比較腫瘍学常陸宮賞

The Prince Hitachi Prize for Comparative Oncology

2007

平成19年5月22日

比較腫瘍学常陸宮賞牌

The Medal of the Prince Hitachi Prize for Comparative Oncology

常陸宮家のご紋とお印の黄心樹（おがたまのき）を図案いたしました。
地金は銅仕上げで、文様はご紋と賞は金です。
The crest and the symbol tree of the Prince Hitachi Family are illustrated.
The tree is ogatama-no-ki(Michelia compressa Maxim. a kind of Magnolia).
The chinese characters at the center are read the Prince Hitachi Prize for Comparative Oncology

財団法人癌研究会
比較腫瘍学常陸宮賞委員会

The Committee on The Prince Hitachi Prize
for Comparative Oncology

The Japanese Foundation for Cancer Research

Introduction to The Prince Hitachi Prize for Comparative Oncology

The Prince Hitachi Prize for Comparative Oncology was established on November 27, 1995 by the Japanese Foundation for Cancer Research in commemoration of the sixtieth birthday of Prince Hitachi and his long time devotion to cancer research. The Prize is made by the Committee on the Prince Hitachi Prize for Comparative Oncology of the Foundation and is awarded to promote the increased research in cancer and related fields.

His Imperial Highness Prince Hitachi, after graduation from Gakushuin University, continued his study of cell biology at the Zoological Department of the University of Tokyo from 1958 to 1969. Since June 1969, he first studied chemical carcinogenesis, then comparative oncology of lower animals (fish and frog) at the Cancer Institute, the Japanese Foundation for Cancer Research as a guest researcher. The Prince has been a member of the Japanese Cancer Association since February 1970 and presented his works at the annual meetings of the Association almost every year. He has also been a corresponding member of the American Association for Cancer Research since May 1977 and published more than forty papers in English. Since January 2001, H.I. H. Prince Hitachi is Honorary President of the Japanese Foundation for Cancer Research.

The Prince Hitachi Prize is awarded within the field of cancer research defined as the same field on which the Prince has been studying, namely comparative oncology, especially tumors of lower animals and related fields. The research in this field is a base in cancer and biology and its progress is highly desirable.

Dr. Manfred Schartl, Professor of Julius-Maximilians University, Germany is elected as the Awardee of The Prize for 2007. Dr. Schartl carried out outstanding works on the clarification of melanomagenesis in the fish. He made a great contribution to comparative oncology.

Presentation Ceremony of the 2007 Prince Hitachi Prize for Comparative Oncology

Date : **May 22, 2007 11:30-13:30**
Place : **Club Kanto**
1-3-1 Marunouchi, Chiyoda-ku, Tokyo
(Tel 03-5221-8955)

Programme for the Presentation Ceremony

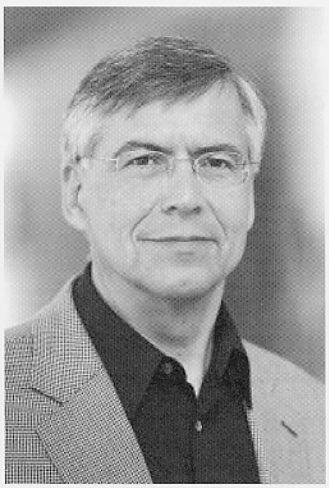
1	Opening	11:30
2	Address **Mr. Kunio Anzai** Chairperson, the Committee on the Prince Hitachi Prize for Comparative Oncology	
3	Report on the Process of Selection Committee **Dr. Tomoyuki Kitagawa** Chairperson, the Selection Committee	
4	Presentation of the Prize	
5	Imperial Message Prince Masahito	
6	Congratulatory Address **Ms. Yasuko Ikenobo** Vice Minister of Ministry of Education, Culture, Science, Sports and Technology	
7	Acceptance Address **Dr. Manfred Schartl** Professor, Julius-Maximilians-University Würzburg, Germany	
8	Closing	

Awarding Lecture 11:50-12:15

Chairperson **Dr. Takatoshi Ishikawa**
Title of the lecture : **Clarification of molecular mechanisms of melanomagenesis in Xiphophorus hybrid fish**
Dr. Manfred Schartl

Reception 12:30-13:30

2007年比較腫瘍学常陸宮賞受賞者



マンフレッド　シャートル　博士

生年月日　1953年4月16日
国　　籍　ドイツ
現　　職　ウルツブルグ　ユリウスーマキシミリアン大学　生理化学教授
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略　　歴

