

## RNA Society

### Officers

Brenda Bass	President (2007)
David Tollervey	President elect ('08)
Lynne Maquat	Past President ('06)
Evelyn Jabri	CEO
Jim Bruzik	CFO
Elsebet Lund	Secretary/Treasurer

### Directors

Manny Ares	('08-'09)
Andrea Barta	('08-'09)
Douglas Black	('08-'09)
Mariano Garcia-Blanco	('06-'07)
Karla Neugebauer	('07-'08)
Roy Parker	('06-'08)
Marina Rodnina	('07-'08)
Bertrand Seraphin	('06-'07)
Sarah Woodson	('06-'07)

### RNA Journal

<http://www.rnajournal.org/>

Tim Nilsen  
Chief Editor

### RNA Society Web Page

<http://www.rnasociety.org/>

Maintained by WebMaster  
Fabrice Jossinet

### Contact the RNA Society

[rna@faseb.org](mailto:rna@faseb.org)  
9650 Rockville Pike  
Bethesda, MD 20814  
(301) 634-7120

### RNA Newsletter Editors

Evelyn Jabri  
Brenda Peculis

### Comments:

Please direct any Newsletter comments, suggestions, rebuttals and articles for submission to : Brenda Peculis  
[peculisb@missouri.edu](mailto:peculisb@missouri.edu)

## From the Desk of the President, Brenda Bass

It was wonderful to see so many of you at the RNA Society meeting in Madison. Thanks again to everyone who contributed



their time and effort to making the meeting a success, especially the organizers: Sam Butcher, Maria Carmo-Fonseca, Rachel Green, and Erik Sontheimer. The science was extraordinary, and as usual, the presentation of the Society's top honors at the Awards Ceremony preceding the banquet was a highlight. This year's award for Lifetime Achievement in Science

went to Walter Keller, while that for Lifetime Achievement in Service went to Marvin Wickens. We are so lucky to have these people in our society.

### In this issue :

From the Desk of the President, Brenda Bass	1
RNA 2007 Meeting Summaries	3
Lifetime Science Award : Walter Keller	3
Lifetime Service Award : Marv Wickens	6
Keynote Speaker : Tom Cech	8
Women in Science Dinner: Joan Steitz	9
Young Scientist Awards	11
Future Meetings : David Lilley	12
RNA 2008 Announcement	14
From the Desk of the CEO, Evelyn Jabri	15
Items of Interest to All Scientists	16
Value of Integrity : Michael Culbertson	16
Letter to Editors : Karla Neugebauer	19
Grad Student/Postdoc Pages	21
Postdoc Mixer : Beth Tran and Dan Golden	21
Graduate Student Representatives	22
Postdoc at NIH : Mark Bayfield	22
Being a foreign postdoc : Pamela David	24
Meetings supported by The Society	25
Employment Opportunities	26



From the Desk of... (Continued from p1)

According to protocol, after receiving his award, Walter gave a presentation of aspects of his career that he deemed most noteworthy (see page 3). Walter's presentation was an overwhelming success with a perfect balance of humor and "life's lessons" that left the audience smiling and inspired. As I visited with meeting attendees later at the banquet, it was interesting to hear the comments from the younger scientists just beginning their careers, and how they felt about Walter's comments made from the perspective of imminent retirement. Most seemed to focus on the various obstacles and hardships that Walter had encountered. Clearly Walter had persevered, and this, apparently, was inspirational. If Walter can come out on top after all of the things he had to overcome, surely I can do science too!

And this leads me to today's topic. Why did Walter decide to overcome each obstacle? What made him persevere? Why do any of us keep going? After our grants are triaged, how and why do we muster the will to go on?

My informal poll suggests that as scientists we just can't help ourselves. A failed experiment spurs us to do another. We are problem solvers and love a challenge. Without thinking about it, our whole being is driven towards wanting to know the answer...*"How does it work...?"*, ...*"Why does it work that way...?"*. WHAT IS THE ANSWER!

To us science is exciting. Maybe not CIA agent, or Sydney Bristow, exciting, but exciting none-the-

less. Memories of our successes, big or small, drive us forward. All of us have had eureka moments—albeit some of us only tiny ones. There we are, in the lab, staring at our data late at night, when we realize we know something no one else does. It's intoxicating, it's addictive, it is simply the best.

Of course, most of the time science is not so exciting, but usually we still show up and run the gel-- and this in itself is important. We show up. We keep going. Which leads me to the second question: What helps us go on? In my poll I did get an ...*"alcohol!"* and a ...*"chocolate!"*, but most said it was encouragement from colleagues, and the hope of success down the line. In this regard, I find scientists to be particularly hopeful. Possibly this is due to the nature of the scientific process itself. In contrast to, say, writing a novel, there is a very defined way to go about science. You have ideas, and you do experiments to test those ideas. We have faith that truth is attainable.

And despite how hard it sometimes seems, we all must acknowledge that we are very, very lucky. At least to us, our chosen career is exciting, challenging, and in those eureka moments, a chance to be taken over by the moment in a way that few human beings experience. But in truth, it is hard. So, support the good ideas of your colleagues, share your successes, and when your colleague down the hall gets a score of 135 on their resubmission, yet still is uncertain it will get funded, bring chocolate to the bar.



# RNA 2007 Meeting Summary

## Walter Keller : RNA Society Lifetime Achievement in Science Award, 2007 by Brenda Peculis

The presentation by Walter Keller was a wonderfully good natured narrative describing his evolution as a scientist, overcoming obstacles, barriers and challenges along the way and arriving at a destination he could never have predicted when he started his career. Walter Keller began his college/career education by being formally trained as a medical doctor from 1957 to 1962 at the Universities of Heidelberg and Würzburg and at the Medical Academy in Düsseldorf, Germany. In his talk he admitted that his deep-seated hope was to become a pediatrician – a goal he never achieved.

As all newly minted MDs, Walter's medical career began as he searched for a rotating internship. He found a position in a psychiatric hospital and moved from Heidelberg to Switzerland in 1962. There are always positive and less-than-positive aspects of any new position, rotation or internship; Walter found that the imprecise methods for analysis of patients led to inconsistent diagnosis and dissention among the doctors at Morning Rounds. Walter came to realize that there was nothing logical about the process and found this sufficiently disturbing that he acknowledged that psychiatry was not for him.

Near the end of his term in Switzerland he assisted in a pathology post-mortem for one of the patients and met a doctor who was interested in training Walter in pathology. Given an opportunity to leave the psychiatric hospital for what appeared to be if not greener, at least different pastures, Walter moved to Freiburg in 1964 and ended up studying the physiological/biochemical characteristics of maple syrup urine disease (MSUD). As a postdoc in the Department of Pathology and later in the Human Genetics Department, he became very interested in studying this incurable metabolic disease that afflicts infants who rarely survive for more than a few months. He carried out enzyme assays that examined the CO<sub>2</sub> released during the catabolism of branched chain amino acids and their corresponding keto acids. Walter was able to compare the levels of

enzymes present and monitor the enzymatic reaction in leucocytes from healthy individuals and compare them to the affected children. The assay was also used to identify heterozygous carriers of the defective gene in families with a history of MSUD. While he was not seeing patients anymore he was doing biochemistry and continued to be fascinated by what was being discovered in the just developing field to become known as molecular biology. He was particularly thrilled and totally absorbed by the first edition of James Watson's "Molecular Biology of the Gene", which he studied with a dictionary at his elbow. While he had schooled in Germany and had learned Latin, German, French and a little math, he did not know English and had no strong background in science beyond the basic science courses taken during preclinical medical school training.



At that time Walter began to look for a postdoc position in the United States. He found a German scientist, Gunter von Ehrenstein, working on translation at Johns Hopkins University. He realized that working with a German scientist would make the language less of an issue and thought this would be a great way to get into molecular biology research. Walter began to search for the funds that would allow him to move to the US and be trained in molecular biology.

Thus it happened that in 1968 Walter arrived in New York, traveled to Baltimore with his family and went to work in the Department of Biophysics at Johns Hopkins University School of Medicine. He arrived in Baltimore in April of 1968 in the middle of the racial riots that followed the assassination of Martin Luther King. While he found this to be rather frightening for his family, he was assured that the bumper sticker indicating he was a Medical Doctor would keep him safe while he commuted to work. And so he did.

**“...I felt like a little farmer boy still trying to learn English and follow their arguments...”**

Walter enjoyed working in the lab and working on the “translation ambiguity” problem that von Ehrenstein was examining in the  $\beta$ -globin chains of rabbits. Isoforms of the protein were found that contained two different amino acids at a single position. The hypothesis was that certain codons are read by two different tRNAs carrying different amino acids. This would lead to the finding of two possible amino acids at a given position by protein sequencing. The translational ambiguity phenomenon later turned out to be the simple consequence of genetic heterozygosity. Nevertheless, Walter was introduced during this time to the *in vitro* translation system prepared from rabbit erythrocytes.

Walter was in the lab in Baltimore for only a few months when von Ehrenstein began packing up and moved to a Max Planck Institute in Germany. Walter thus quickly found himself in an empty laboratory with another grad student and a postdoc, both of whom were also left behind. Walter said he was then worried he would never become a molecular biologist this way...

Since Walter had a fellowship to pay his salary and was in the US to train to become a molecular biologist, he just needed to find another laboratory that had space. Because of his fundamental interest in eukaryotic gene expression he wanted to study viral transcription in cells infected with animal

viruses. With the help of Dan Nathans, Walter was accepted by Norman Salzman at the NIH in Bethesda, Maryland. There he was introduced by Jim Rose to perfect the growth conditions allowing large scale cultures (>12 Liter batches) of HeLa cells. This was going to be essential to obtain large amounts of Adenovirus-infected cells for protein and virus purification. Optimizing the culture conditions was a non-trivial endeavor; once established this practice was quickly adopted by many laboratories to obtain the biomass required for a wide variety of biochemical analyses.

