



PSBMB NEWSLETTER

Philippine Society for Biochemistry and Molecular Biology

December 2006

PSBMB brings RevUp to Bicolandia

The 4th PSBMB REView and UPdate Workshop in biochemistry and molecular biology took place last April 2006 at Bicol University, Legaspi City, Albay.

The 4th RevUp was the first one linked to a two-day Ecotour which showcased the best in Bicol, including interaction with the *butanding* (whale shark) of Donsol, exploration of Huyop-huyopan Cave and climbing the majestic Mt. Mayon.

A total of 138 participants joined in two days of lectures, pen-and-paper and computer exercises. Many, including Bicolanos, joined the Ecotour as well.

More on RevUp 4 on p. 2.

UST hosts RevUp 5

RevUp also went to the University of Santo Tomas last October 19-20, 2006. RevUp 5 was co-sponsored by the Faculty of Pharmacy and the College of Science of UST.

A total of 47 teachers representing 29 private high schools in Metro Manila participated in the seminar-workshop.

More on the RevUp 5 on p. 6.

32nd Annual Convention goes behind the hype of wellness

The PSBMB held its 32nd Annual Convention last December 1-2, 2005 with the theme "Biochemistry of Wellness: Behind the Hype."

Ateneo de Manila University's Biology and Chemistry Departments hosted the Convention.

Eight plenary speakers, ten lecturers, five young scientists, and 22 posters showcased the latest in biochemistry and molecular biology research to guests and 134 participants from all over the country.

More on the 2005 Convention on p.5.



Dr. Bernas opens the 32nd PSBMB Annual Convention last December 1, 2005.

PSBMB mourns passing of Dr. Gloria de Castro-Bernas

The PSBMB together with the science and education communities of the Philippines mourned the passing of Dr. Gloria de Castro-Bernas last May 17, 2006.

Dr. Bernas was one of the pillars of the PSBMB starting from its days as the Philippine Biochemical Society. She was awarded the PSBMB service award in 2003 for her many contributions to the society.

During her term as president of the society from January 2003-December 2005, the PSBMB began its series of RevUp workshops around the country and its partnership with Hybridigm Consulting and other organizations for the Philippine Biotechnology Venture Summits.

Her colleagues Dr. Mafel Ysrael and Dr. Fortunato Sevilla III remembered her many achievements as a scholar, teacher, and leader in the *Philippine Star's* Star Science column last June 1, 2006. Excerpts from the article are in the Proceedings of the 33rd Annual Convention 2006 and on the PSBMB website (www.psbmb.org).

Inside the 4th RevUp Workshop, April 18-19, 2006, Bicol University, Legazpi City

Virginia Dia-Monje

Last October 2005, we were very glad that Pres. Susana Cabredo of the Bicol University (BU) accepted PSBMB's invitation to host the 4th RevUp workshop, replying, "we are truly honored to accept your invitation..." That started the ball rolling, activating the UP and BU RevUp Movers.

Preparations for the Bicol RevUp were different compared to those for previous RevUps. Knowing that the Bicol region is among the most under-served regions in the Philippines in terms of

exposure to advances in science, we solicited support for workshop participation of public school teachers in Bicol. The BU Movers sent letters to 160 heads of schools in Bicol and the UP Movers wrote to about 200 mayors and vice mayors, requesting them to sponsor at least 10 teachers in each of their municipalities, and to 13 Bicol governors and congressmen to sponsor the teachers' travel and accommodations in Legazpi City. CHED sent out a circular endorsing the workshop.

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A Review and Update on RevUp

Virginia Dia-Monje

Chair, PSBMB RevUp Workshop Program

RevUp is a REView and UPdate workshop series in continuing education in Biochemistry and Molecular Biology of the PSBMB. Aside from the annual conventions, PSBMB organized the RevUp to help address the need to improve and update the teaching of the biosciences in the primary, secondary and tertiary levels.

