Heavy Metals Mercury, Selenium and Chromium. KRISHNAJA, A.P. and REGE, M.S., (India) 3P32
33. The Determination of DNA Repair Replication in Isolated Rat Hepatocytes Treated with Chemical Mutagens. ANDRAE, U. (FRG) 3P33
34. Beta-Naphthylamine Induced Presumed Somatic Gene Mutations in Mice. CHAUHAN, P.S., NEUHÄUSER-KLAUS, A. and EHLING, U.H. (FRG) 3P34
35. On the Role of Female Genotype in Dominant Lethal Mutations in Mice. ARAVINDAKSHAN, M., SESHADRI, R. and CHAUHAN, P. S. (India) 3P35
36. An Application of Cluster Analysis Method for the Classification of the Mutagenicity of Various Chemicals. IMAMURA, A., KURUMI, Y., KODAMA, M., KAWACHI, T., NAGAO, M., WAKABAYASHI, K. and SUGIMURA, T. (Japan) 3P36
37. Recombinosuppressive Activity of Some Environmental Chemicals. SHARMA, C.B.S.R., MURTY, K.V., RAJU, D.S.S. and RAO, B.G.S. (India) 3P37

## CYTOGENETIC METHODS

3P

38. Metabolism of Benzene and its Effects on Chromosome of Human Lymphocytes in Culture. MORIMOTO, K., WOLFF, S. and KOIZUMI, A. (Japan and USA) 3P38
39. Estimation of Radiation-induced Mitotic Delay of Trisomy-21 Lymphocytes in Culture. MORIMOTO, K., KANEKO, T. and KOIZUMI, A. (Japan) 3P39
40. Combined Effects of Chemicals with Gamma-Ray on Chromosomes in Trisomy-21 Lymphocytes in Culture. KANEKO, T. and KOIZUMI, A. (Japan) 3P40
41. Comparison of the Effects Induced by Triethylenemelamine in Mouse Somatic and Germ Cells. VANNIER, B., BENICOURT, M. and GLOMOT, R. (France) 3P41
42. Application of Acridine Orange Fluorescent Staining to Micronucleus Test. HAYASHI, M., SOFUNI, T. and ISHIDATE, M., Jr. (Japan) 3P42
43. Cytogenetic Analysis of Meiotic Chromosomal Radiosensitivity Changeable during Oogenesis in the Chinese Hamster. MIKAMO, K. and SUGAWARA, S. (Japan) 3P43
44. Stage Sensitive Inductions of First Cleavage Chromosome Aberrations and Heritable Translocations by Chemicals in Male and Female Germ Cells of Mice. TANAKA, N., KATOH, M. and IWAHARA, S. (Japan) 3P44
45. Effect of 3, 4-Benzo/A/pyrene on the Chromosomes of Tumours and Some Organs of Differently Treated Mice. NEHÉZ, M., SELYPES, A., NAGYMAJTÉNYI, L. and BERENCSI, G. (Hungary) 3P45
46. Histological and Cytogenetical Effects of Redentin<sup>R</sup> on the Spermiogenesis and on the Bone-marrow Cells of the Mouse, *in vivo* Experiment. NEHÉZ, M., KÉKES-SZABÓ, A., MAZZAG, É. and SELYPES, A. (Hungary) 3P46
47. *In vivo* Cytogenetic Screening Test for Carcinogenic Chemicals – Studies of 147 Laboratory and Environmental Chemicals. SUGIYAMA, T., SHIMAZU, H., FUJIE, K., UEDA, N., MAEDA, S., MURAO, S., GOTO-MIMURA, K., KAZAMA, T. and CHATTOPADHYAY, S.C. (Japan) 3P47

9:00 – 11:30 a.m. SYMPOSIUM 2

**THE TOXICOLOGY OF ENVIRONMENTAL MUTAGENS TS2**

Chairperson: R. Truhaut (France)

Cochairperson: T. Kawachi (Japan)

