

⁺
PROCEEDINGS of
The First International Symposium
ADVANCES IN LEGAL MEDICINE

Edited by Taizo Nagano⁺

October 11-15, 1990
Kanazawa, Japan

Contents

COMMEMORATIVE SPECIAL LECTURES

J. Kondo (Japan) : Prediction of Science in 21st Century	1
H. Manabe (Japan) : Expectations for Forensic Medicine Approaching the 21st Century	5
G. Schmidt (FRG) : Advances in Forensic Medicine Towards the 21st Century	11
W. Janssen (FRG) : Advances in Forensic Medicine and the Welfare of Human Beings	20
Symposium-Theme I :	
COMPARISON OF SYSTEMS OF LEGAL MEDICINE IN THE WORLD	
Plenary Lectures	
Y. Mizoi (Japan) : Education, Research and System of Legal Medicine in Japan	31
G. Schewe (FRG) : The Structure and Educational System of German Legal Medicine	34
I – 1. Institution and Practice	
M. S. L. Salgado (Sri Lanka) : Undergraduate and Post-Graduate Medico-Legal Education and Practice in Sri Lanka	37
J. E. L. Pinto da Costa (Portugal) : Medico-Legal Organization in Portugal	40

J. -Z. Zhu, L. Wang. (P. R. China) : The Current System of Forensic Medicine in the P. R. China	43
P. M. Jablonský (Czechoslovakia) : History, Present Status and Future of Legal Medicine in Slovakia	45
O. Romo (Chile) : Psychiatric Forensic Expertise and Imputability	48
G. Schmidt (FRG) : Forensic Medicine As an Interdisciplinary Subject	52
P. Saukko (Finland) : The Medico-Legal System in Finland	54
A. Penttilä, P. J. Karhunen, M. Tenhu, E. Vuori (Finland) : Deaths of Finns Abroad Revisited in Helsinki	57
B. Knight (United Kingdom) : The Ideal System of a Medico-Legal Service	60
R. Breitenecker (USA) : The Current Status of Legal Medicine in the USA	62
J. T. Jia (P. R. China) : On the Historical Development of Forensic Medicine in China	65
T. Fukunaga, Y. Ueno, K. Yamamoto, Y. Mizoi, S. Hishida, Y. Yamamoto, M. Yamada, Y. Tatsuno (Japan) : Statistical Analysis of Unnatural Deaths in Hyogo and Shiga Prefectures—Comparison of the Results of Inquests by Medical Examiners and by Others	68

	Y. Katsumata, J. Nudeshima (Japan) :	
	Unnatural Deaths: A Comparison of Medico- Legal Practices in Japan and the U.S.A.	71
I -2. Education		
	M. Staak, B. Madea (FRG) :	
	Undergraduate and Postgraduate Teaching of Forensic Medicine in West Germany	74
	P. Chandra Sekharan (India) :	
	Medico-Legal Practice and Education in India	80
	Z. Marek (Poland) :	
	Medical Error and Deontological Problems in Undergraduate and Postgraduate Education in Poland	83
	J. E. L. Pinto da Costa (Portugal) :	
	Portuguese Medico-Legal Education	88
	T. C. Chao (Singapore) :	
	Teaching of Forensic Medicine in Singapore	91
	J. T. Jia (P. R. China) :	
	On the Medico-Legal Education in China	93
	S. Alteza, Jr. (Philippines) :	
	Medico-Legal Education in the Philippines	96
	S. Oshida, Y. Ohno, S. Uchigasaki (Japan) :	
	Video Relay System from Legal Autopsy Room to Lecture Room	99
	K. Terazawa, H. Akabane, B. Wu, M. Nagao, T. Takatori (Japan) :	
	Citation of Non-English Literatures - On the Obstruction of Arteries by Typical Hanging	100
I -3. Medical Law and Ethics		
	G. Schewe (FRG) :	
	Recent Trends in Medical Law in Germany	103

T. Kanagawa (Japan) : The Present Situation of Informed Consent in Japan	108
A. Luna, P. Barroso (Spain) : Attitudes of Doctors towards Death, Euthanasia and Informing Terminal Patients	111
H. Harada, N. Furumoto, T. Shouman, M. A. Green (Japan, United Kingdom) : Modeling and Estimation of Breath Alcohol Concentration after Drinking	114
H. Hattori, N. Yamamoto, J. Furuno (Japan) : Legal and Ethical Aspects of AIDS Affair in Japan	117