The most popular attractions in the RevUp menu are the updated lectures with handouts and reference materials, and the pen & paper as well as computer hands-on exercises. The participants also relish the companion CD which is loaded with teaching references, cool links to websites with free bioscience materials, and lots of animation files about key bioscience topics that the teachers can use in their classrooms. Another wow-factor of RevUp workshops is the fun quiz on the lectures and activities, with a shower of gift packs for the winners. The RevUp Movers in both the national organization and in the host institution ensure that each workshop is truly an enjoyable learning experience, such that each participant inevitably looks forward to the next RevUp Workshop.

PSBMB aims to bring the RevUp nationwide. Thus, the 1st RevUp was launched in Silliman University in Dumaguete City on December 2, 2004. Thanks to the evaluations and suggestions of 36 participants, we have significantly improved the succeeding RevUps. The 2nd RevUp was held September 30, 2005 at the University of the Philippines-Manila College of Medicine, organized by the PSBMB members who are also faculty members of the UP Manila Biochemistry Department. In celebration of the centennial anniversary of the UP College of Medicine, this RevUp was a gift-to-public-high-

school-teachers-workshop – everything free for 90 public school teachers, thanks to our generous sponsors.

The 3rd RevUp was in Angeles University Foundation (AUF) in Angeles City on October 22, 2005, heralding "Genomics: Genes/DNA". It was so successful that many of the 196 participants asked when the next RevUp would be.

Last summer, April 18-19, 2006, PSBMB brought the 4th RevUp to Southern Luzon via Bicol University, with the theme: Man–Biotech– Environment: a workshop for the bioscience public school teachers in Bicol. This is the first two-day RevUp and the first linked to an Ecotour. The 2-day ecotour showcased the best of Bicol, including an interaction with the *butanding* (whale shark) of Donsol, exploration of Huyop-huyopan Cave and climbing the majestic Mt. Mayon.

The University of Sto. Tomas graciously hosted the 5th RevUp on October 19-20, 2006, for private school teachers in Metro Manila. PSBMB now moves the RevUp further south, back to the Visayas with the 6th RevUp at West Visayas State University in La Paz, Iloilo City on December 9, 2006 for high school teachers.

In 2007, the Commission on Higher Education (CHED) is launching a project on Faculty Upgrading for Chemistry in Higher Education for all institutions offering BS Chemistry. The PSBMB was chosen as partner of the Philippine Federation of Chemistry Societies to handle the Molecular Biochemistry module, one of five program modules. This special RevUp 5-day lecture-plus-hands-on-lab course is slated for October 2007.

Yes! RevUp is unstoppable.

RevUp 4: Bicol (continued from p. 2)



By February, a few Metro Manila participants registered, but none from Bicol. So we discarded our feasibility study, and launched the “Triple B” or Bicol Budget Bonanza Plan, slashing the registration fee to half. At this point, the UP Movers did all possible means to cut costs, including volunteering their own resources. All Movers intensified their solicitation campaign. Then we got responses from sponsors: Ex-Gov. Felix Imperial sponsored 20 teachers, an anonymous donor offered 8 slots, and Andie Mendigo gave 2 slots.

Meanwhile the BU Movers formed a follow-up network brigade, covering various provinces in the Bicol region, now advertising the Bonanza and the available sponsored slots. BU organizers reported that the hands-on computer exercises portion, which we thought to be a major attraction, seemed to be a strong deterrent to participate in the workshop. There was general lack of desire to participate. In the end, only 22 out of 30 sponsored slots were filled. Thus, we were just thankful that 138 participated in the workshop, 67 of whom are Bicol public school teachers who braved taking the computer exercises.

The San Miguel, Catanduanes delegation was a wonderful example of how the school board, the LGU, and the community all contributed to send their teachers to the workshop, as well as to the ecotour to experience first-hand the tourist attractions of mainland Bicol.