In the summer of 1969 Walter attended the Tumor Virus Workshop at the Cold Spring Harbor Laboratory. He remembered feeling humbled at this meeting attended by the likes of Howard Temin, Paul Berg, David Baltimore, Joe Sambrook, Jim Watson and many others –he claimed to feel like the “little farmer boy still trying to learn English and follow their arguments”. But he did follow them and learned much. He was invited by Joe Sambrook to stay at CSH over the summer and purify RNA polymerases from HeLa cells.

**He did listen, and learn ...and purify proteins**

A few weeks after arriving, Walter had made much of the opportunity to dive into this new challenge, demonstrating the drive and ability to perform protein purification. Having watched Walter for a few weeks, Jim Watson requested that Walter appear in his office. Much to Walter’s surprise, Watson offered him a position at CSH: a five year senior staff appointment in the tumor virus group – it was like a dream come true to Walter. The next day Watson called him back to his office and said he’d been thinking and decided that maybe he ought to make it a three year appointment with the justification that “If you haven’t solved transcription in three years, you know that you are beating a dead horse”. Walter was thrilled nonetheless with the appointment and quipped that in the end he managed to be there for more than five years anyway!



The time in Watson's lab was wonderful for Walter and was by far the most formative period in his scientific life. Working, talking and interacting with colleagues including Phil Sharp, Bill Sugden, Ashley Dunn, Mike Botchan, Ray Gesteland, Joe Sambrook and Ingrid Wendel was mentally invigorating. Best of all, they each treated the others as equals, independent of level or experience. Everyone cooperated and shared ideas and discussed everything. It was a very intense and yet very open atmosphere. Walter said he listened to everyone and everything. He thought he could not always participate in conversations but he did listen and learn... and purify proteins.

**“If you haven't solved transcription in three years, you know that you are beating a dead horse”.**

Walter admitted he was quite “old” when he first published a serious research paper. His early work at CSH focused on DNA topology and topoisomerase and he was encouraged to get a Ph.D. at nearby SUNY at Stony Brook, knowing he could write up his work examining the supercoiling of DNA into a thesis. As with all Ph.D. programs, Walter needed to take some classes. One that was particularly daunting was physical chemistry, which was extremely difficult for an MD who had little math training. But he did want a Ph.D. because he thought it would help him to be recognized in the German academic system when he returned home. Walter was awarded his Ph.D. in 1977 for research he performed at CSH examining DNA supercoiling. He was particularly thrilled by discussing his results with Francis Crick who was extremely interested in his supercoiling data. At that time there was some support for an alternative side-by-side model of DNA structure with essentially no helical turns. However, Walter's data clearly demonstrated that the DNA is helical with about ten base pairs per turn. The side-by-side model was disproven based in significant part on Walter's work.

When he completed his time at CSH, Walter returned to Germany to a position in the Microbiology Department of Heidelberg University. He now refers to the first few months in Germany

during the end of 1976 and early 1977 as a very dark period. Although his department chairman Heinz Schaller made every effort to ease the transition, it was very hard to start a new lab, particularly because Walter had never learned to be a group leader. He very much missed the pervasive CSH attitudes, the collegiality and interactive exchanges and general curiosity and interest in other's work for the sake of knowing.

**“...splicing requires some 300 components and Lührmann is doing everything anyway...”**

He also referred to this as the “Dark Winter” because after he left CSH pre-mRNA splicing was discovered and he missed it completely, since there was a lack of Email, little to no phone communication and he simply lacked communication with the people at CSH. He was working on chromatin in SV40-infected cells and returned to CSH in Spring to attend the chromatin symposium. He met friends who were all chatting away about RNA splicing over lunch – he didn't understand what this was... what was RNA splicing – he had never heard of it and had only been in Heidelberg since last fall.... How could this have happened? Everyone was talking about RNA splicing, even though it was a chromatin meeting.

**Walter's Lesson to Young People :  
“don't always listen to your mentor”**

Eventually Walter figured out what RNA splicing was and then there was no stopping him. In time he moved from the Microbiology Department to the German Cancer Research Center where he stayed from 1980 to 1987. Protein purification continued in his lab. Nouria Hernandez demonstrated that one could uncouple transcription from splicing – they could purify the trans-acting components by fractionating nuclear extracts. This was exciting because it meant Walter could do biochemistry again – uncouple the reactions and determine what the parts were and how they functioned. Walter was



now firmly entrenched in the world of RNA, not DNA.

Walter then told a short story to give advice to the 'young people' who he defined as anyone younger than himself. The story was a lesson of what happens when a graduate student is stubborn and perseverant. Andrea Kyburz was working in Walter's lab examining 3' end formation. She was looking at CPSF and found subunits of the U2 snRNP present in highly purified fractions of CPSF – something quite unexpected. She thought it important but he disagreed and tried to discourage her from wasting her time on it. Walter felt that splicing is really very complex and complicated and adding the U2 complex into the CPSF story would only make things less clear. After all, Walter quipped, "splicing requires some 300 components and Lührmann is doing everything anyway". Although Andrea is a very gentle and soft spoken person she was not to be deterred and really wanted to do one more experiment to follow up this curious

result. In the end she was right, and they have a very nice Molecular Cell paper (2006) demonstrating her finding that components of the U2 snRNP are making contact with CPSF and affect the coupling of splicing and 3' end processing at the 3' most exon. Walter's Lesson to Young People is : "don't always listen to your mentor." As he was just finishing the story showing some particularly colorful schematics on splicing he suggested this bit of advice needed to be taken along with another



comment from Jim Watson, being that one should "never trust anyone who shows colored slides".

Walter is looking forward to retiring at the end of next year – playing bassoon instead of smoking his pipe.

---

## Marvin Wickens : RNA Society Lifetime Achievement in Service Award, 2007

Excerpted from comments delivered by Brenda Bass when awarding Marvin Wickens the RNA Society Lifetime Achievement in Service Award, June 2, 2007.

"The RNA Society Lifetime Achievement in Service Award is one of the two highest awards the RNA Society offers. It is given to a member of the RNA Society based on his or her active involvement in Society business in a leadership capacity, and can also honor significant contributions in teaching that enhance the understanding of RNA research. It also honors individuals who work on behalf of the Society in other important ways at the local, national or international level. I say with complete confidence that Dr. Marvin Wickens, who receives this award today, has excelled in all of these areas.

Marv received his bachelor's degree, with honors in biochemistry and chemistry, in 1972, from the University of California-Berkeley, his Ph.D. in biological sciences in 1978 working with Bob Schimke at Stanford University, and did postdoctoral research at the MRC laboratory of Molecular Biology in Cambridge with John Gurdon from 1979-1982.

In 1983 he joined the faculty of the Biochemistry Department at the University of Wisconsin-Madison, where he is now a Professor in the Biochemistry Department as well as the Max Perutz Professor of Molecular Biology.

Marv has served our society in almost every way possible. Importantly, he was a co-founder of the RNA Society, serving on our very first Board of Directors and providing input in regard to the organization of our Society, much of which continues to this day.

Marv organized the very first meeting of the RNA Society. This occurred at Madison and because it was the first meeting, there was no precedence to rely on, and Marv did an excellent job putting in place the organizational strategies that continue to this day at this very meeting. He was also crucial in founding the journal of our Society, *RNA*. He was an Associate Editor at its inception, and continues today in the larger role of one of three Deputy Editors of the *RNA Journal*. Marv served as President of the RNA Society in 2001.



Marv's contributions to the field of our Society, RNA research, go way beyond the immediate Society. He has worked tirelessly to further our field on his own campus as well as in the world at large. On the Madison campus he organizes the popular chalk-talk series called RNA Maxigroup. This series has been going for 17 years, and those of us who have been fortunate enough to be invited, know that the format of these series is unique, fostering the principles that the RNA Society has

stood for since its inception: high standards, critical thinking, and a supportive environment that fosters discovery.

Marv has contributed to the organization of many international meetings that foster RNA research, and importantly he has put in many, many hours, insuring a fair review of our grant proposals. He has mentored many students and postdocs who now have successful independent careers. He is an extraordinary teacher, and anyone who has heard Marv speak will acknowledge this.

Finally, I would like to add that much of the service Marv does for the RNA Society and RNA research is intangible and not amenable to a category on a CV. It is just part of Marv's nature to mentor young scientists. I suspect that many of you in this room have been approached by Marv in ways that somehow have expanded your scientific world.

While this is an award for Marv's service, I note that Marv's own science is stellar. He has significantly advanced our understanding of polyadenylation, how UTRs regulate gene expression, and throughout his career developed techniques that facilitate the ways that all of us can do science, such as his participation in developing the three-hybrid technique (collaboration with Stan Fields).

In sum, Marv has served our society at every level possible, from exhausting and mundane organizational duties, to daily conversations with each of us that encourage and foster the present and future scientists of the RNA Society. With that, I would like to present the RNA Society Lifetime Achievement in Service Award to my dear friend Marvin Wickens and say thank you for all that you have contributed, and no doubt will continue to contribute.”

-B.Bass



## Tom Cech, Keynote speaker at the Plenary session

By Anne Gooding

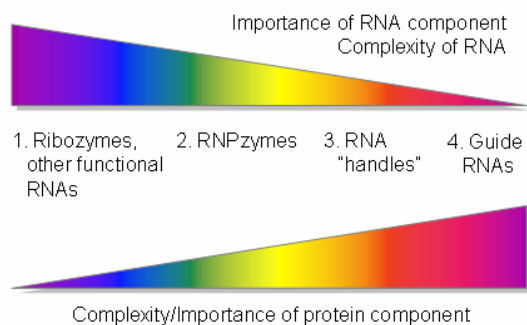
In his keynote talk, Tom Cech led us on a journey from a time when RNA was the main if not the only player in biology, to the current time when RNA still plays a central role, but shares its tasks with proteins and DNA. While we have known for many years that RNA could be an information carrier, in the last two decades we witnessed discoveries of the diverse functions that can be carried out by non-coding RNAs. Tom illustrated the evolutionary progression of non-coding RNAs and how they have incorporated peptidic and protein factors to perform this variety of functions. He proposed four types of non-coding RNAs that are distinguished by the relative importance of the RNA component in the final functional complex. His talk further illustrated each of these classes, focusing mainly on examples from his lab that tend to fall on the “left side” of the figure below.



been found and extensively characterized. A high point in this exciting field was reached in 2004 with the three dimensional structure determination of three different group I ribozymes illustrating various stages in the reaction pathway.



