***ISABEL K. DARCY***
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## EDUCATION

Florida State University, Ph.D in Mathematics 1992 - 1997
Thesis: Biological Metrics on DNA Knots and Catenanes
Thesis advisor: DeWitt Sumners

University of California at Riverside, MS in Mathematics 1989

University of California at Riverside, BS in Mathematics/Physics 1987

## A. Positions and Honors.

### Positions and Employment

Assistant Professor August 2003 - present
University of Iowa

Assistant Professor September 1999 - July 2003
University of Texas at Dallas

Post-Doc/Lecturer September 1997 - August 1999
University of Texas at Austin

Research/Teaching Assistant August 1992 - December 1994
Florida State University Mathematics Department

Mathematics Instructor August 1991 - June 1992
San Jacinto College, Mennifee Valley, CA

Mathematics Instructor September 1990 - June 1991
California Polytechnique University, Pomona, CA

### Fellowship

Fellow of the Program in Mathematics and Molecular Biology Oct. 1994 to Aug. 1997

### Other Experience and Professional Memberships

AMS Member at Large on the Committee on Science Policy (Feb 1, 2005 - Jan 31, 2008).
American Association for the Advancement of Science (AAAS)
American Mathematical Society (AMS)
Applied Mathematical and Computational Sciences (AMCS), University of Iowa

**B. Selected peer-reviewed publications (in chronological order).**

[1] Darcy, I. K., Sumners, D. W., *A Strand Passage Metric for Topoisomerase Action*, in Knots '96: Proceedings of the Fifth MSJ International Research Institute of Mathematical Society of Japan, July 1996, World Scientific, ed. S. Suzuki (1997) 267 - 278.

[2] Darcy, I. K., Sumners, D. W., *Applications of Topology to DNA*, in Knot Theory, Banach Center Publications, Volume 42 (1998) 65 - 75.

[3] Darcy, I. K., Sumners, D. W., *Rational Tangle Distances on Knots and Links*, Mathematical Proceedings of the Cambridge Philosophical Society, 128 (2000), no. 3, 497–510.

[4] Darcy, I. K., *Biological Distances on DNA Knots and Links: Applications to XER recombination*, Journal of Knot Theory and Its Ramifications, 10 (2001), no. 2, 269-294.

[5] Darcy, I. K. *Solving unoriented tangle equations involving 4-plats*, Journal of Knot Theory and Its Ramifications, 14 (2005) 993–1005.

[6] Darcy, I. K. *Solving oriented tangle equations involving 4-plats*, Journal of Knot Theory and Its Ramifications, 14 (2005) 1007–1027.

[7] Vetcher, A. A., Lushnikov, A. Y., Navarra-Madsen, J., Scharein, R. G., Lyubchenko, Y. L., Darcy, I. K., Levene, S. D. *DNA Topology and Geometry in Flp and Cre Recombination*, Journal of Molecular Biology, 357(4) (2006) 1089–104.

[8] Darcy, I. K., Scharein, R. G., *TopoICE-R: 3D visualization modelling the topology of DNA recombination*, Bioinformatics, 22(14) (2006) 1790-1.

[9] Darcy I. K., Chang J., Druivenga N., McKinney C., Medikonduri R.K., Mills S., Navarra-Madsen J., Ponnusamy A., Sweet J., Thompson T. *Coloring the Mu transpososome.* BMC Bioinformatics, 7 (2006) Art. No. 435.

[10] Darcy, I. K., *Modeling protein-DNA complexes with tangles* (invited review), Computers & Mathematics with Applications, accepted.

**C. Research Support**

**Ongoing Research Support**

5 R01 GM067242-05 Darcy (PI) 7/01/02 - 6/30/06 (no cost extension until 6/30/07).
NIH, DMS/NIGMS Mathematical Biology Initiative.
Tangle Analysis of DNA Recombination and Related Proteins.
This study consists of mathematical and experimental analysis of DNA Recombination with a focus on DNA topology.
Role: PI

**Completed Research Support**

Darcy, Levene, Scharein (co-PI's). Summer 2005.
Obermann Center for Advanced Studies Interdisciplinary Research Grant, U. of Iowa.
Computer visualization and identification of DNA knots and links.
The main focus of this study was to begin developing computational tools for DNA knot identification.
Role: co-PI