We are also grateful for the generous donations from our sponsors. The Biotechnology Coalition of the Philippines and ISAA provided quality magazines and excellent mini brochures on biotech for the kit, and sufficient gift packs and food packs for both workshop and ecotour.

The lecture series started with a friendly introduction to biomolecules by Dr. Ameurina Santos, followed by Dr. Virginia Monje’s primer on biotechnology. Dr. Nina Rojas, with her clear bioinformatics lecture, showed the audience how to mine the database. The afternoon of the first day, the participants enjoyed the pen and paper exercises covering Tree of Life, Genes to Proteins, GMOs and DNA fingerprinting – all exercises written by the UP Movers and specifically tailored for the 4th RevUp theme. The first day

ended with a sumptuous merienda cena sponsored by Albay Gov. Fernando Gonzales.

The second day started with the excellent keynote lecture of Dr. Seville Detera- Wadleigh on Impact of Human Diversity on Disease. This was followed by an able presentation by Dr. Ma. Auxilia Siringan on how microbes fight pollution and restore the environment. The lecture series ended with a very comprehensive presentation of the status of Bicol environment covering air, water, land and forests, emphasizing environmental ills of major concern, delivered by Engr. Gilbert Gonzales.

The afternoon of the second day was spiced with hands-on computer exercises with one participant to a computer, using the kit CD put together by Adri Constantino. Even first-time computer users had fun with the virtual lab, animations and virtual tour of the environment, Marvin Altamia’s rare pictorial collection of Philippine indigenous wild life and environs.

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Statistics for RevUp 4: Bicol	
Total	138 participants
Geographic distribution	
Camarines Norte	7
Camarines Sur	6
Catanduanes	4
Masbate	0
Metro Manila	15 *
Sorsogon	6
Albay	100 **
* Includes 9 UP RevUp movers	
** Includes 10 BU RevUp movers and 60 BU students	
Distribution by profession	
Elementary science teachers	3
High School science teachers	17
College science teachers	48
Researchers	8
Students	6

Views from this corner

Nina Rosario L. Rojas

It's the third year that I have been working with the PSBMB newsletter, and the first year that I am serving as president of the PSBMB. It is intimidating to find oneself with very big shoes to fill, that of our late and beloved immediate past president, Dr. Gloria Bernas. Her energy, dedication, and elegance will continue to inspire the PSBMB. So rather than giving a President's report, let me just share some personal notes on the past year with the PSBMB. Our key projects and accomplishments are described elsewhere in this newsletter.

Information

If there's anything that characterizes the era we live in, it's the sea of information that we are immersed in. At the PSBMB, we have tried to improve our communication channels by moving our online home to a permanent location, <http://www.psbmb.org>.

We have also shifted this year to peer-reviewed extended abstracts for the Proceedings of the 33rd PSBMB Annual Convention to raise the bar for the scientific program. An index of abstracts will be made available online soon. This, we hope, will allow better dissemination of local scientific research in biochemistry and molecular biology.

Education

If you would notice from this newsletter, the PSBMB has been busy with the RevUp workshop series around the country. There's more that needs to be done.

For those of us who worked on RevUp 4: Bicol, our experience (see pp. 2-3) highlighted the digital divide in our country. Many of our schools do not have computer and Internet access for teachers, much less for students, while Internet cafes can be found across our archipelago. Teachers who are computer neophytes, such as some of our RevUp 4 participants, found themselves appreciating computers in the context of teaching their subject areas. Other organization's projects (such as the Alay Computer in Paete, Laguna started by Prof. Angel de Dios of Georgetown University, USA) have been able to make a significant improvement in the standardized test scores of public school students by bringing in not just computers but teaching tools and mentoring for faculty and students.

The PSBMB will be continuing its RevUp efforts in the years to come, and we are glad of our partnership with sponsors such as the Biotechnology Coalition of the Philippines. Let us know if you'd like to host RevUp in your own area. Let's keep working together to give better education in the life sciences, especially in the secondary and tertiary levels.