Symposium-Theme II :

**PROBLEMS WITH INSURANCE AND
COMPENSATION AFTER TRAUMATIC INJURIES**

II - 1. Sequelae of Traumatic Injuries

W. Eisenmenger, G. Beier (FRG) : Medical Insurance Problems after Trauma	121
T. Takatori (Japan) : Vehicle Collision Experiments at Low Speeds and Medical Approaches	124
J. Liu, S. Song (P. R. China) : A Preliminary Study on the Application of Visual Evoked Potential (VEP) in Forensic Practice	127
X. Liu, P. Yu, X. Zhou, Y. Zhang (P. R. China) : Evaluation of Auditory Brainstem Response (ABR) Applied in the Forensic Practice	130
P. D. Niall (Australia) : Medical Tribunals in Workers Compensation Disputes Developments in Australia	133

M. Hayashida, M. Nihira, K. Hirakawa,	
N. Moriya, Y. Tomita, T. Watanabe (Japan) :	
The Effect of Alcohol on Diagnosis, Severity and Outcome of Injured Patients in Traffic Accidents and Falling Victims	136
N. Ohashi, M. Doi, S. Misawa, K. Ono (Japan) :	
The Relationship between Impact Speed and Injury Severity in Motorvehicle- Pedestrian Accidents	139
II – 2. Medical Care of Injuries and Responsibility of Doctors	
B. Knight (United Kingdom) :	
The Medical Malpractice and Negligence Situation in Britain	142
M. C. S. Ribeiro, (Portugal) :	
Road Traffic Accidents. Insurance and Compensation	144
T. Hiranuma (Japan) :	
Medical Care on Traffic Accidents and Its Diagnostic Criteria	147
C. Wakasugi (Japan) :	
Damages or Fatal Consequences of External Injuries and Medical Treatment	151
Symposium-Theme III :	
MODERN METHODS FOR DETERMINATION OF DEATH	
III – 1. Time of Death	
C. Henssge, B. Madea (FRG) :	
Estimation of the Time since Death	155
G. Beier, E. Tutsch-Bauer, W. Wiesböck (FRG) :	
Influence of Temperature on Rigor Mortis	159

G. Vacchiano, R. Massini, C. Romano (Italy) :	
The Post-Mortem Demyelination: A New Method for Estimation of Time after Death	162
G. Kauert, W. Eisenmenger (FRG) :	
Experiences in Biochemical Diagnosis of Suicide by Analyzing Serotonin in Cerebrospinal Fluid	167
A. Sawaguchi, J. Kotani, T. Funao, N. Nakada, A. Koshizawa (Japan) :	
Death From Rapid Drowning: Findings of Cerebral Blood Flow and Serum Haptoglobin	170
H. Sugie, T. Funao (Japan) :	
Ultraviolet Spectrophotometry and HPLC of Vitreous Humor for the Estimation of Hours After Death	173
III – 2. Brain Death and Organ Transplantation	
K. Hoshino (Japan) :	
Bioethical Considerations on Brain Death and Organ Transplantation	176
M. Fukaya, Y. Sasaki, S. Murakami, T. Nagano, T. Kanagawa (Japan) :	
A Proposition Concerning the Brain Death Act Legislation in Japan	179
B. Knight (United Kingdom) :	
The Present Situation of Organ Transplantation in Great Britain	182
M. J. Carneiro de Sousa (Portugal) :	
Brain Death. The Problem in Portugal	184
D. -X. Li (P. R. China) :	
Pathology of Brain Death	187

J. Ishise, S. Murakami, J. Yamashita (Japan) : Involuntary Movements after Brain Death: Pathological Observations in the Cervical Spinal Cord	190
Y. Kinoshita, K. Okamoto, T. Yoshioka, T. Sugimoto (Japan) : Long-Term Organ Preservation in Brain Death Maintained with Vasopressin and Catecholamine	193
R. Breitenecker (USA) : The Current Status of Organ Transplantation in the USA	196
Y. Tatsuno, T. Fukunaga, Y. Yamamoto, M. Yamada, M. Kane, S. Fujiwara, J. Adachi, Y. Mizoi (Japan) : Neuropathological Studies on Brain Death	198
D. -X. Li (P. R. China) : Pathology of Brain Death—Delayed Traumatic Intracerebral Hematoma (DTICH)	201

