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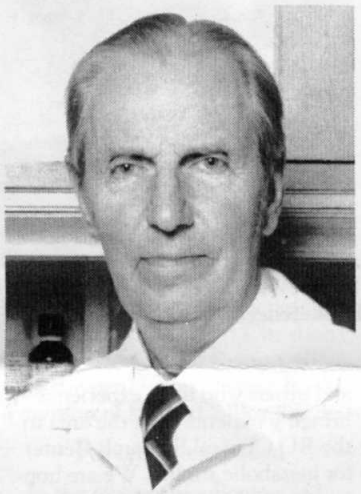
The Rockefeller University

news & notes

February 10, 1995 Volume 5, Number 17 — *The Rockefeller University*

Igor Tamm (1922-1995)

Inghert Grüttner



Igor Tamm, who was professor emeritus at Rockefeller, was a pioneer in the study of virus replication.

Igor Tamm, Abby Rockefeller Mauzé Professor Emeritus and head of laboratory at Rockefeller, died Mon., Feb. 6 of chronic lung disease at his home in Watch Hill, Rhode Island. He was 72.

Tamm was a pioneer in the study of the biochemistry of viruses and understanding how viruses replicate within the cells they invade and affect the genetic material of their hosts. Working first with influenza viruses, he isolated and described what is now called the Tamm-Horsfall glycoprotein, the first pure substrate discovered for the influenza virus enzyme. Tamm also obtained the first evidence that RNA plays a role in the replication of DNA-containing viruses. In the 1960s, he discovered the

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de Duve publishes book on life's origins

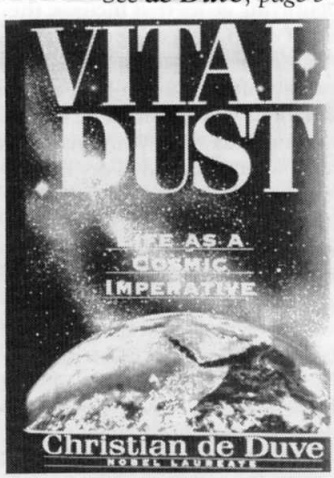
Professor Emeritus and Nobel laureate Christian de Duve has just published *Vital Dust: Life as a Cosmic Imperative*, a sweeping history of four billion years of life on earth. In the book, de Duve partitions the history of life into seven ages: the age of chemistry, the age of information, the age of the protocell, the age of the single cell, the age of multicellular organisms, the age of the mind, and the age of the unknown.

de Duve was awarded the Nobel Prize in Physiology or Medicine in 1974, jointly with Albert Claude and George E. Palade, for discoveries concerning the structural and functional organization of the cell; he is best known for his discovery of lysosomes, which serve as the digestive system of the cell.

de Duve, who divides his time between Rockefeller and the University of Louvain in Belgium, received a medical degree from the University of Louvain in 1941. He continued there to earn a Ph.D. in 1945 and a master of science in chemistry in 1946. After postdoctoral stays at the Medical Nobel Institute in Stockholm and Washington University in St. Louis, Missouri, de Duve returned to his alma mater in 1948. He came to Rockefeller in 1962 as professor, maintaining a part-time appoint-

See ***de Duve****, page 3*

Paul Gamarello/Eyetooth Design



Vital Dust **is the new book by Professor Emeritus Christian de Duve.**

Faculty chronicles

Two new heads of lab settle in at Rockefeller

Andrej Sali and Markus Stoffel, both new heads of laboratory and assistant professors at RU, arrived on campus last month and have begun settling in. Their appointments were announced in October, along with that of Peter Mombaerts, who will arrive in September.

Andrej Sali

Born in Slovenia, Sali obtained his Ph.D. at Birkbeck College (London), in crystallography. He comes to RU after a postdoctoral appointment at Harvard University where he worked with Martin Karplus in the department of chemistry. He works on theory of protein folding and on developing methods for protein structure modeling.

Sali, who arrived on Jan. 1, is temporarily quartered in Tower Building, surrounded by bare walls and open boxes of books and journals. Although not yet in his own lab, which will be located in the Rockefeller Research Building, he has already chosen a name: the Laboratory of Molecular Biophysics—bringing to a total of four the number of university labs with that moniker. "It's the same as Stephen Burley, Seth Darst, and John Kuriyan because I try to do on computer what they do by experiments," he explained.