Update on Linkages

The RevUp series has been supported in part by a grant from the IUBMB's Education Committee to help bring in speakers from overseas. (See RevUps on pp. 2,3, 6.)

I had the opportunity to attend the 20th IUBMB Congress and 11th FAOBMB Congress last June 18-23, 2006 in Kyoto, Japan, and here are some notes that I would like to share with you. The 20th IUBMB/11th FAOBMB Congress highlighted many new areas of research, including the booming field of RNA interference, (see p. 8). Here are two things that many PSBMB members might find interesting.

First: The IUBMB/FAOBMB Congresses include a Young Scientists Program for graduate students and fresh Ph.D.s starting their research careers. The program offers travel grants and free access to the Congress, and also includes special lectures and opportunities to interact with speakers, top researchers, industry leaders, and other key figures in the field. The next IUBMB Congress, which will be hosted once more by the FAOBMB, will be in Shanghai, China in 2009. Please keep the 2009 IUBMB China Congress in mind. Other dates to remember are on p. 8.

Second: As biochemistry students and teachers have probably noticed, there seems to be an increase in length and weight of the standard biochemistry texts with every new edition that is released. How does one effectively teach a subject where there has been a tremendous explosion of information? The Biochemistry Education forum during the Congress, moderated by Professors Donald and Judith Voet, offered many different ideas. Clearly, it was crucial to teach students how to learn on their own and deal with the new information that they will continue to meet throughout their professional lives and not just give as much content as possible.

In other linkages, the PSBMB, through Dr. John Bennett of IRRI, will also be the Philippine contact of the Asian and Oceanian Human Proteome Organization (AOHUPO). We also look forward to working with the Philippine Federation of Chemical Societies on a special RevUp for teachers of Biochemistry in Chemistry programs.

As always, we're glad to work with the Philippine Biotech Venture Summit (see p. 8) and with other partner organizations.

With all these thoughts in mind, let's keep talking about how you would like PSBMB to address your needs and the country's needs. The web and print newsletter also need articles from you! Contact the newsletter at the address below.

The PSBMB Newsletter: Visit us at www.psbmb.org.

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PSBMB Annual Convention held for the first time at Ateneo de Manila University

Nina Rosario L. Rojas, *Chair, 32nd Annual Convention*

The 32nd Annual Convention, held December 1-2, 2005 at AdMU's Loyola Heights, Quezon City campus, focused on the theme "Biochemistry of Wellness: Behind the Hype."

The convention also featured an exciting lineup of parallel sessions on topics in Health and Biomedical Research, Food and Nutrition, Aquaculture, Agriculture, and Natural Products, and Biochemistry Education, for a total of eight plenary and ten parallel lectures by invited speakers.

In keeping with the theme, the keynote address was given by Health Secretary Francisco T. Duque, III. The opening of the exhibits was graced by the presence of former Health Secretary Alfredo Bengzon, now Vice-President of the Professional Schools of Ateneo de Manila University.

Five young investigators shared their undergraduate research results in the Young Scientists' Forum. Christopher Andrew G. Bilbao of the Institute of Chemistry, University of the Philippines-Diliman won the competition with his work on "Simulated Binding of Curcumin and a Curcumin Analogue with Beta-2-Microglobulin and the Effect of their Interactions on Fibrillogenesis." Awards were also given to the best of the 22 research posters that were presented at the Convention.



Young Scientists Forum participants: winner Christopher Andrew Bilbao, Christian Danve Castroverde, Ma. Criselda R. Nuevo, Dr. Gloria Bernas, Dr. Nina Rojas, Frances C. Vega, and Mark Paul S. Castillo.

It was also the year for Special Awards, which were given during the fellowship dinner on the first evening of the convention. Dr. Marilou G. Nicolas, Dean of the University of the Philippines-Manila College of Arts and Sciences received the PSBMB Best Educator Award, while Dr. Gisela P. Concepcion of the University of the Philippines-Diliman Marine Science Institute received the PSBMB Best Researcher Award. Dr. Nicolas, among other things, spearheaded the pioneering B.S. and M.S. Biochemistry programs at UP Manila, while Dr. Concepcion has built an extensive network for collaborative research that has resulted in a long list of publications, patents, and projects.

