

COLLEGE OF MEDICINE CURRICULUM VITAE

Robert Thomas Caldwell

July 1, 2011

**I. EDUCATIONAL AND PROFESSIONAL HISTORY**

**A. List of institutions attended (least to most recent)**

Iowa State University; Ames, IA; 1965-1969; Chemistry & English (dual major);  
B.S. in 1969

The University of Iowa; Iowa City, IA; 1969-1972; Creative Writing, Poetry; M.F.A.  
in 1972

The University of Iowa; Iowa City, IA; Post-graduate courses: Advanced Electron  
Microscopy (1977), Advanced Methods in Electron Microscopy (1978),  
Microscopic Anatomy (1979), Writing for the Sciences (1986)

**B. Professional and academic positions held (least to most recent)**

Graduate Research Assistant; 1969-70; Writer's Workshop, The University of  
Iowa, Iowa City, IA

Laboratory Technician III; 1975-1977; Dows Institute of Dental Research, The  
University of Iowa, Iowa City, IA

Histology Technician II; 1977-1980; Department of Oral Pathology, The  
University of Iowa, Iowa City, IA

Research Assistant I; 1980-1984; Department of Biological Sciences, The  
University of Iowa, Iowa City, IA

Research Assistant II; 1984-1992; Department of Biological Sciences, The  
University of Iowa, Iowa City, IA

Research Assistant III; 1992-1993; Department of Biological Sciences, The  
University of Iowa, Iowa City, IA

Research Assistant III; 1993-1994; Department of Anatomy, The University of  
Iowa, Iowa City, IA

Program Associate I; 1995-2010; Department of Radiology, The University of  
Iowa, Iowa City, IA

Research Manager; 2010-present; Department of Radiology, The University of  
Iowa, Iowa City, IA

- C. **Honors, Awards, Recognitions, Outstanding Achievements (least to most recent)**

## II. **TEACHING**

- A. **Teaching assignments on semester by semester basis (least to most recent)**
- B. **Students supervised**
- C. **Other contributions to institutional programs**

## III. **SCHOLARSHIP**

- A. **Publications or creative works (least to most recent)**

### *Peer-reviewed papers*

1. Denburg JL, Eastburn JL, **Caldwell RT**. Lectin receptors in the cockroach neuromuscular system. I. Distribution among the set of coxal depressor muscles. *Brain Res.* 1983 Dec 19;289(1-2):241-52. PubMed PMID: 6661644.
2. Denburg JL, Eastburn JL, **Caldwell RT**. Lectin receptors in the cockroach neuromuscular system. II. Effects of denervation on muscle lectin receptors. *Brain Res.* 1983 Dec 19;289(1-2):253-67. PubMed PMID: 661645.
3. Denburg JL, Eastburn JL, **Caldwell RT**. Lectin receptors in the cockroach neuromuscular system. III. Distribution and identification within the thoracic ganglia of the nervous system. *Brain Res.* 1983 Dec 19;289(1-):269-80. PubMed PMID: 6661646.
4. Denburg JL, **Caldwell RT**, Marner JA. Monoclonal antibodies to the cockroach nervous system. *J Comp Neurol.* 1986 Mar 1;245(1):123-36. PubMed PMID: 3514693.
5. Denburg JL, **Caldwell RT**, Marner JM. Differences in surface molecules of motor axon terminals correlated with cell-cell recognition. *J Neurobiol.* 1987 Sep;18(5):407-16. PubMed PMID: 3655786.
6. Denburg JL, Norbeck BA, **Caldwell RT**, Marner JA. Developmental stage-specific antigens in the nervous system of the cockroach. *Dev Biol.* 1989 Mar;132(1):1-13. PubMed PMID: 2917689.
7. Denburg JL, **Caldwell RT**. A morphological correlate of target recognition by regenerating motor axons in the cockroach. *J Comp Neurol.* 1992 Jan 15;315(3):364-74. PubMed PMID: 1740549.
8. Denburg JL, **Caldwell RT**, Marner JM. Developmental changes in epitope accessibility as an indicator of multiple states of an immunoglobulin-like neural cell adhesion molecule. *J Comp Neurol.* 1995 Apr 17;354(4):533-50. PubMed PMID: 7608337.