## Introduction

- TRUHAUT, R. (France) TS2-1  
Place of Mutagenicity Tests in Toxicological Evaluation of  
Chemicals Likely to Be Present in the Environment
- CHOUROULINKOV, I. (France) TS2-2  
Mutagenic Hazard and Genetic Risk Evaluation on Environmental  
Chemical Mutagenic Substances
- LOPRIENO, N. (Italy) TS2-3  
Genotoxic and Epigenetic Carcinogens
- WEISBURGER, J. H. (USA) TS2-4  
What is the Predictive Value in regard to Carcinogenic Potential  
of Positive and Negative Results of Mutagenicity Testing?
- SCHMÄHL, D. (FRG) TS2-5

9:00 – 11:30 a.m. SYMPOSIUM 4

Room B

**MUTAGENS AND CARCINOGENS IN THE DIGESTIVE TRACT TS4**

Chairperson: S. R. Tannenbaum (USA)

Cochairperson: T. Kawabata (Japan)

## Chairman's Remarks

- TANNENBAUM, S. R. (USA) TS4-1  
A Search for Mutagens and Carcinogens in the Lower Digestive  
Tract of Man
- ARCHER, M. C. (Canada) TS4-2  
Polynuclear Aromatic Hydrocarbons and Catechol Derivatives as  
Potential Factors in Digestive Tract Carcinogenesis
- HECHT, S. S. (USA) TS4-3  
Ingestion and Excretion of Nitrate in Humans and Experimental  
Animals
- ISHIWATA, H. (Japan) TS4-4  
Quantitative Estimation of Endogenous Nitrosation in Man by  
Measurement of the Urinary Excretion of N-Nitrosoproline
- OHSHIMA, H. (France) TS4-5  
Formation of N-Nitroso Compounds in the Gastrointestinal Tract
- TANNENBAUM, S. R. (USA) TS4-6

9:00 – 11:30 a.m. PANEL DISCUSSION 4

**COMPARISON OF CYTOGENETIC METHODS: CHROMOSOME ABERRATION, SCE AND MICRONUCLEUS TEST**

TP4

Chairperson: J. A. Heddle (Canada)

Cochairperson: M. Ishidate, Jr. (Japan)

Micronuclei *in vivo* and *in vitro* as Short Term Assays for Chemical Mutagens

HEDDLE, J. A. (Canada)

TP4-1

Chromosomal Aberration Test *in vitro* as a Primary Screening for Environmental Mutagens and for Carcinogens

ISHIDATE, M., Jr. (Japan)

TP4-2

Sister Chromatid Exchange as a Sensitive Test for Mutagenic Carcinogens

WOLFF, S. (USA)

TP4-3

Comparison of Cytogenetic Methods

NATARAJAN, A. T. (The Netherlands)

TP4-4

Detection of Somatic Cell Mutation in Human Lymphocytes as an Assay for Previous Mutagenic Exposure *in vitro*

ALBERTINI, R. J. (USA)

TP4-5

General Discussion



# **MISHIMA CONFERENCE**

**SEPTEMBER 25-26**

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# MISHIMA CONFERENCE

FRIDAY, SEPTEMBER 25

MISHIMA Room A

9:30 a.m.—12:30 p.m. SYMPOSIUM 2

## CHROMOSOME ABERRATIONS MS2

Chairperson: W. W. Nichols (USA)

Cochairperson: T. H. Yosida (Japan)

Introductory Comments

NICHOLS, W. W. (USA) MS2-1

The Induction and Formation of Chromatid-type Aberrations

KIHLMAN, B. A. (Sweden) MS2-2

Sister Chromatid Exchange Formation: Detection, Applications,  
and Mechanistic Considerations

LATT, S. A. (USA) MS2-3

Virus Induced Cellular Genetic Changes

NICHOLS, W. W. (USA) MS2-4

Environmental Mutagens and Karyotype Evolution in Mammals

YOSIDA, T. H. (Japan) MS2-5

General Discussion

9:30 a.m.—12:30 p.m. SYMPOSIUM 3

Room B

## DEPENDENCE OF MUTAGENESIS ON GERM CELL STAGE AND SEX MS3

Chairperson: F. H. Sobels (The Netherlands)

Cochairperson: K. Tutikawa (Japan)

Dependence of Mutagenesis in *Drosophila* on Metabolism, Germ  
Cell Stage and Sex

VOGEL, E. (The Netherlands) MS3-1

(Title to be announced)

PRESTON, R. J. (USA) MS3-2

Germ-cell Sensitivity in the Mouse: A Comparison of Radiation  
and Chemical Mutagens

