

# David T. Kirkpatrick, PhD

Department of Genetics, Cell Biology, and Development  
Department of Biology Teaching and Learning  
University of Minnesota  
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## Positions:

2017 – Present: Head (interim Head Jan 2017-Aug 2018)  
Department of Biology Teaching and Learning, University of Minnesota  
2006 – Present: Associate Professor  
Department of Genetics, Cell Biology, and Development, University of Minnesota  
2007 – Aug 2018: Associate Head  
Department of Genetics, Cell Biology, and Development, University of Minnesota  
2012 – 2017 : Director of Undergraduate Studies  
GCD Major, College of Biological Sciences, University of Minnesota  
2000 – 2006: Assistant Professor  
Department of Genetics, Cell Biology, and Development, University of Minnesota

## Education:

1994 - 2000 Postdoctoral Fellow University of North Carolina at Chapel Hill  
Faculty Advisor: Dr. Thomas D. Petes  
Projects: 1) Aspects of Meiotic Recombination at *HIS4* in Yeast  
2) Mismatch Repair During Meiosis in *S. cerevisiae*  
1987 - 1994 Graduate Student: Massachusetts Institute of Technology, Cambridge, MA  
Faculty Advisor: Dr. Frank Solomon  
Thesis: Suppression of Cold-Sensitive Extra-Microtubule Mutants of  
Yeast  $\alpha$ -Tubulin by Overexpression of Wild-Type Genes  
1983 - 1987 Undergraduate: Carnegie Mellon University, Pittsburgh PA  
Faculty advisor: Dr. Elizabeth W. Jones  
Project: Cloning of the *PEP3* gene in *Saccharomyces cerevisiae*

## Memberships:

Member of the University of Minnesota Cancer Center  
Member of the Genetics Society of America  
Member of the American Society of Microbiology

## HONORS AND AWARDS:

National Academies Education Mentor in the Life Sciences, 2014-2016  
Special Fellow of the Leukemia Society of America, 1998-2000  
Distinguished Undergraduate Research Award, Carnegie-Mellon University, 1987

## RESEARCH & SCHOLARSHIP:

### Funding History:

National Institutes of Health 1R21 ES019247  
Award dates: August 1, 2010 to July 31, 2012 (no cost extension to July 31, 2013)  
“Environmental Factors Influencing Minisatellite Stability in Yeast”  
Award amount: \$275,000.

- National Institutes of Health ARRA Supplement 3R01 GM072598-05S1  
Award dates: September 30, 2009 to July 31, 2011  
“Factors Controlling Minisatellite Stability in Yeast”  
Award amount: \$138,200 per year.
- National Institutes of Health R01 GM072598-01A1  
Award dates: August 1, 2005 to July 31, 2010  
“Factors Controlling Minisatellite Stability in Yeast”  
Award amount: \$173,000 per year.
- Minnesota Medical Foundation Research Grant 3759-9222-07  
Award dates: March 1, 2007 to February 28, 2008  
“An *In Vivo* Model System for Regulating Meiotic Recombination & Crossover Formation”  
Award amount: \$11,500
- National Institutes of Health R21 AI059664-01  
Award dates: April 1, 2004 to March 31, 2006 (no cost extension to March 31, 2007)  
“DNA Repair Genes and Acquired Drug Resistance in *Candida*”  
Award amount: \$125,000 per year.
- Minnesota Medical Foundation  
Award dates: September 1, 2003 to August 31, 2004  
“Identification of Novel Genes Involved in Minisatellite Stability”  
Award amount: \$14,675
- Grant-in-Aid, University of Minnesota  
Award dates: January 1, 2003 to December 31, 2003  
“DNA Repair During Meiosis”  
Award Amount: \$17,762
- Basil O’Connor Starter Scholar Research Award (The March of Dimes Birth Defects Foundation)  
Award dates: February 1, 2001 to January 31, 2003  
“Mechanisms Governing DNA Mismatch Repair and Minisatellite Stability During Meiosis”  
Award amount: \$75,000 per year, \$150,000 total
- American Cancer Society Institutional Research Grant (University of Minnesota)  
Award dates: January 1, 2001 to December 31, 2001  
“DNA Mismatch Repair During Meiosis”  
Award amount: \$20,000
- Special Fellow of the Leukemia Society of America,  
Award dates: July 1, 1998 to June 30, 2001  
terminated April 1, 2000 upon starting as Assistant Professor  
“Identification of Genes Affecting Minisatellite Stability in Yeast”  
Award amount: \$39,700 per year.

### **Publications:**

- Caramori, M.L., Kim, Y., Natarajan, R., Moore, J.H., Rich, S.S., Mychaleckyi, J.C., Kuriyama, R., **Kirkpatrick, D.**, and Mauer, M. (2015) Differential Gene Expression in Diabetic Nephropathy in Individuals with Type I Diabetes. *Journal of Clinical Endocrinology & Metabolism* 100 (6) E876-E882. DOI: <http://dx.doi.org/10.1210/jc.2014-4465>
- Caramori, M.L., Kim, Y., Natarajan, R., Moore, J.H., Rich, S.S., Mychaleckyi, J.C., Kuriyama, R., **Kirkpatrick, D.**, and Mauer, M. (2015) Differential Response to High Glucose in Skin Fibroblasts of Identical Twins Discordant for Type I Diabetes. *Journal of Clinical Endocrinology & Metabolism* 100 (6) E883-E889. DOI: <http://dx.doi.org/10.1210/jc.2014-4467>
- LeClere, A. and **D. T. Kirkpatrick** (2014) *MSH4* and *MSH5* Repress Minisatellite-stimulated Meiotic Recombination at *HIS4* in Yeast. Under revision.
- Alver, B., Jauert, P.A., Brosnan, L., O’Hehir, M., VanderSluis, B., Myers, C.L., and **D.T. Kirkpatrick** (2013) A Whole Genome Screen for Minisatellite Stability Genes in Stationary Phase Yeast Cells. *G3:Genes|Genomes|Genetics* 3: 741-756.