Symposium-Theme IV :

ADVANCES IN THE FIELD OF

FORENSIC PATHOLOGY

IV – 1. Application of Ultramicroscopy and

Enzyme-Histochemistry

V. Schneider (FRG) :

Electron Microscopy and Forensic Medicine

205

M. Oehmichen (FRG) :

Application of Immunohistochemistry in

Forensic Medicine

208

S. Shoumura, S. Emura, M. Ustumi, H. Isono,

Y. Bunai, I. Ohya (Japan) :

Postmortal Changes of the Fine Structure

of the Liver

211

M. Morita, N. Tabata (Japan) : The Morphological, Biochemical and Immunohistochemical Studies on Asphyxia	214
T. Kita, Y. Furuya (Japan) : Vasomotion of the Pulmonary Vessels During Asphyxial Congestion	216
M. Yoshino, T. Kimijima, S. Miyasaka, H. Sato, B. Miyake, S. Seta (Japan) : Ultrastructural and Cytochemical Changes of Rabbit Brain in Hypoxic State	218
N. Kawaguchi, M. Mukaida, M. Saito, M. Okada, N. Yamazaki, Y. Takada (Japan) : The Ultrastructural Basis of Tinctorial Change of Collagen Fibers in the Damaged Dermis	221
Y. Tatsuno, T. Fukunaga, Y. Yamamoto, M. Yamada, S. Fujiwara, Y. Ueno, T. Sawaguchi, Y. Mizoi (Japan) : Immunohistochemical Approach to Alzheimer-Type Dementia	224
K. Yoshida, Y. Ogura, M. Masui, M. Yamazaki, C. Wakasugi (Japan) : A Histochemical Study of Calmodulin in Dog Myocardial Ischemia and Autopsy Cases of Sudden Cardiac Death	227
A Luna, E. Osuna (Spain) : Are Biochemical Markers Necessary for Post-Mortem Diagnosis of Myocardial Infarction?	230
U. Hellerich (FRG) : Lectin Histochemistry- A Helpful Method to Differentiate Early Pregnant from Non-Pregnant Endometrium	233

J. -Z. Zhu, D. -C. Wang (P. R. China) : Estimation of Time of Injuries by Microscopic Localization and Quantification of Nonspecific Esterase	235
P. J. Karhunen, A. Penttilä, P. Leinikki, H. Brummer-Korvenkontio, M. -L. Kantanen, M. Nyberg (Finland) : Visually-Read Assay of the Vitreous Humour in Rapid Screening for HIV in Necropsies	238
N. Tabata, M. Morita (Japan) : Studies on Livor Mortis. On the Localization of Hemoglobin in the Human Skin Tissue by Immunohistochemistry	241
M. Ogata, S. Kubo, O. Kitamura, W. Hirose, I. Nakasono, T. Fukunaga, Y. Tatsuno (Japan) : An Immunohistochemical Demonstration of Hemoglobin in the Kidney of Battered Children	243
T. Fukunaga, Y. Yamamoto, M. Yamada, Y. Tatsuno, Y. Mizoi, A. Yamashita (Japan) : Thymic Involution in Abused/Neglected Children	246
A. Nishimura, S. Fujiwara, Y. Yanagida, K. Nakanishi, Y. Mizoi (Japan) : Cerebral Atrophy in Senile Dementia and Normal Aging; A Quantitative Study Using Image Analysing System	249
O. Kitamura, S. Kubo, M. Ogata, M. Iwasaki, W. Hirose, I. Nakasono (Japan) : Histopathological Studies of Hypoxic and Ischemic Brain Damage and its Application to Forensic Autopsy Cases	252

