

Carleton College  
One North College Street  
Northfield, Minnesota 55057

Department of Mathematics

March 31, 2011

Dear Carleton College Mathematics Major Alumni:

Welcome to the second (somewhat) annual Carleton math major alumni newsletter. Much has happened in the department since our last letter to you. First, thanks to an extremely generous gift from Carleton math major Michael E. Morrill ('81), we have established the Morrill Fund to support mathematical activity in the department.

The Morrill Fund partially funded Erica Flapan from Pomona College and Francis Bonahon from USC who came as Distinguished Headley House Visitors for a week. Erica's research is about the knotting of topological graphs in 3D, which has many applications to chemical molecular structure. She has written a book called *When Topology Meets Chemistry*, and she gave a math colloquium about this subject, in particular about how chiral molecules can be like topological rubber gloves. She also met with Helen Wong's comps group, who were trying to extend some of her work about the possible knots that might result from a recombinase enzyme acting on circular, knotted DNA. Erica is a recent recipient of the MAA's top teaching award, the Haimo award, serves on various graduate fellowship boards, and teaches often at Carleton's Summer Mathematics Program. Francis Bonahon is a leading researcher in topology and geometry, with recent interest in quantum topology and geometry. He is winner of many research awards and grants, and was an invited speaker at an International Congress of Mathematicians. He gave a public lecture on *Curvature* as well as a more technical talk about his research with Helen. Since he has served as graduate chair at USC, he was able to provide (along with Erica) advice to both students and faculty about how liberal arts college students can get into and succeed in graduate school.

This spring we are anticipating a visit from Carleton math major Morley Davidson ('90) who was part of the team that proved that every Rubik's cube position can be solved in 20 or fewer moves (<http://cube20.org/>)

Other colloquium talks include:

1. (October 2010) Tom Halverson, Professor of Mathematics and Computer Science at Macalester College, *Random Walks on Permutations and Partitions*.
2. (November 2010) Abra Brisbin '04, Research Fellow at the Mayo Clinic, *Math in your genes: Using probability and linear algebra to map the ancestry of DNA*.
3. (February 2011) Ted Vessey, Professor Emeritus of Mathematics at St. Olaf College and former Visiting Professor at Carleton, *The Gambler's Ruin*.

Our students were also very active this year. Danny Chen '12, Shunji Li '13, and Sen Zhao '12 took first place in the Konhauser competition, returning the trophy to us after a four-year absence.

Eighteen Carls participated in the Konhauser this year, and Carleton teams also finished third and fifth. This past fall Carleton hosted the second annual Northfield Undergraduate Mathematics Symposium, a miniconference devoted to undergraduate research by Carleton and St. Olaf students. This year's event included talks by five St. Olaf students and four Carleton students: Julie Michelman '11, Aaron Maurer '11, Amy Becker '11, and Gabe Davis '11. Several of our students gave talks also at the January joint math meetings in New Orleans.

The 2010 Galovich Prize winner was Danny Wells who is now in a Ph.D. program at Northwestern. So many generous gifts were received to honor the memory of Steve Galovich that in addition to endowing this prize, the department has been able to commission a beautiful blown-glass Klein bottle soon to be on display. The artist, Cliff Stoll, assures us that the piece was imported from the fourth dimension!

The statistics faculty continue to seek projects for senior comps from the local community. In the past two years, Katie St. Clair supervised 4 students on a project from 3M (*Statistical forecasting and time series analysis*), Bob Dobrow supervised 3 students on a project from the Department of Natural Resources (*Got otters?*), and Laura Chihara supervised 4 students on a project from the Minnesota Pollution Control Agency (*Mercury in fish: a linear-mixed models approach*).

Among the many math-related activities were:

1. Alex Fisher ('10) directed the student-led Experimental Theater Board in a production of Tom Stoppard's *Arcadia*. The math department hosted a pre-play talk. Connie Walker from the English department guest lectured and gave a bit of background to the historical and social context of the play. Jon Hibbard (and Helen Wong) from the Math department discussed the mathematical theory of chaos and fractals, featured in the play.
2. Faculty member Gail Nelson demonstrated how to make an origami buckyball, using Post-It notes.
3. The Digits of Pi contest was won by student Chas Karch '13 who recited 128 digits correctly!

You can find more about what our faculty, staff and students are up to, by going to our website: <http://apps.carleton.edu/curricular/math/>. Also, as always, we would love to hear from you as well. Please update us on your activities, professional and personal, whatever you are willing to share. There is an alumni check-in form on our website for your reply:

<http://apps.carleton.edu/curricular/math/alumni>

or you may e-mail Sue Jandro at [sjandro@carleton.edu](mailto:sjandro@carleton.edu).

We look forward to hearing from you,

Jon Armel	Laura Chihara	Bob Dobrow	Eric Egge
Jack Goldfeather	Deanna Haunsperger	Sue Jandro	Steve Kennedy
Mark Krusemeyer	Gail Nelson	Sam Patterson	Russ Petricka
Katie St. Clair	Mike Tie	Helen Wong	