- LeClere, A.R., Yang, J.K., and **D.T. Kirkpatrick** (2013) The Role of *CSM3*, *MRC1* and *TOF1* in Minisatellite Stability and Large Loop DNA Repair During Meiosis in Yeast. *Fungal Genetics and Biology* 50: 33-43.
- Alver, B., Kelly, M.K., and **D. T. Kirkpatrick** (2013) Novel Checkpoint Pathway Organization Promotes Genome Stability in Stationary-Phase Yeast Cells. *Molecular & Cellular Biology* 33: 457-472.
- Kelly, M.K., Brosnan, L., Jauert, P.A., Dunham, M.J., and **D.T. Kirkpatrick** (2012) Multiple Pathways Regulate Minisatellite Stability During Stationary Phase in Yeast. *G3:Genes|Genomes|Genetics* 2: 1185-1195.
- Legrand, M., Chan, C.L., Jauert, P.A., and **D. T. Kirkpatrick** (2011) The Contribution of the S-phase Checkpoint Genes *MEC1* and *SGS1* to Genome Stability Maintenance in *Candida albicans*. *Fungal Genetics & Biology* 48: 823-832
- Kelly, M.K., Alver, B., and **D. T. Kirkpatrick** (2011) Minisatellite Alterations in *ZRT1* Mutants Occur via *RAD52*-dependent and *RAD52*-independent Mechanisms in Quiescent Stationary Phase Yeast Cells. *DNA Repair* 10: 556-566
- Legrand, M., Chan, C.L., Jauert, P.A., and **D. T. Kirkpatrick** (2008) Analysis of Base Excision and Nucleotide Excision Repair in *Candida albicans*. *Microbiology* 154: 2446-2456
- Legrand, M., Forche, A., Selmecki, A., Chan, C., **Kirkpatrick, D.T.**, and Berman, J. (2008) Haplotype Mapping of a Diploid Non-Meiotic Organism Using Existing and Induced Aneuploidies. *PLoS Genetics* 4: e1
- Kelly, M.K., Jauert, P.A., Jensen, L.E., Chan, C.L., Truong, C.S., and **D. T. Kirkpatrick** (2007) Zinc Regulates the Stability of Repetitive Minisatellite DNA Tracts During Stationary Phase. *Genetics* 177: 2469-2479. (Cover Article)
- Legrand, M., Chan, C.L., Jauert, P.A., and **D. T. Kirkpatrick** (2007) Role of DNA Mismatch Repair and Double-Strand Break Repair in Genome Stability and Antifungal Drug Resistance in *Candida albicans*. *Eukaryotic Cell* 6: 2194-2205
- Borts, R. H. and **D. T. Kirkpatrick**. (2005) "The Role of the Genome in Meiotic Recombination", Book Chapter in "The Implicit Genome", edited by Lynn Caporale.
- Jensen, L. E., Jauert, P. A. and **D. T. Kirkpatrick**. (2005) "The Large Loop Repair and Mismatch Repair Pathways Act on Distinct Substrates During Meiosis", *Genetics* 170: 1033-1043.
- Jauert, P. A., Jensen, L. E. and **D. T. Kirkpatrick**. (2005) "A Novel Yeast Genomic DNA Library On a Geneticin-resistance Vector", *Yeast* 22: 653-657.
- Jauert, P. A. and **D. T. Kirkpatrick**. (2005) "Length and Sequence Heterozygosity Differentially Affect *HRAS1* Minisatellite Stability During Meiosis in Yeast", *Genetics* 170: 601-612.
- Sia, E. A. and **D. T. Kirkpatrick**. (2005) "The Yeast *MSH1* Gene Is Not Involved in DNA Repair or Recombination During Meiosis", *DNA Repair* 4: 253-261.
- Jauert, P. A., Edmiston, S. N., Conway, K., and **D. T. Kirkpatrick**. (2002) "*RAD1* Controls the Meiotic Expansion of the Human *HRAS1* Minisatellite in *Saccharomyces cerevisiae*", *Molecular & Cellular Biology* 22: 953-964
- Kearney, H. M., **Kirkpatrick, D. T.**, Gerton, J. L., and T. D. Petes. (2001) "Meiotic Recombination Involving Heterozygous Large Insertions in *S. cerevisiae*: Formation and Repair of Large, Unrepaired DNA Loops" *Genetics* 158: 1457-1476.

**Kirkpatrick, D. T.**, Ferguson, J. R., Petes, T. D., and L. S. Symington. (2000) "Decreased Meiotic Intergenic Recombination and Increased Meiosis I Nondisjunction in *exo1* Mutants of *Saccharomyces cerevisiae*" *Genetics* **156**: 1549-1557.

**Kirkpatrick, D. T.**, Wang, Y.-H., Dominska, M., Griffith, J. D., and T. D. Petes. (1999) "Control of Meiotic Recombination and Gene Expression in Yeast by a Simple Repetitive DNA Sequence that Excludes Nucleosomes", *Molecular & Cellular Biology* **19**: 7661-7671.