The event would not have been possible without the support from sponsors. The Philippine Council for Advanced Science and Technology Research and Development (PCASTRD) sponsored the souvenir program and the convention kits, while Ateneo de Manila University's Departments of Chemistry and Biology hosted the event with the support of the Dean of the School of Science and Engineering and the Vice-President for the Loyola Schools. The latest from industry was presented at the Exhibitors' Lecture Forum. Hybridigm Consulting, RainPhil, Inc., Fil-Anaserv, Inc., Golden Bat (Far East), Inc., and Philab showed their wares at the exhibit booths, while another twelve sponsors supported the event.

All of these were appreciated by the 134 registered participants. The evaluations showed high marks for the convention, which shows us that the convention was a success.

The Plenary Speakers

Enrico Purisima of the National Research Council of Canada on "Molecular Modeling and Structural Bioinformatics of Cysteine Proteases;" **Samuel Bernal** of the University of California- Los Angeles on "Energy Transduction, Cell Proliferation and Apoptosis in Normal and Cancer Cells;" **Baltazar V. Reyes Jr** of the UP College of Medicine, Manila on "Biochemistry of Emotions;" **Pedro A. Jose** of Georgetown University Medical Center on "Mechanisms of Disease: The Role of GRK4 in The Etiology of Essential Hypertension and Salt Sensitivity;" **Gerard F. Barry** of the International Rice Research Institute on "Recent Advances in the Development of Biofortified Crops to Address Micronutrient Deficiencies;" **Ruben D. Umaly** of the Angeles University Foundation on "Biological Activities of *Cordiceps sinensis*;" **Xenia T. Tigno** of the University of South Florida on "Current Approaches to Management of Diabetes;" **James A. Villanueva** of UP Diliman, CYL Sylianco Lecturer on "Protein Characterization Using Circular Dichroism and Fluorescence."

The Organizing Committee:

Chair: Nina Rosario L. Rojas, Department of Chemistry, Ateneo de Manila University; **Co-Chair:** Merab A. Chan, Department of Biology, Ateneo de Manila University; **Secretariat** Bernadette M. Henares, Milyn M. Terado, Mary Rose G. Tandang, Karen Villarante, Giovanni Lao; **Scientific Program** Gracia Fe B. Yu, Chair; Elizabeth L. Tenorio, Leslie M. Dalmacio, Bernadette L. Ramirez; **Physical Arrangements** Vivian S. Tolentino, Chair; Bernadette M. Henares, Myra O. Villareal, Ma. Teresa M. Torres, Joanna V. Flores, Ralph Arnold S. Lasala, Wilberto D. Monotilla; **Awards** Virginia D. Monje, Chair; Marco Nemesio E. Montaña, Gloria de Castro-Bernas; **Ways and Means** Gloria de Castro-Bernas, Chair; Mafel C. Ysrael, Vivian A. Panes, Bernadette M. Henares, Milyn M. Terrado, Angelo M. Veloro, Nina Rosario L. Rojas, Ma. Teresa M. Torres, Joanna V. Flores, Myra O. Villareal; **Website and Souvenir Program** Nina Rosario L. Rojas, Einstein S. Gan, Elizabeth L. Tenorio, Edumar Madlangbayan; **Hosts for the Fellowship Night** Kristopher Inting, Abigail Marie P. Quintos, Gaston Juan P. Rocas.

RevUp 5: University of Santo Tomas

Mafel C. Ysrael, *RevUp 5 Chair*

The PSBMB 5th RevUp was held last Oct 19-20, 2006 at the Benavidez Library University of Santo Tomas. This activity was co-sponsored by the Faculty of Pharmacy and the College of Science of UST.