9. Berbaum KS, Franken EA Jr, Dorfman DD, Miller EM, Krupinski EA, Kreinbring K, **Caldwell RT**, Lu CH. Cause of satisfaction of search effects in contrast studies of the abdomen. *Acad Radiol*. 1996 Oct;3(10):815-26. PubMed PMID: 8923900.
10. Berbaum KS, Franken EA Jr, Dorfman DD, Miller EM, **Caldwell RT**, Kuehn DM, Berbaum ML. Role of faulty visual search in the satisfaction of search effect in chest radiography. *Acad Radiol*. 1998 Jan;5(1):9-19. PubMed PMID: 9442202.
11. Berbaum KS, Dorfman DD, Franken EA, **Caldwell RT**. Proper ROC analysis and joint ROC analysis of the satisfaction of search effect in chest radiology. *Acad Radiol*. 2000 Nov;7(11):945-58. PubMed PMID: 11089697.
12. Berbaum KS, Franken EA Jr, Dorfman DD, **Caldwell RT**, Krupinski EA. Role of faulty decision making in the satisfaction of search effect in chest radiography. *Acad Radiol*. 2000 Dec;7(12):1098-106. PubMed PMID: 1131054.
14. **Caldwell RT**, Berbaum KS, Borah J. Correcting errors in eye-position data arising from the distortion of magnetic fields by display devices. *Behav Res Methods Instrum Comput*. 2000 Nov;32(4):572-8. PubMed PMID: 1189858.
15. Berbaum KS, Brandser EA, Franken EA, Dorfman DD, **Caldwell RT**, Krupinski EA. Gaze dwell times on acute trauma injuries missed because of satisfaction of search. *Acad Radiol*. 2001 Apr;8(4):304-14. PubMed PMID: 11293778.
16. Berbaum KS, Dorfman DD, Franken EA Jr, **Caldwell RT**. An empirical comparison of discrete ratings and subjective probability ratings. *Acad Radiol*. 2002 Jul;9(7):756-63. PubMed PMID: 12139089.
17. Berbaum KS, Franken EA Jr, Dorfman DD, **Caldwell RT**, Lu CH. Can order of report prevent satisfaction of search in abdominal contrast studies? *Acad Radiol*. 2005 Jan;12(1):74-84. PubMed PMID: 15691728.
18. Berbaum K, Franken EA Jr, **Caldwell RT**, Schartz KM. Can a checklist reduce SOS errors in chest radiography? *Acad Radiol*. 2006 Mar;13(3):296-304. PubMed PMID: 16488841.
19. Madsen MT, Berbaum KS, Ellingson AN, Thompson BH, Mullan BF, **Caldwell RT**. A new software tool for removing, storing, and adding abnormalities to medical images for perception research studies. *Acad Radiol*. 2006 Mar;13(3):305-12. PubMed PMID: 16488842.
20. Berbaum KS, El-Khoury GY, Ohashi K, Schartz KM, **Caldwell RT**, Madsen M, Franken EA Jr. Satisfaction of search in multitrauma patients: severity of detected fractures. *Acad Radiol*. 2007 Jun;14(6):711-22. PubMed PMID: 17502261; PubMed Central PMCID: PMC1978092.

21. Berbaum KS, **Caldwell RT**, Schartz KM, Thompson BH, Franken EA Jr. Does computer-aided diagnosis for lung tumors change satisfaction of search in chest radiography? *Acad Radiol.* 2007 Sep;14(9):1069-76. PubMed PMID: 17707314; PubMed Central PMCID: PMC2692435.
22. Krupinski EA, Berbaum KS, **Caldwell RT**, Schartz KM, Kim J. Long radiology workdays reduce detection and accommodation accuracy. *J Am Coll Radiol.* 2010 Sep;7(9):698-704. PubMed PMID: 20816631.

