

CURRICULUM VITAE

Ann Carol Hildebrand Kindfield

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EDUCATION: Ph.D., Graduate Group in Science and Mathematics Education (SESAME), UC Berkeley, 1990
M.A., Biochemistry and Molecular Biology, UC Santa Barbara, 1983
B.S., Biology, The Pennsylvania State University, 1979

CURRENT POSITION: Co-Founder and Learning Facilitator, Hilltop Education Connections

POSITIONS OVERVIEW (details below):

Teacher, 2005-2018, The Farm School, Summertown, TN

Biology Education Specialist, 1999-2018, Educational Designs Unlimited, Inc., Summertown, TN

Senior Lecturer, 2007-2009, Department of Teaching & Learning, Peabody College, Vanderbilt University, Nashville, TN

Assistant Professor of Biology, 1997-1999, Montclair State University, Upper Montclair, NJ

Research Scientist, 1994-1997, Center for Performance Assessment, Educational Testing Service, Princeton, NJ

TEACHING EXPERIENCE:

2019-present **Learning Facilitator**, Hilltop Education Connections, Idyllwild, CA
Teacher, Global Village Schools, Ojai, CA

2005-2018 **Part-time Teacher** (Biology; Elementary, Middle, and High School Math; High School Communication Arts; and Remedial Reading), The Farm School, Summertown, TN

2007-2009 **Senior Lecturer**, Department of Teaching & Learning, Peabody College, Vanderbilt University, Nashville, TN
Instructor for *Introduction to Scientific Literacies; Secondary Science Methods, Practicum, and Student Teaching Seminar; Biological Sciences Lab* (special inquiry-based section—see 6/08-8/09 entry under ADDITIONAL EDUCATION EXPERIENCES); master's thesis advisor

2005-2007 **Administrator**, The Farm School, Summertown, TN

2005 **Part-time Instructor**, Division of Science and Mathematics, Columbia State Community College, Columbia, TN
Instructor for *Introduction to Biology*

2000 **GenScope™ Workshop Leader** (March & May), Great Ideas in Science, Montclair State University, Upper Montclair, NJ

1997-1999 **Assistant Professor of Biology**, Montclair State University, Upper Montclair, NJ
Instructor/coordinator/supervisor for Biology 100 (undergrad)—*Biological Sciences*; Instructor for Biology 490 (undergrad)—*Senior Seminar (Bioethics)*; Major area mentor/supervisor for pre-service science teachers (undergrad and grad)

1987-1993 **Lecturer**, Department of Molecular & Cell Biology, Division: Genetics, UC Berkeley—courses including genetics laboratory (MCB140L) and genetics for non-science majors (MCB41)

1984-1987 **Graduate Student Instructor**, Genetics Department, UC Berkeley—courses including genetics laboratory (Genetics 100L) and genetics for non-science majors (Genetics 10)

1981-1983 **Teaching Assistant**, Biology Department, UC Santa Barbara—courses including introductory biology, biochemistry, and genetics (lecture and labs)

ADDITIONAL EDUCATION EXPERIENCES:

8/16-10/16 **Program Evaluator**, PRACCIS Project, Ravit Golan Duncan, Associate Professor & Clark Chinn, Professor and Associate Dean for Research, Faculty Development, and Research Outreach, Rutgers Graduate School of Education