A total of 47 teachers representing 29 private high schools in Metro Manila participated in the seminar-workshop. The participants learned from the six lectures. Four UST mentors talked on **The Biomolecules of Life, Decoding Life, Introduction to Biotechnology** and **Introduction to Bioinformatics**. Dr. Antonio Alfonso of PHILRICE dismissed the misconceptions on the risk of genetically modified foods with his lecture on **Unraveling the Secrets of Transgenic Crops**. Prof. Takashi Okamoto of Nagoya City University Graduate School of Medical Sciences gave the plenary lecture on **DNA and the Origins of Cancer**.



At the computer laboratory, using the Blackboard system.

The participants had fun and learn experience with the fun quiz, pen and paper and computer exercises. The pen and paper exercises included **Decoding Life, DNA Fingerprinting, Molecular Phylogeny** and **Make Me a GMO**. Winners of the pen-paper exercises each received a three in one pen light, ball pen and laser pointer. The pre and post diagnostic tests allowed the participants to rate their own learning and teaching competencies. They were able to identify the topics in molecular biology which should be given emphasis in their own teaching. The Fun quiz was a hit as it had all the participants excited. Everyone was aiming for the top prize, the latest edition of Biochemistry by Campbell.

The 5th RevUp featured the use of the Blackboard learning system. This web based learning system facilitated the administration of the pre and post diagnostic tests. The 2 participants who got the highest scores in the post test were each given biochemistry book by Campbell.

The Bb learning system also facilitated the administration of the evaluation rating of the seminar-workshop. The scores and comments of the participants on each activity were easily obtained. The overall evaluation rating of the 5th RevUp was very good.

Here are some of the comments of the participants:

Lecturers were superb. The topics are very relevant to the country's present problems.

RevUp workshops are an excellent way to improve the level of Biology education of our country.

I will adapt the fun quiz in my class. It is an exciting way to teach science.

I enjoyed every aspect of the workshop.

Part of the 5th RevUp's success is attributed to the contributions of Fil-Anaserve, C&E Publishing, Mindmovers, and the International Union of Biochemistry and Molecular Biology, which sponsored the trip of Prof. Okamoto.

Prof. Okamoto gives a special lecture in honor of Dr. Gloria de Castro Bernas

Prof. Takashi Okamoto, one of the key lecturers of RevUp 5, also gave special lecture in honor of the late Dr. Gloria de Castro-Bernas last 18 October 2006 at the CME Auditorium, St. Martin De Porres Building, University of Santo Tomas.

His talk, entitled, "Transcriptional Regulation as a Novel Therapeutic Strategy for Cancer, Leukemia, AIDS and Rheumatoid Arthritis," highlighted the transcriptional regulation involving NF-KB and its implications for therapy.

Prof. Okamoto is from the Department of Molecular & Cellular Biology, Nagoya City University, Graduate School of Medical Science, Nagoya City, Japan. He worked closely with Dr. Bernas on cancer research, and was a speaker during the 31st PSBMB Annual Convention in 2004 in Dumaguete.



The event's sponsors were the PSBMB and the College of Science and Faculty of Pharmacy of UST.

RevUp 4: Bicol *(continued from p. 3)*

Capping the workshop, Quiz Master, Kutch Inting, brought the participants to a new high and kept them on the edge with the fun quiz. Quiz winners were particularly jubilant over the Purefoods and Unilever gift packs as prizes. Everyone went home with a happy hangover of the fun quiz and a dinner pack generously provided by Legazpi Mayor Noel Rosal.

The participants evaluated the workshop in the range of excellent and very good. The top five excellent scores were garnered by the REVUP Companion CD (86.2% excellent), the Kit Clearbook (75.9%), the Computer-based Exercises and Overall Rating (both with 69%), and the Movers and Facilitators (67.2%). Many were asking when the next RevUp would be.