Manfred Schartl博士は、1953年4月16日ドイツのFriedberg/Hessenに生まれた。1971年に高校と兵役を終了した後、1973年よりGiessenのJustus-Liebig大学で生物学と化学を学び、1979年に生物学と化学の高校教師免状を得た。研究に関しては、1978年に学位を取得している。学位論文作成のためにFritz Anders教授とその妻Annerose Anders博士の教室に参加していたが、そこで博士はシフォフォラス・メラノーマ系を紹介された。その系は彼の学問的興味に点火し、その興味は魚類を遺伝的モデルとして用いる比較腫瘍学において、今日まで変わらずに残っているのである。Elisabeth Gateff教授に初めて会ったのもこの頃であった。彼女のショウジョウバエの腫瘍抑制遺伝子に関する研究もまた、腫瘍形成の理解のために遺伝学を用いることの価値を博士に保証した。そこで彼はAnders教授の教室でPhD研究を開始し、シフォフォラスでのメラノーマ発生は細胞自立性の進行なのか非自立性のものかという問いに、移植実験を用いて答えようとした。
Anders教授の研究室には、数多くの外国からの訪問者がいて、すこぶる刺激的な雰囲気が有り、Schartl博士も若手研究者として、比較腫瘍学界の指導的研究者達と会うことができた。色素細胞学会の国際会議では、常陸宮様とその同僚に会い影響を受けた。同僚の一人であった石川隆俊教授からは非遺伝性の発がんに関し教えを受けた。松本教授とBagnara教授からは、色素細胞生物学全般と下等脊椎動物のメラノーマ以外の色素細胞腫瘍に関して重要な啓示をうけた。
1980年にPhDを取得した後、1982年にGiessenの遺伝学教室のポスドク、ついで米国NCIのR.C.Gallo博士の研究室のポスドクとなった。1985-1991年の間、博士はミュンヘンのMax-Plank-Institute for Biochemistryの遺伝子センターの独立した研究グループのリーダーであった。ここで彼は、Tu遺伝子座に存在するシフォフォラスのメラノーマ遺伝子のクローニングを行い、1989年に腫瘍遺伝子座の基本的に重要な構成要素としてXmrk遺伝子を単離した。この間にミュンヘンのLudwig-Maximilians大学より教授資格(Habilitation)を得ている。博士は1991年にWürzburg大学医学部生理化学教室の正教授、1996年Würzburg Theodor-Boveri-Institute for Bioscienceの所長、1997年よりはBergen大学のScientific Advisory BoardのChairman, 2001年には同大学の兼任教授になっている。
博士は現在ドイツ遺伝学会の副会長であり次期会長が約束されている。医学生に生化学を講義する義務の他に、新しい生物医学研究プログラムを開始しており、この学科における学士と修士の試験委員会の長である。彼は、自分が新たに任命された教授である生物学部の科学的かつ戦略的開発委員会のメンバーであり、大学の国際協力委員会の勤めを果たしている。彼はEuropean CommissionとGerman Research Councilにより資金が与えられているいくつかの大型のセンターグラントの調整者であり、またTransregio"Ras dependent pathway of human cancer"の議長である。1991年に彼はDeutsche Forschungsgemeinschaftの Heisenberg賞を受け、またOxford大学病理学部でJenkinson lectureを行った。2004年、彼はノルウエーのベルゲン大学より名誉教授(Degree of Dr. honoris causa)の称号を受けた。

The Awardee of the 2007 Prince Hitachi Prize for Comparative Oncology

Professor Dr. Manfred Schartl

Date of Birth	April 16, 1953
Nationality	German
Position	Professor of Physiological Chemistry
Address	Physiologische Chemie I
	Julius-Maximilians-Universität Würzburg
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Outline of Personal History

