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# **Biophysicist in Profile**



**Kathleen Hall** 

"I didn't always like science," says Kathleen Hall, director of the Biochemistry and Molecular Biophysics graduate program at Washington University School of Medicine. In fact, originally she saw herself as a journalist, and later, while a pipe organ player and opera singer, young Hall saw herself primarily as a musician.

Hall was born in 1953 in Minneapolis, Minnesota. Her mother (now deceased) was an accountant, and her father, who is now 90, built golf courses. Hall has one brother Dennis, younger by a mere 13 months, who is a lawyer and now a judge.

While others describe Kathleen as having been a spirited, curious, and lively child, she paints a less euphemistic picture. "As a child I was obnoxious," she explains, "very verbal, very impatient, and usually had my nose in a book—the kind of book I wasn't supposed to be reading."

As a teenager, she channeled her energy into activism. In an era of radical politics sustained by the Vietnam War, Hall was an active member of several student organizations and political groups, most notably Students for a Democratic Society (SDS).

After high school, Hall matriculated into a private university on a National Merit scholarship, but soon left. "I didn't like it because it was too small," Hall remembers. She transferred into her state school, the University of Minnesota, where she initially focused on music.

Deciding that playing the pipe organ and singing might be "a hard way to earn a living," Hall turned to science. Immersing herself in the biological sciences, she graduated in three years with a BS in Microbiology and Immunology. She didn't completely abandon her interest in the pipe organ and singing, however, and earned enough credits to obtain a minor in music.

After a short stint in graduate school, Hall dropped out and headed west to Berkeley, California. At the time, she lacked focus and simply, didn't want to study anymore for awhile," she explains. "I wanted to do other things." For the next five years, Hall did plenty, including working in industry, as a singer with the San Francisco symphony, and at Lawrence Berkeley National Laboratory (LBL). Feeling the urge to do her own research again, Hall ultimately made a decision to return to graduate school. "I really wanted to do science at a level that I couldn't do before."

While Hall was working at LBL, her colleague *Marcos Maestre* convinced *Ignacio Tinoco* at the University of California, Berkeley, to be her graduate advisor. Hall began her graduate studies at UC Berkeley, and acknowledges that Tinoco heavily influenced her career. She credits Maestre for his foresight. "If it hadn't been for Marcos, who knows what I'd be doing," she laughs.

"I thought I was done and gone after I decided to drop out of graduate school, but that's the great thing about the American system. You are able to reinvent yourself and go back and correct mistakes, change paths, change directions," Hall reflects.

Back in academia, Hall worked on her graduate research with intense concentration and determination. "She [Hall] was very rigorous in her design of experiments. She always did all the controls so there was never any question about her results. Her careful experimentation set the tone for the rest of the group," says Tinoco.

Tinoco remembers that her presence in the lab never went unnoticed. "She stands out in any gathering because of her laugh," he says. "With an operatrained voice her laugh is heard throughout any room."

Hall decided to work on RNA, a choice which in those days (the late 1970s), brought bewildered looks and "odd man out" status from fellow researchers. "When I first started studying RNA it was thought to be pretty boring-you also couldn't make it because it had to be made chemically, and it was an incredible pain. And everybody thought I was Resonance (NMR) with Alfred Redfield. "Alfred is pretty spectacular," she explains. "He let me do whatever I wanted to do. He never questioned where I was or what I was doing, and he always seemed to find me whenever he had magnet time. He let me be very independent."

As a postdoc, Hall received a Lucille P. Markey scholarship, which inspired in a way that is infectious," admires James Kranz, one of Hall's first graduate students, who is now a Senior Scientist at Johnson and Johnson.