### Spectrum of Non-coding RNAs



Twenty-five years ago the role of RNA as a biocatalyst was not obvious as it seems today. Tom’s lab found an intron in a gene of *Tetrahymena thermophila* that seemed to splice itself out even without nuclear extract, the supposed source of the splicing machinery. After a year of trying to find a protein responsible for the splicing, an *in vitro* transcript of the RNA was shown to be able to splice in the presence of only magnesium and GTP. This was the first example of a ribozyme, and also the first of many group I introns found to be self-splicing. Since then, many other ribozymes have

More recently, Tom’s interest has been moving further into the RNP world and more particularly towards telomerase, the RNPzyme that maintains the integrity of chromosome ends. Telomerase is an interesting example from the RNP world in that it represents the whole spectrum of non-coding RNA functions represented above. Recent work from his lab has shown that the conserved triple helix in the core of the RNA contributes either directly or indirectly to the extension reaction (function 1 –see figure). In addition telomerase is an RNPzyme with the protein portion being the catalytic subunit (function 2); the RNA serves as a flexible scaffold that provides the “handles” for protein binding (function 3), and the RNA template serves as a guide for synthesis of the complementary telomeric DNA sequence (function 4).

Last but not least, Tom also briefly reviewed other examples of the last two categories that include the signal recognition particle RNAs and the internal ribosomal entry site viral RNAs (function 3 or “handles”), as well as the short interfering RNAs





(function 4 or guide RNAs), whose discoverers were awarded the Nobel Prize last year. RNA has a fascinating evolutionary history running deep into

the tree of life and it probably still has some secrets to reveal to determined and passionate researchers like Tom.

---

## **The First Annual Women in Science Dinner**

### **Keynote Address by Joan Steitz**

**Summarized by Beth Tran, RNA Society Postdoc Representative**

Collaboration, collegiality and respect for one another are fundamental aspects of the scientific community. It is well established that diversity



enhances group creativity, however, several studies have shown that academic science and engineering is lacking such diversity. In fact, women faculty are largely underrepresented in the life sciences at top research universities and

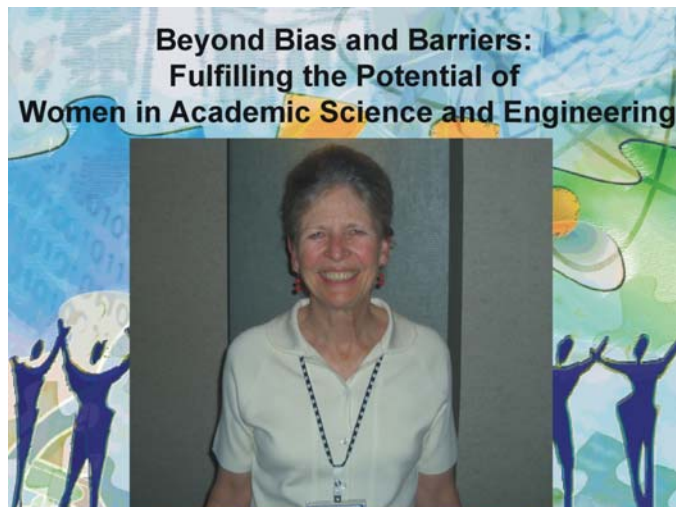
minority women are virtually absent, even though the number of women pursuing degrees is equal to that of men.

At RNA 2007, the RNA Society hosted the first annual Women in Science dinner for the purpose of improving the environment of academic research for women scientists. This year's event was organized by RNA Society past-president Lynne Maquat, with the help of postdoc representative Beth Tran. The dinner was very well attended, with over 300 people representing 40% of the total meeting participants at RNA 2007. Additionally, the dinner had almost equal representation by faculty, graduate student and postdoc meeting attendees (see Figure 1A&B), underscoring the importance of this issue to both established scientists and scientists-in-training.

The keynote speaker was Joan Steitz, Professor of Molecular Biophysics and Biochemistry at Yale, HHMI investigator, and past recipient of the RNA Society Lifetime Achievement Award for Research. Joan is a leader in the scientific community as well as a strong supporter of women in academia. Additionally, she recently served on a National Academies committee focused on maximizing the potential of women in science and engineering. Joan's talk at the Women in

Science dinner centered on the findings of this committee and their recommendations for faculty, department heads and government officials.

Even though more women are earning degrees in science and engineering, Joan began, women are "dropping off" at all stages of the career track (Neugebauer, K. (2006) *PLoS Biology* 4:e97). She reminded everyone of the comments that Harvard president, Lawrence Summers, made at a 2005 conference on diversity in the science and engineering workforce. When asked why so few women make it to professorship in these disciplines, Dr. Summers reasoned that they are not smart enough or may choose to work in less intensive professions (see <http://www.president.harvard.edu/speeches/2005/nber.html>).



Comments such as those from Dr. Summers, Joan stated, stirred the 18 member National Academies committee to evaluate their own universities and make suggestions for equal recruitment and retention. Chaired by Donna Shalala, current president of the University of Miami and former US Secretary of Health and Human Services under the Clinton administration,



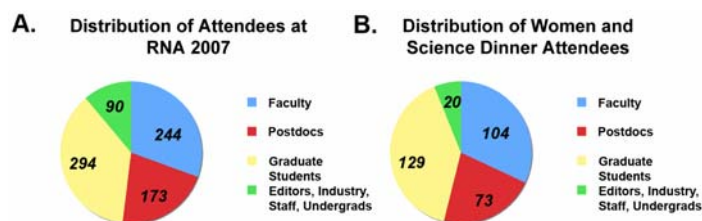
the committee exhaustively reviewed and assessed the current research on gender issues in science and engineering.

### ...a strong support network is paramount to academic success...

What they found, Joan said, were a number of barriers in the academic system arising from the combination of prejudices and an antiquated academic system. The problem is that “scientists are people and all people have implicit biases,” she argued. The study found that criteria for hiring and promoting faculty frequently contain components that disadvantage women, largely due to “unintentional biases and outmoded institutional structures. ...Rules regarding tenure were designed 50 years ago by men when wives were at home. ...It is a different society today,” Joan said. Therefore, the university structure and rules for gaining tenure must be re-evaluated. She suggested that changes could include utilization of grant money for caregiver/child care support or extending the tenure clock for caregivers. However, she added, there is still a problem with retaining women. Joan encouraged the audience to read “Every Other Thursday” by Ellen Daniell, detailing stories of San Francisco bay-area scientists whose personal and scientific lives were impacted by formation of a support group. She asserted that a strong support network is paramount to academic success.

In conclusion, Joan stated the “call to action” issued by the final committee report, directing faculty, university administrators, societies and the federal government to work together to ensure that all people are “welcomed and encouraged” in scientific research at our universities. The report recommends that everyone be conscious of the gender gap and provide creative solutions to both identify and correct the problems. The committee’s full report, entitled “Beyond Bias

and Barriers: Fulfilling the Potential of Women in Academic Science and Engineering”, is available at <http://www.nap.edu/catalog/11741.html>.



**Figure 1: Distribution of Faculty, Postdocs and Graduate Students at RNA 2007 and the First Annual Women in Science Dinner.** A. Pie graph representation of the 801 attendees at RNA 2007. Data were obtained from Wisconsin Union Conference services. Faculty are in blue, postdocs are in red, graduate students are in yellow, and editors, industry members, research staff, and undergrads are in green. B. Pie graph representation of the 326 attendees at the Women in Science Dinner. Data are reflective of registrants for the event and colors reflecting title are as in A. Approximately 40% of faculty, postdocs, and graduate students at the RNA 2007 meeting were present at the dinner. 20% of editors, industry members, research staff, and undergrads were in attendance at the event.

In a continued effort by the RNA Society to discuss ways to fill the gender gap in research, the second Women in Science dinner will take place at RNA 2008 in Berlin with a keynote address from Dr. Mary Osborn. Mary Osborn is a renowned cell biologist from Max Planck Institute for Biophysical Chemistry in Göttingen. We anticipate that next year’s dinner will be as well received as the inaugural event. Enhancing faculty diversity at our research institutions is imperative to strengthening our scientific community.



## Awards to Young Scientists presented/acknowledged at RNA 2007 by Brenda Peculis

The **RNA Society/Scaringe Young Scientist Award** was established to recognize the achievement of young scientists engaged in RNA research and to encourage them to pursue a career in the field of RNA. The award is open to all junior scientists (graduate students or postdoctoral fellows) from all regions of the world who have made a significant contribution to the broad area of RNA. The award is not restricted to authors who have published in the RNA Journal. The prize will recognize one outstanding graduate student and one postdoctoral fellow based on their research accomplishments to date, a 1000-word essay describing their scientific contributions to RNA research, and a 500-word abstract for a review in their field of RNA research.



The **2007 RNA Society/Scaringe Award to a Graduate Student** was given to **Malte Beringer** (shown at left) working with Marina Rodnina. For his work on peptide bond formation in the ribosome. His recent work was important in assigning roles of the nucleotides at the active site and demonstrated that the ribosome is a very fast ribozyme.



The **2007 RNA Society/Scaringe award to a Postdoctoral fellow** was awarded to **Zefeng Wang** (shown at right) currently working with Chris Burge, is looking at regulation of RNA splicing specificity. Most recently he has been performing a screen for exonic splicing silencers that lead to hypothesis that these elements are involved in splice site definition.