**Kirkpatrick, D. T.** (1999) "Roles of the DNA Mismatch Repair and Nucleotide Excision Repair Proteins During Meiosis" (invited review), *Cellular and Molecular Life Sciences* **55**: 437-449.

**Kirkpatrick, D. T.**, Fan, Q.-Q., and T. D. Petes. (1999) "Maximal Stimulation of Meiotic Recombination By a Yeast Transcription Factor Requires the Transcription Activation Domain and a DNA Binding Domain" *Genetics* **152**: 101-115.

**Kirkpatrick, D. T.**, Dominska, M., and T. D. Petes. (1998) "Conversion-type and Restoration-type Repair of DNA Mismatches Formed During Meiotic Recombination in *Saccharomyces cerevisiae*" *Genetics* **149**: 1693-1705.

**Kirkpatrick, D. T.** and T. D. Petes. (1997) "Repair of DNA Loops Involves DNA Mismatch and Nucleotide Excision Repair Proteins" *Nature* **387**: 929-931.

**Kirkpatrick, D. T.** (1997) "Deletion of Flanking ARS Elements Does Not Affect Meiotic Recombination at the *HIS4* Locus in Yeast" *Current Genetics* **31**: 106-111.

**Kirkpatrick, D.** and F. Solomon. (1994) "Overexpression of Yeast Homologs of the Mammalian Checkpoint Gene *RCC1* Suppresses the Class of  $\alpha$ -Tubulin Mutations that Arrest with Excess Microtubules" *Genetics* **137**: 381-392.

Solomon, F., Guenette, S., **Kirkpatrick, D.**, Praitis, V., Weinstein, B., and J. Archer. (1993) A Genetic Analysis of Microtubule Assembly and Function in Yeast. In "Chromosome Segregation and Aneuploidy", NATO ASI Series H: Cell Biology, Vol. 72 (ed. B. Vig), Springer-Verlag, pp. 199-209.

Solomon, F., Connell, L., **Kirkpatrick, D.**, Praitis, V., and B. Weinstein. Methods for Studying the Cytoskeleton in Yeast. Book Chapter in "The Cytoskeleton: a Practical Approach", ed. Carraway, K.L., and C.A.C. Carraway, IRL/Oxford University Press, New York, 1992.

Preston, R., Manolson, M., Becherer, K., Weidenhammer, E., **Kirkpatrick, D.**, Wright, R., and E.W. Jones. (1991) "Isolation and Characterization of *PEP3*, a Gene Required for Vacuolar Biogenesis in *Saccharomyces cerevisiae*." *Mol. Cell. Bio.* **11**: 5801-5812.

### **Abstracts/Talks/Posters**

Led Workshop on Programmatic Assessment at the PULSE (Partnership for Undergraduate Life Sciences Education) Midwest & Great Plains meeting August 2-5 2018, Elmhurst College, Illinois

Prichard, A., D. Clarke and **D. T. Kirkpatrick**. The Effect of Histone H3 Tail Modifications on Meiosis in *Saccharomyces cerevisiae*. Poster at the University of Minnesota Undergraduate Symposium, April 20, 2018

Prichard, A., D. Clarke and **D. T. Kirkpatrick**. The Effect of Histone H3 Phosphorylation on Meiosis, Viability, and Chromosome Segregation in *Saccharomyces cerevisiae*. Poster at the University of Minnesota Undergraduate Symposium, April 20, 2017

Led Workshop on Programmatic Assessment at the PULSE (Partnership for Undergraduate Life Sciences Education) Midwest & Great Plains meeting August 5-7 2016, Washington University St. Louis

Prichard, A., D. Clarke and **D. T. Kirkpatrick**. The Effect of Histone H3 Phosphorylation on Sporulation in *Saccharomyces cerevisiae*. Poster at the University of Minnesota Undergraduate Symposium, April 20, 2016

Cao, S. and **D. T. Kirkpatrick**. Minisatellite Stability in G<sub>0</sub> Phase *Saccharomyces cerevisiae*. Poster at the University of Minnesota Undergraduate Symposium, April 22, 2015

Handlogten, A. and **D. T. Kirkpatrick**. Investigation of the Role of *SMC5* and *MMS21* in Maintenance of Minisatellite Stability. Poster at the University of Minnesota Undergraduate Symposium, April 16, 2014

Olander, M. and **D. T. Kirkpatrick**. The Effects of *COT1* and *CCZ1* on Minisatellite Stability in *Saccharomyces cerevisiae*. Poster at the University of Minnesota Undergraduate Symposium, April 16, 2014

O'Hehir, M. and **D. T. Kirkpatrick**. Environmental Factors Influencing Minisatellite Repeat Stability. Poster at the University of Minnesota Undergraduate Symposium, April 18, 2012

Yang, J., LeClere, A., and **D. T. Kirkpatrick**. The Role of *CSM3*, *MRC1* and *TOF1* in *HRAS1* Minisatellite Stability in Yeast. Poster at the University of Minnesota Undergraduate Symposium, April 18, 2012

**D.T. Kirkpatrick**. DNA Repair and Genome Stability in Yeast. Biology Colloquium talk, University of Minnesota, November 12, 2012

LeClere, A.R., Jauert, P.A., and **D.T. Kirkpatrick**. Minisatellite DNA regulates crossover formation during meiotic recombination in yeast. Poster presented at the Gordon Research Conference on Meiosis, June 3-8, 2012, Colby-Sawyer College, NH.