With an innate mentoring instinct, Hall has the ability to foster independent thinking while expressing genuine interest in the work of her graduate students. "She has a way

of nurturing "crazy ideas" that I've not come across very often. These are thoughts about the next experiment that are pieced together from bits of unrelated mental chatter. Of course

many of them aren't worth doing, but 1 in 10 are worth pursuing. What she taught me during these brainstorming sessions was the ability to think through a project from conception to endpoint, extrapolating what we'd learn and how we'd learn it," says Kranz.

Her influence also extends to colleagues. "She's extremely smart and quick, and doesn't tolerate nonsense, especially time-wasting nonsense," says Sean Eddy, now a group leader at HHMI, Janelia Farms and a former colleague of Hall's at Washington University.

"I met Kathleen when I was being recruited to Washington University in 1994 or so. I asked to meet her because of her work on RNA. My department seemed scared of having

# "Her breadth of knowledge is enviable, as is her ability to do very challenging quantitative work, both experimental and theoretical."

nuts because, once you made it, it would degrade. And why would you make it anyway because it didn't do anything? Everybody said to do DNA," Hall remembers. Always interested in the new and different, or "because I'm stubborn," Hall wryly notes, she was undeterred.

In Tinoco's lab—one of the few labs at the time that worked on RNA—Hall discovered that RNA, which normally forms a right-handed A-form double helix, could be induced to form a left-handed Zform helix. "Left-handed Z-form DNA had been discovered earlier, but a distinguished crystallographer had concluded that it was impossible for RNA to form an equivalent structure," explains Tinoco. "Kathi

[Kathleen] made the experiment succeed. The results were pubgarnered some press recognition."

It was during her stint in Tinoco's lab that Hall first joined the Biophysical Society in 1983. His lab members always attended the Annual Meeting as a group, and everyone she met was a BPS member. "The comments were, "Why aren't you a member?" So it was a sort of natural progression," says Hall.

After obtaining her PhD in biophysics in three years, Hall moved to Brandeis University to do postdoctoral research on Nuclear Magnetic supported her for her first five years as a faculty member at the Washington University, a position she still holds. In addition to teaching, Hall's research is currently focused on NMR dynamics, studying RNA and RNA: protein interactions. "It's interesting to understand how dynamics influences and is important for func-This understanding won't come overnight, but incrementally," she explains.

"Hall is never satisfied with applying a single method or experiment to a problem when she can corroborate her data by applying two or more. Her insistence on having self consistent data from diverse sources strengthens the conclusions she draws in her research," says former lab

"After the meeting, someone from Genetics was sent to lished in Nature and recover my remains, but to his surprise, Kathleen and I got along great—and we've been friends ever since..."

> member Scott Showalter, now Assistant Professor of Chemistry at Penn State.

> Hall's success as a scientist has made her a source of inspiration for students. "She [Hall] is a physicist, turned biochemist, turned biologist. Her breadth of knowledge is enviable, as is her ability to do very challenging quantitative work, both experimental theoretical. and Beyond excelling technically and intellectually, she always seems

me meet her. She has a fierce reputation, and was thought to be especially fierce towards computational/theoretical biologists like me. After the meeting, someone from Genetics was sent to recover my remains, but to his surprise, Kathleen and I got along great—and we've been friends ever since," says Eddy.

Hall's active involvement in the Society stems from her belief that biophysics will become increasinglymore collaborative, "Biophysics has changed a lot. It's much more com

(Continued on page 8.)

- 4. Determine the zone of possible agreement. Quickly establish needs and wants that both you and the chairperson can agree on. It is important to bring up spousal hiring early in the interview process.
- 5. Build a network. Establish a rapport with the persons involved in negotiation and recognize the importance of staff. If things go well you will be working with this group for some time.
- 6. Be cautious. Talk to people outside the department; know the history of the department and chairperson. Get it in writing. Know when you will get up and leave.
- 7. Offer solutions. Anticipate what happens if you don't reach an agreement and come up with creative alternatives.

If you want to learn more about negotiation strategies read *Everyday* Negotiation: Navigating the Hidden Agendas in Bargaining by Deborah Kolb.