### The poster awards presented at the meeting including the following individuals :

The **ACS Chemical Biology** poster for 'innovative use of chemical biology applied to the study of RNA' was awarded to **Dana Baum** (Scott Silvermann lab). Poster #210: *DECAL : Deoxyribozyme-catalyzed labeling of RNA*. The **NSMB prize in Molecular biology** went to **Elizabeth Regulski** (Ron Breaker lab) Poster # 452: *A novel riboswitch class that controls gene involved in molybdenum cofactor metabolism*. The **NSMB poster prize in Genetics** went to **Jihae Shin** (Maurice Swanson lab) Poster #552 : *In vivo reversal of pre-mRNA mis-splicing in a mouse model for an RNA-mediated disease*. The **NSMB poster prize in biophysics** went to **Claus Kuhn** (Patrick Cramer lab) Poster #394: *Functional architecture of RNA Polymerase I based on an integrated structural biology approach*. The **Nature Reviews in Molecular Cell Biology** award went to **Daniel Crawford** (Melissa Moore lab) Poster #274: *Toward a single molecule assay for monitoring pre-mRNA splicing*.

**Congratulations to all!**



**Dana Baum**



**Elizabeth Regulski**



**Jihae Shin**



**Claus Kuhn**



**Daniel Crawford**

## Chairman of the Meetings Committee David M.J. Lilley

I must begin this piece by congratulating Sam Butcher and his co-organizers for the wonderful RNA 2007 meeting in Madison just a short while ago. The meeting ran like clockwork in every respect and the science was terrific. The new-style session on the first evening that included the opening talk by Tom Cech (page 8) was very successful, giving everyone a taste of what was to come throughout the meeting.



Next year the annual meeting will take place in Berlin, arranged by Reinhard Lührmann and co-organizers. It will take place in the Freie Universität Berlin in Dahlem, running from Monday 28 July until Sunday 3 August, 2008. The site is spectacularly good in all respects – lecture halls, poster sessions and dining, all of which are within walking distance. All the sessions will take place in the Henry Ford-Bau; this has been completely refurbished to be a totally state of the art complex. The meeting will be slightly longer than usual, but will include an evening boat trip on the Wannsee and through Berlin mitte. Reinhard is planning to introduce some new workshops in this meeting, in the spirit of developing the format of our meetings and exploring new features. The deadline for abstracts for RNA 2008 will be 24, March 2008.



**From left to right : Henry-Ford building of the Free University of Berlin where lectures and talks will be presented for RNA2008; atrium inside the building, to be used for the RNA2008; the newly renovated Audimax auditorium where lectures will be presented. Photos by Dermann, graciously accumulated and provided by B.Kastner.**

In 2009 we shall return to Madison, between May 26 - 31. The organizing team has now been finalized, consisting of Andrew Feig, Benoit Chabot, Fatima Gebauer and Narry Kim. Anyone with suggestions on any aspect of this meeting is invited to contact the members of the team.

The Seattle site has been reserved for 2010. The 2006 meeting held there was a great success and it did not require much deliberation to decide to return. Beyond that we are uncommitted, and are presently considering our options. One possibility being actively considered is taking the meeting to eastern Asia, and another is Barcelona.

Which brings me to the recent survey of the membership on the format and location of future meetings. 488 of you responded to this, for which we thank you very much. We need this feedback for our future planning.



Both Seattle and Barcelona were popular choices of venue, so there is a clear mandate for both. The membership were about 2/3 in favor of taking the meeting to the far east – and interestingly this view was uniformly spread across the membership, not just the choice of PIs voting. Japan, China and Singapore were all popular choices, and we have some work ahead to flesh out these possibilities.

The other part of the survey discussed the content of our meetings, and particularly the inclusion of more workshops of a functional kind. Just under half those voting were in favor of having some workshops in which techniques were discussed, and Reinhard is planning to introduce some element of this into the Berlin meeting next year. There was some support for non-research workshops on topics such as lab management, and grant or fellowship writing. Although only a quarter of those voting were in favor, it was considerably more popular with non-PIs, and should be seriously considered at least as an experiment in future meetings.

As ever we welcome any opinions on any aspects of future meetings. Anyone is invited to email me with their opinions, so please do so. [d.m.j.lilley@dundee.ac.uk](mailto:d.m.j.lilley@dundee.ac.uk)

---

### Who gets to talk at the RNA Society Meeting?

At RNA2007, 805 scientists attended RNA2007. Of those 30.5% were faculty, 4.9 % research staff, 21.6 % postdocs, 36.7 % graduate students, 0.9 % undergraduates, 3.7 % industry, and 1.7% unspecified. Women constituted 41% of the attendees. An equivalent percentage (35%) of attendees requested oral and poster presentation, and 58 % of those requesting a talk, got one. Interestingly, women requested poster presentations more than talks (97 versus 124, respectively), whereas men preferred oral over poster presentations (178 versus 159, respectively).

---

**If you are a member of an RNA club or in a local RNA Society,  
please email Evelyn Jabri with information about your club.  
We plan to feature some of these clubs and societies in the Spring 2008 newsletter.**

[ejabri@gmail.com](mailto:ejabri@gmail.com).



**RNA 2008**  
Free University of Berlin  
Berlin, Germany  
Monday July 28th - Sunday August 3rd, 2008

Topics include:

<b>RNAi and miRNA</b>	<b>RNA:Protein Interactions</b>
<b>Heterochromatin Silencing</b>	<b>RNP Biogenesis and Function</b>
<b>Riboregulation in Development</b>	<b>RNA Regulation in Neurons and Specialized Cells</b>
<b>Noncoding RNA</b>	<b>RNA Turnover &amp; Surveillance</b>
<b>tRNA, snoRNA and rRNA</b>	<b>RNA Transport and Localization</b>
<b>RNA Catalysis</b>	<b>RNA Editing and Modification</b>
<b>RNA Structure and Folding</b>	<b>Splicing Mechanisms &amp; Regulation</b>
<b>Bioinformatics</b>	<b>3' End Formation</b>
<b>RNA &amp; Disease</b>	<b>Ribosomes &amp; Translation Regulation</b>
<b>Viral RNA Mechanisms</b>	<b>Novel Methods in RNA&amp; RNP Research</b>

*RNA2008 will start with a keynote address and special session on Monday evening*

**Keynote Speaker: Dr. Craig Mello**

Invited speakers : Dr. Phil Sharp and Dr. David Baulcombe

Organizing Committee: Elena Conti (*EMBL Heidelberg*), Volker Erdmann (*Free University Berlin*), Witek Filipowicz (*Friedrich Miescher Institute*), Reinhard Lührmann (*Max-Planck-Institute for Biophysical Chemistry*), Joan Steitz (*Yale University*), Juan Valcarcel (*Centre de Regulació Genòmica*)

Abstract Deadline: The Organizing Committee invites abstracts on all aspects of RNA structure, function, biology and chemistry. Abstracts for oral presentations will be selected by the Committee and the Session Coordinators. Abstracts that are not selected for oral presentations will be presented as posters.

The deadline for submission of abstracts is **Monday March 24th, 2008.**

Sponsorship Opportunities: If you are interested in sponsorship opportunities, please email the Society at [rna@faseb.org](mailto:rna@faseb.org).

The RNA Society, 9650 Rockville Pike, Bethesda, MD 20814-3998 USA  
Phone: 301-634-7120 Fax: 301-634-7420 Email: [rna@faseb.org](mailto:rna@faseb.org)  
Website: <http://www.rnasociety.org/>



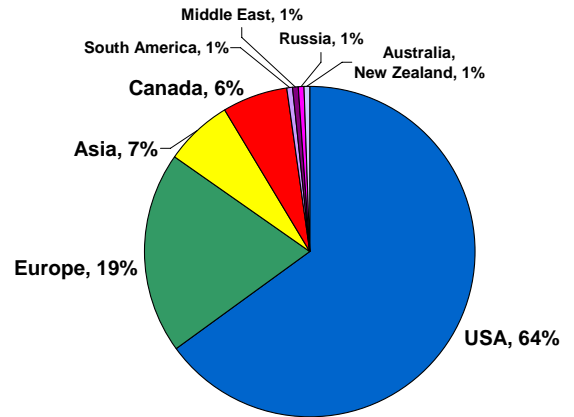
## From the Desk of the CEO

Evelyn Jabri

*Are we a truly international society?* I am often asked about the geographic diversity of our membership so I thought it would be informative to examine the membership over the last three years.



The pie chart illustrates the geographic diversity of our current membership. Since 2005, the Society has seen a 36% increase in non-US members. This expansion has come from roughly equivalent percentage increases in European (primarily German, British and Scottish), Canadian and Asian members. The expansion of our Asian membership is due to new members from Japan, Taiwan, South Korea and China. Although we currently have no members from Singapore, RNA scientists from this country are attending our meeting so it's only a matter of time.



To ensure our continued international growth, the Directors and Officers are keen to reach out to RNA scientists. In 2008, the Society will hold the meeting in Berlin (see page 12) making it easier for our European colleagues to attend due to reduced travel costs. Clearly the Society needs to take its meeting to Asia and we are actively discussing this possibility for 2011. Japan and China have both expressed interest in hosting the RNA Society meeting and now it's simply a matter of planning when we will go to each country.

Last year we began to reach out to RNA clubs and local RNA Societies around the world. We are developing a website to host information about these local groups. We are making progress on this front and hope to have the site in place by early 2008. If you are a member of an RNA club or in a local RNA Society, please email me with information about your club. We plan to feature some of these clubs and societies in the Spring 2008 newsletter.

For members who are interested in connecting with colleagues in other countries, I encourage you to explore our on-line membership directory where a simple search by country will return the relevant information. Very recent changes in the directory make it much more user friendly and informative.