SEARLE, A. G. (UK) MS3-3

9:30 a.m.—12:30 p.m. SYMPOSIUM 6

**GENETIC IMPLICATIONS OF CO-MUTAGENIC AND ANTI-MUTAGENIC AGENTS** MS6

Chairperson: J. W. Drake (USA)

Cochairperson: T. Kada (Japan)

Introduction

DRAKE, J. W. (USA) MS6-1

Antimutagens and the Problem of Controlling the Action of Environmental Mutagens

ALEKPEROV, U. K. (USSR) MS6-2

Mechanisms and Genetic Implications of Environmental Anti-mutagens

KADA, T. (Japan) MS6-3

Plasmid-mediated Enhancement of Chemical Mutagenesis

WALKER, G. C. (USA) MS6-4

Intrinsic Modifiers of Mutagenesis

GLICKMAN, B. W. (USA) MS6-5

1:45 — 2:30 p.m. PLENARY LECTURE 1 Hall

Chairperson: C. Ramel (Sweden)

The Quantitation of Environmental Mutagens

HOLLAENDER, A. (USA) ML-1

2:40 — 5:40 p.m. SYMPOSIUM 5 Room A

**THE EVALUATION OF HUMAN GENETIC RISK** MS5

Chairperson: B. A. Bridges (UK)

Cochairperson: A. Tonomura (Japan)

The Role of Cytogenetics in Evaluation of Human Genetic Risk

BOCHKOV, N. P. (USSR) MS5-1

The Role of the Epidemiologist in Evaluating Human Genetic Risk

MILLER, J. R. (Canada) MS5-2

Quantitation of Human Variant Lymphocyte Assays

ALBERTINI, R. J. (USA) MS5-3

The Alkylation of Macromolecules as a Basis for the Evaluation of Human Genetic Risk

CALLEMAN, C. J. (Sweden) MS5-4

2:40 – 5:40 p.m. PANEL DISCUSSION 1

**PROBLEMS IN MUTATION STUDIES WITH CULTURED MAMMALIAN CELLS** MP1

Chairperson: E. H. Y. Chu (USA)

Co-chairperson: Y. Kuroda (Japan)

Introduction MP1-1

Mutation Studies in Human Somatic Cells

CHU, E. H. Y. (USA) MP1-2

Quantitative Mutagenesis with the CHO/HGPRT System

HSIE, A. W. (USA) MP1-3

Different Implication of Treatment Period on the Mutagenic Activity of Sterigmatocystin and Nickel Acetate

UMEDA, M. (Japan) MP1-4

Forward Selection of Mutants in Cultured Mammalian Cells *via* Substrate Induced Cell Killing

SIMONS, J. W. I. M. (The Netherlands) MP1-5

2:40 – 5:10 p.m. PANEL DISCUSSION 2

Room C

**PROBLEMS OF ENVIRONMENTAL MUTAGENS AND CARCINOGENS IN DEVELOPING COUNTRIES** MP2

Chairperson: P. Oftedal (Norway)

Co-chairperson: Y. Tazima (Japan)

Introductory Remarks

OFTEDAL, P. (Norway) MP2-1

Report of the Workshops

DE NAVA, C. C. (Mexico) MP2-2

LIM-SYLIANCO, C. Y. (Philippines) MP2-3

SMUTKUPT, S. (Thailand) MP2-4

MASSOUD, A. E. (Egypt) MP2-5

Synthesis of the Problems

RAMEL, C. (Sweden) MP2-6

Cancer Problems in Developing Countries

HIGGINSON, J. (France) MP2-7

International Cooperation on Environmental Problems

LESACA (UNEP) MP2-8

Discussion

9:30 a.m.—12:20 p.m. SYMPOSIUM 1

**MECHANISMS OF MUTAGENESIS AND DNA REPAIR MS1**

Chairperson: B. J. Kilbey (UK)  
 Cochairperson: M. Sekiguchi (Japan)

## Introduction

SEKIGUCHI, M. (Japan) MS1-1

Mechanisms of Mutagenesis in Bacteria  
 MOUNT, D. W. (USA) MS1-2

Mechanisms of Induced Mutagenesis in Yeast  
 LAWRENCE, C. W. (USA) MS1-3

Examining the Mechanism of Mutagenesis in *Drosophila melanogaster* with DNA Repair-defective Mutant Strains  
 SMITH, P. D. (USA) MS1-4