Professor Dr. Manfred Schartl was born in Friedberg/Hessen, Germany on 16 April 1953. After finishing high school (Gymnasium) in 1971 and military service, he studied Biology and Chemistry from 1973 on at the Justus-von-Liebig University of Gießen. He earned the teaching certificate for High School in Biology and Chemistry in 1979. For his scientific studies, he finished with the diploma in 1978. For the thesis work he had already joined the laboratory of Prof. Dr. Fritz Anders and his wife, Dr. Annerose Anders, where he was introduced to the Xiphophorus melanoma system. This has sparked his scientific interest, which has remained unchanged until today in comparative oncology using fish as genetic models. It was also at that time when he first met Prof. Elisabeth Gateff. Her work on Drosophila tumor suppressor genes also assured him about the value of using genetics for understanding tumor formation. He then started to do his PhD in the laboratory of Prof. Anders, working on the question whether melanoma formation in Xiphophorus is a cell autonomous or non cell autonomous process using transplantation experiments. The very stimulating atmosphere with many international visitors at the Anders lab enabled him already as a young scientist to meet with other leading scientists in the field of comparative oncology. On occasion of Pigment Cell Society international meetings he was influenced by meeting Prince Masahito and his colleagues, including Takatoshi Ishikawa, who introduced him into non-inherited tumor formation. Important inspirations with respect to pigment cell biology in general and non-melanoma pigment cell tumors of lower vertebrates came from Prof. Matsumoto and Prof. Bagnara. After his PhD, which he finished in 1980, he was a Postdoc at the Department of Genetics in Gießen and in 1982 he went to do Postdoc research at the laboratory of Dr. R. C. Gallo at the National Institutes of Health of the National Cancer Institute in Bethesda, Maryland, USA. From 1985 to 1991 he was an independent research group leader at the Gene Center of the Max-Planck-Institute for Biochemistry in Martinsried near Munich, Germany. Here, he worked on the cloning of the Xiphophorus melanoma oncogene encoded by the Tu locus, which led to the isolation of the Xmrk gene as the critical constituent of the tumor locus in 1989. During this time he completed in 1988 the habilitation, which was given by the Faculty of Biology of the Ludwig-Maximilians University of Munich. In 1991 he was appointed Full Professor at the Department of Physiological Chemistry at the Medical School of the University of Würzburg. Since 1996 he was vice-chairman and chairman of the Theodor-Boveri-Institute for Biosciences at the Biocenter of Würzburg. Since 1997 he is chairman of the Scientific Advisory Board of the Sars International Center for Marine Molecular Biology in Bergen, Norway and since 2001 an Adjunct Professor for Experimental Cancer Research at the University of Bergen, Norway. He is member of the Advisory Board of the German Genetics Society and currently vice-president and incoming president of this society. Besides being responsible for teaching basic Biochemistry to medical students, he has inaugurated a new study program for Biomedicine and he is chairman of the examination committee for Bachelor and Master students in this discipline. He is a member of the committee for scientific and strategic development of the Faculty of Biology where he is a co-opted faculty . He also serves in the Committee for International Relations of the University. He has been the coordinator of several large center grants, funded by the European Commission and the German Research Council and is speaker of the Transregio "Ras dependent pathways of human cancer". In 1991 he was a Heisenberg Awardee of the Deutsche Forschungsgemeinschaft and was awarded the Jenkinson lecture of the department of Pathology at Oxford University. In 2004, he received the degree of a Dr. honoris causa from the University of Bergen, Norway.

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Academic Achievement

The main scientific interest of Prof. Manfred Schartl was always to understand the molecular mechanisms underlying the formation of cancer diseases. Already as a student at the University of Gießen, he was introduced to the Xiphophorus melanoma system by his academic teacher, Prof. Dr. Fritz Anders. He realized the unique possibilities of this animal model system where the gene primarily responsible for neoplastic transformation is clearly defined as a genetic locus. He was inspired by the solid and detailed genetic analysis of tumor formation in this animal system and the cell biological and morphological findings, which led Prof. Anders to visionary hypotheses about the basis of melanoma formation. He started to do his diploma thesis in the Genetics Institute and was familiarized with the peculiarities of the fish tumors and the many detailed and sometimes unpublished data of this cancer system. He learned from scratch how to breed these fish and to do genetic analyses by Prof. Anders and his wife, Dr. Annerose Anders. During his PhD studies he could show by transplantation experiments between embryos of different genotypes that the action of the tumor gene of Xiphophorus is cell-autonomous, a finding for which many years later his laboratory could find a molecular basis, namely that the tumor gene is a ligand-independent constitutively active growth factor receptor.

Through contacts with the department of Virology he started to work on the cellular counterparts of viral oncogenes in the Xiphophorus melanoma system. Together with Dr. Angelika Barnekow, he first identified a fish homolog of the src proto-oncogene and showed that the $pp60^{c\text{-}src}$ kinase activity correlates not only with the malignancy of the melanoma but also follows precisely the inheritance of the tumor gene and its regulatory locus. The finding that a cellular counterpart of a retroviral oncogene, which at that time were only known from birds and mammals, is conserved even down to fish, led to an extended study on the evolutionary distribution and origin of proto-oncogenes. He could show that even the most primitive metazoan animals, namely the sponges, already have these important cellular genes and as a result of this study that went on for many years, a phylogenetic tree of proto-oncogenes was established.