As always your comments, questions and ideas are welcome. You may reach me at [ejabri@gmail.com](mailto:ejabri@gmail.com).

---

### Become a member and save on publication costs!

The RNA journal had an exceptionally profitable year and the RNA Society is pleased to give the profits back to members in the form of reduce page charges in 2008. Members will receive 50% of the page charges as well as 50% of the first color figure. These publishing discounts, combined with discounts on meeting registration and other membership benefits more than pay for a one-year membership to the RNA Society! So take a moment to use our very popular online system to renew your membership for 2008.

(<http://www.rnasociety.org/membership>).



# Items of interest to All Scientists

## The Value of Integrity

Michael R. Culbertson

Professor of Genetics and Molecular Biology

Chair, Department of Genetics, College of Agricultural and Life Sciences

Chair, Department of Medical Genetics, School of Medicine and Public Health

University of Wisconsin, Madison



When my first-born son was old enough to listen, I read stories out loud to him. I remember one that stuck with me. It was about the great Chinese Philosopher Confucius, who lived in the Province of Lu two and a half millennia ago. He believed that scholarship and learning were paths to self-realization. In the story he was teaching a class of young boys. He taught by posing questions, and asked, “What is the difference between honesty and integrity”? Although it is my observation that young people can often think about questions like this with greater clarity than adults, the students were perplexed. Seeing they could not answer, Confucius explained that honesty is when you are truthful to others, whereas integrity is when you are truthful to yourself. How, then, are these words related. In a sense, they mean the same thing, but one is more

fundamental than the other. That is why at the National Institutes of Health we do not have an Office of Research Honesty, but rather an Office of Research Integrity (<http://ori.dhhs.gov/>). In science, which I believe to be a noble enterprise, we demand more than mere honesty from its practitioners.

I am sitting in my office in front of my computer at 10AM on Wednesday, December 21<sup>st</sup>, 2005. I try to work, but daydream instead about what will soon happen. I will fly to the Riviera Maya in Mexico for a holiday vacation. My family is excited with anticipation about the prospect of warm weather, something of value in a Wisconsin winter. I am excited about the prospect of touring the great Mayan temples left to ruin for some unknown reason centuries ago, which, in retrospect, were even more spectacular than imagined. While in Mexico, I also remember trying not to think about what would happen upon my return.

Two graduate students appear at my door and interrupt my thoughts. They had made an appointment and were expected, but I had lost track of time. The students were from another lab that worked in a related area, so I imagined, given they had lab notebooks and reprints of papers in their hands, we were going to talk about experiments. Not so. What unfolded in the next thirty minutes ended up occupying all of my time for the next six months and still occupies part of my time. It caused me to submit an unpolished grant proposal to meet a deadline. The reviewers were not kind. They did not know the circumstances. Even if they had, it wouldn't have mattered. The NIH is not a warm fuzzy place where excuses can be offered. Manuscript submissions were delayed. I've gotten used to that. It's part of the job as a Department Chair at a large, complex research university.

The students met with me to allege scientific misconduct on the part of their thesis advisor, one of my faculty members. They brought evidence indicating that figures and tables in a grant proposal to the NIH, which had received a percentile score indicating a likelihood of funding, had been fabricated. They didn't have a full copy of the grant proposal- only a few pages. What I didn't realize at the time was that these students and others in the same lab had agonized for months over what to do with the knowledge they possessed. The evidence they showed me suggested fraud, but I did not want to believe it. There had to be another explanation. I knew immediately I was facing the greatest challenge of my ten-year tenure as a Department Chair. The next day, the thesis advisor showed up unannounced at my office. One student had alerted her that I had been informed of a problem in the lab. She told me there was a logical explanation. We arranged that upon my return from Mexico, she would lead a meeting describing the logical explanation. I would be present- a silent observer in the back of the room.





The lab meeting took place on Friday January 6th, 2006. The explanation was that circumstances occurred where the pressures of too much to do had caused “placeholder” figures to be included in a grant submission, but the intention had been to replace them with the real data prior to submission. The replacements never occurred, and the application was submitted with placeholders- a regrettable, but inadvertent mistake. Some wanted to believe it and so did I, but it became clear over the next two days that others were not satisfied. The students requested a complete copy of the grant proposal in question as well as another one that had been funded a year earlier. They did not have full copies of any grant because the thesis advisor had the habit of not showing them in full to anyone. The students wanted to do an experiment. If the thesis advisor was correct that particular circumstances surrounding the grant submission had caused the problem, then another grant application submitted during a different time period would be free of problems. If that were the case, the explanation would be more credible. It looked like a good experiment to me.

Grants are confidential. I don't give them out from our administrative office without the consent of the principal investigator. I believed the students should conduct their experiment, but not by violating the confidentiality of the department's administrative office. To find an exit from the moral dilemma resulting from my dual loyalties both to faculty and students, I contacted three Associate Deans, one in the College of Agricultural and Life Sciences, one in the School of Medicine and Public Health, and one in the Graduate School. I kept a contemporaneous log of everything that happened, every meeting and conversation. I sent them a summary.

To my great relief, they knew what to do. We had procedures to handle such situations. One Associate Dean accompanied me to another meeting with the students. He told them that although he understood why I could not release copies of grant proposals from a departmental office without the permission of the principal investigator, he could support a release of information by forwarding a request to the Office of Research and Sponsored Programs. Information could be released either through the Federal Freedom of Information Act or the Wisconsin-specific Open Records Law. All the students had to do was contact him in writing to make a request for a copy of any grant proposal they wanted to see. One of the students did so within 24 hours. Redacted versions of two NIH grant proposals were provided. Redaction means that some parts were blacked out and unreadable, such as names of individuals, salary information, and the like. The scientific content was left intact and readable.

The student's experiment revealed further evidence of fraud in both grants. This undermined the “logical explanation”. A preliminary investigation from the Dean's office was conducted. Sufficient evidence was documented to support a recommendation to the Chancellor for a formal investigation alleging scientific misconduct. From this point on, the process was beyond my influence. Over the next several months, the accused faculty member on advice from her lawyer resigned her tenured position as an Associate Professor. The Office of Research and Sponsored Programs terminated the active NIH grant with remaining funds earmarked for return to the agency. The pending NIH proposal was withdrawn. The thesis advisor's office was sealed off, and the computer hard drive was copied. The students were left without financial support. The lab literally disappeared overnight. In two months, the formal investigation concluded that scientific misconduct had most likely occurred. The Chancellor formally accepted the conclusion. Documents were turned over to the Office of Research Integrity, including the formal investigative report and copies of lab notebooks. Articles appeared in the local newspapers. I had contact numbers for university officials next to my phone for use when reporters called. I made no move and issued no statement without consulting university legal services. I went to work every day, but I did not want to go to work. It was a Department Chair's, thesis advisor's, and student's worst nightmare.

When the active NIH grant was terminated, the Deans provided immediate financial support for all of the students. Decisions had to be made for each of them regarding what to do. Meetings of the research committees were convened. The students were at different stages in their studies ranging from the second to seventh year. Months were spent working out individual plans. In the end, only one student will complete the PhD based on work from this lab under the supervision of another Professor. One student transferred to another university. Another left graduate school with a Master's degree and found a job as a technician. Another took the Master's



and entered law school. Yet another transferred to an alternate lab on the same campus. A technician found alternate employment. They dispersed in different directions, each with the goal of trying to understand what happened while reconstructing their lives. The story of the students was highlighted in great detail in the September 1 2006 issue of Science magazine for which I was interviewed. A year later we are still without closure on the case from the Office of Research Integrity.

During the period of investigation, the most difficult part was that privacy laws prevented all discussion of what was happening until the investigation was formally concluded and released to the public. Faculty members from other departments confronted me demanding information at a time when details could not legally be revealed. I could not tell my own faculty members what happened even though it was obvious to everyone on the floor where this occurred that a lab had evaporated into thin air in a short time frame. I could not explain what was happening to students who were not directly involved. Younger female faculty members just beginning to launch their careers witnessed the self-destruction of the lead female faculty member of the department who by all other criteria was a smashing success, a rising star, and I could not explain to them why this was happening.

Being a department chair is not just about pushing paper, filing reports and asking deans for money (although there are plenty of these kinds of activities to consume a lot of time). It is about sharing the triumphs and defeats of the faculty members you serve as opposed to focusing exclusively on your own triumphs and defeats. Sometimes, it means ranking your well being secondary to the well being of others. In this case, it was about sharing the personal tragedy of a colleague at a deep level. I felt like a family member had strayed without warning into the path of an assassin's bullet. By all accounts, the procedures in place at this university for handling cases of scientific misconduct are efficient and effective, but I learned that perfect procedures only minimize harm to innocent parties. They can't undo most of the damage. We are still asking ourselves if this could have been prevented. What policy changes could be made to make incidents like this less likely in the future? Meaningful answers are hard to come by.

These days the story of Confucius I once read to my son looms large in my mind. Integrity, the art of telling the truth to oneself, is the fundamental basis of science. Honesty is important, but the lesser value, merely the secondary consequence of integrity. In science, we are in the business of integrity- an entry-level requirement to practice the trade. For the scientist, integrity should prevail in your professional and personal life. In the end integrity is all you have. Your promotions, your single digit percentile scores on grants, and your awards if you have any are meaningless in the absence of integrity. Like an athlete on steroids, the scientist without integrity can lay claim to nothing. If any accomplishments come to you by any route other than integrity, no one may find out, but you will know, and in the end, if you are like most people, you will suffer inside.