Mechanisms of Mutagenesis in Cultured Mammalian Cells  
 COX, R. (UK) MS1-5

Summary and Concluding Remarks  
 KILBEY, B. J. (UK) MS1-6

## General Discussion

9:30 a.m.—12:30 p.m. SYMPOSIUM 4

Room B

**HIGHER PLANT SYSTEMS FOR MONITORING ENVIRONMENTAL MUTAGENS MS4**

Chairperson: R. Villalobos-Pietrini (Mexico)  
 Cochairperson: H. Yamaguchi (Japan)

Mutagenicity Testing of Chemical Mutagens in Higher Plants  
 FUJII, T. (Japan) MS4-1

Maize as an Assay for Environmental Mutagens  
 PLEWA, M. J. (USA) MS4-2

Differences in the Responses of Plant and Animal Cells to Mutagenic Agents  
 KIHLMAN, B. A. (Sweden) MS4-3

9:30 a.m. – noon SYMPOSIUM 7

**DOSE-RESPONSE RELATIONSHIP AND THE PROBLEM OF THRESHOLDS** MS7

Chairperson: R. C. von Borstel (Canada)

Co-chairperson: Y. Tazima (Japan)

Apparent Threshold and its Significance in the Assessment of Risks due to Chemical Mutagens

TAZIMA, Y. (Japan) MS7-1

Quantitative Measures of Mutagenicity and Mutability

HAYNES, R. H. (Canada) MS7-2

Linear Dose Dependencies and Repair Processes; Implication for Risk Estimation

ELKIND, M. M. (USA) MS7-3

The Mutational Specificity of  $\gamma$ -Rays Is Influenced by Dose: Implications for Thresholds and Risk Estimation

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A Model for Low Dose Risk Estimations

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Summary

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General Discussion

2:00 – 2:45 p.m. SPECIAL LECTURE 1

Chairperson: J. F. Crow (USA)

A Brief Sketch of Environmental Mutagen Studies in Japan  
TAZIMA, Y. (Japan)

ML-3

2:45 – 3:30 p.m. SPECIAL LECTURE 2

Chairperson: U. H. Ehling (FRG)

Factors Affecting Mutagenicity of Ethylnitrosourea in the Mouse  
Specific-locus Test and their Bearing on Risk Estimation  
RUSSELL, W. L. (USA)

ML-4

3:30 – 4:15 p.m. PLENARY LECTURE 2

Chairperson: Y. Tazima (Japan)

A View from the Ivory Tower  
AUERBACH, C. (UK)

ML-2

4:15 – 4:45 p.m. GENERAL ASSEMBLY OF IAEMS

4:45 p.m. CLOSING CEREMONY



# **KYOTO SATELLITE MEETING**

**SEPTEMBER 26-27**

1970

CHITRA KALIA

1970

# KYOTO SATELLITE MEETING

SATURDAY, SEPTEMBER 26

KYOTO Hall

9:45 – 9:50 a.m. WELCOME ADDRESS  
NISHIOKA, H. (Japan)

9:50 – 10:00 a.m. KEYNOTE ADDRESS  
TAKEBE, H. (Japan)

10:00 a.m. –  
12:30 p.m. SYMPOSIUM 1

## MUTAGENS AND CARCINOGENS IN FOOD KS1

Chairperson: L. Fishbein (USA)  
Cochairperson: M. Ishidate, Jr. (Japan)

Introductory Remarks  
FISHBEIN, L. (USA) KS1-1

Nitrosamines and Related Carcinogens in Food  
LIJINSKY, W. (USA) KS1-2

Mutagens/Carcinogens in Foods  
NAGAO, M. (Japan) KS1-3

Mutagenic Potential of Fried Sausage Extract in Bacteria in the  
Plate and Host-mediated Assay, in *Drosophila*, Mammalian Cells  
in Culture and in Mice  
WILD, D. (FRG) KS1-4

The Need for Multiple Test Systems to Identify Genotoxic  
Compounds in Western Style Food  
STICH, H. F. (Canada) KS1-5