Brosnan, L. and **D.T. Kirkpatrick**. Regulation of Human *HRAS1* Minisatellite Stability During Stationary Phase. Poster presented at the University of Minnesota Undergraduate Symposium, April 13, 2011.

LeClere, A. and **D.T. Kirkpatrick**. Regulation of Meiotic Recombination by Minisatellite Tracts. Poster at the Midwest Yeast Meeting, October 2-3, 2010, Northwestern University, IL.

Alver, B., Brosnan, L., Jauert, P., Kelly, K., and **D.T. Kirkpatrick**. DNA Stability in Stationary Phase Cells. Platform talk by B. Alver at the Midwest Yeast Meeting, October 2-3, 2010, Northwestern University, IL.

LeClere, A. and **D.T. Kirkpatrick**. Regulation of Meiotic Recombination by Minisatellite Tracts. Poster presented at the Gordon Research Conference on Meiosis, June 13-18, 2010, Colby-Sawyer College, NH.

Raja, M. and **D.T. Kirkpatrick**. Determining the Meiotic Stability of *HRAS1* Minisatellite Tracts. Poster presented at the University of Minnesota Undergraduate Symposium, April 21, 2010.

Brosnan, L. and **D.T. Kirkpatrick**. Regulation of Human *HRAS1* Minisatellite Stability During Stationary Phase. Poster presented at the University of Minnesota Undergraduate Symposium, April 21, 2010.

**D.T. Kirkpatrick**. Oncogenesis & Quiescence: DNA Stability in Stationary Phase Cells. Talk for the Institute of Human Genetics monthly seminar series, February 4<sup>th</sup>, 2010.

Kelly, M. K. and **D. T. Kirkpatrick**, Novel Mechanisms of Minisatellite DNA Repeat Tract Alteration in Quiescent Cells. Platform talk (by MK Kelly) at the 11<sup>th</sup> Annual Midwest DNA Repair Symposium, University of Michigan Ann Arbor, May 16-17, 2009

LeClere, A. and D. T. Kirkpatrick, Characterizing Factors Involved in Minisatellite Stability. Poster at the 11<sup>th</sup> Annual Midwest DNA Repair Symposium, University of Michigan Ann Arbor, May 16-17, 2009

Swanlund, S., Kelly, M. K. and D. T. Kirkpatrick, Identification and Characterization of Genes Required for Minisatellite Stability in Stationary Phase. Poster at the University of Minnesota Undergraduate Symposium, April 8, 2009

Kelly, M. K., and **D.T. Kirkpatrick**. Mechanisms of Minisatellite Instability During Stationary Phase. Platform Talk at Yeast Genetics and Molecular Biology Meeting, Toronto ON Canada, July 22<sup>nd</sup> – 27<sup>th</sup>, 2008.

LeClere, A., and D. T. Kirkpatrick. Crossover Regulation by a Repetitive Minisatellite DNA Tract. Poster at the Gordon Research Conference on Meiosis, New London NH, June 8<sup>th</sup> – June 13<sup>th</sup>, 2008

Legrand, M., Forche, A., Selmecki, A., Chan, C., Berman, J., and **D. T. Kirkpatrick**. Mapping Recombination Events via Microarray Analysis of Induced Aneuploidies. Poster at the 9<sup>th</sup> ASM Conference on Candida and Candidiasis, Jersey City, NJ, March 24<sup>th</sup> – March 28<sup>th</sup>, 2008.

Legrand, M., Chan, C., and **D. T. Kirkpatrick**. DNA Repair, Genome Stability and Drug Resistance in *Candida albicans*. Poster at the FASEB Summer Research Conference: Genetic Recombination and Genome Rearrangements, Snowmass, CO, July 28<sup>th</sup> – Aug 2<sup>nd</sup>, 2007.

Legrand, M., Forche, A., Berman, J., and **D. T. Kirkpatrick**. Mapping Recombination Events via Microarray Analysis of Induced Aneuploidies. Poster at the FASEB Summer Research Conference: Genetic Recombination and Genome Rearrangements, Snowmass, CO, July 28<sup>th</sup> – Aug 2<sup>nd</sup>, 2007.

Kelly, M. K., and **D.T. Kirkpatrick**. The Role of Zinc Homeostasis in Minisatellite Stability Poster at Yeast Genetics and Molecular Biology Meeting, Princeton NJ, July 25<sup>th</sup> – 30<sup>th</sup>, 2006.

Kelly, M. K., Jauert, P. A., and **D.T. Kirkpatrick**. Zinc Regulates the Stability of Minisatellite DNA Poster at Gordon Research Conference on Meiosis, Colby-Sawyer College, NH June 11<sup>th</sup> – 16<sup>th</sup>, 2006.

**D.T. Kirkpatrick**. Factors Influencing the Stability of the HRAS1 Minisatellite – Implications for Genome Stability and Oncogenesis Invited Talk at the University of Minnesota Cancer Center, April 27, 2006

Legrand, M. and **D.T. Kirkpatrick**, DNA Repair Genes and Acquired Drug Resistance in *Candida albicans* Poster and Talk (by M.L.) at the FEBS Advanced Lecture Course on Human Fungal Pathogens: Molecular mechanisms of Host-Pathogen Interactions and Virulence, La Colle sur Loup, France, May 21 – 28, 2005.