#### *Chapters*

1. Franken EA Jr., Whitten PS, **Caldwell RT**, Bowerman RF. Impact of teleradiology on radiological consultation in rural areas. In: Lemke HU, Vannier MW, Inamura K, Farman AG, eds. *Computer assisted radiology and surgery, CAR '98*. New York: Elsevier, 1998;478-483.
2. Berbaum KS, Franken EA Jr, **Caldwell RT**, Schartz KM. Satisfaction of search in traditional radiographic imaging. In: Samei E, Krupinski E, Jacobson F, eds. *The Handbook of Medical Image Perception and Techniques*. Cambridge, UK: Cambridge University Press, 2010;107-138.

#### *Creative works*

1. *Typewriter*. An international magazine of concrete and visual poetry, **Robert Caldwell**, executive editor, published by Bird in the Bush Press, Iowa City, IA and Islip, NY, funded in part by the Coordinating Council for Literary Magazines and the National Endowment for the Arts, 1971-1980.
2. *Restoration of the Herbert Hoover Birthplace Cottage*. A five-part television series documenting the restoration of the birthplace cottage, 130 minutes, **Robert Caldwell**, executive director, produced for the National Park Service, 1992.
3. *West Branch, Iowa*. A community promotional videotape program, 5 minutes, that played at the Iowa State Fair, 5 minutes, **Robert Caldwell**, executive director, produced for the West Branch Chamber of Commerce, 1993.
4. *The Herbert Hoover National Historic Site*. A visitor's orientation videotape program, 4 minutes, **Robert Caldwell**, executive director, produced for the National Park Service, 1996.
5. *Hooverfest*. A promotional videotape program played statewide on local access channels, 14 minutes, **Robert Caldwell**, executive director, produced for the Herbert Hoover Presidential Library Association, 1997.
6. *Looking Back*. A television program recollecting the early days of the Herbert Hoover Birthplace Society as recounted by original board member, Floyd Fawcett, 20 minutes, **Robert Caldwell**, executive director, produced for the Herbert Hoover Presidential Library Association, 1997.

7. *A Guest Returns*. A television program recollecting the return to Scattergood School by a refugee from Nazi occupied Europe, 50 minutes, **Robert Caldwell**, executive director, produced for West Branch Community Access Television, 1998.
8. Hooverfest '98. A promotional videotape program, 3 minutes, **Robert Caldwell**, executive director, produced for the Herbert Hoover Presidential Library Association, 1998.
9. *A Re-telling of Maud Stratton's Herbert Hoover's Home Town*, A 12-part television series sponsored by the West Branch Heritage Museum Foundation, **Robert Caldwell**, executive director, funded in part by the Iowa Humanities Board and the National Endowment for the Humanities, 2000.
10. *The War Years*. **Robert Caldwell**. A multimedia CD, published by IRIS Productions and presented at the Actualists Reunion, Iowa City, IA, 2008.

**B. Areas of Research Interest and Current Projects**

*Areas of Research Interest:* Understanding the human factors contributing to medical error in diagnostic radiology.

*Current Projects:* Measuring the effect of visual fatigue on detection accuracy viewing computed tomography images; determining if verbal search commands effect the detection accuracy for non-pulmonary abnormalities in chest radiography.

**C. Published reviews of scholarship**

**D. Grants received**

*Previous*

Title: Biochemistry of Cell Recognition in Nervous Systems  
 Source: NIH Grant R01 NS14295  
 Funding: \$2,455,367 (total)  
 Dates: 1978-1996  
 P.I.: Jeffrey Denburg, Ph.D.  
 Effort: 50% effort and salary support  
 Role: Research Assistant I-III

Title: Generation of Neuronal Form and Function  
 Source: NIH Grant R01 NS15350  
 Funding: \$2,216,524 (total)  
 Dates: 1979-1994  
 P.I.: Jeffrey Denburg, Ph.D.  
 Effort: 50% effort and salary support  
 Role: Research Assistant I-III

Title: The National Laboratory for the Study of Rural Telemedicine  
Source: NLM N01-LM-4-3511  
Funding: \$6,247,478 (total)  
Dates: 1994-1997  
P.I.: Michael Kienzle, M.D.  
Effort: 100% effort and salary support  
Role: Program Associate I