Accusations of scientific misconduct shown by investigation to be unfounded require the same legal process before closure can be reached. Even if you conduct yourself with integrity, you should not risk accusations of questionable conduct. Transparency and openness offer the best forms of self-protection. Other typical safeguards include paying close attention to how you handle that annoying and unexplained band on the gel that confounds the interpretation of the experiment; omitting from a manuscript the result that contradicts and detracts from the main conclusion; borrowing an idea from a privileged communication and using it to advance your own career; over-interpreting data in a paper or grant proposal. In science we face moral decisions on every detail of our business every day. It's a slippery slope. It's not that hard to cross the line between acceptable conduct and the abyss of misconduct. It is my belief that outright fabrication is typically preceded by years of lesser evils where misconduct is approached through small incremental advances toward the precipice. Because "to err is human", I know we have all been guilty from time to time of small indiscretions. Beware. The risk of harm to yourself and others is much too high compared to any perceived potential gain. You are better off with a manuscript rejection or an unfunded grant than you are losing your integrity. Once lost, recovery, if it occurs at all, is a slow and painful process.

The students were brave souls. They did what was right as opposed to looking the other way, which seemed more convenient at the time. Their lives were irrevocably altered. However, I believe they will go on to



forms of productive work in the future much the more so because they acted with integrity. They can go forward in possession of the most important thing in life- a clear conscience, the reward for integrity the benefits of which should not be underestimated. Their thesis advisor, for whom I have great empathy despite what happened and for whom I still consider to be one of my colleagues, will carry the weight of an unbearably heavy burden for which there is no obvious remedy. I will miss her as I try to find ways to fill the gaps in departmental teaching and service created by her absence. Aside from her life's work in research, which is now tainted, she made many other valid contributions to our mission.

---

## Letters from the Editor's Emails :

*(This was addressed to the Current and Past Presidents, from Karla Neugebauer)*

Dear Brenda and Lynne,

I was pleased to read about the RNA Society Women in Science initiative and look forward to the planned event at the annual meeting in Madison. Beyond hearing Steitz's talk, I think it is appropriate that both men and



women are encouraged to attend and that balancing career and family is a prominent theme. It is important to recognize that gender inequality affects us all negatively. Today, all scientists naturally strive for their own success, but many have to view their career options in the context of their partners and families; both men and women also want the best for their partners. Likewise, men and women scientific mentors want all of their students and postdocs, regardless of their sex, to realize their full potential. The obvious point is that gender balance is an issue for all scientists, not just women.

Lynne Maquat summarized the findings of the study by the National Academy of Sciences in her article in the last newsletter, citing in particular the under-representation of women in faculty and leadership positions. As an American working in Europe, I have my ear to both continents and can tell you that the situation is more extreme in Europe. Gender inequality is of great concern to the EU, and numerous studies have been undertaken over the last 5 years to establish the facts and attempt to identify problems and solutions. Further points and some of the key references can be found in my article last year (Neugebauer, KM. 2006. Keeping tabs on the Women: Life Scientists in Europe. PLoS Biology 4:e94). On both continents, the progressive loss of female talent is the concern of nations, universities and research institutions, industry, and scientific organizations. In the recommendations of the report, it is stated that "professional societies.... have a responsibility to play a leading role in promoting equal treatment of women and men and to demonstrate a commitment to it in their practices." In Europe, the European Molecular Biology Organization (EMBO), European Life Sciences Organization (ELSO), and the European Commission sponsor initiatives and have Women in Science web pages.

Here I would like to make RNA Society members aware of the Database of Expert Women in the Molecular Life Sciences (<http://www.elso-cdc.org/M11.shtm>), created by ELSO's Career Development Committee to increase the visibility of women scientists in Europe. This initiative addresses the realization that, perhaps paradoxically, identifying the women who are already successful can be an obstacle. For example, in order to promote gender equality in the long term, gender balance in all aspects of peer review is a priority. Grant review panels, the editorial boards of journals, hiring committees, and conference organization committees are examples of powerful, decision-making bodies that should themselves be gender-balanced. However, one often hears that women cannot be found to serve on this or that committee or speak at a conference. Believe it or not, I have heard the innocent comment that sometimes the names of appropriate women experts simply do not come

to mind. The senior women who do come to mind are over-booked. How does one find appropriate women experts to approach?

ELSO's Database of Expert Women in the Molecular Life Sciences was launched in 2005, is curated to ensure that the entries represent active members of the research community, and currently includes nearly 400 women - from senior postdocs to senior PIs. The database is in use within Europe by granting organizations, search committees and conference organizers; a "hidden" benefit may be that junior women can see from the database how many women have already made it against the odds! The database is European: to be eligible, you must be of European nationality and/or working in Europe. A similar initiative in the US and other geographical areas would be logical. For now, it is my great hope that European women RNA biologists know about the database and have already registered or will do so in the near future! We also need to spread the word to all potential users. With sufficient awareness, it should be self-evident that gender balance is an aim embraced by the entire scientific community. It is no longer acceptable to exclude women participants, because their names do not come to mind.

Karla

Karla M. Neugebauer, PhD  
Group leader  
Max Planck Institute of Molecular Cell Biology and Genetics  
Pfortenhauerstrasse 108  
01307 Dresden GERMANY  
tel +49-351-210-2589  
www.mpi-cbg.de



# GradStudent and Postdoc Corner

## Postdoc 'Mixer' at RNA 2007 Dan Golden and Beth Tran

The 2007 RNA Society meeting in Madison highlighted not only new research within our field, but new additions to our society. Beth Tran and I (Dan Golden) were introduced to the members of our society as the new post-doctoral representatives to the RNA Society Board. The main goal of our job is to find out how the society can better serve the needs of our peers and then work with the administration to develop these services.

It is my pleasure to report the success of our first outreach to the post-doctoral members of the society. We hosted a social hour on the Wednesday evening during the meeting. Approximately 100 post-docs attended the event to meet colleagues and exchange ideas. University of Wisconsin Conference Services was indispensable in organizing the event. They arranged for beverages to be served in the main hall, providing our gathering with a comfortable atmosphere conducive for informal discussions.

The social was a wonderful venue for postdocs to meet each other. Discussions amongst postdocs ranged from obtaining fellowships, experimental design and execution, entering the job market, and balancing work and family life. This event was a great way to network and to discuss topics of interest.

Additionally, Beth and I used the postdoc social to solicit ideas on how the RNA Society can better address the interests and concerns of post-docs. Suggestions varied, but quite a few centered on constructing useful on-line resources. It was suggested that these resources could host a wild array of information including data on local RNA clubs to collections of new, innovative RNA-based protocols. Currently, I am working with RNA Society administrative personnel to implement some of these ideas. Our goal is to provide internet



resources that will facilitate communication and knowledge sharing among post-docs, graduate students, and senior members of our society. Be on the look out as we launch those during the next year!

The success of the first postdoc social at RNA 2007 demonstrates the enthusiasm and commitment of the RNA Society postdoc members. Furthermore it provided an opportunity to meet other attendees within the RNA Society. Beth and I are looking forward to helping the RNA Society to build on its past successes, making it an invaluable resource for the advancement of our scientific careers. If you are a postdoc and would like to volunteer to assist the society, or if you have suggestions for society resources, don't hesitate to contact either Beth or myself.

Daniel Golden  
[degolden@northwestern.edu](mailto:degolden@northwestern.edu)

Beth Tran  
[beth.tran@vanderbilt.edu](mailto:beth.tran@vanderbilt.edu)



## New RNA Society Graduate Student Representatives

By Lynne Maquat

Three graduate student members of the RNA Society have been selected to represent graduate student members at large. They are:

- **Sarah Ledoux** ([s-ledoux@northwestern.edu](mailto:s-ledoux@northwestern.edu)), who is beginning her fifth year as a member of Olke Uhlenbeck's lab in the Department of Biochemistry, Molecular Biology and Cell Biology at Northwestern University,
- **Tom Mullen** ([tmullen@email.unc.edu](mailto:tmullen@email.unc.edu)), who is a sixth-year student with Bill Marzluff in the Department of Biochemistry and Biophysics at the University of North Carolina-Chapel Hill, and
- **Claudia Recinos** ([crecinos@med.miami.edu](mailto:crecinos@med.miami.edu)) who is a fourth-year graduate student in the lab of Arun Malhotra from the Department of Biochemistry and Molecular Biology at the University of Miami School of Medicine.



Sarah Ledoux Tom Mullen Claudia Recinos

You can expect to hear from Sarah, Tom and Claudia in the first 2008 issue of the RNA Society Newsletter as they establish programs for RNA 2008 in Berlin together with RNA Society Post-doctoral Representatives Beth ("Elizabeth Tran" <[beth.tran@vanderbilt.edu](mailto:beth.tran@vanderbilt.edu)>) and Dan ("Daniel E. Golden" <[degolden@northwestern.edu](mailto:degolden@northwestern.edu)>).

Evelyn Jabri and I wish to thank everyone who volunteered to represent graduate students. Please consider volunteering again next year, since Sarah and Tom have plans to graduate, and we will need to find their replacements. We are very much interested in working with young motivated individuals who some day may become elected officers of the RNA Society.

Students and post-docs are welcome to contact any of their representatives (Email contacts above) or Evelyn ([ejabri@gmail.com](mailto:ejabri@gmail.com)) or myself ([lynne\\_maquat@urmc.rochester.edu](mailto:lynne_maquat@urmc.rochester.edu)) with ideas or questions about Society issues.

---

### "Have you considered the NIH intramural program for a postdoc?"

Mark Bayfield, Postdoc, NICHD, National Institutes of Health



Whither to postdoc? For people considering a postdoctoral fellowship in the United States, some may wonder about the National Institutes of Health intramural research program (IRP) in Bethesda, Maryland. Despite the fact that a significant proportion of successful primary investigators located throughout the world have previously done fellowships at the NIH, many prospective postdocs know little about this training option. Having spent the past three years as a postdoc at the NIH Bethesda campus, I thought it might be useful to describe some of the differences between this program and the extramural programs that are funded by NIH.