T. Fujikura, Y. Kominato, H. Takizawa (Japan) : Forensic Application of Post-Mortem Cerebral Angiography. 1. Subarachnoid Bleeding	255
S. Takeichi, A. Tsuji, Y. Seto, T. Saito (Japan) : Histological and Enzyme-Histochemical Studies on Cardiac Sudden Death, Especially Acute Ischemic Cardiac Disease	258
Y. Ueno, K. Yamamoto, T. Imabayashi, T. Fukunaga, Y. Mizoi (Japan) : Biogenic Amine Content of Human Carotid Body in the Cases of Sudden Death	260
H. Fukushima, M. Ota, K. Tanaka, H. Hasekura (Japan) : Using the Immunostaining Method and the Polymerase Chain Reaction Amplification for Identifying Mixed-up Formalin-Fixed, Paraffin-Embedded Tissues	263
K. Matsuura, Y. Bunai, X. Jiang, A. Nagai, S. Yamada, I. Ohya, H. Sawada (Japan) : Immunohistochemical Localization of Dihydrodiol Dehydrogenases in the Lens and the Kidney	266
S. Miyasaka, T. Kimijima, M. Yoshino, H. Sato, B. Miyake, S. Seta (Japan) : Immunohistochemical Demonstration of ABH Blood Group Antigens in the Putrefied and Dried Skin Fragments	269

IV – 2. Present Status of SIDS

A. Takatsu (Japan) : Advances in Pathological Diagnosis of SIDS	272
G. Sorgo (Austria) : The Unexpected Sudden Death of a Child with Unusual Pathological Findings	275

P. M. Jablonský, S. Dluholucký (Czechoslovakia) :
Present Status of SIDS in Central Slovakia 278

Y. Matsubara, K. Narisawa (Japan) :
Identification of a Common Genetic Mutation
Responsible for Sudden Infant Death Syndrome 280

Y. Tsuda (Japan) :
Several Cases of Pediatric Forensic Study
– The Second Report of the Statistic and
Sociomedical Review on Sudden Infant and
Child Death – 282

Symposium-Theme V :

ADVANCES IN TOXICOLOGICAL ANALYSIS

V – 1. Determination of Drugs and Poisons in Tissues

H. Käferstein (FRG) :
Methodology of Drug Detection in Body Fluids 285

G. Machata (Austria) :
Sample Collector (BSC 1) for
Volatile Substances in the Work Environment 288

**T. Miyazaki, F. Chikasue, M. Yashiki,
T. Kojima (Japan) :**
Carbon Monoxide Hemoglobin Saturations in
Left and Right Heart Blood from Cadavers not
Exposed to Fire or CO Gas 291

Y. Yamamoto, K. Yamamoto, Y. Fukui (Japan) :
Teratogenic Effects of Methamphetamine 294

T. Marcinkowski, K. Borowiak, M. Parafiniuk (Poland) :
Microcrystals in the Toxicological and
Histological Analysis in Cases of Intoxication with
Ethylene Glycol 297

H. Seno, O. Suzuki, T. Kumazawa, M. Asano (Japan) : Isolation of Medico-Legally Important Drugs with SEP-PAK C ₁₈ Cartridges Using Chloroform as Elution Solvent	299
B. Hu, M. Liu, Z. Wang, Y. Yang, X. Deng, G. Li, H. Li, Q. Liang, P. Su (P. R. China) : Studies on Aconitine Toxicology	302
B. Hu, K. Yun, M. Liu, Z. Wang (P. R. China) : Toxicokinetic Studies of Cantharidin in Rabbits	305
C. Moore, K. Sato, H. Hattori, Y. Katsumata (Japan) : The Determination of Cephalosporins Using Super Microbore High Pressure Liquid Chromatography-Mass Spectrometry	308
J. Adachi, Y. Tatsuno, Y. Ogawa, K. Nakagawa, Y. Mizoi (Japan) : Greenish Discoloration of Skin and Formation of Sulfhemoglobin Caused by Hydrogen Sulfide Poisoning and Putrefaction	311
K. Ameno, C. Fuke, S. Ameno, T. Kiriu, T. Shinohara, K. Sogo, I. Ijiri (Japan) : A Rapid and Sensitive Quantitation of Amitraz in Plasma by Gas Chromatography With Flame Thermionic Detection	314
T. Kiriu, K. Ameno, C. Fuke, S. Ameno, T. Shinohara, K. Sogo, I. Ijiri (Japan) : In Vivo and in Vitro Studies of Regional Brain Distribution of Toluene	317
Y. Kuroiwa, K. Aoki, T. Watanabe, Y. Kuroiwa (Japan) : Enzyme-Linked Immunosorbent Assay for Methamphetamine, Morphine and Benzoyllecgonine.....	320