His computer is plugged in and running. "I had to be on line from day one. Even when I think, I do it by typing on my computer. Armand Gazes was really helpful in setting me up."

Sali is acquiring more computers, and once he settles in, he plans to hire two postdocs. He is also "hoping for students," he said. "The main resource for me here is the people. I really want to collaborate with people who work with biologically interesting proteins." Sali has already done some work with Professor Peter Model and Associate Professor Marjorie Russel, and he has a paper in press with Professor John Kuriyan. He looks forward to working with other faculty as well.

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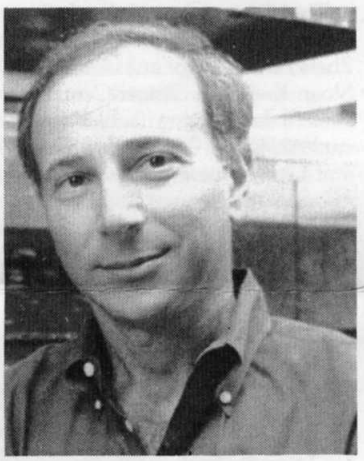
Friday lecturer to discuss cardiac development

Susan McGreavey



Mark C. Fishman will lecture today (Feb. 10).

Mark C. Fishman, director of the Cardiovascular Research Center at the Massachusetts General Hospital, will speak on "Fashioning a Heart: Revelations from Mutant Zebrafish" at the Friday lecture today (Feb. 10).

Fishman studies the genetic mechanisms of cardiovascular development in zebrafish. While much of what is known about control of development has been learned from genetic studies of fruit flies, worms, and mice, little is known about the single steps of development of such vital organs as the heart, in part because mutations often prevent the animal from surviving until birth. Zebrafish allow Fishman and his colleagues to observe development in its earliest stages: The eggs are fertilized outside the body, and both the eggs and the embryos are transparent. In addition, the heart begins to function 24 hours after fertilization. Today Fishman will discuss decisions made by progenitor cells as they coalesce into vertebrate organs, and the prospects for genetic analysis of patterning these complex structures.

"Mark has pioneered the study of the developmental biology of the heart using a new system—the zebrafish," said Professor and Senior Physician Jan Breslow. "Using this system he has identified a number

See ***Fishman****, page 4*

Children's School celebrates Lunar New Near and diverse nationalities

Borne aloft by Children's School students, a dragon paraded through Tower Café last Friday in honor of the Lunar New Year, which began Tues., Jan. 31. "We used to call it Chinese New Year, but Koreans and Vietnamese also celebrate it," explained Marjorie Goldsmith, director of the Children's School and Infant-Toddler Center.

To celebrate the holiday, Li-Lan Tsai, assistant for research, and Zhen Fan, a doctor at Memorial Sloan-Kettering Cancer Center, cooked dumplings with Blue Room students in the Children's School, and Yiying Zhang, postdoctoral associate, distributed cookies in the Infant-Toddler Center's Yellow Room.

"We make the children's cultures a theme in our activities," said Goldsmith, who recently collaborated with the children in mounting a display about languages spoken at the Children's School. According to the display, on view in the main corridor of the Children's School in Graduate Students Residence, 21 languages are spoken there, among them five Indian dialects and two Chinese dialects.

The languages are: Bengali, Bulgarian, Cantonese, English, Finnish, French, Greek, Hindi, Hungarian, Italian, Japanese, Kannada, Korean, Malayam, Mandarin, Polish, Portuguese, Russian, Spanish, Swedish, and Urdu.

Carol Fondé

Students of the Yellow and Blue Rooms at the Children's School carried their handcrafted dragon to Tower Café last week, then paraded it through the cafeteria in honor of the Lunar New Year.

Profiles

Rokshana Jahan

Position at Rockefeller: Cashier, Tower Café.

Number of years at RU: One.

Favorite part of being a cashier: "Everyone here is very friendly."

Born: Bangladesh.

Education: M.S. in economics from Dhaka University in Bangladesh.

Number of years in the U.S.: Five. "Back home, everyone learns English when they go to school, so I was able to use it when we moved to the U.S."