Title: Satisfaction of Search in Diagnostic Radiology  
Source: NIH Grant R01 EB00145  
Funding: \$969,589 (direct)  
Dates: 1997-2002  
P.I.: Kevin Berbaum, Ph.D.  
Effort: 100% effort and salary support except for other listed below  
Role: Program Associate I

Title: Improved DBM ROC Methods for Diagnostic Radiology  
Source: NIH Grant R01 EB00863  
Funding: \$2,420,281 (direct)  
Dates: 2003-2007  
P.I.: Kevin Berbaum, Ph.D.  
Effort: 10% effort and salary support  
Role: Program Associate I

Title: Satisfaction of Search in Diagnostic Radiology  
Source: NIH Grant R01 EB00145  
Funding: \$900,000 (direct)  
Dates: 2002-2007  
P.I.: Kevin Berbaum, Ph.D.  
Effort: 90% effort and salary support  
Role: Program Associate I

*Current*

Title: Eyestrain in Radiologists  
Source: NIH Grant R01 EB004987, subcontract with University of Arizona  
Funding: \$346,900 (direct)  
Dates: 2006-2010  
P.I.: Kevin Berbaum, Ph.D. (Univ. of Arizona PI: Elizabeth Krupinski)  
Effort: 65% effort and salary support  
Role: Program Associate I

Title: Abnormality Manipulation for Tomographic Imaging Perception Research  
Source: NIH Grant R01 EB00145  
Funding: \$750,000 (direct)  
Dates: 2007-2010

P.I.: Mark Madsen, Ph.D.  
 Effort: 25% effort and salary support  
 Role: Program Associate I  
  
 Title: Improved DBM ROC Methods for Diagnostic Radiology  
 Source: NIH Grant R01 EB00863  
 Funding: \$2,061,526 (direct)  
 Dates: 2007-2011  
 P.I.: Kevin Berbaum, Ph.D.  
 Effort: 5% effort and salary support  
 Role: Program Associate I  
  
 Title: Satisfaction of Search in Diagnostic Radiology  
 Source: NIH Grant R01 EB00145  
 Funding: \$1,020,457 (direct)  
 Dates: 2008-2012  
 P.I.: Kevin Berbaum, Ph.D.  
 Effort: 5% effort and salary support  
 Role: Program Associate I

## E. Invited lectures

### Conference presentations

1. Denburg JL and **Caldwell RT**. Do Changes in Neuronal Recognition Macromolecules Contribute to Speciation? The XVIII International Congress of Entomology, Vancouver, Canada, July, 1988.
2. **Caldwell RT**. Using Monoclonal Antibodies to Demonstrate Relatedness Between Species in the Orders Blattaria, Isoptera, and Orthoptera. Noon Lecture in the Department of Biological Sciences, The University of Iowa, Iowa City, IA, February 1990.
3. Kuehn DM, Berbaum KS, El Khoury GY, Franken EA Jr, Dorfman DD, Miller EM, **Caldwell RT**: Gaze dwell times on multiple acute trauma injuries. Presented at the Association of University Radiologists 44th Annual Meeting, Birmingham, AL, April 17-21, 1996.
4. Berbaum KS, Franken EA Jr, Dorfman DD, **Caldwell RT**: The role of faulty search in satisfaction of search effects in chest radiology. The Seventh Farwest Image Perception Conference, October 16-18, 1997, Tucson, AZ.
5. **Caldwell RT**, Berbaum KS, Borah J. A Method for Correction of Magnetic Field Distortion Produced by Display Devices on Eye-Position Data. Presentation at the 8<sup>th</sup> Far West Image Perception Conference, Alberta, Canada, 1999.
6. Berbaum KS, Dorfman DD, Franken EA Jr, **Caldwell RT**. An empirical comparison of discrete ratings and subjective probability ratings. Medical