T. Nagano, T. Takayasu, T. Ohshima, H. Maeda (Japan) : An Analytical Method for Volatiles in the Biological Materials by Pulse Heating	323
M. Nihira, K. Hirakawa, M. Hayashida, Y. Tomita, N. Moriya, T. Watanabe (Japan) : Changes of Acetic Acid Concentration of Various Rat Tissues After Ethanol Injection	326
T. Shinozuka, N. Kuroda, T. Murai, S. Takei, K. Kurihara, J. Yanagida (Japan) : Determination of Microamount of Mefenamic Acid by High Performance Liquid Chromatography	329
K. Terazawa, L. Ji, M. Nagao, T. Takatori, K. Aoki, Y. Hirose, Y. Kuroiwa (Japan) : Production and Characterization of Monoclonal Antibodies Reactive with Methamphetamine Raised Against a New Antigen	332
M. Tomita, T. Okuyama, S. Watanabe, B. Uno, S. Kawai (Japan) : Liquid Chromatographic Determination of Glyphosate and its Metabolite in Serum	335
G. Huang, Y. Zhang, L. Li, X. Sung, Z. Wang, L. Qiao (P. R. China) : Toxicological Pathological Study of Lei Gong Teng (<i>Tripterygium Wilfordii</i> Hook)	338
C. Romano, A. Malorni, A. Acampora, G. Vacchiano, M. Esposito, R. De Mercato : Experiences in Legal Medicine about Antiparasites Toxic Substances and Human Nourishment	341

V – 2. Emergency Medicine and Forensic Toxicology

W. Bonte (FRG) :

Advances in Congener Analysis 344

K. Kimura, T. Nagata, K. Kudo, T. Imamura (Japan) :

Determination of Kerosene and
Light Oil Components in Blood 347

E. Logemann, C. Müller, E. Keller (FRG) :

Pharmacokinetics of Diazepam in Patients
with Nephrotic Syndrome 350

L. v. Meyer, W. Hanisch, G. Kauert,

G. Drasch (FRG) :

Determination of THC in Blood by HPLC 353

M. Nagao, H. Saitoh, T. Takatori, K. Iseki,

K. Terazawa, K. Miyazaki (Japan) :

Transport Characteristics of Paraquat Across
Rat Intestinal Brush Border Membrane 356

C. Fuke, K. Ameno, S. Ameno, T. Kiriu,

T. Shinohara, K. Sogo, I. Ijiri (Japan) :

Simultaneous Determination of Paraquat and
Diquat in Biological Materials Using
Second-Derivative Spectroscopy and
High-Performance Liquid Chromatography 359

K. Gonmori, N. Yoshioka (Japan) :

Effect of Mushroom Toxin on Biogenic Amines
of Rat Brain 362

K. Hirakawa, M. Nihira, M. Hayashida,

N. Moriya, Y. Tomita, T. Watanabe (Japan) :

Assesment of the Brain Lesions of the Rats on
Acute Ethanol Poisoning Using Magnetic
Resonance Imaging (MRI) 365

T. Nagano, H. Maeda, T. Takayasu, J. Nishigami, T. Ohshima (Japan) : Screening and Quantitation of Drugs and Poisons in Blood and Urine in Emergency Medical Care and Legal Autopsy Cases	368
K. Sato, Y. Mizuno, C. M. Moore, K. Tamaki, Y. Katsumata (Japan) : Storage of Blood for Methemoglobin Determination: Effect of Various Buffers on the Storage of Hemolysates	371
I. Yamamoto, T. Matsunaga, H. Kobayashi, K. Watanabe, H. Yoshimura (Japan) : Pharmaco-Toxicity of p-Coumaroyltyramine and Feruloyltyramine in Marihuana	374
K. Yamazaki, E. Tanaka, N. Shimojo, S. Misawa (Japan) : The Validity of Measurements of Locomotor Activity as Evidence of Exposure to Toluene	377

Symposium-Theme VI:

METHODOLOGY IN FORENSIC SEROLOGY AND STAIN ANALYSIS

VI - 1. Sero-Genetic Procedures

P. Hooft, H. van de Voorde (Belgium) : The Zinc Spot Test as a Tool for the Primary Identification of Human Seminal Stains	381
R. Iida, T. Yasuda, D. Nadano, K. Kishi (Japan) : Intensification of Peroxidase-Diaminobenzidine Staining Using Gold-Sulfide-Silver: A Simple and Highly Sensitive Detection Method for Immunoblotting	384