Household: Husband, Mizanur Rahman, a doctor who is studying in preparation for a residency; 15-month-old son, Rifat; mother-in-law, Rabeya Khatun, who helps take care of Rifat.

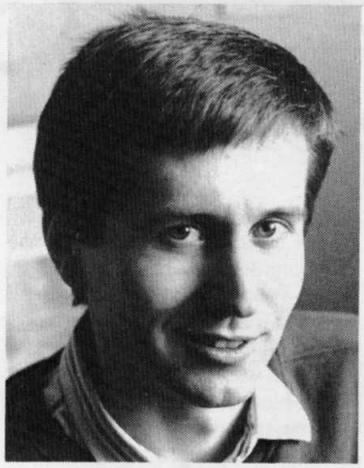
Free time activities: Reading Bangladeshi literature and writing letters to her mother in Bangladesh.

Current residence: Astoria, Queens.

Why she likes Astoria: "I feel very much at home. There are many Bangladeshi stores and a lot of people from Bangladesh live there."

Rokshana Jahan, Tower Café cashier, who hails from Bangladesh, has found a home away from home in Queens, N.Y.

New faculty adjust to new jobs, new homes, a new city, and new lives



Andrej Sali (*left*) and Markus Stoffel are new assistant professors and heads of lab at Rockefeller.

(continued from page 1)

"Even though I'm more a physicist than a molecular biologist, I prefer to be with biologists," he said. Indeed, he is married to one: Dasa Sali, a molecular biologist who is staff scientist at Genetics Institute in Cambridge, MA. "When she finds a job here, we'll move, probably to New Jersey. I don't think our dog would like New York."

Markus Stoffel

Markus Stoffel, who was born in Germany, was a medical student at Cambridge University, England and Bonn University, Germany, where he received his M.D. in 1989. In 1991, he received a Ph.D. in molecular virology, also from Bonn. After a postdoctoral fellowship at the Heinrich Pette Institute at Hamburg University with Wolfram Ostertag, he went to the University of Chicago as a postdoc, then as assistant professor in the department of medicine and research associate at the Howard Hughes Medical Institute. Stoffel takes a multifaceted approach to identifying genes that increase the risk of developing diabetes mellitus.

Stoffel also began on Jan. 1, a few days after a sixteen-hour trek in his Honda with plasmids he's been working on for three years and DNA from patients packed in dry ice in Styrofoam boxes. "I was afraid to stop. I got here at 3 A.M., got my key, put my plasmids in the refrigerator, and went to bed. Shipping would have been too dangerous," he said.

With his biological stores, he will start up a Laboratory of Metabolic Diseases. "I study diabetes, a disease characterized by hyperglycemia which is so heterogenous in nature that I like to think of it as a metabolic syndrome," he said. Stoffel wants to recruit diabetic families to the hospital. "I spoke to Jan Breslow and others who have experience bringing patients from the area to the RU Clinical Research Center for metabolic studies. We are hoping to use the hospital very effectively to recruit patients, characterize them phenotypically, and do genetic studies." He also will be hiring two postdocs and a technician and looking for students.

"It's quiet here," he said, of his offices on the 10th floor of Tower. "I'm used to a busy medical center." But that's a minor change in comparison with moving to a new city, starting a new job—and becoming a father. On Jan. 30, his wife, Toula Stoffel, gave birth to a girl, Elina, who may join the Infant-Toddler Center when her mother, a biochemist, finds a postdoctoral appointment. How's fatherhood? "Right now, I'm just trying my best to stay awake," said Stoffel.

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de Duve relies on laws of physics and chemistry to account for life on Earth