Chan, C. L., Truong, C. S., and **D.T. Kirkpatrick**, Analysis and Sequencing of the Yeast *ZRT1* Gene Poster at the Life Sciences Undergraduate Research Symposium, University of Minnesota, April 27<sup>th</sup>, 2005.

Jauert, P.A., Kelly, M.K., and **D.T. Kirkpatrick**, Identification of Factors Controlling Minisatellite DNA Stability. FASEB Summer Research Conference: Genetic Recombination and Genome Rearrangements, Snowmass, CO, July 23-28, 2005.

Legrand, M., Chan, C. L., and **D.T. Kirkpatrick**, DNA Repair Genes and Acquired Drug Resistance in *Candida albicans* Poster at the 8<sup>th</sup> ASM Conference on Candida and Candidiasis, Denver, CO, March 13 – 17, 2006.

**Kirkpatrick, D. T.** “The Role of DNA Repair & Recombination in Genome Stability Maintenance”. Seminar, Department of Genetics, Cell Biology and Development, University of Minnesota, September 15<sup>th</sup>, 2005

**Kirkpatrick, D. T.** Minisatellites: Roles of the Genome, Life Cycle and Environment in Tract Stability Talk at the University of Minnesota Area Yeast Meeting, June 16, 2005.

Legrand, M. and **Kirkpatrick, D. T.** DNA Repair Genes and Acquired Drug Resistance in *Candida albicans* Poster and Platform Presentation (by M.L.) at the FEBS Advanced Lecture Course on Human Fungal Pathogens: Molecular mechanisms of Host-Pathogen Interactions and Virulence, La Colle sur Loup, France, May 21 – 28, 2005.

Chan, C. L., Truong, C. S., and **Kirkpatrick, D. T.** Analysis and Sequencing of the Yeast *ZRT1* Gene Poster at the Life Sciences Undergraduate Research Symposium, University of Minnesota, April 27<sup>th</sup>, 2005.

**Kirkpatrick, D. T.** Minisatellite Stability Control: Recombination, Repair & Oncogenesis Invited seminar, Department of Biology, University of Rochester, NY, October 4<sup>th</sup>, 2004.

**Kirkpatrick, D. T.** Factors Controlling the Stability of Minisatellite DNA Talk at the DNA Replication and Genome Integrity meeting, The Salk Institute, La Jolla, CA, August 14<sup>th</sup>, 2004.

**Kirkpatrick, D. T.** Factors Controlling the Meiotic Stability of Minisatellite DNA Talk at the Gordon Research Conference on Meiosis, Colby-Sawyer College, NH, June 15<sup>th</sup>, 2004.

**Kirkpatrick, D. T.** The *HRAS1* Minisatellite: Cancer, Transcription, and Genome Stability Connections Talk at the University of Minnesota Cancer Center, Breast Cancer Interest Group, September 30<sup>th</sup>, 2003.

**Kirkpatrick, D. T.** Factors Affecting the Stability of the *HRAS1* Minisatellite. Talk at the University of Minnesota Cancer Center, Genetic Mechanisms of Cancer Program, Feb 27<sup>th</sup>, 2003.

Jensen, L.E., Jaman, S.L., Jauert, P.A., and **Kirkpatrick, D.T.**, DNA Mismatch Repair During Meiosis in *Saccharomyces cerevisiae*. 2002 Yeast Genetics & Molecular Biology meeting, University of Wisconsin, Madison, July 30<sup>th</sup> – August 4<sup>th</sup>, 2002.

Jauert, P. A. and **Kirkpatrick, D. T.** Factors Affecting the Stability of the Human *HRAS1* Minisatellite in Yeast. Talk at the 2002 Yeast Genetics & Molecular Biology meeting, University of Wisconsin, Madison, July 30<sup>th</sup> - August 4<sup>th</sup>, 2002.

**Kirkpatrick, D. T.**, The Control of Human Minisatellite DNA Tract Stability in *Saccharomyces cerevisiae*. Talk at the Second Annual Minnesota Area Yeast Meeting, University of Minnesota, January 19<sup>th</sup>, 2002.

Jauert, P. A., Edmiston, S. N., Conway, K., and **Kirkpatrick, D. T.**. *RAD1* Controls the Meiotic Expansion of the Human *HRAS1* Minisatellite in *Saccharomyces cerevisiae*. FASEB Summer Research Conference: Genetic Recombination and Genome Rearrangements, Snowmass, CO, July 21-26, 2001.

**Kirkpatrick, D. T.** Analyzing Repetitive DNA Tract Behavior During Meiosis. Talk at the First Annual Minnesota Area Yeast Meeting, University of Minnesota, January 13, 2001.

**Kirkpatrick, D. T.** Kearney, H. M., and Petes, T. Identification of Genes Involved in Large Loop Repair During Meiotic Recombination in *S. cerevisiae*. Gordon Conference on Meiosis, Holderness School, NH, June, 2000.

**Kirkpatrick, D. T.** and Petes, T. Repair of DNA Loops During Meiosis Involves DNA Mismatch and Nucleotide Excision Repair Proteins. Talk at the Mid-Atlantic Yeast Meeting, Carnegie Mellon University, June 19-21, 1997.

**Kirkpatrick, D. T.** and Petes, T. The Transcription Activation Domain of the Yeast *RAP1* Protein is Required for the Initiation of Meiotic Recombination at *HIS4*. Gordon Conference on Meiosis, Holderness School, NH, June, 1996.

**Kirkpatrick, D. T.** Identification of the Functional Domain of the Rap1 Protein Required for Meiotic Recombination at *HIS4*. Talk at the Mid-Atlantic Yeast Meeting, Princeton, NJ June 28 - July 1, 1995.