Y. Furusawa, Y. Uchimura, S. Tsunenari (Japan) : Forensic Biology of Human Hepatic Bile: Its Application to the Determination of Species Specificity and ABO Blood Type of Feces	387
S. Kubo, M. Iwasaki, O. Kitamura, M. Ogata, I. Nakasono (Japan) : The Effect of Soil Fungi on Changes in the Specificity of the ABO Blood Groups and on the Degeneration of Hair	390
Y. Tamaki, T. Kishida (Japan) : Experience with Anti-Mouse IgG/Anti-Peroxidase Bispecific Monoclonal Antibody in ELISA and Dot Immunobinding for GM Typing	393
M. Wu, Z. Jin (P. R. China) : Phenotyping of GC in Human Semen Stains Using IEF Followed by Enzyme Immunoassay	396
T. Matsuki, T. Nakajima, K. Furukawa (Japan) : Application of Anti-H Active Antibodies and Lectins to the Detection of Human Blood Group H Substances	399
T. Kogure, M. Sagi, Y. Kuwaki, K. Yamazaki, M. Kitahama (Japan) : Detection and Activity of Blood Group A and B Gene-Encoded Glycosyltransferases in Human Seminal Plasma and Cerebrospinal fluid	402
S. Ito, K. Matsui, K. Suzuki, H. Matsumoto, Y. Mizoi (Japan) : A Simple Extraction Procedure for ABO Group Typing of Bloodstain by Dot ELISA Method	405

K. Sodesaki, A. Kimura, T. Tsuji F. Matsumura (Japan) : Cell Surface ELISA for Detection of Anti-ABO and Anti-MN Blood Group Antibodies	408
P. K. Chattopadhyay, M. K. Thakkar (India) : ABO Blood Groups from Hair	411
A. Kimura, M. Osawa, S. Yasuda, H. Ikeda, T. Uda, S. Nakashima M. Ohta, T. Tsuji (Japan) : On Monoclonal Antibodies to Epitopes Specific for Species in Primates	415
T. Nagano, T. Ohshima, H. Maeda, Y. Fujioka (Japan) : Species Identification of Minute Bloodstains by Simultaneous Precipitin Reactions in an Agarose Gel after Electrophoresis	418
B. Wang, J. Jia, D. Chen (P. R. China) : On the Species Discrimination of Animal Bloodstains by Polyacrylamide Gel Isoelectrofocusing	421
J. Guo, A. Fan (P. R. China) : Determination of Phenotypes of Salivary Amylase in Saliva and Saliva Stains by IEF and Silver Staining	424
K. Akiyama, Y. Ito, H. Kimura (Japan) : Characterization of a New Protein Which Binds Actin in Seminal Plasma and Saliva	427
H. Matsumoto, T. Fukae, S. Kubo, O. Kitamura, M. Iwasaki, I. Nakasono, M. Ogata (Japan) : Subtyping of the Group Specific Component (Gc) in Semen and in Seminal Stains	430

S. Abe, K. Hiraiwa (Japan) : New Form of γ -Glutamyl Transpeptidase in Human Seminal Plasma and It's Application to Forensic Medicine	433
K. Suzuki, S. Ito, H. Matsumoto, Y. Mizoi (Japan) : Three Hereditary Subtypic Patterns detected in the Ba Fragment of Complement Factor B	435
S. Nakamura, K. Omoto, O. Ohue, K. Yamashita, J. Ochi, K. Akiyama, A. Sawaguchi (Japan) : C1R Polymorphism in the Japanese Population	438
H. Nishimukai, K. Shinomiya, T. Shinomiya (Japan) : Genetically Controlled Variants of Antithrombin III	441
K. Umetsu, I. Yuasa, T. Suzuki (Japan) : Orosomuroid (ORM) Typing by Isoelectric Focusing: Effect of Protease Treatment and Stability in Bloodstains	444
I. Yuasa, K. Umetsu, N. Nakayashiki, N. Tamaki, H. Shiono, K. Okada (Japan) : Orosomuroid (ORM) Typing by Isoelectric Focusing: An Improved Method for ORM1 Subtyping and the Reactivity of Anti-Human ORM Antibodies with Animal ORM	447
A. Tamura, K. Suzuki, S. Ito, H. Matsumoto, Y. Mizoi (Japan) : Two-Dimensional Polyacrylamide Gel Electrophoresis Analysis of Postmortem Change in Brain Proteins	450