The 4th RevUp was the first RevUp linked to a two-day Ecotour which showcased the best in Bicol, including an interaction with the *butanding* (whale shark) of Donsol,

Nobel Prizes *(continued from p. 8)*

A family story about life (from the Nobel Foundation press release)

In order for our bodies to make use of the information stored in the genes, a copy must first be made and transferred to the outer parts of the cells. There it is used as an instruction for protein production – it is the proteins that in their turn actually construct the organism and its function. The copying process is called transcription. Roger Kornberg was the first to create an actual picture of how transcription works at a molecular level in the important group of organisms called eukaryotes (organisms whose cells have a well-defined nucleus). Mammals like ourselves are included in this group, as is ordinary yeast.

Transcription is necessary for all life. This makes the detailed description of the mechanism that Roger Kornberg provides exactly the kind of "most important chemical discovery" referred to by Alfred Nobel in his will.

If transcription stops, genetic information is no longer transferred into the different parts of the body. Since these are then no longer renewed, the organism dies within a few days. This is what happens in cases of poisoning by certain toadstools, like the death cap, since the toxin stops the transcription process. Understanding of how transcription works also has a fundamental medical importance. Disturbances in the transcription process are involved in many human illnesses such as cancer, heart disease and various kinds of inflammation.

The capacity of stem cells to develop into different types of specific cells with well-defined functions in different organs, is also linked to how the transcription is regulated. Understanding more about the transcription process is therefore important for the development of different therapeutic applications of stem cells.

Forty-seven years ago, the then twelve-year-old Roger Kornberg came to Stockholm to see his father, Arthur

exploration of Huyop-huyopan Cave and a trip to the majestic Mt. Mayon. Everyone, even the Bicolano participants, said the ecotour was most exciting because for most of them, this was their first time to experience these Bicol tourist attractions.

What participants said:

Exciting! I enjoyed while playing the CD because this is my first time to "hands on" the computer. To the facilitators/speakers, Movers, thanks a lot. Please come back!!!

- participant from San Miguel, Catanduanes

After the workshop, I felt so revved-up and excited to bring the whole thing to my own classroom.

-participant from Bicol University, Legazpi City

Kornberg, receive the Nobel Prize in Physiology or Medicine (1959) for his studies of how genetic information is transferred from one DNA-molecule to another. Kornberg senior had described how genetic information is transferred from a mother cell to its daughters. What Roger Kornberg himself has now done is to describe how the genetic information is copied from DNA into what is called messenger-RNA. The messenger-RNA carries the information out of the cell nucleus so that it can be used to construct the proteins.

Kornberg's contribution has culminated in his creation of detailed crystallographic pictures describing the transcription apparatus in full action in a eukaryotic cell. In his pictures (all of them created since 2000) we can see the new RNA-strand gradually developing, as well as the role of several other molecules necessary for the transcription process. The pictures are so detailed that separate atoms can be distinguished and this makes it possible to understand the mechanisms of transcription and how it is regulated.

Roger D. Kornberg, born 1947 (59) in St Louis, MO, USA (US citizen). PhD from Stanford University, CA, USA. Mrs. George A. Winzer Professor in Medicine at Stanford University School of Medicine, CA, USA.

The landmark papers (among others):
Gnatt, A.L., Cramer, P., Fu, J., Bushnell, D.A. and Kornberg, R.D. (2001) Structural basis of transcription: An RNA polymerase II elongation complex at 3.3 Å resolution. *Science* **292**:1876-1882.
Cramer, P., Bushnell, D.A. and Kornberg, R.D. (2001) Structural basis of transcription: RNA polymerase II at 2.8 ångstrom resolution. *Science* **292**:1863-1876.

Learn more about the Nobel Prizes from the official website at <http://www.nobelprize.org>.

2006 Nobel Prizes highlight RNAi, transcription complex

Last October 2, the Nobel Assembly at Karolinska Institutet announced that the Nobel Prize in Physiology or Medicine for 2006 was to be awarded to Andrew Z. Fire and Craig C. Mello for their discovery of "RNA interference – gene silencing by double-stranded RNA."