**Kirkpatrick, D. T.** and Petes, T. Does a Delay in Replication of *HIS4* Affect the Initiation of Meiotic Recombination? Gordon Conference on Meiosis, Plymouth State College NH, July 3-8, 1994.

**Kirkpatrick, D.** and Solomon, F. *ATS1* Overexpression Suppresses Cold-sensitive Extra-Microtubule  $\alpha$ -Tubulin Mutants. Cold Spring Harbor Laboratory Yeast Cell Biology Meeting, Cold Spring Harbor, August 17-22, 1993

Guenette, S., **Kirkpatrick, D.**, Magendantz, M., and Solomon, F. Suppression of Microtubule Assembly Defects by Overexpression of Wild Type Genes. Yeast Genetics and Molecular Biology Meeting, University of Wisconsin-Madison, June 8-13, 1993.

**Kirkpatrick, D.** and Solomon, F. Suppression of a Cold-Sensitive  $\alpha$ -Tubulin Mutant of *Saccharomyces cerevisiae* by Overexpression. American Society of Cell Biology, Denver, Colorado, Nov. 15-19, 1992.

**Kirkpatrick, D.** and Solomon, F. Suppression of Cold-Sensitive Mutations in  $\alpha$ -Tubulin by Overexpression. Yeast Genetics and Molecular Biology Meeting, San Francisco, CA, May 23-27, 1991.

Preston, R. A., **Kirkpatrick, D.** and Jones, E. W. Characterization of *PEP3*, an Essential Gene Required for Vacuole Biogenesis. Yeast Cell Biology Meeting, Cold Spring Harbor, 1987.

**Other Research-related Activities:**

Organized and hosted Second Annual Minnesota Area Yeast Meeting (January 19, 2002)

Organized and hosted First Annual Minnesota Area Yeast Meeting (January 13, 2001)



## **TEACHING AND CURRICULUM DEVELOPMENT:**

### **Courses Taught:**

Fall, 2015 to date, University of Minnesota  
Biol 3020: Molecular Biology & Society

Fall, 2018, University of Minnesota  
Biology 4003: Undergraduate Genetics

Spring 2015, University of Minnesota  
Biol 3700: Special Topics in Molecular Biology & Society (pilot)

Spring, 2008 to Fall 2014, University of Minnesota  
GCD 3022: Undergraduate Genetics (non-majors)

Spring, 2006-2010, University of Minnesota  
Biology 8131: Advanced Genetics

Fall, 2001-2007, University of Minnesota  
Biology 4003: Undergraduate Genetics

Fall, 2003-2004, University of Minnesota  
Biology 8131: Advanced Genetics

Fall, 2002, University of Minnesota  
GCD/BioC 8171: Literature Analysis

Spring, 2002-2007, University of Minnesota  
Northstar Elementary School Outreach Program  
Six lecture/lab presentations to the 5<sup>th</sup> grade classes  
Joint outreach program with College of Liberal Arts and College of Biological Sciences

Spring, 1991, Massachusetts Institute of Technology:  
7.08: Molecular Biology for Undergraduates Teaching Assistant  
Taught by: Dr. Uttam RajBhandary and Dr. Alan Grossman

Fall, 1988, Massachusetts Institute of Technology:  
7.011: Introductory Molecular Biology Undergraduate Lab Teaching Assistant  
Taught by: Dr. Brent Cochran and Dr. Paul Matsudaira

### **Curriculum Development:**

*Molecular Biology & Society.* Developed with Paul Siliciano (BMBB) a 3 credit course at the 3000-level that will be required for all CBS majors in Fall 2015, and will act as a gateway course to the upper level courses. It focuses on the Central Dogma material and will be team-taught by faculty from multiple departments. The course also fulfills the Technology & Society Liberal Education (LE) undergraduate degree requirement.

*GCD3022 Undergraduate Genetics for Non-majors.* Prior to 2008, genetics was taught as a combined course for both CBS majors and non-CBS students. Significant issues were apparent in the two populations, and I developed and implemented the separation of the course into a CBS majors version (Biol4003) and a non-CBS majors version (GCD3022). This model has been successful on multiple levels, as evidenced by student performance, growth in class size and number of offered sections, and by adoption of this model by the Cell Biology course (Biol4004 and the new GCD3033 non-CBS majors version).

## **Teaching-Related Grants:**

- 1) Small grant from PULSE (Partnership for Undergraduate Life Sciences Education):  
Title: "Spreading the Wealth of Vision and Change Principles and Methodology Through a Faculty Development Program"  
Recipients: Sue Wick (Plant Bio, UMN); Deena Wassenberg (BTL, UMN); David Kirkpatrick (GCD, UMN); Karen Klyczek (University of Wisconsin-River Falls)  
Amount: \$705  
Purpose: To hold a two-day mini-workshop at the University of Minnesota on Scientific Teaching and Active Learning principles and methods, for participants from the colleges and universities around the Twin Cities.  
Award date: Applied September 1, 2015; awarded October 5, 2015