The NIH IRP refers to research that is performed on NIH campuses, most commonly the 300-acre main campus in Bethesda, MD, as opposed to the large number of universities and institutes across the U.S. that receive research support through NIH extramural funding. Other smaller intramural facilities exist (see <http://www.nih.gov/about/FAQ.htm#Where>). There are approximately 3800 postdoctoral fellows in the IRP. One big difference between the IRP and other programs is the funding mechanism. Unlike extramural labs that can point to successful grants as a sign of achievement, intramural labs undergo site visits as a means of peer-review (usually by extramural investigators). For postdocs, an advantage of the IRP is that Fellowships extend for up to five years, and postdoc salary funding is assured without the necessity of writing postdoc grants or teaching. However, this brings up the possibility that missing the experience of writing grants and limited teaching are disadvantages for IRP postdocs in their subsequent job search. Such training opportunities do exist at NIH, and new postdocs would do well to consult with their Institutes' office of education to learn about these. One excellent training possibility is the K22 career transition award. This operates similarly to the new and popular K99/R00 Pathway to Independence funding mechanism, but unlike the K99, the K22 is often available only to intramural fellows, who must also be American citizens or permanent residents. During an academic job search, faculty search committees often look for a successful history of grant writing, and the K22 is highly valued as its funds transfer with the postdoc when he/she begins a career as a new Principal Investigator.

Foreign graduate students should inform themselves about visa issues before choosing where to go for their postdoc training. Generally, foreign postdocs cannot work at the NIH using the popular H-1 visa, and instead must use the J-1. J-1 visas come with a two-year home residency requirement at the end of the postdoc, unless this requirement is later waived. One advantage of the J-1 is that unlike the H-1 visa, J-1 dependents (e.g., spouse) can apply for work authorization in the U.S. during their stay. For more information about the Visiting Postdoc programs, go to <http://www.training.nih.gov/postdoctoral/vf.asp>.

Scientifically, the NIH is a wonderful place to work. The depth of expertise and the breadth of research topics covered across the campus are unmatched. However, with the intense focus on biomedical research, NIH does not have the diversity of academic study one would find on a university campus. NIH hosts many fantastic interest groups (<http://www.nih.gov/sigs/>), of which my favorites are RNA Club and Yeast Club, both of which include investigators from several NIH labs as well as neighboring universities such as Johns Hopkins, Univ. Maryland, Georgetown, George Washington, and Virginia Commonwealth. The RNA Club ([http://tango01.cit.nih.gov/sig/home.taf?\\_function=main&SIGInfo\\_SIGID=83](http://tango01.cit.nih.gov/sig/home.taf?_function=main&SIGInfo_SIGID=83)) meets on the first Tuesday of every month with two 30 minute talks that can entail either finished work or work in progress. Both PIs and postdocs present, and I've found the comments and suggestions I've received there to be very helpful.

I've tried to describe briefly some of the distinctions between the IRP and extramural institutions; while these differences can be substantial, certainly the largest determinants of a successful postdoc are the choice of laboratory and the nature of the mentor/mentee relationship. I've found my postdoc at the NIH highly enjoyable and scientifically rewarding. For more information about postdoctoral fellowships at NIH, visit <http://www.training.nih.gov/postdoctoral/index.asp>.



## Being a foreign Postdoctoral fellow in the USA

Pamela David, Postdoc, University of Colorado Health Sciences Center

After arriving in the USA I discovered that Americans typically have one of two reactions to finding out where I am from and/or hearing me speak: 1) You are from Canada? Why don't you have an accent? 2) Where are you from with that accent? On one occasion a person actually crossed a crowded room after hearing me speak because he recognized my accent. Personally, I don't think I have an accent but I don't listen to myself speak as others do.



So, as I mentioned, I am from Canada. Maybe that doesn't qualify me to write about being a foreign postdoctoral fellow in the USA. Canada is America's closest ally, largest trading partner and has the longest undefended border with the USA. However, Canada is a separate country and even though Canadians do not require an entry visa to the USA we do require a work permit. To clarify, the sticker that you may have or need to get in your passport is an entry visa. Your work permit, which is also confusingly called a visa by some people, is your status, i.e. J1 status or H1-b status.

So, how does one go about getting permission to work in the USA? First, find out all you can about the work permit/Visa application process. Your potential university should have an Office of International Students and Scholars (ISS) or the like that assists foreign students and postdocs/faculty in the work permit application process. They will know more than your potential boss, however, they may not necessarily be competent or know everything. Secondly, leave plenty of time for your documents to be processed. The University office needs to file paperwork after receiving all the required documentation from you. This may take a week or two. Only then are they ready to send your application to the US Citizenship and Immigration Service/Department of Homeland Security. Third, understand that the US Citizenship and Immigration Service/Department of Homeland Security does not supply information about the progress of your individual application. Once your application has been sent from the University to the processing office and you have received confirmation of receipt of your application there is no way to check on the status of your application until more than 120 days has passed. The USCIS publishes online progress updates for applications, but past progress in no way guarantees that your application will be processed in the same time frame. Fourth, which work status, either J1 or H1-b should you apply for? This decision will depend on certain criteria such as your postdoctoral position funding source, research area, residency requirements, length of position and whether you want to pay a fee for applying, to name a few.

Most of all, realize that the requirements and restrictions for foreign scientists are subject to change at any time. However, obtaining a work permit and entry Visa it is a process that all foreign postdocs go through and live to tell the tale and conduct scientific research in the USA.





## Meetings Supported by the RNA Society

### The Gordon conference on RNA editing

**January 14-19 2007 Ventura CA**

The biannual GRC on RNA Editing is the only regularly scheduled meeting on this subject. It convened a relatively small group of established leaders and junior scientists in a casual setting for five days of morning and evening presentations with afternoons reserved for poster sessions, informal discussions, and recreation. The GRC on RNA Editing provides scientists investigating these diverse processes with a unique opportunity to interact at a single meeting and discuss new hypotheses and mechanistic paradigms, exchange information about experimental strategies, and initiate collaborations. Funds from the RNA Society were used as poster prizes for two students and one postdoctoral fellow to present their work : **Michael L. Hayes** (Maureen R. Hanson lab) *Nucleotides critical for in vitro RNA editing in a chloroplast transcript*; **Mary Anne T. Rubio** (Juan D. Alfonzo lab) *An adenosine to inosine tRNA editing enzyme that can perform C to U deamination of DNA*; **Ryan Bennett** (Harold Smith lab) *Structural and biochemical evidence that hA3G in the absence of RNA forms a tail-to-tail dimer in its active LMM-like form.*

---

### RNAi2007

**29-30 March 2007 St Anne's College, Oxford UK.**

The second annual Oxford RNAi conference, RNAi2007, covered a diverse variety of topics in the field, including advances in understanding biology of RNA interference and its potential applications in gene function analysis and therapy. The conference brought together a diverse mix of participants, including leading experts from both academia and industry, postdoctoral researchers, graduate students and managers. It provided an excellent opportunity to discover the latest research directions and thinking in this fast moving field in academic and commercial settings as well as to develop new collaborative links. Names of all four beneficiaries of the RNA Society travel funds are : Ms **Madgalini Papadika**, Athens, Greece; Dr **Graeme Doran**, MIT, USA; Dr **Alla Grishok**, MIT, USA; Dr **Joel Neilson**, MIT, USA

---

### RiboWest 2007

**July 30 and 31 at UNBC in Prince George.**

The 3rd annual Western Canada RNA Conference (RiboWest) was held at the University of Northern BC, Prince George, on July 30 and 31. Over sixty scientists, mainly from BC and Alberta, attended the meeting. Keynote speaker Adrian Ferré-d'Amaré gave a presentation on "Structural insights on RNA versatility: riboswitches and ribozymes." The RNA Society generously provided sponsorship for poster and presentation prizes, which were awarded as follows: 1st place presentation, **Matthew Lau** (Simon Fraser); 2nd place presentation, **Liz Chester** (UNBC); 3rd place presentation, **Christopher Jang** (UBC). The poster prizes were awarded to: **Matt Schellenberg** (U of Alberta) First Place, **Daniel Chapman** (UNBC), **Brianne Burkinshaw** (UNBC), **Dustin Ritchie** (U of Alberta), **Yun-Young Lee** (UBC), **Julianne Roy** (UBC), and **Jeffrey Fischer** (U of Lethbridge). RiboWest 2007 also received generous sponsorship from GenomeBC. The organizers wish to thank all of the corporate sponsors, and look forward to another successful meeting in 2008. More information about the Western RiboClub and the RiboWest meetings can be found at: <http://www.biochem.ualberta.ca/RiboWest/>

---



## **Ribosomes : Form and Function**

**June 3-8 2007, Cape Cod, MA**

Funds from the RNA Society were used to help younger scientists attend the meeting. The meeting organizers designated two students "RNA Society Fellows". The first was **Elisa Alvarez Garcia** from Madrid. She presented a poster that explained how cleavage of the sarcin/ricin loop of 23S rRNA leads to the inhibition of protein synthesis. The second was **Pohl Milon** from the University of Camerino in Italy. His poster described the time-resolved work he and his colleagues are doing on the initiation process in bacteria.

---

## **Employment Opportunities**

### **Postdoctoral positions**

Position available in Dept of Chemistry of the University of Cincinnati, Cincinnati, United States

Position posted on Saturday, July 14, 2007

A postdoctoral position is available for NSF and NIH funded research in the areas of RNomics and Structure-Function studies of Ribonucleoprotein complexes. We are seeking a strong independent Postdoctoral Researcher who will be studying the functional consequences of RNA modification on transcriptional regulation. The project will involve technique developments using mass spectrometry to characterize the structural significance of RNA modification status as well as biochemical studies to elucidate the functional role of RNA modifications within specific signaling pathways.

Candidates must have a Ph.D. in the Biological or Physical Sciences. A strong record of research accomplishments and publications, the ability to work in a team environment, excellent oral and written communications skills in English, presentations of scientific results at national meetings and their publication in peer-reviewed journals are required. The ideal candidate will have expertise in molecular biology and either biochemistry or genetics. Previous work in plants, yeast or fungi is not required, but would be preferable. Desired, but not required, skills include mass spectrometry techniques such as LC-MS and MALDI-MS.