Concluding Remarks  
ISHIDATE, M., Jr. (Japan) KS1-6

1:30 – 3:30 p.m. SYMPOSIUM 2

**MUTAGENS AND CARCINOGENS IN AIR AND WATER**

KS2

Chairperson: C. Ramel (Sweden)

Co-chairperson: Y. Ohnishi (Japan)

Introductory Remarks

RAMEL, C. (Sweden)

KS2-1

Mutagens and Carcinogens in Particulates in the Environmental Air

MATSUSHITA, H. (Japan)

KS2-2

The Detection of Mutagens in the Tissues of Marine Organisms

PARRY, J. M. (UK)

KS2-3

Aldehydes and Related Substances in Water and Air Systems

MOUTSCHEN, J. (Belgium)

KS2-4

Concluding Remarks

OHNISHI, Y. (Japan)

KS2-5

4:00 – 6:00 p.m. SYMPOSIUM 3

**MUTAGENS AND CARCINOGENS IN PESTICIDES**

KS3

Chairperson: J. Wassom (USA)

Co-chairperson: Y. Shirasu (Japan)

Introductory Remarks

WASSOM, J. (USA)

KS3-1

Study of Pesticide Genotoxicity

WATERS, M. D. (USA)

KS3-2

Comparative "in vitro" Mutational Studies with Pesticides: Results of a Five Years E.E.C. Programme

CARERE, A. (Italy)

KS3-3

The Use of Predictive Assays in Assessment of Mutagenic/Carcinogenic Potential of Pesticides

REINHARDT, C. F. (USA)

KS3-4

Inconsistencies between *in vitro* and *in vivo* Mutagenesis Results in the Toxicological Evaluation of Pesticides

NEWELL, G. W. (USA)

KS3-5

Concluding Remarks

SHIRASU, Y. (Japan)

KS3-6

9:30 a.m. — noon SYMPOSIUM 4

**MUTAGENS AND CARCINOGENS IN DRUG AND COSMETICS**

KS4

Chairperson: B. N. Ames (USA)

Cochairperson: T. Sugahara (Japan)

Introductory Remarks

AMES, B. N. (USA)

KS4-1

Effect of Bleomycin on Chromosome Structure and Centromere Activity

VIG, B. K. (USA)

KS4-2

Microbial Mutagenicity Assays of Inhalation Anesthetics and their Metabolites

SIMMON, V. F. (USA)

KS4-3

The Present Knowledge on the Mutagenic and Genetic Risks of the Hair Dyes.

LOPRIENO, N. (Italy)

KS4-4

Light Effect on Chemical Mutagenesis and its Evaluation in Environmental Carcinogenesis

NISHIOKA, H. (Japan)

KS4-5

Concluding Remarks

SUGAHARA, T. (Japan)

KS4-6

1:00 – 5:15 p.m. LECTURES AND PANEL DISCUSSION

**BIOLOGICAL COMPLEXITIES IN ESTIMATING THE GENETIC AND SOMATIC EFFECTS OF ENVIRONMENTAL MUTAGENS**

KL

Chairperson: J. R. Miller (Canada)

Cochairpersons: S. Kondo (Japan)

H. Takebe (Japan)

## An Introduction

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| AMES, B. N. (USA)   | KL-2 |
| Hypermutagenesis in the Eye Color of <i>Drosophila melanogaster</i> Caused by a Transposable Element                                    |      |
| RASMUSON, B. (Sweden)   | KL-3 |
| Genetic Factors Affecting the Production of Chemically Induced Dominant-lethal Mutations and Heritable Translocations in Mice           |      |
| GENEROSO, W. M. (USA)   | KL-4 |
| Induction of Dominant and Recessive Mutations by Chemicals in Mice  |      |
| EHLING, U. H. (FRG)   | KL-5 |
| Complexities in the Response of Mammalian Germ Cells to Mutagens and their Bearing on Some Commonly used Approaches to Risk Estimation. |      |
| RUSSELL, W. L. (USA)  | KL-6 |
| Comparative Sensitivity of Mice to Induction of Malformation and Cancer by Urethan and Alkylating Agents                                |      |
| NOMURA, T. (Japan)  | KL-7 |
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| MILLER, J. R. (Canada)  | KL-8 |

# INDEX OF CONTRIBUTORS

Pages are given after the names of contributors. Italic numerals indicate pages on which contributors appear as chairpersons or cochairpersons.