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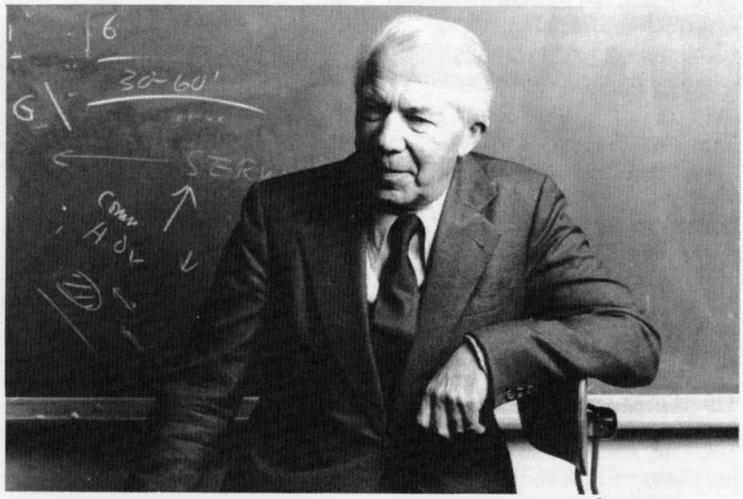
ment at the University of Louvain, and became emeritus at RU in 1988. He is a founding member and past president of the International Institute of Cellular and Molecular Pathology in Brussels, which he created in 1975. A foreign associate of the National Academy of Sciences, he has received many other honors and awards and has served on committees and boards of numerous scientific organizations.

When he returns to Rockefeller later this winter, he will be a speaker at the university's celebration of 50 years of electron microscopy in cell biology (March 16, 17, and 18).

Featured below are brief passages from *Vital Dust* (© 1995 Christian René de Duve Trust. Reprinted with the permission of Basic Books, a division of HarperCollins, Inc.).



Ingbert Gruttner

Professor Emeritus Christian de Duve divides his time between Rockefeller and the University of Louvain in Belgium.

Foresight excluded

In the making of a Boeing 747, all steps are intentional, designed, and organized according to a detailed blueprint of the final objective. Things cannot have been the same in the making of the first living cell. Every step had to stand on its own and cannot be viewed as preparation for things to come. This kind of objectivity is difficult to sustain because we know the outcome and also because our whole thinking about life is permeated by intentionality. Cells are so obviously programmed to develop according to certain lines, organs adapted to perform certain functions, organisms suited to certain environments, that the word design almost unavoidably comes to mind. [But] design has given place to natural selection. ... Life is increasingly explained strictly *in terms of the laws of physics and chemistry*. Its origin must be accounted for in similar terms.

From hydrogen to free electron to life

Whatever the exact composition of the prebiotic atmosphere, we may consider it likely that our young planet, abundantly supplied with ferrous iron, enveloped in hydrogen sulfide fumes, and exposed to strong ultraviolet radiation, was exuding hydrogen through every pore, while iron combinations destined one day to become the minerals magnetite and pyrite were laid down at the bottom of the oceans. Electrons were indeed available at a high enough energy level to support early biosynthetic reductions.

Grope, jump, evolve...

Emerging life went through a long succession of tiny evolutionary jumps separated by more or less extended periods of random groping. An image that comes to mind is that of a surface of water slowly spreading over an irregular terrain. Fingerlets extend here and there, as local attractive forces battle with surface tension, until a minor breakthrough suddenly occurs in a given direction and all the pressure momentarily concentrates on a single rivulet. After that, groping soon resumes, sending out feelers until the next breakthrough.

Evolution did its groping by means of chance mutations resulting in the synthesis of altered peptide molecules; it achieved its directional jumps through the occasional emergence of an altered peptide product that conferred a selective advantage on the protocell concerned. As with spreading water, the outcome of such a process depends on the structure of the terrain. Without better knowledge of the prebiotic terrain, we cannot reconstruct this phase of evolution in any detail...

Cell division

Whatever the mechanism of encapsulation, it had to include the possibility of turning growth into division. Without such a link, advantageous mutations could not have turned into selective assets; they would even have been self-defeating. This point is easy to understand. Consider a spherical cell. As it grows, its mass and, therefore, its maintenance and repair needs increase as a function of the third power of its radius. On the other hand, the surface area it has available for the import of nutrients increases only as a function of the second power of the radius. Growth of such a cell must necessarily reach a point where import just suffices for maintenance and repair. Further growth is impossible, unless the cell becomes asymmetrical, forms a bud, for example. Burgeoning of the bud would eventually lead to its falling off as a free entity, especially if a self-sealing membrane surrounded the whole system. Thus, any surface property that favored asymmetric growth and budding of the first protocells would, if hereditarily transmissible, automatically have been selected.