- Image Perception Conference X, Durham, NC, September 11-14, 2003.
7. Berbaum KS, Franken EA Jr, **Caldwell RT**. Order of report in abdominal contrast studies: Can satisfaction of search be prevented? Medical Image Perception Conference XI, Lake Bowness on Windermere, UK, September 27-30, 2005.
  8. Schartz KM, Berbaum KS, **Caldwell RT**, Madsen MT. WorkstationJ: Workstation emulation software for medical image perception and technology evaluation research. Presentation at the Annual Meeting of the SPIE – The International Society for Optical Engineering, Medical Imaging 2007: Image Perception and Performance, San Diego, CA, February 2007.
  9. Berbaum KS, El-Khoury GY, Ohashi K, Schartz KM, **Caldwell RT**, Madsen MT, Franken EA Jr. Satisfaction of search in multi-trauma patients: Severity of detected fractures. Presentation at the Association of University Radiologists 55th Annual Meeting, Denver, CO, April 24-28, 2007.
  10. Schartz KM, Berbaum KS, **Caldwell RT**, Madsen MT. Software to facilitate medical image perception and technology evaluation research. Presentation at the Medical Image Perception Conference XII, Iowa City, IA, October 17-20, 2007.
  11. Berbaum KS, El-Khoury GY, Ohashi K, Schartz KM, **Caldwell RT**, Madsen MT, Franken EA Jr. Satisfaction of search in multi-trauma patients: Severity of detected fractures. Presentation at the Medical Image Perception Conference XII, Iowa City, IA, October 17-20, 2007.
  12. Madsen MT, Berbaum KS, **Caldwell RT**, Schartz KM. Abnormality manipulation tools for medical image perception research. Presentation at the Medical Image Perception Conference XII, Iowa City, IA, October 17-20, 2007.
  13. Madsen MT, Durst GR, **Caldwell RT**, Schartz KM, Thompson BH, Berbaum KS. Validation of an improved abnormality insertion method for medical image perception investigations. Presentation at the Annual Meeting of the SPIE – The International Society for Optical Engineering, Medical Imaging 2009, Lake Buena Vista, Florida, February 7-12, 2009.
  14. Schartz KM, Berbaum KS, **Caldwell RT**, Madsen MT. WorkstationJ. Software workshop presentation at the Annual Meeting of the SPIE – The International Society for Optical Engineering, Medical Imaging 2009, Lake Buena Vista, Florida, February 7-12, 2009.
  15. Madsen MT, Schartz KM, **Caldwell RT**, Berbaum KS. Abnormality Manipulation Software Tools. Software workshop presentation at the Annual Meeting of the SPIE – The International Society for Optical Engineering, Medical Imaging 2009, Lake Buena Vista, Florida, February 7-12, 2009.



16. Schartz KM, Berbaum KS, **Caldwell RT**, Madsen MT. WorkstationJ as ImageJ plugin for medical image studies. Presentation at the R&D Symposium at the Annual Meeting of The Society for Imaging Informatics in Medicine, Charlotte, North Carolina, June 4-7, 2009.
17. Schartz KM, Berbaum KS, **Caldwell RT**, Madsen MT. WorkstationJ as ImageJ plugin for medical image studies. Software demonstration at the Annual Meeting of The Society for Imaging Informatics in Medicine, Charlotte, North Carolina, June 4-7, 2009.
18. Schartz KM, Berbaum KS, **Caldwell RT**, Madsen MT. Conversion of WorkstationJ to ImageJ Plugin. Presentation at the Medical Image Perception Conference XIII, Santa Barbara, CA, October 19-21, 2009.
19. Madsen MT, Berbaum KS, Schartz KM, **Caldwell RT**. Abnormality Manipulation Tools for PET CT. Presentation at the Medical Image Perception Conference XIII, Santa Barbara, CA, October 19-21, 2009.

**F. Pending decisions (grant proposals, book contracts)**

Title:	Software Tools for Collaborative Observer Performance Research
Source:	NIH
Submitted:	July, 2011
P.I.:	Kevin Schartz, Ph.D.
Title:	Power and Sample-Size Methodology for Radiology Research
Source:	NIH
Submitted:	July, 2011
P.I.:	Stephen Hillis, Ph.D.

**IV. SERVICE**

- A. Offices held in professional organizations (least to most recent)**
- B. Clinical assignments since last promotion (if applicable)**