-Kathy Giangiacomo, Chair CPOW

# **Subgroups**

## **Membrane Biophysics**

### What's new?

**Annual Symposium:** The Membrane Biophysics Subgroup organizes an annual symposium to highlight an area of membrane biophysics. The symposium is held on the Saturday afternoon before the start of the annual Biophysical Society meeting. This year's chair and symposium organizer is Criss Hartzell, Emory University. The theme for the 2009 Membrane Biophysics symposium will be Ion Channels with Borderline Personalities. Speakers will include: *Tom DeCoursey*, Fred Lamb, Joe Mindell, Ann-Marie Surprenant, Criss Hartzell, and others. Dues increase: Membrane Biophysics dues will increase to \$10 with the 2009 dues invoices. (Student dues will remain free.) Dues have been \$6 for many years. We are no longer even

covering the symposium costs with dues at this level. There will be another small dues increase in 2010 to bring us to the dues level of the other subgroups We do have some funds in reserve, but we have been (very) actively spending those and need to slow the spending rate. (Thanks to our last two Chairs for soliciting funds to cover the snack at the symposium.) Dues are used to cover symposium costs, Cole Award, Cole Dinner costs, and student dinners. \$10 is still less than lunch in a convention center! Don't forget to renew your membership.

Advantages of membership: Being a member of the Membrane Biophysics subgroup means you:

- are supporting the purposes of the subgroup;
- will receive subgroup information via the group's listsery;
- are eligible to nominate investigators for the Kenneth S. Cole Award; and
- will have the earliest opportunity to reserve a place at the Cole Award dinner (we have been selling out each year for past few years and are not always able to accommodate last minute people).

Call for Nominations for the Kenneth S. Cole Award: The Membrane Biophysics subgroup solicits nominations for the Kenneth S. Cole Award. This is an annual award, given to an investigator who has made a substantial contribution to the understanding of membrane biophysics. The award will be presented at the subgroup dinner following the Saturday afternoon symposium at the Annual Meeting. Any member of the Membrane Biophysics subgroup may be a nominator. The recipient will be selected by the Subgroup Chair and the Advisory Committee. Nominations should contain a brief statement summarizing the qualifications of the nominee. The deadline for nominations September 15, 2008.

Nominations should be sent to the Chair (*Criss Hartzell*), the

Advisory Committee (*Eitan Reuveny*, *Nael A. McCarty*, *David T. Yue*, or *Dan Minor*), or subgroup Secretary/Treasurer (*Carol L. Beck*).

Please note the earlier deadline this year. We would like to make the selection earlier in order to meet newsletter deadlines for publicizing the awardee.

Subgroup Email List: The subgroup has an email distribution list. Members may contact *Carol Beck* (carol.beck@jefferson.edu) for information about sending out email announcements of conferences or meetings.

—Carol Beck, Secretary/Treasurer

### **Profile** (Continued from page 3.)

putational, much more interdisciplinary. It's always been interdisciplinary, but now much more so. The problems require much more expertise, so I see a lot more collaborations. And increased demands on anyone who does it [biophysics] to know more than one discipline," she says.

The Biophysical Society remains a place where Hall feels at ease. "I think it provides a home to a lot of people, an intellectual home. In that sense, it's reassuring that there are other people out there who care about the same things. It's a very healthy Society," she says. "I think it's a question of being able to give back. As a home for biophysics, BPS is like any other home, it needs caring for and participation, and that's part of being a scientist and public service. All scientific societies rely on a lot of volunteers." Hall is currently on the Public Affairs Committee, serves as an Associate Editor of Biophysical Journal, and just recently completed a term on the Society Council.

When not doing science, Hall enjoys spending time with her three cats and her boyfriend Noel, a sculptor who lives in New Mexico. Harkening back to her dreams of journalism and love of reading, she laughingly notes that she "still likes to read—although lately it's been journals and manuscripts!"