The great oxygen crisis

We tend to think of oxygen as a vital element, which indeed it is for us and for all other aerobic organisms, that is, those "living in air." For the early forms of life, however, oxygen was a redoubtable poison, as it still is for those bacteria known as obligatory anaerobes, which can survive only in the absence of oxygen. The toxicity of oxygen is due to its ready conversion in the presence of living systems into highly reactive chemical species, with names such as free hydroxyl radicals, superoxide ions, and hydrogen peroxide, that can severely damage vital cell constituents, including DNA and lipid bilayers.

When oxygen made its appearance, life had no defense against these poisons, and a major holocaust threatened. Fortunately, the process was slow and there was plenty of time for the main strategies of evolutionary adaptation to come into play. Victims probably were legion, but a few survivors emerged to people the world with new forms of life, thus turning an impending catastrophe into a major source of innovation.

Cellular collectivism

Every cell is born by division, next to a sister cell. If something tends to keep the two cells together, they will stay together. This will happen if sister cells stick to each other or if they remain within a shared housing. When each of the two sister cells divides, the same phenomenon keeps the resulting foursome together. Repetition of this process gives rise to a colony of increasing size.

Since plenty of mutations may occur that favor or impede the associative behavior of cells, it is left for natural selection to weigh the advantages of congregation against its disadvantages. The main drawback: Cells are likely to have less access to sources of nutrients and energy when grouped together than when isolated. On the plus side are better protection against predators and environmental injuries and, especially, the benefits of cooperativity.

Adam's apple

Whether mitochondrial Eve or some other ancestor, one of our distant forebears must have acquired a trait that gave its progeny a decisive evolutionary advantage. What was this trait? The answer to this tantalizing question could come from those linguists who have studied the origin and evolution of language. It is possible that this ancestor was born with a genetic "defect" that moved the larynx deeper down the neck. As pointed out by the American linguist Philip Lieberman, this anatomical feature is unique to modern humans and appears late in development. In newborn babies, as well as chimpanzees and all other animals, the larynx is much closer to the mouth. It is our lower larynx that gives us the ability to emit a much wider variety of sounds than any other animal. What started the modern human line may have been the ability to speak...

Natural selection, for better and worse

If we do not, in the near future, succeed in curtailing our population growth with rational care, *natural selection will do it for us the hard way*, at the cost of unprecedented hardship to human populations and irreparable harm to the environment. Such is the lesson of four billion years of the history of life on Earth.

The meaning of life

Meaning is to be found in the structure of the universe, which happens to be such as to produce thought by way of life and mind. Thought, in turn, is a faculty whereby the universe can reflect upon itself, discover its own structure, and apprehend such immanent entities as truth, beauty, goodness, and love. Such is the meaning of the universe, as I see it.

Potpourri

Memorial service

A memorial service for Carl Monder will be held Wed., Feb. 15 at 4:00 P.M. in Caspary Auditorium. Monder, who died last month, was a senior scientist at the Population Council's Center for Biomedical Research.

Tri-Institutional Noon Recital

The Cavani String Quartet will perform works by Luigi Boccherini, Felix Mendelssohn, and Ludwig van Beethoven at the Tri-Institutional Noon Recital today (Feb. 10). The concert, to be held in Caspary Auditorium at noon, is free. All are welcome.

Christian Steiner

The Cavani String Quartet will perform today (Feb. 10).

Friday film

L'Atalante (France, 1934), directed by Jean Vigo, will be shown today (Feb. 10) at 8:00 P.M. in Caspary Auditorium. In French with English subtitles, the film chronicles a young woman's stormy initiation into married life. Admission is free.

Lecture

Robert Blackburn of the Liberty Science Center will discuss "Handling and Care of Anoles, Iguanas, Millipedes and Tarantulas" Mon., Feb. 13 in 305 Tower.

Valentine's market

The annual Valentine's Day sale will be held Tues., Feb. 14 in the Tower Lobby from 8:30 A.M. to 3:30 P.M. Decorated roses, flowering plants, sweets, and plenty of chocolate will be on sale. Proceeds benefit the RU Children's School and Infant-Toddler Center.