## **ADVISING AND MENTORING:**

### **Personnel Trained:**

#### Undergraduate Students:

##### *Directed Research, Honors, and UROP Students:*

Amy Prichard – Fall 2015 to Spring 2018  
Rachel Davis – Fall 2014 to Fall 2015  
Scarlett Cao – Fall 2013 to Spring 2015  
Megan Olander – Summer 2013 to Spring 2014  
Amy Handlogten – Spring 2012 to Spring 2014  
Melissa O’Hehir – Spring 2011 to Spring 2013  
John Yang – Spring 2011 to 2012  
Laura Brosnan – Spring 2008 to 2011  
Masoom Raja – Fall 2009 to Summer 2010  
Hillary Krause – Fall 2007  
Seth Swanlund – Summer 2007  
Thomas Burling: May 2006 to December 2006  
Christine L. Chan: September 2004 to June 2005  
Adam McCord: September 2004 to June 2005  
Chinh S. Truong: September 2003 to present  
Carolyn Hazen: September 2003 to May 2004  
Morgan Groth: Summer, 2003  
Cassie Williamson: Summer, 2002  
Selina L. Jaman: June 2000 to January 2002  
May C. Yang: June to July 2000

#### High School Students:

Leah Plasek (Apple Valley High School) – Fall 2011

#### Research Technicians:

Marnie Johannson: August 2014 to present  
Melissa O’Hehir: July 2013 to August 2014  
Peter A. Jauert: July 2000 to September 2012  
Christine L. Chan: June 2005 to September 2007  
Selina L. Jaman: January 2002 to August 2002

#### Post-doctoral Research Associates:

Carrie Ketel, PhD  
August 2012 to August 2013  
Took Faculty position at Normandale Community College  
Maire (Katy) Kelly Sustacek, PhD  
June 2009 to January 2010  
Took Faculty position at Minneapolis Community & Technical College (MCTC)

#### Graduate Students:

##### *Current:*

None

##### *Graduated:*

Bonnie Alver (MCDB&G)  
January to March 2008 (rotation)  
March 2008 to October 2012 (Ph.D. student)  
Andrea LeClere (MCDB&G)  
April 2006 to June 2006 (rotation)  
June 2006 to April 2012 (Ph.D. student)  
Maire (Katy) Kelly (MCDB&G)  
September 2004 to November 2004 (rotation)

March 2005 to June 2009 (Ph.D. student)  
Melanie Legrand (MCDB&G)  
April 2004 to December 2007 (Ph. D. student)  
Linnea Jensen (MCDB&G)  
November 2000 to February 2001 (rotation)  
February 2001 to December 2003 (graduated with Masters)

*Rotation only:*

Matthew Berkseth (Joint Admissions Program)  
September 2006 to November 2006 (rotation)  
Kelly Bouchonville (Joint Admissions Program)  
October 2005 to December 2005 (rotation)  
Andrea Kalis (Joint Admissions Program)  
January 2004 to March 2004 (rotation)  
Jung-hun Kweon (Joint Admissions Program)  
September 2003 to November 2003 (rotation)  
Benjamin L. Kidder (Joint Admissions Program)  
September 2002 to November 2002 (rotation)  
Jeremy DeMai (MCDB&G)  
September 4, 2001 to November, 2001 (rotation)

Thesis Committees:

*Current:*

Thomas Bohl: Aihara Lab  
BMBB Program  
May 2013 – present

*Past:*

Josh Campbell: Voytas Lab  
MCDB&G Program  
November 2014 – 2017  
Nicholas Baltes: Voytas Lab  
MCDB&G Program  
December 2010 – July 2014  
Jessica Biever: Gary Gardner Lab  
Plant Biology  
June 2009 – December 2013  
Shanaka Gunawardena: Conklin Lab  
MCDB&G Program  
June 2006 - 2010  
Dong-Hwan Kim: Koepp Lab  
MCDB&G Program  
March 2009 - 2012  
Andy Lane: Clarke Lab  
MCDB&G Program  
March 2008 – 2012  
Katie Furniss: Clarke Lab  
MCDB&G Program  
March 2008 – 2011  
Kelaine Zimmerman: Wright Lab  
MCDB&G Program  
March 2008 - 2011  
Sehyun Oh: Hendrickson Lab  
BMBB Program  
June 2006 – 2011  
Kelly Bouchonville: Berman Lab  
MCDB&G Program

June 2006 – 2010  
Priah Nadarajan: Greenstein Lab  
MCDB&G Program  
September 2006 - 2010  
Luci Zacchi: Davis Lab  
MiCaB Program  
September 2006 to 2010  
Jung-hun Kweon: Hendrickson Lab  
BMBB Program  
June 2005 to April 2009  
Helen Wang: Berman Lab  
MCDB&G Program (Masters received)  
June 2006 – August 2007  
Anna Selmecki: Berman Lab  
June 2004 to Spring 2006 (PhD awarded)  
Ken Finley: Berman Lab  
MCDB&G Program  
Fall 2005 – Spring 2006 (PhD awarded)  
Haeyoung Kim: Livingston Lab  
BMBB Program  
June 2004 to August 2007 (PhD awarded)  
Jamie Margolis: Ranum Lab  
June 2003 to December 2007 (PhD awarded)  
Beth Ziemba: Behrens Lab  
June 2005 to 2006 (Masters received)  
Paul Lephart: Magee Lab  
MiCab Program  
Summer 2001 to 2005 (PhD received)  
Jeremy DeMai: Livingston Lab  
November 2002 to May 2003 (Masters received)

**Other Teaching-Related Activities:**

**CBS Undergraduate Knowledge Assessment**

Developed a knowledge assessment examination to be administered to CBS undergraduates as beginning freshmen, at the end of their sophomore year, and just prior to graduation  
Developed in collaboration with Associate Dean Jane Glazebrook  
Initial pilot: Summer 2015 at Nature of Life to incoming freshmen