Two days later, the Royal Swedish Academy of Sciences announced their decision to award the Nobel Prize in Chemistry for 2006 to Roger D. Kornberg "for his studies of the molecular basis of eukaryotic transcription."

The Nobel Laureates will receive the Nobel Prize Medal, Nobel Prize Diploma and document confirming the Nobel Prize amount from King Carl XVI Gustaf of Sweden on December 10 in Stockholm.

RNA interference

(from the Nobel Foundation press release)

This year's Nobel Laureates have discovered a fundamental mechanism for controlling the flow of genetic information. Our genome operates by sending instructions for the manufacture of proteins from DNA in the nucleus of the cell to the protein synthesizing machinery in the cytoplasm. These instructions are conveyed by messenger RNA (mRNA). In 1998, the American scientists Andrew Fire and Craig Mello published their discovery of a mechanism that can degrade mRNA from a specific gene. This mechanism, RNA interference, is activated when RNA molecules occur as double-stranded pairs in the cell. Double-stranded RNA activates biochemical machinery which degrades those mRNA molecules that carry a genetic code identical to that of the double-stranded RNA. When such mRNA molecules disappear, the corresponding gene is silenced and no protein of the encoded type is made.

RNA interference occurs in plants, animals, and humans. It is of great importance for the regulation of gene expression, participates in defense against viral infections, and keeps jumping genes under control. RNA interference is already being widely used in basic science as a method to study the function of genes and it may lead to novel therapies in the future.

Andrew Z. Fire, born 1959, US citizen, PhD in Biology 1983, Massachusetts Institute of Technology, Cambridge, MA, USA. Professor of Pathology and Genetics, Stanford University School of Medicine, Stanford, CA, USA.

Craig C. Mello, born 1960, US citizen, PhD in Biology 1990, Harvard University, Boston, MA, USA. Professor of Molecular Medicine and Howard Hughes Medical Institute Investigator, Program in Molecular Medicine, University of Massachusetts Medical School, Worcester, MA, USA.

The landmark paper: Fire A., Xu S.Q., Montgomery M.K., Kostas S.A., Driver S.E., Mello C.C. (1998) Potent and specific genetic interference by double-stranded RNA in *Caenorhabditis elegans*. *Nature* **391**:806-811.

Events to watch out for:

January 10-12, 2007:

Philippine Biotechnology Venture Summit
Ateneo Professional Schools Auditorium,
Rockwell Center, Makati
This event is co-sponsored by the PSBMB.
Early registration discounts until December 15,
2006!

Industry early bird registration fees:
daily = ₱ 2,750
full package = ₱ 5,000.00

Academic registration:
daily = ₱ 2,250;
full package = ₱ 4,000.00

Register at (02)-813-8412.

Also see <http://www.philbiotech.com>.

May 21-25, 2007:

10th IUBMB Conference "Biochemistry of Parasites, Vectors and Hosts" Bahia, Brazil
<http://sbbq.iq.usp.br/iubmb2007/>

May 27-30, 2007:

19th FAOBMB Conference, Seoul, Korea:
<http://www.biochem.or.kr/faobmb2007/>

June 28-July 3, 2008:

33rd FEBS Congress and 11th IUBMB Conference "Biochemistry of Cell Regulation" Athens, Greece:
<http://www.febs-iubmb-2008.org/>

October 2008:

FAOBMB Symposium on Regulatory RNAs
Academia Sinica, Taiwan

2009: 21st IUBMB and 12th FAOBMB Congress

Shanghai, China

There will be fellowships available for graduate students and recent Ph.D.s to attend the Young Scientists Program and the Congress. The FAOBMB also offers travel fellowships and young scientist awards. See the IUBMB Website <http://www.iubmb.org> and the FAOBMB website <http://www.faobmb.org> for more information.

For information on PSBMB events and events of our partner organizations, please see our website at <http://www.psbmb.org>.

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