**S. Ikemoto, E. Kajii, A. Taketomi, E. Fukui,
Y. Kamitani, K. Tomita (Japan) :**
Transformation of Genetic Markers in Blood with
BMT and Problems in Legal Medicine 453

VI – 2. DNA Polymorphisms

K. Sullivan, P. Gill (United Kingdom) :
The Potential Use of PCR in Forensic Analysis 456

K. Suzuki, S. Ito, H. Matsumoto, Y. Mizoi (Japan) :
Restriction Fragment Length Polymorphisms
Associated with Immunoglobulin Gamma Switch
Regions in Man 459

**I. Sakai, K. Kasai, K. Yoshida, H. Mukoyama,
S. Seta (Japan) :**
DNA Analysis Using Single Locus VNTR Probes
and Its Application to the Individualization of
Human Bloodstains 462

**C. Rittner, L. Braun-Heimer,
P. M. Schneider (FRG) :**
The Use of PCR-Amplified DNA in
Paternity Testing and Stain Analysis 465

**T. Yokoi, M. Nata, Y. Aoki, K.
Sagisaka (Japan) :**
Contribution of DNA Analysis on Paternity Test 468

**C. Rittner, U. Schacker, G. Rittner,
B. Holtkamp, E. Bohnke, H. H. Sonneborn,
P. M. Schneider (FRG) :**
DNA Polymorphisms in Paternity Testing:
The Use of Minisatellite Probe MZ 1.3 in Incest,
Deficiency, Antenatal and Postmortem Cases 471

M. Ota, H. Inoko, A. Ichinose, K. Tsuji, H. Fukushima, H. Hasekura (Japan) : Application of Modified PCR-RFLP Method in Forensic Science	474
S. Harada, T. Nakamura, S. Misawa (Japan) : Investigation of DNA Polymorphism by Amplification Strategy	477
Y. Yang, X. Wu, C. Luo, X. Liu (P. R. China) : Differentiation of Sex Origin of Bloodstains by Dot Hybridization with Y-Chromosome Specific Probe	480
M. Nakai, F. Moriya, Y. Hashimoto, H. Ishizu, R. Nanikawa (Japan) : Sex Identification from Contaminated Human Bloodstains by DNA Analysis	483
Y. Yamamoto, A. Nakanishi, H. Ishizu (Japan) : Sex Determination of Forensic Biological Materials by Polymerase Chain Reaction (PCR)	486
M. Wu, G. Sun (P. R. China) : Sex Determination of Hairs by Analysis of Amplified DNA Sequences	489
K. Honda, S. Harihara, T. Nakamura, M. Hirai, S. Misawa (Japan) : Identification of a Dead by DNA Extracted from a Fragment of Bone or a Single Tooth	492
T. R. Kumari, P. Chandra Sekharan (India) : Authenticity of DNA Fingerprinting	495
E. Naito, K. Dewa, M. Fukuda, H. Yamanouchi, R. Kominami (Japan) : A PCR Method for Species Identification	498

M. Yamada, T. Fukunaga, Y. Yamamoto, K. Kurokawa, H. Ueyama, I. Ohkubo, J. Ochi, Y. Tatsuno (Japan) : Detection of DNA Polymorphisms by Using PCR Method and Its Application to Forensic Identification	499
M. Wu, G. Sun (P. R. China) : Application of the Polymerase Chain Reaction in Forensic Science Practice	502
A. Akane, K. Matsubara, H. Shiono, S. Takahashi, Y. Nakahori, M. Yamada, Y. Nakagome (Japan) : Forensic Application of Hyper-Variable DNA Polymorphisms and Sex Determination by Polymerase Chain Reaction	504
A. F. Vuorio, A. Sajantila, T. Hämäläinen, A -C. Syvänen, L. Peltonen, C. Ehnholm (Finland) : Amplification of the Hypervariable Region of the Apolipoprotein B Gene: A Suitable Method for Solving Forensic Problems	507
K. Tamaki, T. Yamamoto, R. Uchihi, Y. Katsumata (Japan) : Distribution of HLA-DQA1 Genotypes in the Japanese Population	510
C. Luo, X. Wu, H. Du, Y. Yang, X. Liu (P. R. China) : The Study on DNA RFLPs Detected by pAW101 Probe in the Population of Guangdong, China	513
T. Rothämel, W. Keil, H. D. Tröger (FRG) : DNA-Profiling with VNTR-Probes - Allelic Frequencies of Hinf1-RFLPs Detected by pHINS310, pMUC7 and pMR24/1	516