Clinical Research Seminar

Katherine A. Hajjar, professor of pediatric hematology/oncology at New York Hospital-Cornell Medical College, will speak on "Annexin II: A New Component in Fibrinolytic Assembly" Wed., Feb. 15 at the Clinical Research Seminar at noon in Nurses Residence 110B.

Digital imaging orders

Media Resource Service Center now offers on-line ordering for digital imaging. To do this, connect to the MediaServe OutBasket and open the folder called "OrderFMS."

Copy the appropriate form to your computer and fill it out using your word processor. Rename the completed order form—"PRINTME.WRI" if you use a P.C. or "PRINTME" if you use a Mac—and place it, with the file to be imaged, in the InBasket. Call x7575 and leave a message that you have a new order and in which folder it can be found. For further information, contact Media, x8994.

Netscape fix

Computing Services recommends editing the NETSCAPE.INI file for users of Netscape 1.0N for the P.C. who experience problems such as the error message "unable to reach host," the Windows error called General Protection Fault, or Netscape freezing while trying to connect to a particular Web server. Contact the Help Desk, x8940, for assistance in editing this file.

Leslie Aitchison

"The structural biology department has ordered 30 more boxes of Lego."

Tax forms

Tax forms are available on the second floor of Founder's Hall, on a table across from Room 215. Tax forms not on the table may be copied from a book kept in the Controller's Office, Founder's 204. The telephone number for the I.R.S. is: 1-800-829-1040.

Pharmacy service

The research aspects of the Hospital pharmacy have required restructuring. To continue filling prescriptions for the RU community, an alternate dispensary, equally convenient, will shortly be announced. In the meantime, the Hospital will continue to fill prescriptions as usual.

Tamm

(continued from page 1)

existence of double-stranded RNA as genetic material in the ubiquitous reoviruses of humans and animals and in the wound tumor virus of plants. He also studied mechanisms that regulate the production of interferons, small proteins naturally produced by virus-infected cells to fight virus replication.

Tamm, a native of Tapa, Estonia, emigrated to the U.S. in 1945 after studying at the Tartu University Medical Faculty and at the Karolinska Institute. He received an M.D. cum laude from Yale University in 1947. In 1949, he joined Rockefeller as an assistant and as assistant physician of the Rockefeller Hospital. He became associate and associate physician in 1953, associate professor in 1956, physician in 1958, and professor and senior physician in 1964. He was named Abby Rockefeller Mauzé Professor in 1986, and became emeritus in 1992.

In 1967 Tamm was the first American to receive the Alfred Benzon Prize, awarded by the Alfred Benzon Foundation of Copenhagen, "in recognition of his outstanding research on the replication of viruses." In 1975 he received the Sarah L. Poiley Memorial Award of the New York Academy of Sciences. He was elected to membership in the National Academy of Sciences in 1975.

Tamm was a member of many professional societies and served on the advisory committee of the American Cancer Society and as general chairman of the task force on virology sponsored by the National Institute of Allergy and Infectious Diseases from 1976 to 1978. He contributed over 250 research articles and was co-editor (with F.L. Horsfall) of the fourth edition of *Viral and Rickettsial Infections of Man*.

He is survived by his wife Olive E. Pitkin, daughters Carol and Ellen, and son Eric.

Fishman

(continued from page 1)

of important gene mutations that control heart development."

Fishman received an M.D. magna cum laude from Harvard Medical School in 1976. After completing an internship and residencies at Massachusetts General Hospital, he became an assistant professor at Harvard Medical School in 1983. He was promoted to associate professor in 1989. He has held numerous positions at Massachusetts General Hospital, including chief of the Section on Neurobiology (1983-1988), assistant director of the Cancer Center (1988-1989), and assistant physician (1988-1989). He became assistant neurobiologist in the Neurology Services in 1983, chief of the Developmental Biology Laboratory in 1988, director of the Cardiovascular Research Center in 1990, and associate physician in 1992.

Fishman has received many awards and honors, including the Lambert Research Award from Harvard Medical School, a certificate of merit from the National Institutes of Health, the Basil D. O'Connor Award from the March of Dimes, established investigator of the American Heart Association, and the Rita Levi-Montalcini Lectureship of the European Neurosciences Association.

The lecture will be held at 3:45 P.M. in Caspary Auditorium and preceded by tea at 3:15 P.M. All are welcome.