- 2015 **Sr. Consultant**, OER Projects, Daniel T. Hickey, Professor and Program Coordinator Learning Sciences Program, Indiana University
- 2009-2015 **Consultant**, EduChange, Inc. — Activities including:
 Workshop leader, *Pedagogical Practices to Support Deeper Understandings of Genetics and Evolution*
 Workshop facilitator, *Five Fridays for Math & Science*
 Program evaluator, SMART Dissemination Project (funded by HHMI), Center for Biomolecular Modeling, Milwaukee School of Engineering (MSOE)
 Judging System designer, *Oracle Education Foundation ThinkQuest International Competition 2011 and 2012*
 Development of labs and standards alignments (NGSS, McRel, AERO) for the Integrated Science Program
- 6/08-8/09 **Faculty Research**, *Improving Undergraduate Science Instruction for Prospective Early Childhood and Elementary Teachers* project, Department of Teaching and Learning, Peabody College, Vanderbilt University, Principle Investigator
- 9/07-8/09 **Faculty Research**, *Linking Teacher Preparation to Student Learning in Mathematics and Science* project, Department of Teaching and Learning, Peabody College, Vanderbilt University under the direction of Dr. Marcy Singer-Gabella, Vanderbilt University
- 9/07-5/08 **Faculty Research**, *Supporting the Development of Model-Based Reasoning* project, Department of Teaching and Learning, Peabody College, Vanderbilt University under the direction of Dr. Leona Schauble and Dr. Rich Lehrer, Vanderbilt University
- 9/06-8/07 **Consultant**, *Linking Teacher Preparation to Student Learning in Mathematics and Science* project of Department of Teaching and Learning, Peabody College, Vanderbilt University under the direction of Dr. Marcy Singer-Gabella, Vanderbilt University
- 3/06-8/06 **Consultant**, *ThinkLink Learning*, Nashville, TN
- 7/02-4/04 **Consultant**, *Science and Life Issues (SALI)* project of the Science Education for Public Understanding Program (SEPUP) under the direction of Drs. Barbara Nagle and Marcelle Siegel, Lawrence Hall of Science, UC Berkeley
- 4/03-8/03 **Program Evaluator**, *Undergraduate Research Community* and *Bridges to the Baccalaureate* projects of the Department of Biology & Molecular Biology under the direction of Dr. Scott Kight, Montclair State University
- 5/02-12/02 **Program Evaluator**, Waksman Student Scholars Program (WSSP) and *Genes, Genomes & Human Genetics* on-line course project under the direction of Dr. William Sofer, Rutgers University
- 11/01-2/04 **Consultant**, *Modeling across the curriculum* IERI-funded project under the direction of Drs. Robert Tinker, Paul Horwitz & Janice Gobert, Concord Consortium
- 1/01-12/02 **Advisory Panel**, *Learning how to learn science: Metacognition in post-secondary physics education for bioscience majors* NSF-funded project under the direction of Drs. Joe Redish and David Hammer, University of Maryland
- 1/01-12/02 **Consultant**, *Talking about genetics: Using representations and language to understand complex science* NSF-funded project under the direction of Dr. Marie Bienkowski, SRI International
- 3/00-5/02 **Consultant**, *Engagement, assessment, and epistemological reconciliation in technology supported learning environments* NSF-funded project under the direction of Dr. Daniel T. Hickey, University of Georgia
- 10/99-12/00 **Consultant** (Domain Expert), *Assessment Futures: Culminating Assessment (Biomass)* College Board/ETS-funded project involving the design of a prototype next-generation standards-based, diagnostic biology assessment for transition from high school to college under the direction of Dr. Robert Mislevy and Ms. Linda Steinberg, Educational Testing Service, Princeton, NJ
- 6/98-6/99 **Faculty Research**, Sokol Faculty Student Research (FSR) project entitled *Student Reasoning in Basic Mendelian Genetics*, Montclair State University, Upper Montclair, NJ
- 1/98-11/99 **Consultant** to *Triggering 'The Need to Know': Barriers to Integrating New Genetic Knowledge into Primary Care Practice* US Dept. of HHS-funded project under the direction of Dr. Carol I. Barash, Genetics, Ethics & Policy Consulting, Boston, MA
- 9/97-9/99 **Consultant**, *GenScope™* Evaluation Project (procured grant and served as PI for years 1 and 2 of grant at ETS; year 3 of grant resided at Georgia State University, Dr. Daniel T. Hickey, PI)

- 1994-1997 **Research Scientist**, Center for Performance Assessment, Educational Testing Service, Princeton, NJ
Included years 1 & 2 of the *GenScope*TM Evaluation Project and participation in a MISE (Merck Institute for Science Education)-funded project designed to assist K-8 teachers in the systematic development of methods for assessing student science learning
- 1990-1994 **Post-doctoral research**, understanding/reasoning about biology with a focus on subcellular processes and domain-specific diagrams, EMST/School of Education, UC Berkeley
- 1993-1994; **Program Evaluator**, *Molecular Biology/Environmental Chemistry Curriculum Development* project, Washington University/University City Science Education Partnership Education Project, St. Louis, MO
- 1990-1993 **Consultant**, *Fostering Communities of Learning* project dealing with children's biology learning under the direction of Drs. Ann Brown & Joseph Campione, EMST/School of Education, UC Berkeley
- 1986-1989 **Dissertation research**, *Pictorial Representations and Understanding Genetics: An Expert/Novice Study of Meiosis Knowledge*, SESAME, UC Berkeley (Drs. Joan I. Heller & Andrea A. diSessa, Advisors)
- 1985-1986 **Consultant**, genetics problem-solving study, Cognitive Psychology Program/Psychology Department and EMST/School of Education, UC Berkeley
- 1983-1984 **Research Assistant**, SemNet project, Department of Education, UC Davis
- 1979-1983 **Graduate laboratory research**, molecular and classical genetics of yeast (UC Santa Barbara) and other model organisms (UC San Diego)
- 1978-1979 **Undergraduate laboratory research** on *Salmonid* genetics and bacterial genetics (Pennsylvania State University)