**Nature of Life: Itasca Freshman Orientation Program**

Summer 2014 – Summer 2018:

Taught module on recombination and genetic mapping w/ Catherine Kirkpatrick

**PULSE (Partnership for Undergraduate Life Science Education) Meeting:**

Attended Midwest & Great Plains regional meeting June 5-7 2015, Washington University St. Louis

Attended MWGP organizational meeting January 29<sup>th</sup>-31<sup>st</sup> 2016

Attended Midwest & Great Plains meeting August 5-7 2016, Washington University St. Louis

Attended MWGP organizational meeting January 26<sup>th</sup>-28<sup>th</sup> 2018

Attended Midwest & Great Plains meeting August 2-5 2018, Elmhurst College, Illinois

**National Academies NorthStar Summer Institute (NANSI) for Undergraduate Science Education**

Participated: July 7 – 12, 2013 at the University of Minnesota Twin Cities

Facilitator: June 9 – 14, 2014 at the University of Minnesota Twin Cities

Facilitator: June 8 – 13, 2015 at the University of Minnesota Twin Cities

**Workshop on Computer-based Genetics Tutor Programs at Carnegie Mellon University, Pittsburgh PA**

July 11 – 13, 2007

July 14 – 16, 2008

**SERVICE AND PUBLIC OUTREACH:**

**Editorial Duties:**

PLoS-One Academic Editor – September 2009 to May 2015

**Ad hoc reviewer for:**

American Journal of Human Genetics

BMC Genomics

Biological Procedures Online

Current Genetics

Eukaryotic Cell

Genetics

G3

Molecular and Cellular Biology

Nature Genetics

Nucleic Acids Research

PLoS-One

Trends in Genetics

Yeast

**Departmental, College and University Service and Committees:**

Departmental (BTL)

BTL Executive Council

Fall 2015 to present

BTL 7.12 Document Committee

Fall 2014 to Spring 2015

Departmental (GCD)

Executive Committee, GCD Department

October 2006 to August 2018

Chair, Teaching and Curriculum Committee, GCD Department

October 2010 to August 2018  
Space Committee: Department of Genetics, Cell Biology, and Development, Univ. Minn.  
January 2001 to present  
Chair – October 2006 to present  
MCSB Joint Admissions Program Admissions Committee  
January 2006 to September 2010  
MCDB&G Recruitment Enhancement Committee (ad hoc)  
Chair - June 2005 to 2008  
Joint Steering Committee: Graduate Studies in Molecular and Cellular Biology Graduate Program  
Summer 2002 to 2004  
Advertising Committee: Department of Genetics, Cell Biology, and Development, Univ. Minn.  
Chair - January 2001 to 2004  
Recruitment Committee: MCDB&G Graduate Program  
December 2000 to March 2002

College:

CBS Faculty Consultative Committee  
October 2013 to January 2017  
CBS TA Award Committee  
March 2013 to present  
CBS Educational Policy Committee  
September 2012 to March 2017  
Chair; September 2013 to March 2017  
CBS Constitution Revision Committee  
Spring 2014 to Summer 2015  
CBS Dean's Advisory Council  
October 2009 to 2015  
CBS Consultative Committee  
January 2005 to 2008  
Computing Advisory Committee: College of Biological Sciences  
Fall 2001 to 2005

University:

University Senate Committee on Committees  
September 2011 to August 2017  
Chair, 2015-16, 2016-2017 Academic Years  
University of Minnesota Senate and Faculty Senate member  
September 2011 to August 2016

**Search Committees:**

Faculty Search Committee (chair) – 2 Tenure-track Assistant Professor Positions  
Department of Biology Teaching and Learning  
September 2015 – February 2016  
Faculty Search Committee (member) – 3 Tenure-track or Tenured Positions  
Department of Biology Teaching and Learning  
August 2014 – April 2015

**Study Sections:**

NIH MGC – Molecular Genetics C  
June 3-4, 2010  
NIH PTHE – Pathogenic Eukaryotes  
October 15-16, 2009  
NIH NDT – Nuclear Dynamics and Transport  
February 22, 2007  
NIAID DDR – Drug Discovery and Mechanisms of Antimicrobial Resistance  
February 7, 2008  
October 1 – 3, 2007  
June 6-8, 2007  
February 23-24, 2006

NIAID IDM-M 02 Candida Study Section  
June 16<sup>th</sup>, 2005 (teleconference)

**International Service:**

Spring 2006: External Review Committee: Genome Canada  
Reviewed interim progress reports for their Applied Genomics and Proteomics Research in Human Health Competition

**Other Public Outreach:**

April 21<sup>st</sup>, 2015: Taught two modules to 4<sup>th</sup>-6<sup>th</sup> grade students at Great River School (St. Paul MN) on 'Mutants and Model Organisms' – a slideshow followed by a mini-lab using yeast color mutants to investigate the ideas of DNA mutation, phenotypes, and the role that the environment plays in those processes.

March 2003: Science Education Partnership in Greater Minnesota (SEPGM) – HHMI program.  
Conducted a workshop for high school teachers at the CBS Biological Research Station at Itasca State Park. The workshop taught basic molecular biology principles and some techniques, primarily PCR and gel electrophoresis.

Spring 2001 to 2007: Fifth Grade Outreach Program (TEAM-UP). Presented two on-campus lectures to the complete Fifth Grade class of the Minneapolis Northstar Public School (approximately 60 students) in each year of the program.