After being introduced into up-to-date molecular biology methods and recombinant DNA technology in the laboratory of Prof. Dr. Robert Gallo, he was able with his team at the Gene Centre of the Max-Planck-Institute in Martinsried, to isolate and molecularly characterize the gene, which is encoded by the long known Tu locus of Xiphophorus. He could show that this gene is a mutated version of the EGF receptor. The oncogene was termed Xmrk for Xiphophorus melanoma receptor tyrosine kinase. Using Xmrk as a model for understanding the biochemical changes that occur in the transformation from a normal to a malignant cell, the signal transduction network downstream of Xmrk was elucidated and the molecular mechanisms that lead to uncontrolled proliferation, anti-apoptosis, inhibition of differentiation, tumor cell migration, and survival at ectopic sites, were clarified. With this molecular systems biology approach on oncogenic signalling, the Xmrk receptor tyrosine kinase is now one of the best understood cancer molecules. The research on fish melanoma uncovered several important molecules, which had so far not been appreciated in human melanoma but on the basis of the Xiphophorus work turned out to be important molecules involved in melanoma cell progression or being involved in the resistance of human tumors to certain therapies.

Because Xiphophorus fish are live-bearing and therefore not well suited for transgenic technologies, Prof. Schartl started to work also with the Japanese medaka, Oryzias latipes. In his laboratory the first

embryonic stem cell line from fish was established, which is still being used for understanding normal and malignant pigment cell development, as well as for embryonal development studies in general. Most importantly, the Xmrk gene has been transferred to the medaka. Now, a transgenic medaka line is available that develops spontaneously highly malignant pigment cell tumors, which opens a plethora of possibilities for new research approaches in the future.

Working on medaka, he also became interested in the genetics of sex determination. With a team of colleagues he was able to isolate the male sex-determining gene from the medaka, which is the first master male sex-determining gene of vertebrates besides SRY to be known. Prof. Schartl was also involved in the study that identified the homolog of this medaka sex-determining gene as the candidate male-determining gene of birds. The gene, dmrt1, is the only gene involved in sex determination, which is conserved from flies and worms throughout the evolution and plays even a role in establishing male development of humans.

With a broad interest in molecular biology in general and the usefulness of such techniques for understanding the evolution and biology of fish and other lower vertebrates, his laboratory reported on the first (and so far only) sexual reproducing triploid animal, the Batura toads of the Karakorum mountains from Central Asia. He used microsatellite studies together with Prof. Hans Fricke to analyze the population genetics of a living fossil, the coelacanth Latimeria chalumnae. He also detected a mechanism, namely paternal introgression, that helps asexual fish, in particular the Amazon molly, Poecilia formosa, despite their ameiotic mode of reproduction to survive over longer evolutionary times than theoretically predicted.

His current research centers around approaches to find and molecularly identify the regulatory locus in the Xiphophorus melanoma system, to use the new medaka melanoma model for identifying and understanding the action of tumor modifier genes, and last not least, to transfer the knowledge about the molecular mechanisms of melanoma formation in fish to the human situation. To this end, the Xiphophorus melanoma oncogene has been introduced into mammalian melanocyte cultures and the resulting neoplastically transformed melanoma cells are investigated on a comparative level.

Outline of the Prince Hitachi Prize for Comparative Oncology

The Prince Hitachi Prize for Comparative Oncology was instituted on November 27, 1995 by the Japanese Foundation for Cancer Research to promote the increased research in cancer and related field in commemoration of the sixtieth birthday of Prince Hitachi and his longtime devotion to cancer research at the Cancer Institute, the Japanese Foundation for Cancer Research. The Prize is made by the Committee on the Prince Hitachi Prize for Comparative Oncology of the Foundation.