GRANTS:

- Peabody College Instructional Improvement Grant** for support of research project *Improving Undergraduate Science Instruction for Prospective Early Childhood and Elementary Teachers*, \$9980, June 1, 2008-August 31, 2009
- Sokol Faculty/Student Research Program** for support of research project *Student Reasoning in Basic Mendelian Genetics*, \$2000, April 1, 1998-June 30, 1999
- NSF Applications of Advanced Technology** subcontract with BBN (moved to Concord Consortium) for evaluating student learning with *GenScope*, a computer-based learning environment designed to promote model-based reasoning in high school genetics, \$350K, October 1, 1995-September 30, 1998 (run under a no-cost extension through September 30, 1999)
- Spencer Foundation Small Grants Program** for support of research project *Constructing Understanding of Basic Biological Processes*, \$7500, June 1, 1992-August 31, 1993
- UC Berkeley Chancellor's Patent Fund Grant** for support of dissertation research, \$2170, 1986-87

HONORS:

- National Academy of Education Spencer Postdoctoral Fellow, 1993-1994
- James S. McDonnell Foundation Postdoctoral Fellow, Program in Cognitive Studies for Educational Practice, 1990-1993
- Spencer Foundation Graduate Fellow, 1987-1988
- Outstanding Graduate Student Instructor Award, UC Berkeley Academic Senate Committee on Teaching, 1987
- University of California Regents Graduate Fellow, 1985-1987
- National Science Foundation Graduate Fellow, 1979-1983
- Graduated with Highest Distinction, The Pennsylvania State University, 1979
- President's Freshman Award, The Pennsylvania State University, 1976

PAPERS & PUBLICATIONS:

- Kindfield, A. C. H., & Singer-Gabella, M. (2010). Inscriptural Practices in Undergraduate Science Survey Courses: A Path Toward Improving Prospective K-6 Teachers' Understanding and Teaching of Science. *Journal of the Scholarship of Teaching and Learning*, 10(3), 58-88. <<https://www.iupui.edu/~josotl/toc.php?id=0>>
- Kindfield, A. C. H. (2009). Situating cognitive/socio-cognitive approaches to student learning in genetics. *Cultural Studies in Science Education*, 4, 193-199.