Free Theme

A. Garmus (USSR) :

Pelvis Bones Sexing by Inspectional Method 519

Th. Riepert, Ch. Rittner (FRG) :

Importance of Identification of Corpses by
X-Ray Comparison 522

R. Neshige, Y. Kuroda, R. Kakigi, F. Fujiyama,

R. Matoba, K. Takada (Japan) :

Electroencephalography as an Objective Index
of Photograph Recognition. Application to
Simulated Criminal Investigation 525

N. Oguri (Japan) :

Rapid Discrimination Method for the Animal Fats
Using Pyrolyzer-Gas Chromatograph 528

Author Index 531

W. Eisenmenger and G. Beier

Medical insurance problems after trauma are due both to the national particularities of insurance law and to difficulties in proving the medical facts. The latter are identical world-wide and known to all doctors of forensic medicine, therefore, only the legal aspects of insurance medicine in the Federal Republic of Germany will be discussed hereafter.

Due to the fact that already more than 100 years ago social insurance was introduced in our country and that our economy is flourishing, social security in case of injury and death after accidents is good. Problems result from the coexistence of different kinds of historically established insurances, from the legal fields competent for these insurances and the special concepts of causality in these legal fields.

In addition to the statutory accident insurance foreseen within general social insurance there is personal accident insurance. In case of dispute regarding statutory accident insurance, the matters are brought before a Social Court, for the latter - personal accident insurance - the civil courts are competent. In social law the person insured is obliged to provide evidence, however, there the requirements to be met regarding the proof of causality are not very high. A probable connection between trauma and damage is sufficient, i.e. in case there are more things which speak for it than against it.

If there is more than one condition concurring as a cause of damage, then the most important condition is decisive. In case a trauma worsened a physical ailment not caused by an accident such that death occurred, then causality is fulfilled if the life expectancy was reduced by at least one year.

The social accident insurance covers accidents at work as well as those which occur on the way to work and on the way back home. Accidents caused by negligence are also covered but not those caused by gross negligence. This mainly applies to those kinds of accidents where alcoholization is one of the major conditions.

Other accidents apart from those occurring at work can be covered by personal accident insurance. Each owner of a motor bike, e.g. has to take out third-party liability insurance. Disputes are settled by civil law which entails that the person who is maintaining something also has to prove it. The theory of causality differs from that in social law: It is not sufficient that an incident factually causes damage but - according to the general experience of life - this incident must also normally be apt to cause such damage. These kinds of insurances do not cover intoxications, diseases caused by mental influence, by high-energy rays, effects of light, temperature and weather nor damage caused by apoplectic stroke, cramp fit, fainting or attacks of vertigo or by mental disturbance or disturbance of consciousness e.g. neither those caused by alcoholization. If, in addition to this natural internal diseases contributed by more than 25% to the death, then the insurance benefit can be reduced accordingly.

These complicated legal rules necessitate a number of medical expert opinions. The latter deal in particular with questions relating to causality in the simultaneous presence of natural diseases and traumatic damage, with the significance of existing alcoholization and with self-caused risk increase - especially when in case of a traffic accident a seat belt was not put on although this is mandatory in our country. Regarding this topic our institute carried out an extensive field study of seriously injured or killed persons who had put on a seat belt. The result of this study is now used as a basis for many expert opinions. The questions of the courts concentrate on the evaluation, whether it can be established by means of the injuries incurred that no belt

was worn and what kind of injuries could then have been avoided had a belt been worn.

Address:

W. Eisenmenger and G. Beier
Institute for Forensic Medicine of the University of Munich
Frauenlobstrasse 7a, D-8000 München 2
Federal Republic of Germany