The Prize will be awarded in accordance with the following:

1. The Prize shall be made by the Committee every year, commencing in 1996.
2. The Prize shall consist of a certificate of merit, a medal, a memorial and a prize of one million (1,000,000)yen.
3. There shall be no restrictions on the nationality of the recipient.
4. The Prize shall normally be made to one individual. In the event of a Prize being shared by two or more individuals, each shall receive a certificate, a medal, a memorial and an equal share of the prize.
5. The Prize shall be awarded to an individual or individuals who, in the judgement of the members of the Committee, has made an outstanding contribution to the advancement of research in comparative oncology, especially in tumors of lower animals and related research fields.
6. The Committee shall establish a selection committee and a funding committee.
7. The Committee shall be advised on suitable candidates for the Prize by the selection committee.
8. The selection committee shall invite nominations of candidates from such relevant individuals and organizations at home and abroad as the selection committee may deem appropriate.
9. The nomination shall consist of:
   a) Full name, date of birth, nationality and address of the candidate.
   b) The candidate's academic or professional qualifications and position.
   c) A brief statement (1 or 2 pages) describing the candidate's achievements in relation to the purpose of the Prize.
   d) The name of the individual or institution making the nomination.
10. The selection committee shall submit to the Committee a report containing recommendations of the candidate or candidates for the Prize and a supporting statement.
11. The Prize shall be presented in Tokyo in spring every year. The recipient and his or her spouse shall be invited to attend the presentation ceremony at the expense of the Committee.
12. The funding committee shall invite contributions for the Prize.

The Prince Hitachi Prize for Comparative Oncology
Awardees

○ 1996 (1st)

John C. Harshbarger
Professor, Department of Pathology
Director, Registry of Tumors in Lower Animals
The George Washington University Medical Center
"Studies on Tumors of Lower Animals"
下等動物の腫瘍に関する研究

○ 1997 (2nd)

Fritz W. Anders
Professor Emeritus
Genetisches Institut
Justus-Liebig-Universität
"The Genetics and Biology of Cancer as Studied in Fish Melanoma"
がんの遺伝学と生物学：魚のメラノーマを通して

○ 1998 (3rd)

Robert G. McKinnell
Professor
Department of Genetics and Cell Biology
University of Minnesota
"Biology and Developmental Aspect of Lucke Renal Adenocarcinoma"
リュッケー腎癌の生物学と発生学的側面

○ 1999 (4th)

Shozo Takayama
Visiting Professor
Department of Pathology School of Medicine
Showa University
"Studies on Natural History in Comparative Oncology"
比較腫瘍学におけるがんの自然史の研究

Takatoshi Ishikawa
Professor
Department of Molecular Pathology Graduate School of Medicine
University of Tokyo
"Studies on Carcinogenesis in Comparative Oncology"
比較腫瘍学における発癌機構の研究

○ 2000 (5th)

Elisabeth Gateff
Professor of Genetics
Institut für Genetik
Johannes Gutenberg Universität
"Studies on Drosophila Tumor Suppressor Genes"
ショウジョウバエのがん抑制遺伝子の研究

○ **2001 (6th)**

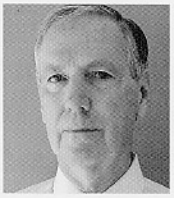
George S. Bailey
Professor of Toxicology and Director of the Marine/Freshwater
Biomedical Sciences Center
Department of Environmental and Molecular Toxicology
Oregon State University

Jerry D. Hendricks
Professor of Toxicology
Department of Environmental and Molecular Toxicology
Oregon State University
"Carcinogenesis at Low Dose in the Rainbow Trout Model"
ニジマスを用いた低用量発癌の研究

○ **2002 (7th)**

Makoto Asashima
Professor of Developmental Biology
Department of Life Sciences
The University of Tokyo
"Studies on Comparative Oncology -Developmental Biology, especially on the Mechanism of Organogenesis"
比較腫瘍学－発生生物学、ことに器官形成の機序に関する研究

○ **2003 (8th)**



Jesse Summers
Professor of Molecular Genetics and Microbiology
University of New Mexico
"Studies on woodchuck hepatitis virus and duck Hepatitis B virus"
ウッドチャック肝炎ウイルス、ダック肝炎Bウイルスの研究

○ **2004 (9th)**

Akihiro Shima
Professor　Emeritus
The University of Tokyo
"Studies on Medaka tumors and genome analysis"
メダカの腫瘍とゲノムの研究

○ **2005 (10th)**

Takeo Kishimoto
Professor of Tokyo Institute of Technology Laboratory of Cell and Developmental Biology
"The role of proto-oncogenes in cell cycle control during meiotic maturation in starfish oocytes"
ヒトデ卵におけるプロトオンコジンによる胚発生の制御

○ **2006 (11th)**

Jiro Matsumoto
Professor Emeritus Keio University
"Studies on erythrophoroma cells of goldfish and its multiple differentiation"
魚類赤色腫の株細胞樹立と分化誘導

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