This position is available immediately. Formal applications require C.V.s including a statement of research interests and three reference letters submitted electronically to Dr. Pat Limbach (Pat.Limbach@uc.edu). The initial appointment will be for one year and is renewable upon mutual agreement. Competitive salary (commensurate with experience) and fringe benefits including health insurance are included within this position.

Contact :

[Dr Pat Limbach](#)

Tel : 513-556-1871

Fax : 513-556-9239

Email : Pat.Limbach@uc.edu

---

Position available in Dept of Cell and Molecular Biology, Medical Nobel Institute of the Karolinska Institutet , Stockholm, Sweden

Position posted on Thursday, June 21, 2007

The Department of Cell and Molecular Biology (CMB) at the Karolinska Institutet is strongly focused on basic science conducting research in several areas of cell, molecular, and developmental biology. CMB is comprised of more than 20 independent research groups organized in five themes: Molecular Cell Biology, Developmental and Stem Cell Biology,



Gene Regulation, Genome Structure and Integrity and Infection and Cancer. Focus of study is the structural basis of tRNA processing, modification and transport.

Transfer RNAs (tRNAs) must be recognizable to the correct aminoacyl-tRNA synthase, by elongation factors and by elements on the ribosome to deliver their valued amino-acid cargo to the growing peptide chain through the action of the ribosome. In all kingdoms of life, mechanisms are in place to ensure the fidelity and efficiency of tRNA function. We aim to understand the structural basis of tRNA maturation and transport by studying the molecular structure of proteins - both with and without target RNA - that are involved in processing, modification and nucleocytoplasmic transport of tRNA.

Successful candidates will participate in all steps involved in structure determination of target proteins and target RNA/protein complexes.

Suitable candidates have a PhD in a relevant area, preferably in RNA Biochemistry, Structural Biology or related subjects. General requirement to be eligible for this position is a doctoral degree from a University outside Sweden.

The position is offered for two years (full-time) and is funded by a non-taxable scholarship.

Last date for applications is July 18 (2007).

Please see: <http://jobb.ki.se/external/ad/showAd.asp?adId=1285>

Contact :

[Dr Martin Hallberg](#)

Tel : +46-8-52486630

Fax :

Email : [Martin.Hallberg@ki.se](mailto:Martin.Hallberg@ki.se)

---

Position available in Dept of Genetics and Microbiology of the Charles University , Prague, Czech Republic

Position posted on Thursday, June 21, 2007

Postdoctoral position is available in translation initiation to study the role of mRNA cap binding human translation initiation factors and their interacting partners in oncogenesis and genesis of the childhood leukemia. We are looking for a highly motivated, creative and independent individual with strong experimental training and experience in molecular biology or biochemistry. An expertise in translational control or other fields of RNA biology will be an advantage but other candidates will also be seriously considered.

Successful candidate will be involved in a multidisciplinary joint project of the Laboratory of RNA Biochemistry, Faculty of Science, Charles University and the clinical research group of Prof. Jan Trka at the Department of Pediatric Hematology and Oncology, 2nd Medical School, Charles University.

Please visit our websites at:

<http://clip.lf2.cuni.cz/index.php?action=activity&lng=en>

[http://natur.cuni.cz/~pospisek/home\\_e.htm](http://natur.cuni.cz/~pospisek/home_e.htm)

<http://www.iresite.org>

The laboratory is located at Charles University in Prague, which is the capital of the Czech Republic and ranks among the most beautiful, inspiring and cultural towns in Europe. <http://en.wikipedia.org/wiki/Prague>

The position is available immediately for up to two years with the possibility to extend it upon mutual agreement. To apply, please send your curriculum vitae, brief description of your research interests and contact information of three references to Dr. Martin Pospisek [martin@natur.cuni.cz](mailto:martin@natur.cuni.cz).

Contact :

[Dr Martin Pospisek](#)

Tel : +420-221951719



Fax : +420-221951724  
Email : martin@natur.cuni.cz

---

Position available in Institute of Medical Microbiology of the University of Zurich , Zurich, Switzerland

Position posted on Monday, April 30, 2007

A postdoctoral position in ribosome biochemistry is available for a qualified candidate to work on the development of in-vitro translation assays with purified ribosomes. The assays to be developed will provide an analytical assessment of specific steps in mRNA translation (decoding, peptide-bond formation, translocation) in wild-type and mutant prokaryotic and eukaryotic ribosomes. The ultimate objectives are to understand the mechanisms of action of ribosomal antibiotics and to identify malfunctions in ribosome activity that lead to human disease. The position is available now for a minimum of one year and is suitable for a researcher with a strong background in biochemistry and some technical knowledge of molecular biology and microbiology. Previous work experience with ribosomes or RNA is an advantage; expertise in structural biology is a plus. We offer a highly productive and stimulating work environment in a small but cooperative and effective research team at the University of Downtown Switzerland.

Contact :

[Dr Sven N. Hobbie](#)

Tel : +41 44 634 2700

Email : shobbie@immv.unizh.ch

---

Position available in Dept of Chemistry of the University of Michigan , Ann Arbor, United States

Position posted on Sunday, April 15, 2007

Starting this fall, postdoctoral research positions in single molecule fluorescence spectroscopy and imaging of RNA are available in the group of Professor Nils G. Walter at the University of Michigan, Ann Arbor, USA. Projects involve highly interdisciplinary, National Institutes of Health funded work targeted at real-time imaging of either pathogenic ribozymes in vitro or of regulatory micro (mi)RNAs involved in RNA interference (Nobel prize in Medicine, 2006) in living cells. Highly motivated and enthusiastic candidates are sought with experience in fluorescence and/or other spectroscopies, RNA biochemistry, and the enthusiasm to learn state-of-the-art biophysical techniques. Those with the appropriate background should review the group's web page at: [www.umich.edu/~rnapeopl](http://www.umich.edu/~rnapeopl) and send their Curriculum Vitae and the names and addresses of three references to Dr. Nils G. Walter, Associate Professor of Chemistry, via email: [nwalter@umich.edu](mailto:nwalter@umich.edu).

Contact :

[Dr Nils G. Walter](#)

Tel : (734) 615-2060

Fax : (734) 647-4865

Email : [nwalter@umich.edu](mailto:nwalter@umich.edu)

---

Position available in Department of Cell Biology of the Lerner Research Institute, Cleveland Clinic , Cleveland, US

Position posted on Sunday, April 15, 2007

Postdoctoral positions are available on NIH-funded grants to investigate the mechanism and regulation of selenoprotein synthesis. The translation of selenoprotein mRNAs involves the recoding of the UGA stop codon as selenocysteine, the 21st amino acid. The goals of our research are to: characterize the trans-acting factors required for this novel recoding event; identify functionally important RNA structures and RNA-protein interactions; and elucidate regulatory pathways that control selenoprotein expression in mammalian cells (see <http://www.lerner.ccf.org/cellbio/driscoll/>).

We are seeking highly motivated, independent, creative, interactive individuals who have excellent oral and written communication skills and less than three years of postdoctoral experience. The ideal candidate will have expertise in RNA biology or translational control, but individuals with strong training in molecular biology, nucleic acid biochemistry, or protein biochemistry will also be seriously considered. As an equal opportunity and affirmative action employer, the Cleveland Clinic recognizes the power of a diverse community and encourages applications from individuals with varied experiences, perspectives, and backgrounds.



The Cleveland Clinic's Lerner Research Institute provides an excellent environment for biomedical research and competitive salaries and benefits. Applicants will have the opportunity to interact with the extensive RNA community within the institute and at nearby Case Western Research University. For information on our postdoctoral training program, see <http://www.lerner.ccf.org/education/postdoc/program>.

Positions are available immediately. The initial appointment is for one year and is extendable, depending on mutual agreement. To apply, send a CV, brief description of research interests and career goals, and contact information for three references to Donna Driscoll ([driscod@ccf.org](mailto:driscod@ccf.org)).

Contact :

[Dr Donna Driscoll](#)

Tel : 216-445-9758

Fax : 216-444-9404

Email : [driscod@ccf.org](mailto:driscod@ccf.org)

---

Position available in Dept of Pathology, Molecular and Cellular Biology of the Baylor College of Medicine , Houston, United States

Position posted on Friday, February 02, 2007

Two NIH-funded postdoctoral positions are available to study alternative splicing regulation during development and the disruption of regulated splicing in myotonic dystrophy. Goals are to discover networks that coordinate developmental splicing transitions using splicing microarrays, move upstream to identify the regulators and controlling signaling pathways and also to determine the downstream functional consequences of the isoform transitions. Myotonic dystrophy is caused by expanded CTG or CCTG repeats. The repeats are expressed as RNA that have toxic effects on the regulation of alternative splicing and translation. Pathogenesis involves disrupted functions of CELF and MBNL proteins, which normally regulate subsets of developmental splicing transitions as well as cytoplasmic RNA processing events. Investigations include identification of the pathogenic form of the RNA, the mechanism by which expression of repeat RNA alters CELF and MBNL regulatory activities, and use of existing mouse models to establish pathogenic mechanisms for skeletal muscle and cardiac myopathy, cardiac arrhythmias, and central nervous system dysfunction.

We are looking for individuals who are creative, motivated, productive, are looking for a highly interactive environment and who enjoy the process of discovery. Our lab interacts regularly with seven other RNA labs in the Texas Medical Center including monthly joint lab meetings and a biweekly RNA journal club. For more information, please contact Tom Cooper at [tcooper\[at\]bcm.edu](mailto:tcooper[at]bcm.edu) and visit our lab website at <http://www.bcm.edu/pathology/labs/cooper/index.htm>.

Contact :

[Dr Tom Cooper](#)

Tel : 713-798-3141

Fax : 713-798-5838

Email : [tcooper@bcm.edu](mailto:tcooper@bcm.edu)

---