- Singer-Gabella, M., Kindfield, A. C. H., Bolger, M. (2008, April). *Practices and Pedagogies in Undergraduate Science*. Paper presented at the Annual Meeting of the American Educational Research Association, New York.
- Buckley, B. C., Gobert, J. D., Kindfield, A. C. H., & the MAC Research Team. (2004) Model-based Teaching and Learning with BioLogica™: What do they learn? How do they learn? How do we know? *Journal of Science Education and Technology*, 13(1), 23-41.
- Hickey, D. T., Kindfield, A. C. H., Horwitz, P., Christie, M. (2003). Assessment-oriented scaffolding of student and teacher performance in a technology-supported genetics environment. *American Education Research Journal*, 40(2), 495-538.
- Steinberg, L. S., Mislevy, R. J., Almond, R. G., Baird, A. B., Cahallan, C., Dibello, L V., Senturk, D., Yan, D., Chernick, H., Kindfield, A. C. H. (2003). *Introduction to the Biomass Project: An Illustration of Evidence-Centered Assessment Design and Delivery Capability* (National Center for Research on Evaluation, Standards and Student Testing CSE Report 609), Los Angeles: UCLA.
- Hickey, D. T., Wolfe, E. W., & Kindfield, A. C. H. (1999-2000). Assessing learning in a technology-supported genetics environment: Evidential and systemic validity issues. *Educational Assessment*, 6, 155-196.
- Hickey, D. T., Kindfield, A. C. H., Horwitz, P., & Christie, M. A. (1999). Advancing educational theory by enhancing practice in a technology supported genetics learning environment. *Journal of Education*, 181(2), 25-55.
- Kindfield, A. C. H. (1999). Generating and using diagrams to learn and reason about biological processes. *Journal of Structural Learning and Intelligent Systems*, 14(2), 81-124.
- Kindfield, A. C. H., Hickey, D. T., & Wolfe, E. W. (1999, April). *Tools for scaffolding inquiry in the domain of introductory genetics*. Paper presented at the Annual Meeting of the American Educational Research Association, Montreal, Canada.
- Hickey, D. T., Kindfield, A. C. H., Wolfe, E. W., & Heidenberg, A. (1999, March). *GenScope™ evaluation design and learning outcomes*. Paper presented at the Annual Meeting of the National Association for Research in Science Teaching, Boston, MA.
- Kindfield, A. C. H., Hickey, D. T., & Yessis, L. M. (1999, March). *Assessing student understanding of genetics: The NewWorm® assessment*. Paper presented at the Annual Meeting of the National Association for Research in Science Teaching, Boston, MA.
- Smith, M. U. & Kindfield, A. C. H. (1999). Teaching cell division: Basics and recommendations. *The American Biology Teacher*, 61(5), 366-371.
- Horwitz, P., Schwartz, J., Kindfield, A. C. H., Yessis, L. M., Hickey, D. T., Heidenberg, A., & Wolfe, E. W. (1998). Implementation and evaluation of the GenScope™ learning environment: Issues, solutions, and results. In M. Guzdial, J. Kolodner, A. Bruckman, & A. Ram (Eds.), *Proceedings of the Third Annual International Conference of the Learning Sciences* (pp. 6-10). Charlottesville, VA: Association for the Advancement of Computers in Education.
- Kindfield, A. C. H. (1997). Genetics beyond the textbook [Review of the book *The DNA mystique: The gene as a cultural icon*]. *Science Education*, 81(5), 609-610.
- Kindfield, A. C. H. (1995, April). *Constructing models of biological processes through reasoning and diagrams*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco.
- Kindfield, A. C. H. (1994). Assessing understanding of biological processes: Elucidating students' models of meiosis. *The American Biology Teacher*, 56(6), 367-371.
- Kindfield, A. C. H. (1994). Understanding a basic biological process: Expert and novice models of meiosis. *Science Education*, 78(3), 255-283.
- Kindfield, A. C. H. (1993/1994). Biology diagrams: Tools to think with. *The Journal of the Learning Sciences*, 3(1), 1-36.
- Kindfield, A. C. H. (1992, March). Expert diagrammatic reasoning in biology. In N. H. Narayanan (Ed.), *AAAI Spring Symposium on Reasoning with Diagrammatic Representations: Working Notes* (pp. 41-46). Stanford, CA.
- Kindfield, A. C. H. (1992). Teaching genetics: Recommendations and research. In Smith M. U., Simmons, P. E. (Eds.) *Teaching Genetics: Recommendations and Research* (NSF Conference Proceedings) (pp. 39-43), Macon, GA: Mercer University School of Medicine.
- Kindfield, A. C. H. (1991). Confusing chromosome number and structure: A common student error. *Journal of Biological Education*, 25(3), 193-200.
- Kindfield, A. C. H. (1991). Researcher questions "Exploring growth (& mitosis) through a learning cycle" [Letter to the editor]. *American Biology Teacher*, 53(8), 455-456.

- Hildebrand*, A. C. (1989). *Pictorial Representations and Understanding Genetics: An Expert/Novice Study of Meiosis Knowledge*. Unpublished doctoral dissertation. University of California, Berkeley (UMI order number 9103719).
- Hildebrand, A. C. (1986, April). *Cognitive representations of basic biological entities*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco.
- Hildebrand, A. C. (1985). *Conceptual problems associated with understanding genetics: A review of the literature on genetics learning*. Unpublished manuscript.
- Fisher, K. M., Hildebrand, A. C., Miguel, L., Schoenberg, N., Porter, N., & Lipson, J. I. (1986). Student misconceptions and teaching assumptions in college biology. *Journal of College Science Teaching*, 15(4), 276-280.
- Stoneking, M., Wagner, D., & Hildebrand, A. C. (1981). Genetic evidence suggesting subspecific differences between northern and southern populations of brook trout. *Copeia*, 1981(4), 810-819.

PROFESSIONAL MEETINGS & PRESENTATIONS:

- Sept., 2009 Ethics in Science Workshop, Vanderbilt University—Invited presentation: *The Science of Teaching Science*
- May, 2009 Learning Sciences Discussion Group, Peabody College, Vanderbilt University—Invited Presentation: *Inscriptions in Scientific Practice and Science Education: You Can't be Scientifically Literate Without 'em*
- April, 2008 AERA Annual Meeting (American Educational Research Association), New York—Participant in symposium on *The Vision and Reality of Fostering Teachers' Pedagogical Content Knowledge*
- April, 2003 Center for Excellence in STEM Education, CCNY-CUNY—Invited presentation: *Evidence-centered Design: Using Research on Student Learning to Inform Curriculum/Assessment Design*
- Aug., 2001 Assessment and Cognition: Theory to Practice, University of Maryland, College Park—Co-presenter for *Biomass: ETS Assessment Futures Evidence-Centered Assessment Design Project*
- June, 2000 NECC (National Educational Computing Conference), Atlanta, GA—Co-presenter for *Integrating Assessment, Evaluation, Curriculum, and Instruction in the GenScope™ Genetics Learning Environment*
- ICLS (Fourth International Conference on the Learning Sciences), University of Michigan, Ann Arbor—Co-author for *Integrating Instruction, Assessment, & Evaluation in a Technology-Based Genetics Environment: The GenScope™ Follow-up Study*
- April, 1999 AERA Annual Meeting (American Educational Research Association), Montreal—Participant in symposia on (1) *Improving Development, Implementation, and Evaluation of Technological Learning Environments: A Project-based Perspective* and (2) *Thinking Like a Scientist: Issues in Teaching and Learning Scientific Inquiry*
- March, 1999 NARST Annual Meeting (National Association for Research in Science Teaching), Boston, MA—Organizer of and participant in a symposium on *Large-scale Implementation of the GenScope™ Learning Environment: Issues, Solutions Results, and Future Directions*
- NSTA Annual Meeting (National Science Teachers Association), Boston, MA—Organizer of and participant in a symposium on *The Tao of Assessment: Experiences and Outcomes of the GenScope™ Project*
- Dec., 1998 ICLS Annual Meeting (Third International Conference on the Learning Sciences), Atlanta, GA—Participant in a symposium on the *Implementation and Evaluation of the GenScope™ Learning Environment: Issues, Solutions, and Results*
- April, 1995 AERA Annual Meeting, San Francisco—Participant in symposium on *Model-based Learning and Reasoning in Science*
- Jan.-May, 1994 Second International Biotechnology Education Leadership Conference, Site Planning Committee Member
- August, 1993 Third International Seminar on Misconceptions and Educational Strategies in Science and Mathematics, Cornell University, Ithaca, NY—paper presentation
- May, 1993 5th Annual Conference of Partnership in Biology Education, San Jose State University, Discussion Group Facilitator: *Use of Educational Technology in Our Biology Courses*

*surname prior to marriage

- April, 1992 AERA Annual Meeting, San Francisco—Organizer of and participant in symposium on *Conceptions and Conceptual Change in Biology*
ACS Annual Meeting, San Francisco—Participant in symposium on *Conducting Chemical Education Research: Methods and Related Issues*
- March, 1992 NSF-sponsored *Teaching Genetics: Recommendations and Research* Conference, Invited participant, Boston
AAAI Symposium on *Reasoning with Diagrammatic Representations*, Invited participant, Stanford University, Stanford, CA
- Sept., 1991 Perspectives '91: Computers in Medical and Life Sciences Education, Stanford University School of Medicine and Apple Computer—Panel discussion participant—*BioQUEST: History and Philosophy of the Consortium* (selected to share experiences as a field tester of BioQUEST genetics-related software)
- July, 1991 BioQUEST Curriculum Writing Workshop, Invited participant, Beloit College, Beloit, WI
- June, 1991 Washington University/University City Science Education Partnership Education Project, Invited seminar/discussion on *Student Conceptions in Biology: Broad Issues & Reasoning about Subcellular Processes*, Washington University, St. Louis, MO
- April, 1991 AERA Annual Meeting, Chicago—Participant in symposium on *Microanalysis and Classroom Curriculum: Specific Lessons about Learning Problematic Concepts in Mathematics and Science*
NARST Annual Meeting, Fontana, WI—Paper presentation
- March, 1991 3rd Annual Conference of Partnership in Biology Education, UC Berkeley, Workshop leader: *Focus on Cell Division*
- April, 1986 AERA Annual Meeting, San Francisco—Organizer of and participant in symposium on *Concept Development and Problem Solving in Genetics*

PROFESSIONAL SERVICE:

- 1992-present Reviewer, *Science Education*, Wiley, New York
- 2009-2010 Reviewer, *Cognition and Instruction*, Lawrence Erlbaum & Associates, Mahwah, NJ
- 1998-2004 Overseas Advisory Board, *Journal of Biological Education*, Institute of Biology, London
- 1998-2004 North American Editorial Board, *International Journal of Science Education*, Taylor & Francis, London
- 1993 Proposal Reviewer—Division C: Section 2 and Subject Matter Knowledge and Conceptual Change Special Interest Group, AERA Annual Meeting
- 1985-1986 Proposal Reviewer—Division C: Section 4, AERA Annual Meeting